City of Canada Bay



CITY OF CANADA BAY DEVELOPMENT CONTROL PLAN

Date of adoption: 15 March 2022

Effective date: 26 August 2022

List of Amendments

Amendment No.	Description	Adopted	Effective	DCP Reference
1	Amends car parking requirements in relation to restaurant, cafe, take away food and drink premises.	5 February 2008	7 March 2008	Part 7.7 Parking
2	Minor amendments including typographical errors, definitions, clarification of controls and general housekeeping	4 August 2009	19 August 2009	Various
3	Minor amendments regarding development on Sydney Harbour.	15 February 2011	24 Feb 2011	Part 5.2.2 Part 6.3.2
4	Inclusion of guidelines for Bibby Street industrial precinct, western side of Victoria Road (between Church and Day Streets) and 186 Great North Road.	7 May 2013	23 May 2013	Part 6.6.1 Part 6.6.2
5	Notification and Advertising.	20 November 2015	23 Nov 2015	Part 2.2
6	Updated to incorporate changes resulting from CCBC LEP 2013 Amendment 7 (Five Dock Town Centre).	3 November 2015	19 August 2016	Part 7
7	Updated to incorporate changes resulting from CCBC LEP 2013 Amendment 10 (2A Hythe Street, Drummoyne).	31 May 2016	2 Dec 2016	Part 6
8	Updated to incorporate changes resulting from CCBC LEP 2013 Amendment 9 (355-359 Lyons Road, Five Dock).	15 March 2016	5 August 2016	Part 7

Amendment No.	Description	Adopted	Effective	DCP Reference
9	Amendments including addition of engineering specifications, flooding controls, changes to controls for contaminated land and crime prevention, removal of character areas, consolidation of residential controls, relocation of site specific controls from Part 6 to Special Precincts DCP, various housekeeping amendments and changes to formatting, illustrations and maps.	21 February 2017	7 March 2017	Various
10	Updated to incorporate DCP changes resulting from CCBC LEP 2013 Amendment 12 (land west of, and generally fronting Waterview St, bounded by Second Ave and Barnstaple Rd, Five Dock)	6 February 2018	27 April 2018	F2.2 - Five Dock Town Centre
11	Part I - Child Care Centres updated to remove duplication in response to introduction of SEPP (Educational Establishments and Child Care Facilities) 2017	4 December 2018	18 Dec 2018	Part I - Child Care Centres
12	Part B of this Development Control Plan was repealed.	19 November 2019	3 Dec 2019	Part B - Notification and Advertising
13	Changes to Part F2.1 to include built form controls for the Victoria Road Planning Proposal (Day Street, Formosa Street, Victoria Road, Thornley Street Drummoyne)		18 Feb 2020	Part F2.1 - Victoria Road, Drummoyne
14	Updated to incorporate amendments arising from LSPS and background strategies, low rise medium density housing review, waste management system review, Victoria Road urban design review, consolidation of DCPs, housekeeping and miscellaneous amendments.	15 March 2022	26 August 2022	Various

Table of Contents

City of Canada Bay Development Control Plan

PART A - Introduction

A1 Introduction **A-2**
A1.1 The purpose of this Development Control Plan A-2
A1.2 DCP name and commencement A-2
A1.3 Savings and transitional arrangements A-2
A1.4 Land covered by this Plan A-2
A1.5 Relationship of this DCP to the LEP A-2
A1.6 Aims of this DCP A-2
A1.7 Background information on this document A-3

PART B - General Controls

B1 Accessibility **B-3**
B1.1 Adaptable housing B-3
B1.2 Accessible Design B-4
B2 Telecommunications and radiocommunications **B-5**
B2.1 To what facilities does this Part apply? B-5
B2.2 What is the purpose of this Part? B-5
B2.3 Design controls B-6
B3 Vehicle and bicycle parking and access **B-9**
B3.1 Vehicle Parking B-9
B3.2 Single Dwellings, Semi-Detached Dwellings and Dual Occupancies B-14
B3.3 Multi-dwelling housing, multi dwelling housing (terraces), manor houses and residential flat buildings B-18
B3.4 Car Parking Rates B-19
B3.5 Special Precincts B-33
B3.6 Bicycle parking and storage facilities B-35
B3.7 End of trip facilities B-36
B3.8 Electric Vehicles B-37
B3.9 Common loading docks and service vehicle parking B-39
B3.10 Car Share B-40
B4 Waste Management **B-41**
B4.1 General Controls B-41
B4.2 Single Dwellings and Dual Occupancies B-43
B4.3 Multi-unit Dwelling Residential Development B-43
B4.4 Controls for Mixed Use Developments B-52

B5 Water conservation B-56

B6 Urban Forest B-57

B6.1 Tree maintenance B-57

B6.2 Assessment of trees B-59

B6.3 City of Canada Bay tree species B-60

B6.4 Biodiversity B-65

B6.5 Habitat Connectivity B-73

B6.6 Plants suitable for corridors and restoration planting B-81

B6.7 Replacement planting B-85

B6.8 Wetlands and waterways B-86

B6.9 Threatened and migratory species B-87

B6.10 Urban Tree Canopy B-95

B7 Engineering Requirements for Development B-97

B7.1 Engineering works B-97

B7.2 Objectives B-97

B8 Flooding Control B-98

B8.1 Introduction B-98

B8.2 Relationship to other documents B-98

B8.3 Land to which this Flood Control clause applies B-98

B8.4 Flood planning maps B-101

B8.5 Development Controls B-106

B8.6 Details of the Flood Controls B-109

B9 Contaminated land B-111

B10 Crime prevention through environmental design B-112

B11 Energy efficiency B-112

B12 Subdivision and allotment size B-113

PART C - Heritage

C1 Heritage reports to accompany development applications C-3

C1.1 Statement of heritage impact C-3

C1.2 Conservation policy C-3

C1.3 Conservation management plan C-3

C1.4 Requirements for heritage reports C-3

C2 Development of heritage items C-5
C2.1 Setting C-5
C2.2 Scale C-5
C2.3 Form and detailing C-6
C2.4 Materials and colours C-6
C2.5 Doors and windows C-7
C2.6 Car parking C-8
C2.7 Fencing C-9
C2.8 Landscape elements including paving and driveways C-9
C2.9 Outbuildings C-10
C2.10 Services C-10
C2.11 Demolition C-11
C2.12 Subdivision C-11
C2.13 Signs C-11
C2.14 Adaptive reuse C-13
C2.15 Structural Integrity C-14
C2.16 Conservation Works C-14
C2.17 Secondary dwellings C-15
C3 Development in the vicinity of a heritage item or a heritage conservation area C-16
C3.1 General C-16
C3.2 Scale C-17
C3.3 Siting C-17
C3.4 Materials and Colours C-18
C3.5 Landscaping C-18
C4 Development in Heritage Conservation Areas C-19
C4.1 General C-19
C4.2 Scale C-20
C4.3 Form and detailing C-21
C4.4 Siting C-23
C4.5 Materials and colours C-23
C4.6 Doors and Windows C-24
C4.7 Car parking C-25
C4.8 Fencing C-26
C4.9 Landscape elements including paving and driveways C-27
C4.10 Outbuildings C-28
C4.11 Services C-28
C4.12 Demolition C-29

C4.13 Subdivision C-29
C4.14 Signs C-30
C4.15 Conservation Works C-31
C4.16 Secondary Dwellings C-32

PART D - Local Character Areas

PART E - Single Dwellings, Semi-Detached Dwellings, Dual Occupancies and Secondary Dwellings

E1 Land to which Part E applies E-2

E2 Design Quality E-3

E2.1 Design of dwelling houses, semi-detached dwellings, dual occupancies and secondary dwellings E-3
E2.2 Materials, colour schemes and details E-7

E3 Environmental criteria and residential amenity E-8

E3.1 Topography E-8
E3.2 Harbour foreshore development and foreshore access E-8
E3.3 Solar access to neighbours E-10
E3.4 Solar access to dwellings within the development E-10
E3.5 Solar access for solar panels E-10
E3.6 Solar access general guidelines E-11
E3.7 Shade guidelines E-11
E3.8 Visual and acoustic privacy E-12
E3.9 Traffic and transport corridor amenity impacts E-15
E3.10 Access to views E-16
E3.11 Safety and security E-17

E4 General Controls E-18

E4.1 Frontage E-18
E4.2 Building setbacks E-18
E4.3 Street orientation and presentation E-24
E4.4 Height of buildings E-25
E4.5 Bulk and Scale E-32
E4.6 Landscaped area E-32
E4.7 Parking and access E-34
E4.8 Private open space E-34

E5 Ancillary structures E-35

E5.1 Fencing E-35
E5.2 Site facilities E-37

PART F - Multi-dwelling housing, multi dwelling housing (terraces), manor houses and residential flat buildings

F1 Land to which Part F applies F-3

F2 Design Quality F-3

F2.1 Design Quality of Residential Apartment Development F-3

F2.2 Materials, colour schemes and details F-4

F3 Environmental criteria and residential amenity F-5

F3.1 Topography F-5

F3.2 Harbour foreshore development and foreshore access F-5

F3.3 Solar access to neighbours F-7

F3.4 Solar access to dwellings within the development F-7

F3.5 Solar access for solar panels F-7

F3.6 Solar access general guidelines F-8

F3.7 Shade guidelines F-8

F3.8 Visual and acoustic privacy F-9

F3.9 Traffic and transport corridor amenity impacts F-12

F3.10 Access to views F-13

F3.11 Safety and security F-14

F3.12 Access to public transport F-14

F4 General Controls F-15

F4.1 Frontage F-15

F4.2 Building setbacks F-15

F4.3 Street orientation and presentation F-20

F4.4 Height of buildings F-22

F4.5 Bulk and Scale F-26

F4.6 Landscaped area F-26

F4.7 Parking and access F-28

F4.8 Private open space F-28

F4.9 Common open space F-29

F4.10 Alterations and additions F-30

F5 Ancillary structures F-33

F5.1 Fencing F-33

F5.2 Site facilities F-35

F6 Public Art F-38

PART G - Local centres

G1 Land to which Part G applies G-2

G2 General Requirements G-3

G2.1 General objectives G-3
G2.2 Building design and appearance G-3
G2.3 Ground floor interfaces G-7
G2.4 Building performance G-9
G2.5 Safety and security G-10
G2.6 Neighbourhood amenity G-11
G2.7 Landscape Design G-12
G2.8 Heritage G-12
G2.9 Signage and advertising G-13
G2.10 Public Art G-14
G2.11 Access and parking G-15
G2.12 Residential Uses not covered by the Apartment Design Guide G-16

G3 Site specific building envelope and design controls G-17

G3.1 Victoria Road Drummoyne G-17
G3.2 Five Dock Town Centre G-55
G3.3 Majors Bay Road Shopping Centre, Concord G-75
G3.4 Victoria Avenue Shopping Centre, Concord West G-77
G3.5 355-359 Lyons Road, Five Dock G-79

PART H - Industrial Development

H1 General Objectives H-2

H2 Setbacks H-2

H3 Landscaping H-3

H4 Building form and appearance H-3

H5 Light and noise H-4

H6 Public Art H-5

PART I - Signage and Advertising

I1 Signage and Advertising I-2
I2 General Objectives and standards applicable to all development I-3
I3 Sign proliferation and dominance I-7
I4 Sign dimensions I-8
I5 Integration I-8
I6 Conservation areas I-9
I7 Concord Oval and Drummoyne Oval Signage I-10
I8 Architectural amenity and residential character I-12

PART J - Child Care Centres

J1 Child Care Centres J-2
J2 Building setbacks J-2
J3 Provision of parking J-2
J4 Signage J-2

PART K - Special Precincts

K1 Land to which Part K applies K-2
K2 Abbotsford Cove K-3
K3 Bibby Street K-7
K4 Breakfast Point K-9
K5 Cape Cabarita K-49
K6 Concord West K-57
K7 Edgewood and Kendall Inlet (former Dulux site) K-73
K8 27 George Street North Strathfield K-78
K9 186 Great North Road, Five Dock K-82
K10 2A Hythe Street, Drummoyne K-88
K11 Kings Bay (former Hycraft site), Five Dock K-92
K12 Liberty Grove K-96

K13 Mortlake Point **K-99**
K14 Pelican Point, Pelican Quays and Philips Landing, Concord **K-103**
K15 Rhodes Corporate Park **K-106**
K16 Rhodes East **K-111**
K17 Rhodes West **K-201**
K18 Sydney Wire Mill site, Chiswick **K-291**
K19 Tuscany Court **K-296**

PART L - Definitions

Definitions **L-2**

Appendix 1 - Conservation Areas

Statements of significance **A1-2**
CA.1 Birkenhead and Dawson Estates Conservation Area A1-2
CA.2 Bourketown Conservation Area A1-7
CA.3 Creewood Street Conservation Area A1-15
CA.4 Drummoyne Avenue East Conservation Area A1-17
CA.5 Drummoyne Avenue West Conservation Area A1-20
CA.6 Drummoyne Park Conservation Area A1-22
CA.7 Gale Street Inter-War Californian Bungalow Group A1-25
CA.8 Gale Street Victorian Housing Group A1-27
CA.9 Gears Avenue Conservation Area A1-29
CA.10 Gipps Street Conservation Area A1-31
CA.11 Hampden Road Conservation Area A1-33
CA.12 Lindfield Avenue Conservation Area A1-36
CA.13 Majors Bay Road Conservation Area A1-38
CA.14 Marlborough and Tavistock Streets Conservation Area A1-40
CA.15 Mons Street and Boronia Avenue Conservation Area A1-43
CA.16 Moore Street Conservation Area A1-45
CA.17 Mortlake Workers' Housing Group A1-47
CA.18 Park Avenue Conservation Area A1-49
CA.19 Parklands Estate Conservation Area A1-51
CA.20 Powell's Estate Conservation Area A1-53
CA.21 Sailsbury Street Housing Group A1-55
CA.22 Thompson Street Conservation Area A1-57
CA.23 Victoria Road Retail Conservation Area A1-59
CA.24 Yaralla Estate Conservation Area A1-61

Appendix 2 - Engineering Specifications

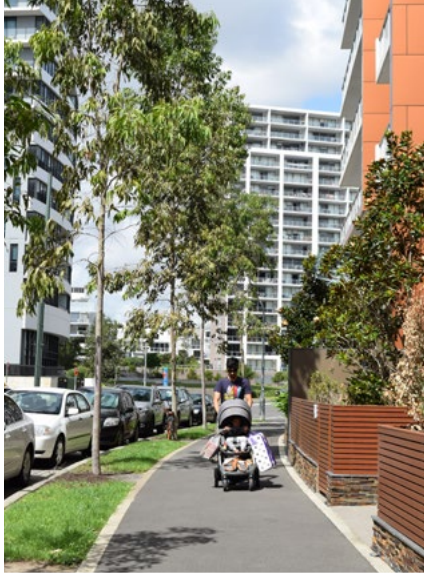
ES1 Road and Footpath Works A2-2
Footway A2-3
Footpath A2-5
Kerb and Gutter A2-7
Road Carriageway A2-8
Ancillaries A2-9
ES2 Vehicular Access A2-12
Statutory and Design Requirements A2-12
ES3 Stormwater Management A2-21
On-site Stormwater Detention Systems A2-24
On-site Stormwater Absorption Systems A2-33
Charged Systems A2-34
Mechanical Pump-out Systems A2-36
Scouring, Erosion and Water Quality Control A2-38
Rainwater Re-use A2-40
Stormwater Drainage Design A2-41
Stormwater Pollution and Erosion Control A2-54
Water Sensitive Urban Design A2-55
Document Submission A2-56
ES4 Appendices A2-60
Terms of Positive Covenant A2-60
Restriction on the Use of Land A2-62
Generic Letter for Seeking Easement on Adjoining Land A2-64
Intensity-Frequency-Duration Charts A2-65
Rhodes Peninsula Site Specific Requirements A2-69
Strathfield Triangle Site Specific Requirements A2-72
Flow Charts Rainwater Reuse A2-100
Stormwater Management Type 2 Developments A2-101
Stormwater Management Type 3 to 9 Developments A2-102
Driveway and Ancillary Works A2-103
Standard Engineering Drawings A2-104

This page was intentionally left blank

A







PART A - INTRODUCTION

A1 Introduction A-2

A1.1 The purpose of this Development Control Plan A-2

A1.2 DCP name and commencement A-2

A1.3 Savings and transitional arrangements A-2

A1.4 Land covered by this Plan A-2

A1.5 Relationship of this DCP to the LEP A-2

A1.6 Aims of this DCP A-2

A1.7 Background information on this document A-3

A1 Introduction

A1.1 The purpose of this Development Control Plan

The purpose of this Development Control Plan (DCP) is to supplement the Canada Bay Local Environmental Plan (LEP) 2013 and provide more detailed provisions to guide development.

This DCP has been made in accordance with Section 3.43 of the Environmental Planning & Assessment Act 1979 (the Act) and must be read in conjunction with the provisions of Canada Bay LEP 2013.

Compliance with the provisions of this DCP does not necessarily guarantee that consent to a Development Application (DA) will be granted. Each DA will be assessed having regard to the LEP, this DCP, other matters listed in Section 4.15 of the Act, and any other policies adopted by the consent authority.

If there are circumstances when it is not relevant to comply with the controls in this DCP, applicants must provide a written submission clearly demonstrating compliance with the objectives of this DCP, and detailing the reasons the control/s should be varied. The proposed variation must result in a better outcome and meet all objectives of this DCP. The submission must also clearly demonstrate the variation sought will not adversely impact on the local amenity.

A1.2 DCP name and commencement

This DCP may be referred to as the City of Canada Bay Development Control Plan. The DCP was adopted by Council and came into effect as specified in the List of Amendments.

A1.3 Savings and transitional arrangements

A development application that has been lodged prior to the adoption of this plan but not determined shall be determined in accordance with the provision of the plan that applied at the date of lodgement of the application.

A1.4 Land covered by this Plan

This Plan applies to all land within the Canada Bay Local Government Area except for the sites included in:

- Strathfield Triangle Development Control Plan

It should be noted that in certain circumstances site and precinct specific DCPs adopt some of the provisions of this DCP in accordance with Section 3.43 (3) of the Act.

A1.5 Relationship of this DCP to the LEP

The provisions contained in this DCP are in addition to the provisions of the LEP. If there is any inconsistency between this DCP and the LEP, the LEP will prevail.

A1.6 Aims of this DCP

1. Encourage development that responds to its context and is compatible with the existing built environment and public domain;
2. Recognise and reinforce the distinctive characteristics of Canada Bay's neighbourhood and centres;
3. Build upon the detailed objectives and controls under Canada Bay LEP 2013;
4. Protect and enhance the public domain;
5. Encourage design that maintains and enhances the character and heritage significance of heritage items and heritage conservation areas; and
6. Encourage ecologically sustainable development and reduce the impacts of development on the environment.

A1.7 Background information on this document

What is a Development Control Plan?

A Development Control Plan (DCP) is a commonly used town planning document which provides detailed guidance for the design and assessment of new development.

How to work through this document

Each topic contains an explanation, objectives and controls that should be complied with.

Objectives outline what the controls aim to achieve. Applicants should demonstrate that the proposed development fulfils the relevant objectives of each element and complies with the relevant controls.

Structure of this DCP

The DCP is divided into the following sections with further detail is provided in the table below:

- Part A - Introduction
- Part B - General Controls
- Part C - Heritage
- Part D - Local Character Areas
- Part E - Single Dwellings, Semi-Detached Dwellings, Dual Occupancies and Secondary Dwellings
- Part F - Multi-dwelling housing, multi dwelling housing (terraces), manor houses and residential flat buildings
- Part G - Local Centres
- Part H - Industrial Development
- Part I - Signage and Advertising
- Part J - Childcare Centres
- Part K - Special Precincts
- Part L - Definitions
- Appendix 1 - Conservation Areas
- Appendix 2 - Engineering Specifications

Monitoring and review

The Council is required to keep the local environmental plans and development control plans under regular and periodic review (see section 3.21 of the Act). The Council is committed to this process to ensure that the Plans continue to be useful and relevant.

This page was intentionally left blank

B







PART B - GENERAL CONTROLS

B1 Accessibility B-3

B1.1 Adaptable housing B-3

B1.2 Accessible Design B-4

B2 Telecommunications and radiocommunications B-5

B2.1 To what facilities does this Part apply? B-5

B2.2 What is the purpose of this Part? B-5

B2.3 Design controls B-6

B3 Vehicle and bicycle parking and access B-9

B3.1 Vehicle Parking B-9

B3.2 Single Dwellings, Semi-Detached Dwellings and Dual Occupancies B-14

B3.3 Multi-dwelling housing, multi dwelling housing (terraces), manor houses and residential flat buildings B-18

B3.4 Car Parking Rates B-19

B3.5 Special Precincts B-33

B3.6 Bicycle parking and storage facilities B-35

B3.7 End of trip facilities B-36

B3.8 Electric Vehicles B-37

B3.9 Common loading docks and service vehicle parking B-39

B3.10 Car Share B-40

B4 Waste Management B-41

B4.1 General Controls B-41

B4.2 Single Dwellings and Dual Occupancies B-43

B4.3 Multi-unit Dwelling Residential Development B-43

B4.4 Controls for Mixed Use Developments B-52

B5 Water conservation B-56

B6 Urban Forest B-57
B6.1 Tree maintenance B-57
B6.2 Assessment of trees B-59
B6.3 City of Canada Bay tree species B-60
B6.4 Biodiversity B-65
B6.5 Habitat Connectivity B-73
B6.6 Plants suitable for corridors and restoration planting B-81
B6.7 Replacement planting B-85
B6.8 Wetlands and waterways B-86
B6.9 Threatened and migratory species B-87
B6.10 Urban Tree Canopy B-95
B7 Engineering Requirements for Development B-97
B7.1 Engineering works B-97
B7.2 Objectives B-97
B8 Flooding Control B-98
B8.1 Introduction B-98
B8.2 Relationship to other documents B-98
B8.3 Land to which this Flood Control clause applies B-98
B8.4 Flood planning maps B-101
B8.5 Development Controls B-106
B8.6 Details of the Flood Controls B-109
B9 Contaminated land B-111
B10 Crime prevention through environmental design B-112
B11 Energy efficiency B-112
B12 Subdivision and allotment size B-113

B1 Accessibility

B1.1 Adaptable housing

Adaptable Housing is accommodation that is specifically designed to enable easy modification in the future for occupation and visitation by people with disabilities or progressive frailties. It is designed in accordance with the minimum standards for accessibility but is not designed as special purpose housing such as institutional care. Adaptable housing therefore can suit the needs of many different people, including people with a current disability and people who will acquire disabilities gradually as they age. Adaptable housing is also often attractive to people who prefer open plan type living, or those with children.

Typically, the provision of adaptable housing has been perceived to be onerous on developers. However, it has been demonstrated that the additional cost of incorporating adaptable features is in most cases not more than 5% - in fact nil in many cases. This initial cost is more than outweighed by the benefits of providing adaptable housing which include:

a) reduced costs of future modifications, which are often costly, to suit people with disabilities or increasing frailties; and
b) a wider range of people are able to access adaptable homes, thereby making them more visitable; and
c) residents are able to stay in their homes and use the same services as well as maintain the same support networks despite their changing needs; and
d) many adaptable features make homes safer for people of all ages and abilities.

Adaptable housing units should be constructed to meet the performance requirements and are to include the essential features as required by AS4299 at the rates specified in Table B-A for developments that include a lift. Where the total number of adaptable housing units to be provided is not a whole figure, the figure is to be rounded up to the next whole figure.

Objectives

O1. To ensure that a proportion of all new apartment developments are adaptable and accessible.

Controls	
C1.	Adaptable dwellings are to be spread amongst all unit sizes to accommodate various household sizes.
C2.	Adaptable housing units are to be located close to the main entrance of a building and access to adaptable housing units must comply with Australian Standards.
C3.	Adaptable housing units, and internal and external common areas, are to be designed to Australian Standard AS 4299-1995, to accommodate varying degrees of physical ability over time.
C4.	Provide adaptable housing as specified in Table B-A.
C5.	Where a car parking space is to be provided in connection with an adaptable unit, that parking space is to be accessible.

Table B-A Adaptable housing ratios

Total number of dwellings	Minimum number of adaptable dwellings to be provided
Between 0 and 7 inclusive	Nil
Between 8 and 14	1 dwelling
Between 15 and 21	2 dwellings
Between 21 and 29	3 dwellings
30 or more	15% of total dwellings

* Note: Where the total number of adaptable housing units to be provided is not a whole number, the number is to be rounded to the nearest whole number.

B1.2 Accessible Design

Accessible design aims to create an inclusive and accessible city for all. By improving access to the built environment for people with disability, wider community benefits result, providing increased opportunities for people to participate. This part of the DCP aims to provide non-discriminatory, equitable and dignified access for everyone in the City.

O1. To ensure that the public domain of new development provides equitable, safe and legible access for everyone.

O2. To provide equitable access and facilities for all people to all new development and upgraded or intensified uses in existing buildings.

O3. To minimise access barriers in all new developments

O4. To ensure consideration of access issues early in the development design process

Controls	
C1.	All development must comply with the following: a) All Australian Standards relevant to accessibility; b) Building Code of Australia access requirements and c) Disability Discrimination Act 1992, including the Disability (Access to Premises – Buildings) Standards 2010. Note: Refer to Council's accessible guidelines / check list.
C2.	Developments where compliance is proposed through alternative solutions must be accompanied by an Access report prepared by a suitably qualified access professional.
C3.	Shade and shelter in the form of a verandah, porch, portico or the like is to be provided for weather protection in external areas leading to principal pedestrian entrances.
C4.	Publicly accessible buildings that allow gathering of people are to provide accessible seating spaces for a wheelchair and person using an assistance animal.
C5.	Where heritage impact is used as a reason for not providing equitable access in accordance with this Section, evidence is to be provided that no suitable alternatives for access are available.
C6.	Encroachment onto public land to achieve access requirements is generally not permitted except when: a) access by other means will result in a substantial loss of original fabric of a heritage-listed property impacting on the heritage significance of the place, and that the provision of equitable access is highly desirable, with no alternative access options available; or b) the proposal involves a significant public building where equitable access is highly desirable and there are no alternative access options available.
C7.	Access for pedestrians and vehicles are to be separated.
C8.	Access arrangements are to be: a) integral with the overall building and landscape design and not appear as 'add-on' elements or as of secondary importance; b) as direct as possible; and c) designed so that a person does not need to summon help.
C9.	Required egress routes in residential development are to allow for safe escape for persons with a disability including, but not limited to, waiting space on landings within fire stairs and provision of accessible egress paths from ground floor apartments.
C10.	In achieving accessible design, buildings and public spaces are to be accessible and the proposed path of travel must meet Australian standards and remove barriers to access.

B2 Telecommunications and radiocommunications

The provisions in this section apply to telecommunications and radio-communications infrastructure (including broadcasting infrastructure covered under the Telecommunications Act 1997 and the Radio communications Act 1992), within the City of Canada Bay Council Local Government Area (LGA).

The City of Canada Bay Council (Council) is the consent authority for facilities that require development consent under the terms of the Environmental Planning and Assessment Act 1979. These are the facilities that are referred to as “not low impact facilities”.

Council does not have regulatory control over “low impact facilities”. These are facilities described in the Telecommunications (Low Impact Facilities) Determination 1997 (LIF Determination), which exempts low impact facilities from State and Territory planning and environmental laws.

The Telecommunications and Radiocommunications controls of this DCP provide:

- controls for the siting, design and installation of telecommunications and radiocommunications facilities that require development consent from Council; and
- guidelines for telecommunications carriers for the siting, design and installation of “low impact” facilities.

B2.1 To what facilities does this Part apply?

This Part of the DCP applies to any fixed transmitter, its supporting infrastructure and ancillary development under the following legislation:

- Telecommunications (Low-impact Facilities) Determination 1997 [LIF Determination];
- Telecommunications Act 1997, and
- Radiocommunications Act 1992.

The DCP does not apply to temporary emergency services.

B2.2 What is the purpose of this Part?

The purpose of this Part is:

- to provide a consistent and integrated planning framework that addresses the community’s interests in the effective and efficient provision of telecommunications and radio communications infrastructure so that it achieves environmental, economic and social sustainability in the short, medium and long term;
- to provide a consistency of approach which benefits carriers, community and councils;
- to balance the needs of different stakeholders, including the community/ industry/ local, state and federal governments, and
- to provide guidance to carriers about Council’s requirements for:

a) site selection

b) lodging an application

c) conducting community consultation.

Objectives

The Objectives of this plan are:

O1. Social

- to apply a precautionary approach to the deployment of radiocommunications infrastructure; and
- to minimise EMR exposure to the public; and
- to avoid community sensitive locations; and
- to ensure that the general public and local communities have access to telecommunications technology; and
- to achieve equity for the various stakeholders by endeavouring to balance their various needs; and
- to enable members of the public to adequately identify infrastructure and the agencies responsible for them; and
- to provide mechanisms by which information can be disseminated to ensure that the community is adequately informed and empowered to participate in the planning/decision-making process.

O2. Environmental

- to help implement principles of urban design in respect to telecommunications and radio communications infrastructure; and
- to promote good industrial design of infrastructure;
- to provide infrastructure that is visually compatible with surrounding character and locality/visual context with particular regard to heritage buildings/areas and cultural icons; and
- to minimise adverse impacts on the natural environment; and
- to assess whether the proposed infrastructure is consistent with the amenity of the area; and
- to restore the site after discontinuation or removal of infrastructure.

O3. Economic

- to identify the type of land use areas suitable for infrastructure in a local government area; and
- to accommodate the planning requirements of new technology; and
- to provide equitable availability of locations to carriers; and
- to assess whether the proposed infrastructure is consistent with permitted development in adjacent areas; and
- to ensure reasonable access to telecommunications technology; and
- to provide certainty for stakeholders and a consistent approach to the implementation/assessment of telecommunications infrastructure.

O4. Administrative

- to ensure that Council obtains information about existing and proposed infrastructure to assist with strategic planning.

B2.3 Design controls

Visual amenity

Controls	
C1.	Carriers are to design antennas and supporting infrastructure in such a way as to minimise or reduce the visual and cumulative visual impact from the public domain and adjacent areas.
C2.	Within the local context, the infrastructure design should take account of: a) Colour; b) Texture; c) Form; and d) Bulk and scale.
C3.	Infrastructure should: a) Be well-designed; b) Be integrated with the existing building structure unless otherwise justified in writing to Council; c) Have concealed cables where practical and appropriate; d) Be unobtrusive where possible, and e) Be consistent with the character of the surrounding area. A discussion on facility design can be found in Low Impact Facilities for Better Visual Outcomes that can be accessed at www.amta.org.au/mcf
C4.	Infrastructure should be removed when no longer being used.

Co-location

Controls	
C5.	Co-location is the practice of locating a number of different telecommunication facilities, often owned by different carriers, on one facility or structure.
C6.	Co-location may not always be a desirable option where: a) Cumulative emissions are a consideration; b) It may be visually unacceptable; c) There are physical and technical limits to the amount of infrastructure that structures are able to support, or d) The required coverage cannot be achieved from the location.
C7.	Carriers should demonstrate a precautionary approach and effective measures to minimise the negative impacts of co-location.

Location

Controls	
C8.	The applicant should demonstrate that, in selecting a site, it has adopted a precautionary approach in regards to minimising EMR exposures consistent with Section 5.1 of the ACIF Code.
C9.	Preferred land uses (as determined by this Council) include: a) Industrial areas; b) Low-use open space, and c) Commercial centres.
C10.	The application should demonstrate particular consideration of likely sensitive land uses. Sensitive land uses may include areas: a) Where occupants are located for long periods of time (eg residences); b) That are frequented by children (eg schools and child care centres), and c) Where there are people with particular health problems (eg hospitals, aged care facilities)
C11.	Applicants should locate proposed facilities at least 300 metres away from heritage conservation areas and heritage items and any of the following sensitive land uses: a) Areas that are frequented by children (eg schools and child care centres); and b) Where there are people with particular health problems (eg hospitals, aged care facilities).

Heritage and Environment

Controls	
C12.	Infrastructure proposed for areas of environmental significance (as defined in LIF Determination) require: a) Development consent under the LIF Determination and Council's planning instruments and policies; b) The applicant to have regard to avoiding or minimising the visual impact of any proposed facility on the heritage significance of adjacent/adjoining/ surrounding heritage items and conservation areas; c) The applicant is to provide a heritage report/impact statement in accordance with Council's planning instruments and policies; d) The applicant to have regard to avoiding or minimising the physical impact of any proposed facility on endemic flora and fauna; and e) For proposals within heritage conservation and/or special character areas consideration should be given to the impact of the proliferation of telecommunication facilities on the integrity of the heritage conservation and/or special character areas.

Facility physical design controls

Controls	
C13.	Infrastructure should be of high quality design and construction.
C14.	Proposals should consider the range of available alternate infrastructure including new technologies, to minimise unnecessary or incidental EMR emissions and exposures, as required under Section 5.2.3 of the ACIF Code.
C15.	The plan for the facility should include measures to restrict public access to the antenna(s). Approaches to the antenna(s) should contain appropriate signs warning of EMR and providing contact details for the facility(ies) owner/manager.
C16.	The minimum requisites that should apply where relevant are the BCA for purposes of construction and the relevant exposure levels as directed by the Australian Communications Authority (ACA). The applicant should provide Council with certification about the standards with which the facility will comply.

Facility health controls

Controls	
C17.	The applicant is to demonstrate the precautions it has taken to minimise EMR exposures to the public
C18.	The applicant is to provide documentation to show that the proposed facility complies with the relevant Australian exposure standard as specified by the ACA
C19.	The applicant is to provide a mapped analysis of cumulative EMR effect of the proposal.

B3 Vehicle and bicycle parking and access

B3.1 Vehicle Parking

Council's car parking controls seek to limit car parking in locations that have good accessibility to public transport. This approach recognises that people will continue to use and depend on cars but this dependence reduces in more walkable neighbourhoods with good access to public transport.

Car parking needs to be accessible and convenient. It should also be designed so that it does not detract from the amenity of the streetscape.

Objectives

O1. To provide off street parking for residents.

O2. Provide vehicular and pedestrian safety.

O3. To encourage the location of carports and garages behind the building line where possible.

O4. To ensure that car parking structures respect the character of the street.

O5. To ensure carports and garages etc are designed to be in sympathy with existing dwellings without becoming the dominant feature on the site.

O6. To limit the width of driveways depending on site frontage.

O7. To limit the number of garage doors to the street.

O8. To provide vehicle parking at the rear of properties and off laneways instead of along the street where feasible.

O9. To encourage the location of carports and garages behind the building line where possible.

O10. To maximise the landscaped area on site and within the nature strip.

O11. To identify the maximum number of car parking spaces that may be provided to service particular uses of land.

O12. To provide less resident and visitor parking in localities that are identified as having good accessibility to public transport.

O13. To minimise vehicular traffic generated by development.

O14. To ensure parking areas do not detract from the streetscape.

O15. To provide a rate of parking that encourages the use of public transport.

O16. To minimise traffic generation.

General

Controls	
C1.	Parking should not detract from the streetscape qualities, while meeting the needs of residents, visitors and employees in all areas.
C2.	Stack parking is not permitted for residential development except where two spaces are provided for one apartment.
C3.	To maximise the area for soft landscaping consolidated parking areas should be concentrated under building footprints wherever possible.
C4.	To accommodate a relatively safe environment in accordance with CPTED 'Safer by Design' principles.
C5.	Parking structures should be designed to minimise reliance on artificial ventilation of car exhaust.

Car spaces

Controls	
C6.	Parking space should be a minimum of 5.4m x 2.4m, with an additional 300mm either side where enclosed (i.e. 5.4m x 3.0m).
C7.	Carports, garages and car parking areas are located and designed to: a) Conveniently and safely serve users; b) Enable efficient use of car spaces and access ways, including adequate manoeuvrability for vehicles between the site and the street; c) Not dominate or detract from the appearance of the existing dwelling or new development and the streetscape; d) Be compatible in scale, form, materials and finishes with the associated dwelling or development found on the site; and e) Retain any protected or heritage trees.
C8.	Garages and other parking structures must not occupy more than 40% of the frontage and shall have a maximum width of 6m.
C9.	No outdoor spaces are permitted on garage roofs, such as terraces, patio, gardens and the like.

Note: Reference should be made to Table B-B for the maximum number of parking permitted.

Basement car parking

O17. Ensure the safe and orderly movement of traffic, pedestrians and bicycles.

O18. To ensure basements and basement access are designed to minimise impacts upon the streetscape.

Controls	
C10.	The design of the driveway and basement are to achieve a quality landscape setting for the development and mitigate potential visual impacts of excavation.
C11.	The design of the driveway and basement does not detract from the presentation of the dwelling to the street and retains any natural features on the site.
C12.	Excavation for basements should not extend beyond the building footprint.
C13.	Ramps accessing basement car parking are not permitted forward of the building line unless the following is achieved: a) Compatibility with the streetscape. b) Safe pedestrian crossings. c) Adequate line of sight for cars entering or leaving. d) The first 6 metres must be at a maximum grade of 1:10 for domestic driveways and 1:20 for all other driveways. e) The ramp does not have a finished level that is greater than 1m below natural ground level within the setback to the street.
C14.	Entries to underground car parking are to be set back behind the building line.
C15.	All basement parking areas must be designed so that vehicles can enter and leave the property in a forward direction.
C16.	A strip of landscaping at least 1m wide is provided to the adjoining property boundary.
C17.	A 1m wide deep soil landscaped setback to neighbouring properties is to be provided along the driveways.
C18.	The maximum dimension of any domestic driveway basement car park entry is to be 2.7m high by 3.5m wide.

Garages

Controls	
C19.	Garaging is to be provided to the rear of the site or on a secondary elevation if it is a corner site or behind the main street elevation of the dwelling (behind the primary building façade) in all instances.
C20.	Garage doors should be of timber or simple metal cladding.
C21.	Garage doors and gates are not to encroach over a public footpath during operation.
C22.	Garage dimensions should be as follows:

Garage size	Minimum internal dimension
Single Garage	5.5m x 3.0m and not less than 2.6m between door jambs
Double Garage	5.5m x 5.4m and not less than 5.2m between door jambs

Refer to Figure B3.1, Figure B3.2, Figure B3.3 and Figure B3.4.

Driveways

Controls	
C23.	The alignment of driveways should, where possible, create visual interest and avoid the creation of a “gun barrel” effect.
C24.	The number of vehicle crossings is limited to one (1) per site. At Council's discretion, the number of crossings may be greater than one per site where the following outcomes are achieved: a) More than one dwelling is proposed; and b) The landscaped area complies with relevant provisions; and c) There will be no impact upon street trees; and d) Impacts to on-street parking are minimised; and e) The crossing does not connect into a section of road which is considered hazardous for vehicular traffic entering or exiting the site; and f) The crossing does not connect into a section of unformed road reserve; and g) Vehicles entering or exiting the proposed driveway have good sight distance; and h) The crossing will not be near or in front of an existing bus stop or shelter; and i) The proposal complies with relevant Australian Standards. Additional notes: • The number of crossings may be greater than one per site if the following also applies (in addition to the above requirements): • It is a commercial/industrial development where there are currently separate entry and exit points or there are two (2) or more entry levels or multiple ramps;

	• It is a residential development with more than one dwelling where the location of the garages or parking spaces within the property does not permit the use of a shared driveway. For a single combined driveway, the maximum width will be assessed as if the site was for a single dwelling, or to a width which would be sufficient to permit only one vehicular movement to enter and exit the site in a forward direction.
C25.	If a site has more than one frontage, driveway access is to be provided where streetscape impacts are minimised and to maximise landscaping within the front setback. This may be achieved by encouraging driveway access on separate streets or off the wider frontage where possible.
C26.	Vehicular entrances to parking areas should be visually inconspicuous, appropriately screened and ideally not be located along the front façade, but rather to the side or rear.
C27.	The surface and slope of driveways and parking areas facilitate stormwater infiltration on-site and are to be appropriately landscaped eg, driveways should have sealed wheel tracks with grass strips.
C28.	Development shall have a maximum driveway crossover and driveway width of: a) 3m for dwellings where the frontage is 12m or less; or b) 3.5m for dwellings with a frontage greater than 12m; or c) 6m for any other development. Note: 1) If a garage with a width greater than 3m is permitted (based on the frontage), then the driveway may be constructed to the width of the garage at the garage entry and splayed so that it is reduced to the maximum width listed above at the property boundary. 2) In certain circumstances, wider driveway widths may be granted based on vehicle swept path analysis if the above widths cannot be achieved. 3) Crossover and driveway must comply with all relevant Australian Standards. 4) The minimum width refers to the crossing slab only and does not include the width of the layback with 0.6 metre wing-walls at each end.
C29.	All multi unit development and residential flat buildings should ensure that all vehicle parking is behind the building line and arranged so that all vehicles may be driven in a forward direction during both ingress and egress from the site.

Accessible Parking

Controls	
C30.	Parking provision should be in accordance with Table B-D.

Adaptable Housing

Controls	
C31.	Car parking for adaptable dwellings shall be designed in accordance with AS/NZS2890.6.

Credit for car parking in existing developments

Controls	
C32.	Council will apply the relevant car parking rate to the entire floor area for new developments and developments proposing substantial alterations and additions to existing buildings.
C33.	A credit will be provided for car parking spaces when calculating required parking numbers for developments involving a change of use of an existing building. The credit shall be calculated on the basis of the demand generated by the existing use that is proposed to be changed.
C34.	A credit for car parking spaces will be provided when calculating required parking numbers for developments involving minor alterations and additions to an existing building. The credit shall be calculated on the basis of the demand generated by the existing use carried out in the building that is proposed to be altered or extended.

Motorcycle Parking

Controls	
C35.	Where there are more than 30 off-street parking spaces, a minimum of 1 motorcycle parking space shall be provided. Plus 1 per 30 thereafter.

Residential

Controls	
C36.	Car Parking is to be provided in accordance with Table B-B and Table B-C.
C37.	All visitor parking should be provided off-street and behind the front setback.
C38.	Visitor parking spaces should be conveniently located, identified as such, and accessible to the general public. They should not be located behind any security grill or gate.
C39.	Dedicated disabled parking spaces should be line-marked and signposted in accordance with AS/NZS2890.6.
C40.	Dedicated disabled parking spaces should be located close to wheelchair accessible entrance lifts.
C41.	If relevant, objectives and controls in section E3.9 or F3.9 (Parking and access) also apply.

Commercial

Controls	
C42.	On site car parking should be provided below ground or located within the building and well screened.
C43.	Vehicular access ways are designed to be integrated with the building and of minimum height and width.
C44.	Loading facilities should be provided in accordance with the current Transport for NSW “Guide to Traffic Generating Developments” and AS 2890.2.
C45.	The provision of parking for different types of development should be in accordance with Table B-E.
C46.	Development should be in accordance with the provisions of State Environmental Planning Policy (Infrastructure) 2007.

Industrial

Controls	
C47.	All vehicles should be able to enter and leave the site in a forward direction.
C48.	Car parking areas are to be landscaped with trees and shrubs.
C49.	Separation of service areas (loading/ unloading) and parking areas is required.
C50.	Development should be in accordance with the provisions of State Environmental Planning Policy (Infrastructure) 2007.
C51.	All loading and unloading operations should be carried out wholly within the confines of the site at all times.
C52.	Loading facilities should be provided in accordance with the current Transport for NSW "Guide to Traffic Generating Developments" and AS 2890.2.
C53.	All loading docks, car parking spaces and access driveways should be kept clear of goods at all times and should not be used for storage purposes including garbage storage.
C54.	Parking provision should be in accordance with Table B-F.

B3.2 Single Dwellings, Semi-Detached Dwellings and Dual Occupancies

Controls	
C1.	A landscaped area at least 0.6m wide (1m preferred) is to be provided between a driveway and a side boundary.
C2.	Garages for each dwelling within an attached dual occupancy should be single fronted only.

Car spaces

Controls	
C3.	For existing and new dwellings, a garage or carport in order of priority should be: a) Located at the rear of the site with access from a rear lane; b) Located at the rear of the site with access from the street frontage; and c) Located at the side of the dwelling house, behind the front building alignment. d) Located in a basement with access from a rear lane; e) Located in a basement with access from the street frontage.

Hardstand

Controls	
C4.	Where a garage/carport cannot be provided at the side or rear of a dwelling house or semi, a hardstand area forward of the building alignment which is integrated into the landscape character of the front yard may be considered by Council. The distance between the front property boundary and building is to be a minimum of 5.5m.

New detached garages and carports to existing dwellings

Controls	
C5.	Locate detached garages and carports either at the rear of the site where rear access is available or between the side elevation and the side property boundary. Note: Rear and side access is considered available where there is an existing side boundary setback of 2.6 metres or more or where there is rear lane or secondary street access.
C6.	No outdoor spaces are permitted on garage roofs, such as terraces, patio, gardens and the like.

Carports

Controls	
C7.	Council may consider a carport forward of the front building alignment where: a) It is a single carport with an external width of no more than 3.0 metres; b) The site is of a sufficient width that the carport will not obscure the existing building; c) The distance between the building and the front property boundary is a minimum of 5.5 metres; d) It is of a simple post design, with no side panel infill; is not elaborate in its decoration and colour and does not detract from the existing building; e) There is no solid panel lift or roller shutter door proposed; f) Does not significantly affect the landscaped front garden; g) Is within a varied streetscape that currently has carports forward of the building alignment; h) The roof is either flat or of a pitch that relates to the existing house; i) The views of the house from the public domain will not be adversely affected; and j) There is no rear lane access or side access of 2.6 metres or more available. k) Where existing car parking is available, no new structures are permitted forward of the building line.

Access Aisles

Controls	
C8.	A 4.0 metre wide access handle is to be provided to detached dual occupancy development to enable access to the rear dwelling.

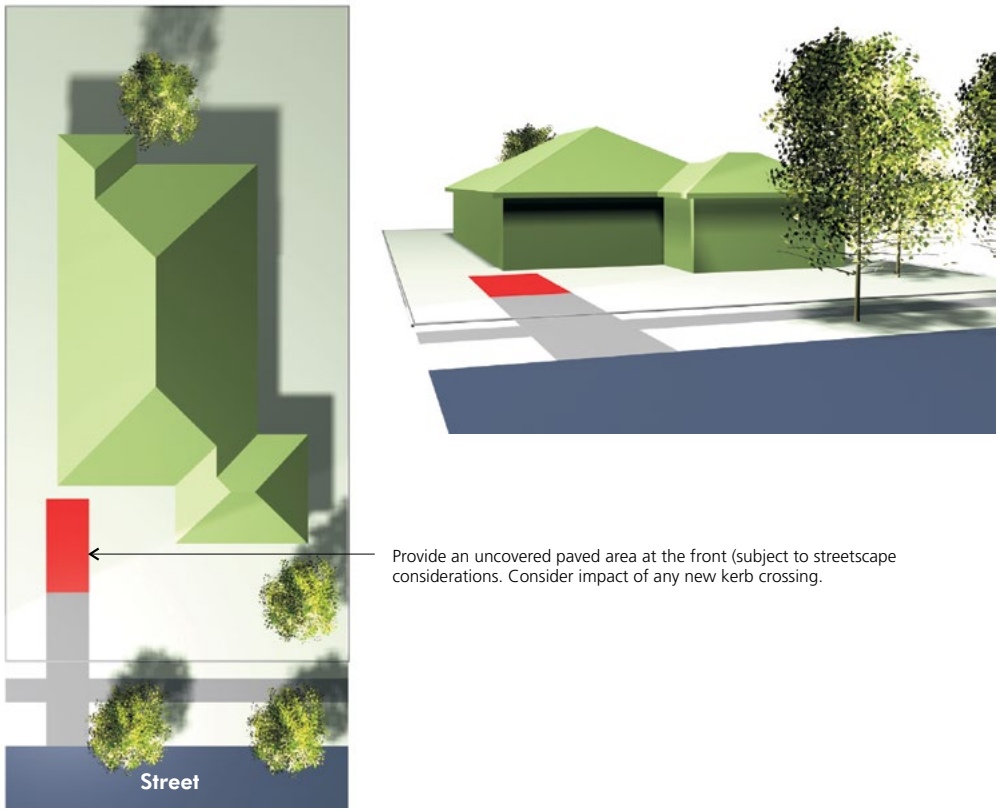


Figure B3.1 Location of car parking at the front consisting of an open paved area



Figure B3.2 Location of car parking at the side behind the front alignment

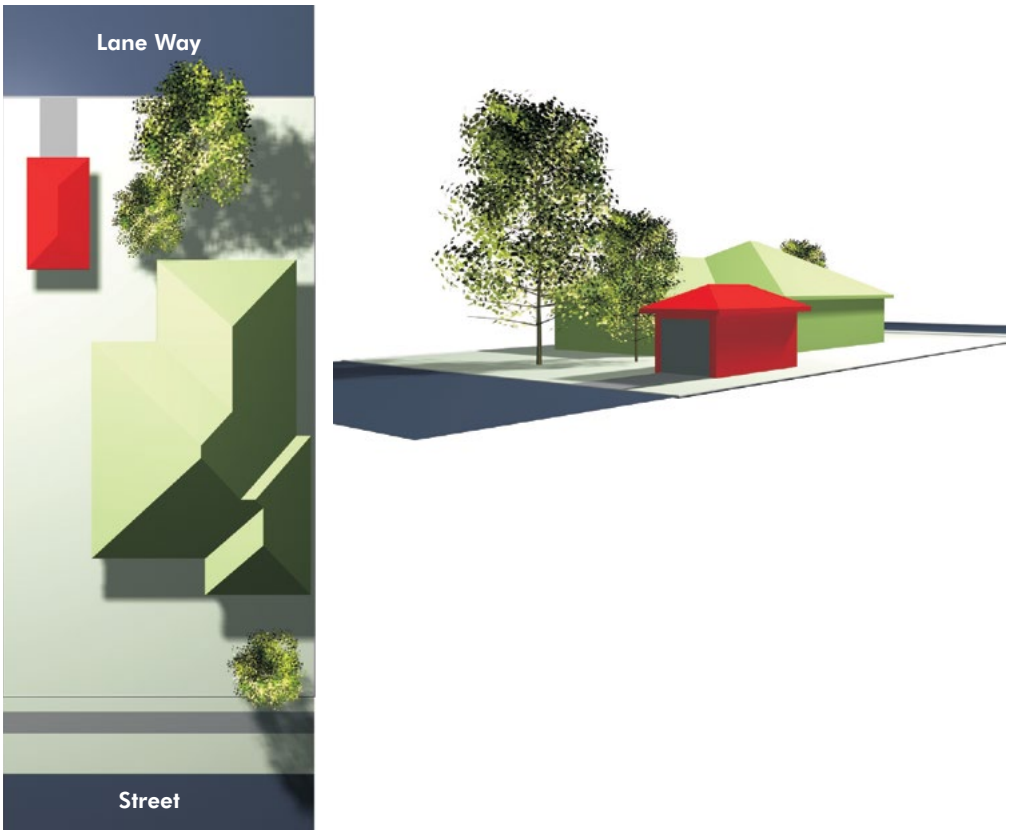


Figure B3.3 Location of car parking at the rear of the site with access from a rear lane

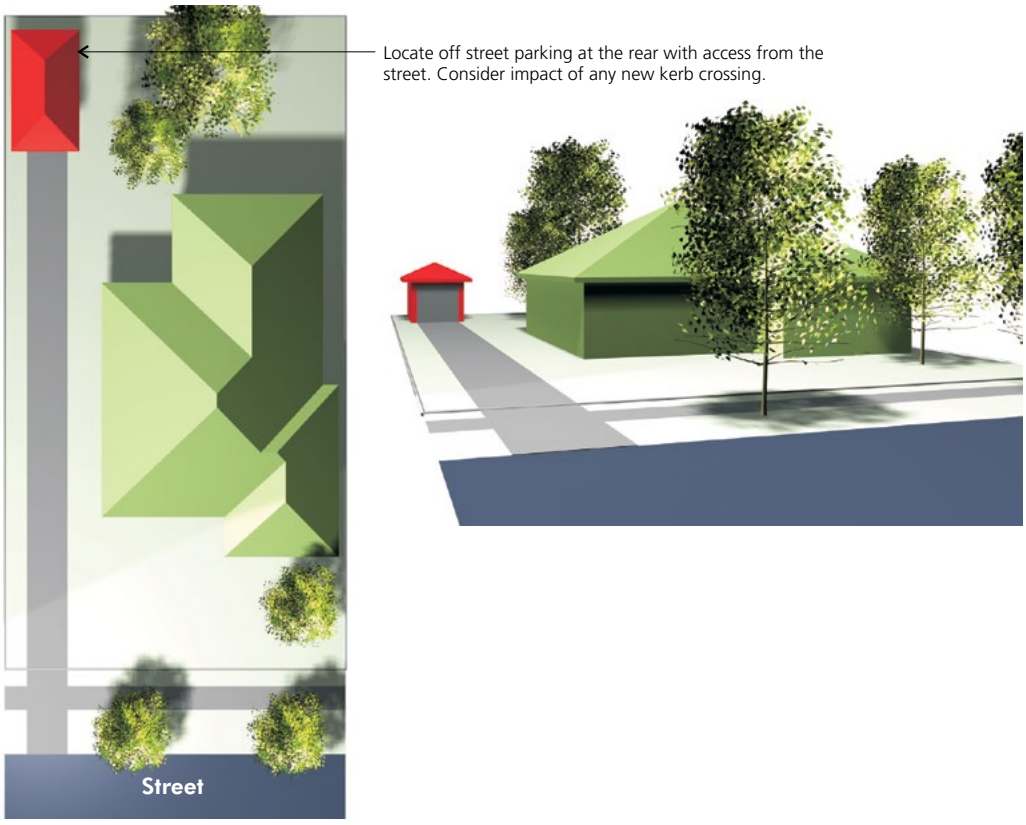


Figure B3.4 Location of car parking at the rear of the site with access from street frontage

B3.3 Multi-dwelling housing, multi dwelling housing (terraces), manor houses and residential flat buildings.

Car spaces

Controls	
C1.	For existing and new development the location of a garage or carport, in order of high to low priority, is to be: a) Located in a basement with access from a rear lane; b) Located at the rear of the site with access from a rear lane; c) Located in a basement with access from the street frontage; d) Located at the rear of the site with access from the street frontage; and e) Located at the side of the development, behind the front building alignment.
C2.	All multi unit development and residential flat buildings should ensure that all vehicle parking is behind the building line and arranged so that all vehicles may be driven in a forward direction during both ingress and egress from the site.
C3.	Car Share schemes, carpark decoupling and the like should be utilised wherever possible to reduce the amount of on-site carparking.

B3.4 Car Parking Rates

Residential parking requirements - Dwelling houses, Semi-detached dwellings, Dual occupancies and Secondary dwellings.

Table B-B Residential parking requirements (low density) - Dwelling houses, Semi-detached dwellings, Dual occupancies and Secondary dwellings.

The following parking rates apply to any dwelling houses, semi-detached dwellings, dual occupancies or secondary dwellings.

Dwelling type	Car parking spaces required per dwelling	
	Minimum	Maximum
Dwelling house	1	2
Semi-detached dwelling	1	1
Dual occupancy	1	1
Secondary dwelling	0	0

Table B-B Residential Parking Requirements Additional Information

1. Any parking in excess of the above requirements will be counted as Gross Floor Area (GFA) (refer to definition in Canada Bay LEP).

Residential parking requirements - Residential flat buildings, Manor houses, Multi dwelling housing, Multi dwelling housing (terraces) and Shop top housing

Table B-C Residential parking requirements (medium/high density) - Residential flat buildings, Manor houses, Multi dwelling housing, Multi dwelling housing (terraces) and Shop top housing

Residential Parking Category A	

The following parking rates apply to any residential flat buildings, manor houses, multi dwelling housing, multi dwelling housing (terraces) or shop top housing on any land parcel wholly or partly located within Category A on the Residential Car Parking Rates Map.

Resident parking	
Number of bedrooms per dwelling	Maximum number of car parking spaces
0 - 1	1
2	1
3	1.5
4 +	2
Visitor parking	
Number of dwellings	Maximum number of car parking spaces
Any	1 space per 5 dwellings

Note: Category A generally applies to residential development located within the following areas that are not within Category B:

- B1 Neighbourhood Centre zone
- B6 Enterprise Corridor zone
- R1 General Residential zone
- R3 Medium Density Residential zone
- R4 High Density Residential zone

Residential Parking Category B

The following parking rates apply to any residential flat buildings, manor houses, multi dwelling housing, multi dwelling housing (terraces) or shop top housing on any land parcel wholly or partly located within Category B on the Residential Car Parking Rates Map.

Resident Parking	
Number of bedrooms per dwelling	Maximum number of car parking spaces
0 - 1	0.6
2	0.9
3	1.4
Visitor Parking	
Number of dwellings	Maximum number of car parking spaces
0 - 4	0
5-9	1
10+	1 per 5 dwellings

Note: Category B generally applies to residential development located within the following areas:

- B4 Mixed Use zone
- Within 400m of a B4 Mixed Use zone
- B3 Commercial Core zone
- Within 400m of a B3 Commercial Core zone
- Within 800m of a railway or metro station

Residential Parking Category C

The following parking rates apply to any residential flat buildings, manor houses, multi dwelling housing, multi dwelling housing (terraces) or shop top housing on any land parcel wholly or partly located within Category C on the Residential Car Parking Rates Map.

Resident parking	
Number of bedrooms per dwelling	Maximum number of car parking spaces
Studio	0.3
1	0.5
2	0.9
3	1.2
Visitor parking	
Number of dwellings	Maximum number of car parking spaces
Any	0.1 space per 5 dwellings

Note: Category C generally applies to residential development located within the following areas:

- Parramatta Road Corridor Urban Transformation Strategy Stage 1 Implementation Area

Residential Parking Category D

The following parking rates apply to any residential flat buildings, multi dwelling housing or shop top housing on any land parcel wholly or partly located within Category D on the Residential (Medium/High Density) Car Parking Rates Map.

Resident parking	
Number of bedrooms per dwelling	Maximum number of car parking spaces
Studio	0.1
1	0.3
2	0.7
3 +	1
Visitor parking	
Number of dwellings	Maximum number of car parking spaces
Any	1 space per 20 dwellings

Note: Category D generally applies to residential development located within the following areas:

- Rhodes West and Rhodes East

Table B-C Residential Parking Requirements Additional Information

1) Any parking in excess of the above requirements will be counted as Gross Floor Area (GFA) (refer to definition in Canada Bay LEP).
2) In calculating the total number of car parking spaces required for a development, the total should:
   a) Be rounded up if the fraction of the total calculation is equal or more than half (0.5 of a space); and
   b) Include a room that is capable of being converted to a bedroom (it has a minimum internal area of 12sqm and includes a window).
3) Refer to Residential (Medium/High Density) Car Parking Rates Map (Figure B3.5 to Figure B3.11) to understand where the above car parking requirements apply.
4) If a site falls within Category C and also Category A or B then the Category C parking requirements will prevail.
5) If a site falls within Category D and also Category A or B then the Category D parking requirements will prevail.
6) If there is a discrepancy between Category C and the Parramatta Road Corridor Urban Transformation Strategy then the Parramatta Road Corridor Urban Transformation Strategy parking requirements will prevail.

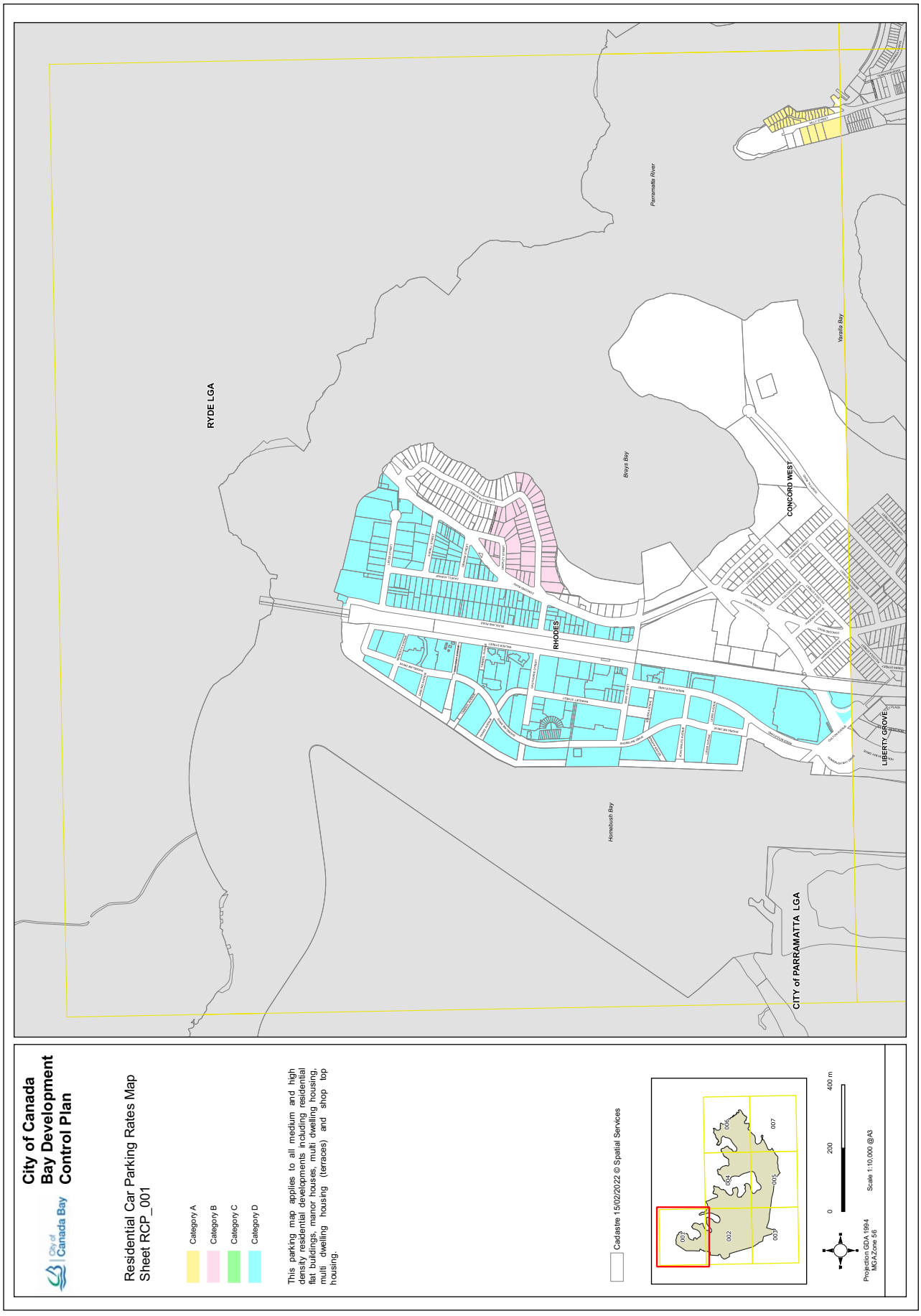


Figure B3.5 Residential Car Parking Rates map - Sheet 1



Figure B3.6 Residential Car Parking Rates map - Sheet 2

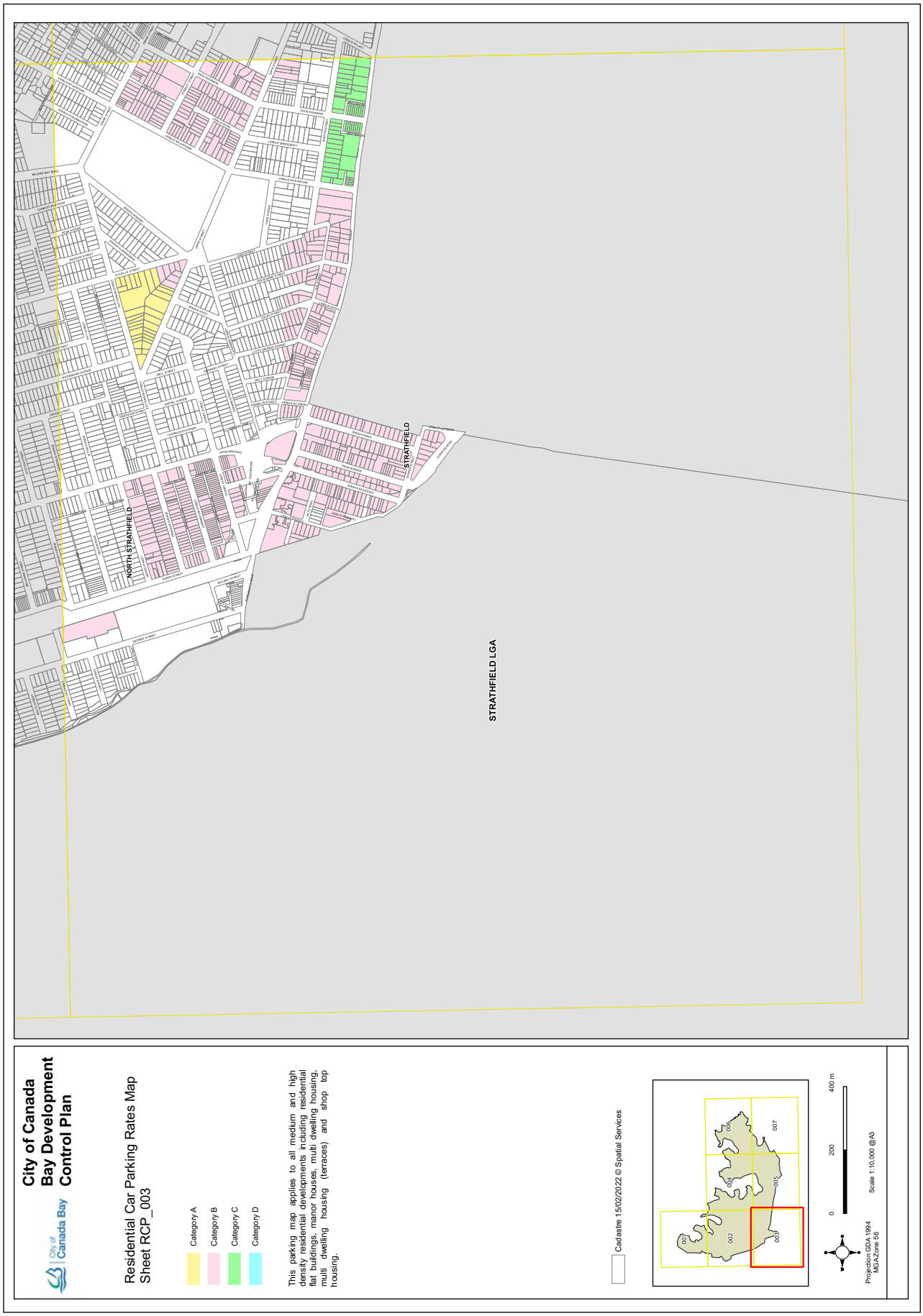


Figure B3.7 Residential Car Parking Rates map - Sheet 3

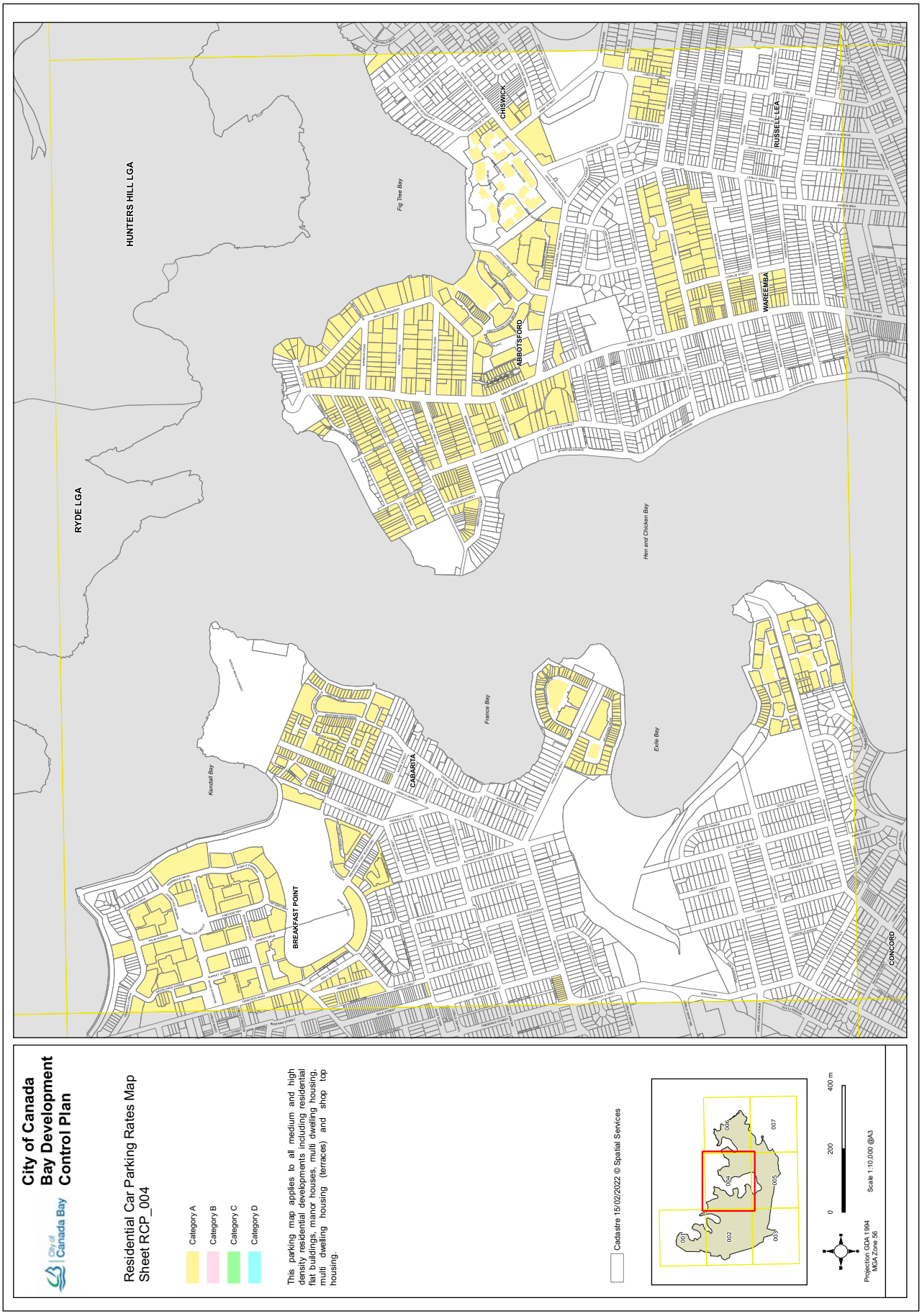


Figure B3.8 Residential Car Parking Rates map - Sheet 4

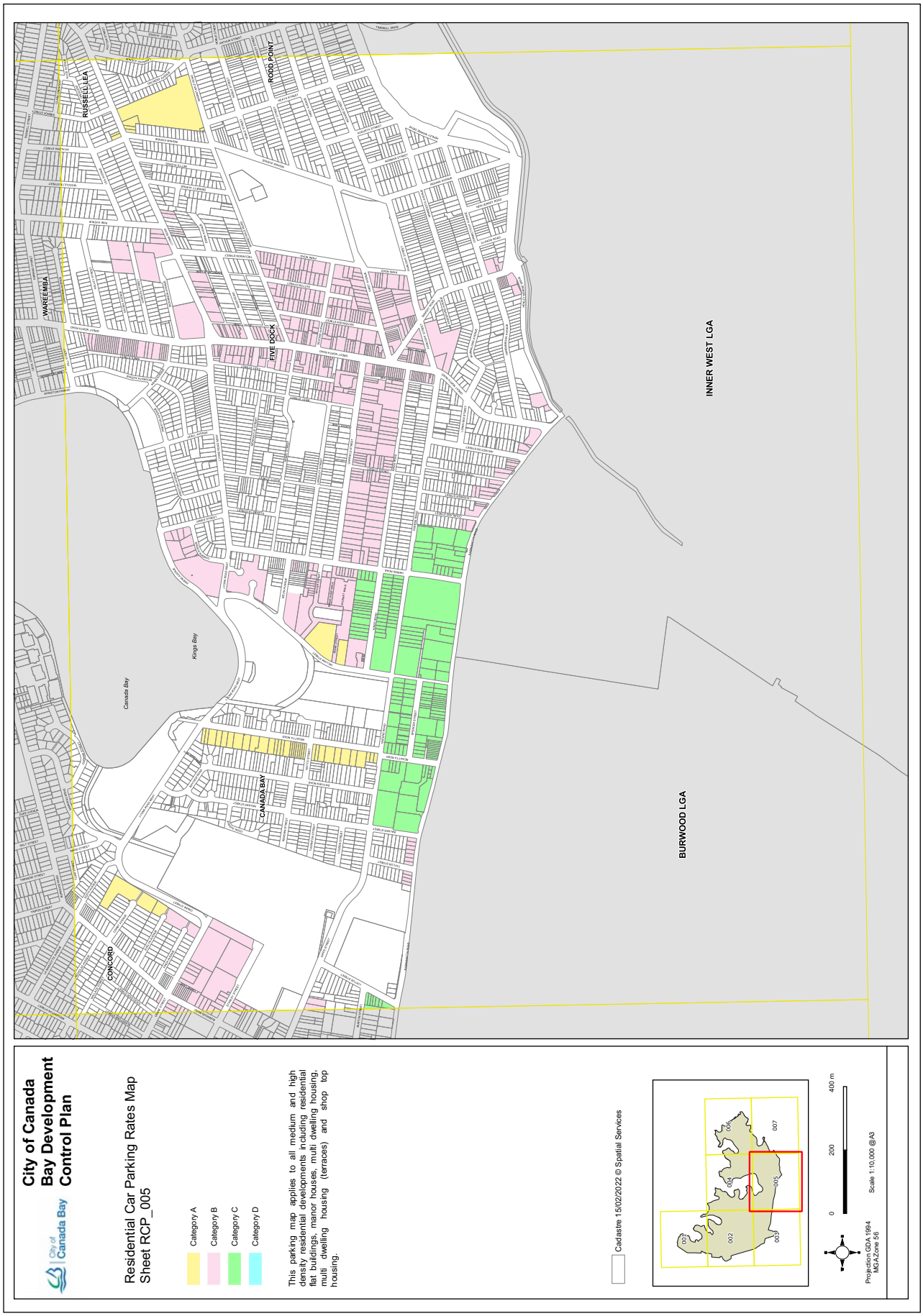


Figure B3.9 Residential Car Parking Rates map - Sheet 5

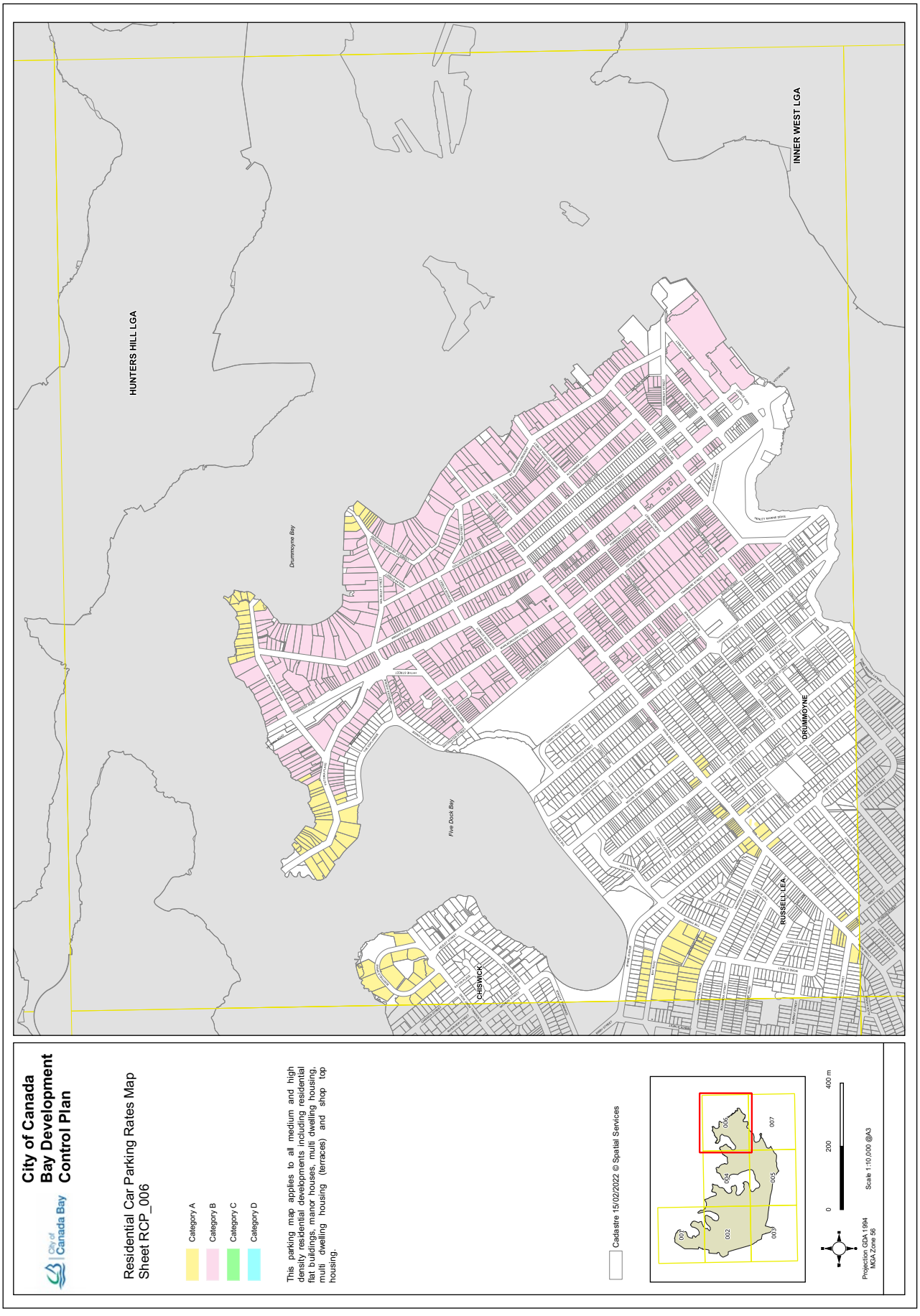


Figure B3.10 Residential Car Parking Rates map - Sheet 6

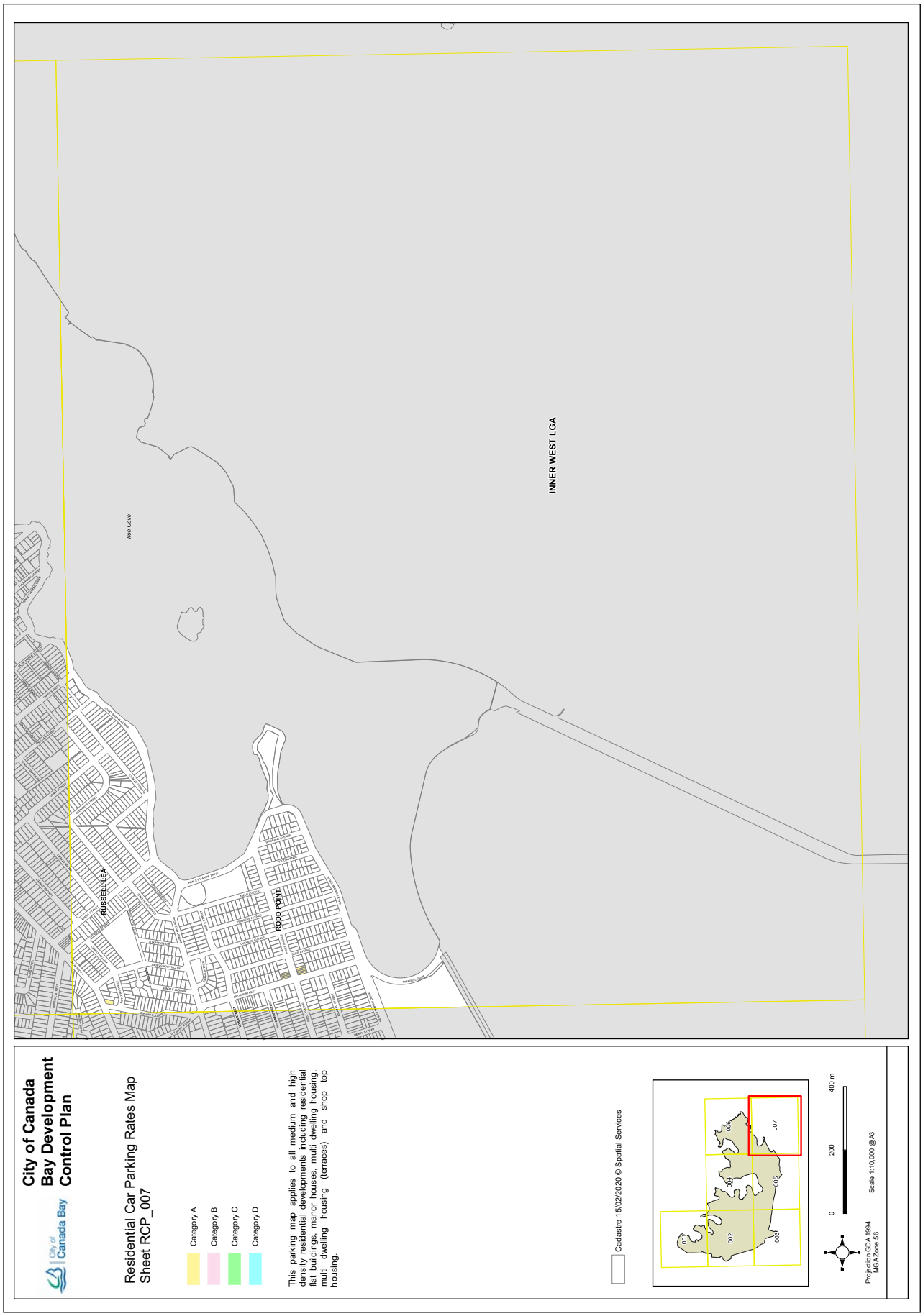


Figure B3.11 Residential Car Parking Rates map - Sheet 7

Table B-D Accessible Parking Requirements

BCA Classification of the building to which the parking is associated	Minimum parking requirements (Table D3.5 of the BCA)
Class 3	
Boarding houses, guest houses, hostel, backpackers accommodation, or the residential part of a hotel or motel	To be calculated by multiplying the total number of car parking spaces by the: a) Percentage of accessible sole-occupancy units to the total number of sole-occupancy units; or b) Percentage of beds to which access for people with disabilities is provided to the total number of beds provided. The calculated number to be taken to the next whole figure. 1 space for every 100 car parking spaces or part thereof
Class 5, 7, 8 and 9c	
	1 space for every 100 car parking spaces or part thereof
Class 6	
a) up to 1000 car parking spaces; and b) for each additional 100 car parking spaces or part thereof in excess of 1000 car parking spaces	1 space for every 50 car parking spaces or part thereof 1 space
Class 9a	
(a) Hospital (non-outpatient area)	1 space for every 100 car parking spaces or part thereof
(b) Hospital (outpatient area) up to 1000 car parking spaces; and	1 space for every 50 car parking spaces or part thereof
for each additional 100 car parking spaces or part thereof in excess of 1000 car parking spaces	1 space
Nursing home	1 space for every 100 car parking spaces or part thereof
Clinic or day surgery not forming part of a hospital	1 space for every 100 car parking spaces or part thereof
Class 9b	
(a) School	1 space for every 100 car parking spaces or part thereof
(b) Other assembly buildings up to 1000 car parking spaces; and	1 space for every 50 car parking spaces or part thereof
for each additional 100 car parking spaces or part thereof in excess of 1000 car parking spaces	1 space

Source: Based on Transport for NSW Guide to Traffic Generating Developments 2002

Table B-E Parking Requirements: Development in mixed use areas and Neighbourhood Centres

Land use	Minimum parking requirements
Accommodation	
Motels	1 space for each unit +1 space per 2 employees if restaurant included then add the greater of: • 15 spaces per 100m² GFA of restaurant/function room, or • 1 space per 3 seats
Hotels	Comparisons should be drawn with similar developments
Office and Business	
Office Premises	1 space per 40m² GFA
Business Premises	1 space per 40m² GFA
Retail	
Shops	1 space per 40m² GLFA
Service stations and convenience stores	Requirements are additive: • 6 spaces per work bay • 5 spaces per 100m² GFA of convenience store If restaurant present, the greater of: • 15 spaces per 100m² GFA, or 1 space per 3 seats
Drive-in take-away food outlets	Developments with no on-site seating: 12 spaces per 100m² GFA Developments with on-site seating: 12 spaces per 100m² GFA or greater of: • 1 space per 5 seats (internal and external), or • 1 space per 2 seats (internal) Developments with on-site seating and drive through facilities greater of: • 1 space per 2 seats (internal), or • 1 space per 3 seats (internal and external), plus queuing area for 5-12 cars
Restaurants, Cafes, Take-away food & drink premises	Whichever is the greater of: • 1 space per 6m² of serviced area, or • 1 space per 4 seats. A parking free threshold of 20 seats and 30m² serviced area shall apply to all restaurants, cafes & take-away food and drink premises (to which this DCP applies) in B1 Neighbourhood Centre and B4 Mixed Use zones, excluding those in the areas listed below. A parking free threshold of 40 seats and 60m² serviced area shall apply to restaurants in the following (commercial centres) B1 Neighbourhood Centre and B4 Mixed Use zones: • Victoria Road, Drummoyne (inc. Lyons Rd to Bayswater Street) • Great North Road, Five Dock (excluding Wareemba/ Abbotsford) • Majors Bay Road, Concord • Parramatta Road, Concord (No B1 or B4 on Parramatta Rd) • Parramatta Road, Five Dock (No B1 or B4 on Parramatta Rd) • Concord Road, Concord West • Concord Road, North Strathfield *Where variation to the above criteria is sought, refer to Additional Criteria below.

Land use	Minimum parking requirements
Footpath Dining	Nil.
Residential	As per Table B-B
Car tyre retail outlets	Whichever is the greater of: • 3 spaces per 100m^2 GFA, or • 3 spaces per work bay
Roadside stalls	4 spaces
Markets	2.5 spaces per stall (customers only)
Video Stores	6.1 spaces per 100m^2 GFA
Pub	Comparisons should be drawn with similar developments
Vehicle Showrooms	0.75 spaces per 100m^2 site area + 6 spaces per work bay (for vehicle servicing facilities
Drive-in liquor stores	Comparisons should be drawn with similar developments
Plant nurseries	Whichever is greater of: • 15 spaces, or • 0.5 spaces per 100m^2 of site area
Recreational and Tourist Facilities	
Recreational facilities • Squash courts • Tennis courts • Bowling alleys • Bowling greens • Gymnasiums	 3 spaces per court 3 spaces per court 3 spaces per alley 30 spaces for first green + 15 spaces for each additional green 7.5 spaces per 100m^2 GFA (desirable) 4.5 spaces per 100m^2 GFA (minimum)
Marinas	If a survey of a similar existing development has not been undertaken, the following figures may serve as a general guide: • 0.6 spaces per wet berth • 0.2 spaces per dry storage berth • 0.2 spaces per swing mooring • 0.5 spaces per marina employee
Health and Community Services	
Health consulting rooms and Medical centres	Comparisons should be drawn with similar development
Child care centres	1 space for every 4 children in attendance
Hospitals	Comparisons should be drawn with similar developments

Source: Based on Transport for NSW Guide to Traffic Generating Developments 2002

Note:

1) Parking spaces, unless stipulated otherwise, are for cars and depending on land use type, parking for delivery/service vehicles, courier vehicles and bicycles should also be provided.
2) Parking free threshold: means an area expressed in both number of seats and serviced area up to which on-site parking does not need to be provided. The standard parking rate applies to any area and seats in excess of the threshold.
3) Serviced area: means the physical area within the restaurant or café which is accessible to the public, but excluding toilets and corridors. Areas such as the kitchen, or behind counters, or display areas should not be included as serviced area.
4) To calculate car parking requirements, applicants must establish the number of spaces required by the proposed development calculated from Tables C-B to C-E in Part C3. The threshold can then be subtracted from this figure and the balance provided.
5) Where an applicable parking rate has not been provided in the parking requirements tables, a comparison should be drawn with similar developments.
6) Additional Criteria - Restaurants & Cafes

   In exceptional circumstances, Council may allow a variation to these requirements where it is demonstrated by the applicant that the proposed use would not have any adverse impacts on the surrounding residential amenity in relation to car parking availability.

To achieve this variation for Restaurants and Cafes, the following criteria would need to be demonstrated to the satisfaction of Council:

A Parking Impact Study prepared by a qualified traffic consultant shall be provided by the applicant, which demonstrates that the shortfall of parking spaces created by the application is able to be accommodated within 200m walking distance of the subject site. The Parking Impact Study would need to provide the following:

a) Total number of available spaces within 200m of the subject site;
b) Parking availability within the study area over operating hours (including hours open for staff and customers);
c) Demonstrate how the parking shortfall of the proposal can be satisfied by the available parking spaces identified in parts (a) and (b) above.
d) Demonstrate that the amenity of the surrounding residential areas would not be adversely impacted by any additional on-street parking.

Note: Within the Study, the applicant may demonstrate alternative options as to how the proposed use/ development mitigates potential impacts of additional car parking requirements. An example of how this may be achieved includes:

- Demonstrating that parking facilities associated with alternative time-of-day uses can be utilised for the use of the restaurant/café customers.

Table B-F Parking Requirements: Development in Industrial Areas

Land use	Parking requirements
Industry	
Factories	1.3 spaces per 100m^2 GFA
Warehouses	1.5 spaces per 100m^2 of total GLA. 1.8 spaces per 100m^2 gross leasable office/showroom area plus 1.2 spaces per 100m^2 of gross leasable factory/warehouse area (where information on components of development is available).
Bulky goods retail stores	Comparisons should be drawn with similar development
Road Transport Facilities	
Road Transport Terminals	Surveys should be undertaken of similar developments
Container depots	Surveys should be undertaken of similar developments
Truck stops	1 truck parking space per motel unit + 1 car space per 2 employees For restaurant facilities, the greater of: • 15 spaces per 100m^2 GFA, or • 1 space per 3 seats
Other	
Caravan parks	1 space per caravan site

Source: Based on Transport for NSW Guide to Traffic Generating Developments 2002

B3.5 Special Precincts

Breakfast Point

Controls	
C1.	Project Applications for developments involving uses other than those listed in the table below are to be accompanied by a report prepared by a suitably qualified person addressing traffic and parking issues.
C2.	Unless otherwise approved by Council, carparking provision is to be as per the table below:

Use	Provision
Single Family Dwelling or Attached Dwelling	2 spaces garaged
Townhouse/ Apartment 3 or more bedrooms	2 spaces garaged
Townhouse/ Apartment 2 bedrooms	1.5 space 1 space garaged (note: 0.5 space garaged and available for allocation to specific unit)
Apartment 1 bedroom	1 space garaged
Residential Visitors	1 space per 5 dwellings (note: on-street within 100m of dwellings served, or off-street if insufficient space available on street)
Shops	1 space per 20m^2 GFA
Offices	1 space per 40m^2 GFA

Note: applications for developments involving uses other than those listed above are to be accompanied by a report prepared by a suitably qualified person addressing traffic and parking issues.

Breakfast Point single dwellings

Vehicle Access

O1. To minimise impact of traffic generated by new development at Breakfast Point on existing residential streets.

O2. To contain vehicle access to the rear of properties where possible.

O3. To minimise the visual impact of garage structures on the street.

Controls	
C3.	All vehicle access to lots is to be from the rear lanes provided.
C4.	No vehicle access is permitted from Brays Road, Bishop Street, Medora Street, Adams Street and Adams Lane.

Garages

O4. To ensure residents parked cars do not dominate the streetscape.

O5. To ensure motor vehicle, home repair, maintenance and hobby activities can occur without impacting on neighbourhood amenity.

O6. To ensure car parking facilities and access are fully integrated into the house design and streetscape visual character.

O7. To ensure garaging of vehicles does not become a dominant or detrimental element in the visual streetscape.

Controls	
C5.	Kerb cross-overs and driveways to open access ways are not to exceed 3.6m in width.
C6.	Each dwelling is to have an attached or approved freestanding garage capable of accommodating 2 cars, designed to fully integrate with the dwelling.
C7.	Garage structures shall not exceed 7.0m in width.
C8.	Open carports are not permitted.

Driveways and Kerb Cross-Overs

O8. To ensure a consistent visual standard in the street-scape.

O9. To ensure landscaped nature strip is predominant in the visual environment of the street.

O10. To ensure comfortable, safe and convenient access to allotments.

Controls	
C9.	Kerb cross-overs and driveways in rear access laneways shall not exceed 6 metres in width.
C10.	Within an allotment, driveway gradients are not to exceed 1 in 5 and are to have a transition gradient of no greater than 1 in 15 for a distance of 2.5m at each end.
C11.	Cross over construction is to be to Council standards.

Concord West

Controls	
C12.	Car and bicycle provision is to be in accordance with Table B-C.
C13.	Car parking provision must not exceed individual maximums provided per Sub-precinct in Table B-H Concord West Maximum Car Parking Provisions per Sub-precinct.

Table B-G Concord West Maximum Car Parking Rates

Category	Other (max. spaces/m² GFA)		
	Commercial	Retail	Industrial
Homebush Precinct	100	70	120

(Extract of Table 3.2 Paramatta Road Corridor Urban Transformation Strategy, Planning and Design Guidelines, Nov 2016, Page 45)

Table B-H Concord West Maximum Car Parking Provisions per Sub-precinct

Sub-precinct	No. of Car Parking Spaces
2	86
3	20
5	157
6	141
7	126

Rhodes West

Controls	
C14.	To achieve a high quality public domain, at grade car parking is only permitted to the rear of shops, restaurants and the like, and to detached, pair and row housing. It must be located behind the building line and screened from the public domain unless accessed via a lane or private street.
C15.	To achieve a high quality public domain, internal car parking which protrudes more than 1.2m above ground level of the adjacent public domain must be located behind the building alignment and be screened from the public domain in a manner that is an integral part of the external design of the building.

B3.6 Bicycle parking and storage facilities

Objectives

O1. To encourage the use of bicycles by residents, employees and visitors of Canada Bay for recreational use and as an alternative mode of transport.

O2. To ensure bicycle parking and storage facilities are located in a safe location.

O3. To ensure bicycle parking and storage facilities can be used to securely store bicycles.

O4. To ensure bicycle parking and storage facilities are designed and located to provide easy, convenient and safe access to buildings.

O5. To ensure bicycle parking and storage facilities are designed and located to minimise conflict with pedestrians and other traffic.

O6. To ensure that bicycle storage and parking facilities are provided at end of trip for cyclists.

Controls	
C1.	Bicycle parking and storage facilities should be provided to allow parking or storage of a minimum number of bicycles, in accordance with Table B-I.
C2.	Bicycle parking must be made available to customers and staff and conveniently located.
C3.	Bicycle storage facilities may be provided as fully enclosed individual lockers (referred to in AS 2890.3 as Class 1 facilities) or as locked compounds (referred to in AS 2890.3 as Class 2 facilities), depending on the type of development and practicality of access to the facility. A private garage is deemed to be the equivalent of an individual locker space. Compounds should be fitted with a sufficient number of devices to which stored bicycles can be secured (referred to in AS 2890.3 as Class 3 facilities).
C4.	Bicycle storage facilities should be covered to provide weather protection.
C5.	Showers and lockers (end of trip facilities) should be provided close to secure bicycle storage facilities within new commercial and industrial developments (refer to End of trip facilities for more information).
C6.	Bicycle storage facilities should generally be designed in accordance with paragraph 2.2 of AS 2890.3.
C7.	Bicycle parking facilities must be located so that the minimum clearance (for a pedestrian pass) between a parked bicycle and any other obstruction is 1200mm.
C8.	Bicycle parking facilities should generally be designed in accordance with figure B3 in AS 2890.3. The provision of weather protection for bicycle parking is encouraged.
C9.	Access paths to bicycle storage or parking facilities must be provided so that the envelope shown in figure 3.1 in AS 2890.3 will fit when projected along the access path.
C10.	Where an access path to a bicycle storage or parking facility includes stairs, such stairs must include a bicycle wheeling ramp in accordance with figure 7.12 in the Austroads Guide to Traffic Engineering Practice (Part 14 Bicycles). The gradient of the ramp should not exceed 25%.
C11.	Unacceptable bicycle parking and storage facilities are facilities where: a) Only a wheel can be secured but not the bicycle frame; b) The device does not provide stability for the bicycle and may result in damage to the bicycle; and c) The device has a slot in the ground which may get dirty and difficult to use over time.
C12.	Directional signs advising the public of the location of bicycle parking and storage areas should be harmoniously designed and erected to assist both the facilitation and promotion of the use of these facilities.
C13.	To ensure bicycle parking and storage facilities are located in a safe location that is well lit with minimal concealment spaces.

Table B-I Minimum bicycle parking and storage provisions

Land Use	Resident/Staff Bicycle storage facility	Visitor Bicycle parking facility
Residential	2 per dwelling	2 per 10 dwellings
Commercial	2 per 150m^2 GFA	2 per 400m^2 GFA
Retail	2 per 250m^2 GFA	2 per unit + 2 per 100m^2 GFA
Industrial	2 per 10 employees	2 per unit +2 per 100m^2 GFA

Note:

1) For all residential, commercial and industrial development, fractions should be rounded up in the calculation of the required number of spaces.
2) Council may waive the requirement for bicycle storage facilities for other non-residential development if it is satisfied that the requirement presents an unreasonable burden on the development.
3) The above requirements only apply to new developments or where substantial alterations and additions are proposed.
4) Where the table does not provide a standard, the Council will make an assessment of the required number of spaces based on:
   a) Expected number of employees, and their likely or desired use of bicycles for travel to and from work; and
   b) Expected number of visitors, and their likely or desired use of bicycles to visit the development.
5) Bicycle parking and storage provisions are in addition to any other parking and storage requirements.
6) If different rates are provided elsewhere within this DCP then those rates will prevail for that specified location.

B3.7 End of trip facilities

Objectives

O1. To encourage cycling as a highly convenient transport mode by providing easily accessible and secure parking and end-of-trip facilities.

O2. To reduce car-usage and reliance, promote sustainability and a more active, healthy lifestyle.

Controls	
C1.	End of trip facilities in non-residential developments are to be provided in accordance with Table B-J.
C2.	Consideration should be given to the provision of fully serviced end of trip facilities such as showers, changerooms and daily laundry (including supplying laundered towels, detergents, irons and ironing boards, hair dryers, toiletries, and the like).
C3.	End of trip facilities must be publicly available and conveniently located.

Table B-J Minimum end of trip facility provisions

Personal lockers	Showers, change cubicles and lockers	
	20 bicycle spaces	Each 20 additional bicycle spaces
1 per bicycle space	2	2

B3.8 Electric Vehicles

Objectives

O1. To provide facilities for charging of electric vehicles to meet current and future needs.

O2. To accommodate hybrid and electric vehicles by ensuring that adequate charging points for these vehicles are provided in off-street private and public car parking areas.

Controls	
C1.	Level 1 electric vehicle charging facilities must be provided in accordance with Table B-K:
C2.	Level 2 electric vehicle charging facilities must be provided in accordance with Table B-L: Note: If Level 2 facilities are required they are to be provided in addition to any Level 1 requirements.
C3.	Shared facilities must be accessible to anyone who has legal access to the building.
C4.	All electric charging points in common property or visitor parking areas are to have clear signage identifying: a) Location; and b) Fees and charges, if any.
C5.	Electric circuitry to accommodate 'Level 2' electric vehicle charging points must be integrated into all off-street car parking of new residential and non-residential development to ensure that all car spaces can install electric vehicle charging points in the future. This must include: a) Ensuring adequate electrical capacity and infrastructure (cable size, distribution board size etc.) for the electric vehicle charging point system; and b) Providing either buried cables underground or cable trays sufficient to accommodate electric circuitry to each car space; and c) Slow, single phase 7kW electrical circuitry for private car spaces; and d) Fast, three-phase 11kW – 22kW electrical circuitry for publicly available spaces. Note: Circuitry requirements for all off-street parking spaces are in addition to minimum charging point requirements in Table B-K and Table B-L.
C6.	The installation of a Level 2 electric vehicle charging points is encouraged for new dwelling houses, dual occupancies and semi-detached dwellings.

Table B-K Minimum Level 1 electric vehicle charging facility requirements

Type of development	Type of charging facility	Minimum number of charging points/facilities/stations
Dwelling houses, dual occupancies, semi-detached dwellings	Level 1 • Regular 240V wall socket (10amps). • 2.4kW - 3.7kW. • No specialist installation required. • 16 – 20 hours to fully charge average vehicle.	1 per parking space
Secondary dwelling	Level 1 • Regular 240V wall socket (10amps). • 2.4kW - 3.7kW. • No specialist installation required. • 16 – 20 hours to fully charge average vehicle.	1 per parking space (if parking is provided)
Manor houses, Multi-dwelling housing, Multi-dwelling housing (terraces), Residential flat building, Shop top housing	Level 1 • Regular 240V wall socket (10amps). • 2.4kW - 3.7kW. • No specialist installation required. • 16 – 20 hours to fully charge average vehicle.	1 per parking space 1 per five bicycle parking spaces (a dedicated space and charging point for electric bicycles and mobility scooters to be charged must be provided for every five bicycle parking spaces)
Non-residential	Level 1 • Level 1 Regular 240V wall socket (10amps). • 2.4kW - 3.7kW. • No specialist installation required. • 16 – 20 hours to fully charge average vehicle.	1 per parking space

Table B-L Minimum Level 2 electric vehicle charging facility requirements

Type of development	Type of charging facility	Minimum number of charging points/facilities/stations
Manor houses, Multi-dwelling housing, Multi-dwelling housing (terraces), Residential flat building, Shop top housing	Level 2 AC • Directly wired into a dedicated circuit (16amp – 40amp). • 7kW – 22kW. • Level 2 provides between 18km to 110km of charge per hour. • Total charge time of between 4 – 12 hours depending on the vehicle.	Private spaces • A charging point in 1 car parking space or 10% of all car parking spaces, whichever is greater. Public spaces • 1 shared facility for developments with 5-10 dwellings • 1 additional shared facility for every additional 10 dwellings or part thereof. • To be provided in common or visitor parking areas.
Non-residential	Level 2 AC • Directly wired into a dedicated circuit (16amp – 40amp). • 7kW – 22kW. • Level 2 provides between 18km to 110km of charge per hour. • Total charge time of between 4 – 12 hours depending on the vehicle.	A charging point in 1 car parking space or 10% of all car parking spaces, whichever is greater.

B3.9 Common loading docks and service vehicle parking

Objectives

O1. To provide common loading docks and parking for the receiving of home deliveries and the parking of service vehicles (trades etc.) and removalist trucks in new commercial and medium/high density residential developments.

Controls	
C1.	Separate parking spaces for service vehicles are to be provided in new developments in accordance with the minimum requirements detailed in Table B-M. Note: Service vehicle parking spaces are in addition to any requirements for access, parking or storage specified in DCP Waste Management section.
C2.	Service vehicle parking spaces are not to be shared with parking provided for any other purpose.
C3.	For mixed use developments, the total number of service vehicle spaces is to be calculated on a pro rata basis of spaces required for the relative proportions of different uses within the building.
C4.	Service vehicle parking spaces, including spaces for bike couriers are to be: a) located near vehicle entry points and near lifts; b) clearly designated and signposted for service vehicles only; c) screened from the street where possible; and d) located completely within the boundary of the site, clear of parked vehicles; and clear of through traffic.
C5.	Parking spaces for service vehicles are not to be used for other purposes such as storage of goods and equipment.
C6.	The total requirement identified in Table B-M may be reduced for developments with a gross floor area in excess of 50,000sqm where it can be demonstrated to the satisfaction of the consent authority that: a) the proposed uses are complementary in terms of servicing demand; and b) at least one space per tenancy for business owners is provided.
C7.	All service vehicle parking spaces must be designed in accordance with AS 2890.2:2018 Parking facilities – Off-street commercial vehicle facilities. These spaces must be large enough for at least a medium rigid vehicle (8.8m) to accommodate removalist trucks.

Table B-M

Land use	Service Vehicle Parking Requirements
Residential	1 space for the first 50 dwellings or serviced apartments; plus 0.5 spaces for every 50 dwellings/serviced apartments or part thereafter
Commercial	1 space per 3,300sqm GFA, or part thereof, for the first 50,000sqm; plus 1 space per 6,600sqm, or part thereof, for additional floor area over 50,000sqm and under 100,000sqm; plus 1 space per 13,200sqm, or part thereof, for additional floor area over 100,000sqm
Shops, shopping centres	1 space per 350sqm GFA, or part thereof, up to 2,000sqm; then 1 space per 8,00sqm GFA thereafter
Hotels	1 space per 50 hotel bedrooms, or part thereof, up to 100 bedrooms; then 1 space per 100 hotel bedrooms; plus 1 space per 400sqm of reception, lounge, bar and restaurant area GFA, or part thereof, for the first 2,000sqm; then 1 space per 8000sqm of reception, lounge, bar and restaurant area GFA thereafter.
Industry, warehouse, distribution centre	1 space per 700sqm GFA, or part thereof
Other	1 space for 1,750sqm GFA, or part thereof, or to meet needs.

B3.10 Car Share

Objectives

O1. To provide car sharing facilities to meet current and future needs.

O2. To reduce car usage and reliance.

Controls	
C1.	Car sharing facilities must be provided in Rhodes East in accordance with the following table:

Type of development	Car share facilities required within 400m or less walking distance to station.	Car share facilities required if greater than 400m walking distance to station.
Multi dwelling housing, Residential flat building, Shop top housing	1 per 20 dwellings	1 per 40 dwellings
Car share rate to reduce car parking provision	N/A	1 car share space in lieu of 3 private car parking spaces

C2.	Car share spaces are to be for the exclusive use of car share scheme vehicles.
C3.	Car share parking spaces are to be: a) Exclusive of visitor car parking; b) Retained as common property of the Owners Corporation of the site and not sold or leased to an individual owner/ occupier at any time; c) Made available for use by operators of car share schemes; d) Grouped together in the most convenient locations relative to car parking entrances and pedestrian lifts or access points; e) Located in well-lit places that allow for casual surveillance; and f) Signposted for use only by car share vehicles and made known to building occupants and car share members through appropriate signage which indicate the availability of the scheme and promotes its use as an alternative mode of transport.
C4.	Development Applications are to demonstrate how the car share parking space(s) is to be accessed, including where access is through a security gate.
C5.	A covenant is to be registered with the strata plan advising of any car share parking space. The covenant is to include provisions that the car share parking space(s) cannot be revoked or modified without prior approval of Council.

B4 Waste Management

Objectives

O1. Assist in achieving Federal and State Government waste minimisation targets in accordance with regional waste plans.

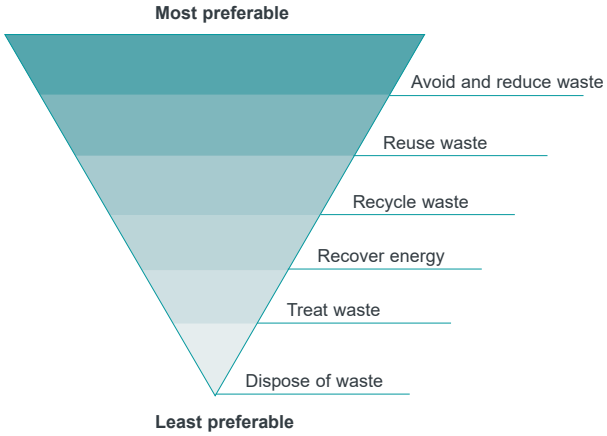
O2. Minimise overall environmental impacts of waste and foster the principles of ecologically sustainable development (ESD).

O3. Facilitate source separation and provide design standards that complement waste collection and management services offered by Council and private service providers.

O4. Manage waste in accordance with the Waste Hierarchy to:

i) Avoid producing waste in the first place;
ii) Minimise the amount of waste produced;
iii) Re-use waste materials wherever possible;
iv) Recycle once re-use options have been exhausted; and
v) Dispose of what is left, as a last resort, in a responsible way to appropriate waste disposal facilities;

O5. Ensure waste management systems are convenient and safe for residents and waste collection personnel.



Waste Hierarchy diagram

B4.1 General Controls

Controls	
C1.	A Waste Management Plan is required as part of the development application documents for all developments.
C2.	On site storage for waste and recycling facilities must be provided in designated areas for all new developments. The area should be located so as not to cause offence to adjoining property owners or occupiers with regard to smell, visual appearance, noise disturbance and traffic.
C3.	Source separation facilities and containers shall be provided in kitchens for waste to be divided into separate waste streams to encourage the composting and recycling of materials. Space must be allocated and receptacles supplied with the capacity to store at least 2 days' worth of residual waste, recyclables and food waste.
C4.	Common composting facilities should be provided at accessible locations away from dwellings to every residential development for garden waste and organic kitchen waste.
C5.	Consideration should be given to bin storage space for garden organics that are not able to be composted on site e.g. thick branches as garden organics cannot be disposed of in Council serviced waste bins.
C6.	Source separation facilities shall be provided on building sites so that different waste streams may be easily separated during construction and demolition to encourage the re-use and recycling of materials. The source separation facilities are to be clearly indicated on the drawings. Tipping dockets for disposal and recovery of all wastes are required to be held on site during this phase and are subject to auditing and/or inspection by Council.

C7.	In the design of buildings waste should be minimised by: • Matching building dimensions to standard sizes of building materials; • Using recycled materials; • Selecting materials that can be re-used or recycled in the future; and • Utilising component parts that may be easily replaced.
C8.	Plans and drawings of the proposed development that highlight the location of and space allocated to the waste management facilities and the nominated waste collection point must be included in the Waste Management Plan. The path of access for both users and collection vehicles must also be highlighted.

Understanding Council's Waste Service

C9.	Waste, recycling and garden organics generation rates are provided as minimum requirements:

	Waste generation per week		
Residential Developments	**Waste**	**Recycling**	**Garden organics***
Per Premises	120L	120L	120L

**For multi-unit developments, 1 x 240L garden organics bin is to be designated per 10 residential units (rounded up).*

C10.	Standard space dimensions for residential waste, recycling and garden organic bins:

	Height	Width	Depth
120L	980mm	500mm	540mm
240L	1140mm	580mm	715mm
660L	1200mm	1260mm	780mm
1100L	1330mm	1240mm	1070mm

Note: Standard dimensions are a guide only and may differ depending on the manufacturer.

C11.	Collection Vehicle Dimensions City of Canada Bay and its waste contractors currently use rear-loading, compacting collection vehicles of various capacities for on-site collection. In order to ensure access for both current vehicles, and future-proof allowance for any changes in waste fleet requirements, on-site access is to be designed for a vehicle of the following dimensions (provided for a standard heavy rigid vehicle as identified in Australian Standard 2890.2:2018):

Table B-N Table 1 Standard dimensions for a HRV from AS 2890.2 Parking Facilities: Off-street Commercial Vehicle Facilities

Heavy Rigid Vehicle Dimensions	
Overall length (m)	12.5
Design width (m)	2.8
Swept circle (m)	27.8
Clearance (travel height) (m)	4.5
Roadway/ramp grade (max)	1:6.5 (15.4%)
Rate of change of grade (max)	1:16 (6.25%) in 7.0m of travel
Front chassis clearance	13 degrees
Rear chassis clearance	16 degrees

B4.2 Single Dwellings and Dual Occupancies

Controls	
C1.	Residential development are to provide storage space for waste, recyclables, and garden organics in accordance with the following: Allocated 1x 120L Waste Bin (1 per dwelling), 1 x 240L Recycling Bin (1 per dwelling) and 1 x 240L Garden Organics (1 per dwelling).
C2.	Space must be allocated within each property boundary behind the building line for storing Council specified waste and recycling bins.
C3.	The waste/recycling storage area shall be constructed of brick or other approved masonry material, have a concrete floor at appropriate level approved by Council and be suitably graded to allow drainage.

B4.3 Multi-unit Dwelling Residential Development

Controls	
C1.	Multi-unit accommodation refers to all buildings with three or more dwellings on one lot (whether self-contained or not) and includes the following: • Attached dwellings • Boarding houses • Group homes • Multi dwelling housing • Residential flat buildings • Seniors housing • Serviced apartments • Shop top housing

Bin Allocation

Controls	
C2.	Multi-unit dwellings may be permitted to have allocated one set of bins per dwelling, on approval by council, in accordance with the following: Allocated 1x 120L Waste Bin (1 per dwelling, collected weekly), 1 x 240L Recycling Bin (1 per dwelling, collected fortnightly) and 1 x 240L Garden Organics Bin (1 per dwelling collected fortnightly). Approval for allocation of one set of bins per dwelling will only be permitted where: • Each dwelling has direct access at ground level • Bin storage is provided at each dwelling, and the bin storage location is specified on the application. • A kerbside presentation point is nominated on the application • The space required for presentation at kerb does not exceed one-third of the width of the property frontage • Kerbside collection activity does not create an obstruction of the pathway or roadway or cause an illegal hazard • Kerbside presentation point is to be located so as to minimise the impacts from noise and odour during collection • The path for wheeling bins between each and every dwelling bin storage location and the kerbside presentation point is a maximum of 30m and does not exceed a grade of 1:14 at any point.

C3.	In all other cases, multi-unit dwellings with less than 20 dwellings are to provide storage space for waste, recyclables and garden organics in accordance with the following: Either: Allocated 1x 240L Waste Bin (per 2 residential units), 1 x 240L Recycling Bin (per 2 residential units) and 1 x 240L Garden Organics (per 10 residential units up to a maximum of 20 residential units). Or: Allocated 660L or 1100L bins, in accordance with waste generation requirements.
C4.	In multi-unit dwelling residential development containing 20 or more dwellings, a bulk waste and recycling collection service is required. Council supplies 660L and 1100L bulk recycling and waste bins.

Waste Collection and Vehicle Access

Controls	
C5.	<u>Presentation to kerb</u> Presentation to kerb is only permitted where council approval has been provided for one set of bins per dwelling, as per the Bin Allocation section above. Presentation to kerb will only be permitted where: • A kerbside presentation point is nominated on the application • The space required for presentation at kerb does not exceed one-third of the width of the property frontage • Kerbside collection activity does not create an obstruction of the pathway or roadway or cause an illegal hazard • Kerbside collection point is to be located so as to minimise the impacts from noise and odour during collection • The path for wheeling bins between dwelling storage and the kerbside collection point is a maximum of 30m and does not exceed a grade of 1:14 at any point.

C6.	Collect and Return Collection Multi-unit dwellings with 20 or less units may be permitted to be provided with a Collect and Return collection service (also known as a wheel-out wheel-in service), on approval from Council. The Collect and Return service involves Council's waste collection vehicle parking at a designated kerbside collection point, parallel to kerbside (see collection vehicle dimensions above). Collection staff will enter the bin storage area on foot and collect waste, recycling or garden or-ganics bins. The bins are wheeled to the rear of the vehicle to be emptied. Once emptied the bins are placed back within the bin storage area and the driver leaves the development. The following design elements must be demonstrated in order for Council to approve a collect and return collection. • Communal bin storage area large enough to accommodate all bins assigned to the development. • Maximum walking distance from the front of each and every dwelling to the communal bin storage area is not to exceed 30m (excluding travel via lift) • The access pathway for wheeling bins between the bin storage area and kerbside collection point is to be level and free of steps. • The maximum manual handling distance between the bin storage area and kerbside collection point is 15m. • The bin storage area is constructed to allow physical separation from the bulky household waste area. • Minimum doorway width of 1400 mm. • The location of the proposed kerbside collection point is to be illustrated on the DA plans, and is to be level, free of obstructions and with sufficient height clearance to enable the safe mechanical pick up and set down of bins.
	Kerbside collection points should not be located: • near intersections; • near roundabouts or slow-points; • along busy arterial roads; • in narrow lanes; • near possible obstructions, including trees, overhanging buildings, and overhead powerlines; or • where they pose a traffic hazard. On approval from Council, bin storage areas may be locked via a PIN lock in order to reduce access by non-residents. The PIN code must be provided to council two weeks prior to the first service occurring.
C7.	On-Site Collection All multi-unit dwellings that are not approved for 'presentation to kerb' or 'collect and return' collection must provide on-site collection for Council vehicles, where the collection vehicle enters the property and services the development within the property boundary from a designated loading area. A nominated collection point must be designated where waste, recyclables and garden organics are loaded onto the collection vehicle. The location of the nominated collection point is to be illustrated on the DA plans. Nominated collection points are to be located, in order of preference: 1) In the building's basement 2) At grade within the building in a dedicated collection or loading bay

	The nominated collection point is required to be within 15m of the bin presentation area. Note that all bins for collection must be located in the bin presentation area prior to collection (see 'Bin Storage Areas' for further details). The nominated collection point is to be level, free of obstructions and with sufficient height clearance to enable the safe mechanical pick up and set down of bins. In all cases, vehicles will enter and exit the premises in a forward direction. The following allowances are required for collection vehicle access: • An unimpeded minimum vertical clearance of 4.5 metres throughout the entire onsite approach, including clearances of all ducts, pipes and other services • A minimum width of driveway of 3.6 m • A minimum turning circle radius as per the vehicle dimensions provided, or provision for changing the facing direction of a waste or recycling collection vehicle. • The grades of entry and exit ramps must not exceed the capabilities of the waste collection vehicle compliant with *AS2890.2 Parking Facilities: Off-Street Commercial Vehicle Facilities.* A swept path analysis must be provided with the application demonstrating that paths of vehicles travelling in the forward direction when negotiating access driveways and circulation roadways can be accommodated within the proposed development. Swept path analysis must also be used to establish that sufficient width is provided for the vehicle swept path, including manoeuvring clearances.
	The following must be provided in a swept path analysis: • Details of road geometry (details dimension of the driveway, width of the road (carriage way), footpath, kerb and gutter, median and on-street parking where applicable.) • Dimension details of the design vehicle • Turning radius and operable speed • Three clear swept paths line namely wheel path, vehicle body path and 0.6m clearance path.
C8.	Where collection staff or collection vehicles are required to enter a site a Servicing Agreement will be required to be entered into with Council giving power and authority to Council collectors to enter the site for the purpose of waste services.

Waste and Recycling Chutes

Controls	
C9.	All developments that meet the following criteria are required to incorporate a waste and recycling chute system: • comprise four or more storeys; and • include a lift within the development For buildings with 9 or less storeys the chute system must consist of separate chutes for waste and recycling. Dual function chutes will have a mechanism for selecting the waste stream to be disposed of and a diverter at the bottom of the chute to direct the waste into the appropriate bin. For buildings with 10 or more storeys the chute system must consist of separate chutes for waste and recycling. All waste chutes serviced by 240 litre or 660L bins must discharge into a compaction unit. Compaction units shall not compact above the ratio of 2:1. Recycling bins and 1100 litre bins must not be compacted.

	Chute requirements include: • Each floor will have a chute inlet with clear instructions on how to use the system. • residual waste and recycling chutes will be co-located side by side for ease of use and to reduce the likelihood of contamination • waste disposal points (chute inlets) on each residential level enclosed in a chute room • the chute is to terminate in a dedicated waste and recycling room and discharge directly into a receptacle • protective skirting between chute and bins is encouraged to prevent spillage and minimise dust or spray • chute must be completely enclosed and fire-rated, compliant with the Building Code of Australia • chutes must be cylindrical in section to avoid waste being caught within the chute, and with a diameter of 500mm or more • chutes must be ventilated to ensure that air does not flow from the chute through any service opening • residential chutes must operate separately to commercial chutes • residents are not to be given access to the area where the chute discharges • total maximum travel distance from any residential dwelling entry to a chute system on any given storey is not to exceed 30 metres.
	• chute inlets must be designed to: - effectively close off the service opening in the chute when the device is opened for loading - automatically return to the closed position after use - permit free flow of waste into the chute - not project into the chute - permit easy cleaning of the device and connection between the service opening and the chute - be no less than one metre (1 m) or more than one and one-half metres (1.5 m) above the floor level Waste management plans should include consideration of how the chute system has been designed to enable additional waste streams, such as food waste, to be collected if required in the future.
C10.	Chute outlets must discharge into a waste and recycling chute collection room. Chute collection rooms must be able to accommodate at minimum one days waste volume from the number of units it is servicing. The distance between chute collection room and central waste and recycling room must be minimised wherever possible. All transferring of waste from the central waste and recycling room to the collection point must occur underground.

Bin Storage Areas

Controls	
C11.	All waste and recycling bins are to be located in a dedicated bin storage area. Proposed bin storage areas must meet the following design requirements: • Where a development does not include waste and recycling chutes, the maximum travel distance from any dwelling to a bin storage area must not exceed 30m, excluding the distance travelled by lift. • Bin storage areas are not to be located adjacent to a habitable room. • Bin storage areas should be out of sight or well screened from the street • A minimum door width of 1400mm is required to allow for easy movement of large bins and other equipment in and out of the room. • The floor is to be constructed with concrete to a minimum thickness of 75 mm, non-slip and smooth/even surface covered at all intersections. • Bin storage areas must be easy to clean, with access to water (a tap and a hose) and adequate drainage. Water from washing bins and/or bin storage areas should not flow into the stormwater drain. Wash areas must be designed in accordance with relevant EPA requirements. • Ideally, having covered floor junctions at walls helps with cleaning and avoids the build-up of dirt and spills. • Where a residential development and non-residential development occupy the same site, the waste and recycling handling and storage systems for residential waste and non-residential (such as commercial) waste are to be separate and self-contained, and capable of being secured. • Bin storage areas are to be detailed on DA plans and drawings submitted to Council, with clear floor space dimensions.
	More than one bin storage area may be required in order to meet access criteria. If more than one bin storage area is required, the Waste Management Plan must specify the number of units serviced by each bin storage area and the number of bins required for that storage area, with reference to waste generation rates and bin capacities. For developments with on-site collection, a single bin presentation area must be designated for presentation of all bins prior to collection. This bin presentation area must have sufficient storage space for all development bins and be located within 15m of the nominated collection point. It may be suitable for the bin presentation area to also be a bin storage area. Dimensions of bin storage areas and bin presentation areas must be calculated using City of Canada Bay waste generation rates, bin dimensions, and a minimum manoeuvrability factor of 20%, using the following equation as a basis: (*no.of bins* x *bin footprint*(*area*)) + (*waste equipment footprint* (*area*)) x 1.2 For example, four 660 L MGB (with dimensions (m): 1.2 H x 1.26 W x 0.78 D) with no specific waste equipment would need an area of at least: (4 x (1.26 x 0.78)) + (0) x 1.2 = **4.72 m²** All waste, recycling and organics bins are to be stored at all times within the boundary of the development. Distances between bin storage areas and the bin presentation area must be minimised, and the access pathways between bin storage areas and the bin presentation area are to be level and free of steps or kerbs.

	Best practice design of storage rooms ensures flexibility and future-proofing is integrated into every aspect of the development. This is particularly important for a waste management system as waste contractors are likely to vary over the lifetime of any development; therefore the design should not be limited to one type of vehicle, bin, or equipment. Examples of how flexibility can be considered include: • Ensuring bin storage areas are kept clear of potential obstacles that would make it difficult to modify existing bin sizes. For example, in communal bin areas, using fixed structures to separate individual bins should be avoided, as bin sizes and/or configurations may change • Designing access paths and doorways greater than the minimum width requirements to allow for possible future changes in bin sizes. • Sizing communal bin storage areas to allow for a potential increase in waste generation from the development or a change in allocated council services per dwelling.
C12.	In high rise residential developments where there is a full time caretaker on site, it is advisable that access to waste facilities by residents is limited to only the service compartments located on each floor, and the bulky items storage area. This is to help prevent contamination of recycling bins. Council will not collect recycling bins that are contaminated with unacceptable materials.

Bulky Household Waste Storage Room

Controls	
C13.	A bulky household waste storage room must be located within the boundary of the development and must be located no more than 30 m walking distance from any dwelling, excluding travel via lift. A minimum area of $3m^2$ is to be provided. The size of the bulky household goods area for developments of 20 or more dwellings is based upon the following calculation: *Bulky Household Goods Area* (m^2) = [*Number of units* x 8] ÷ 52 Note: All calculations are rounded up to next whole number (i.e. 4.1 m^2 = 5 m^2). Bulky household waste storage must be separated from bin storage areas, and located within the boundary of the development. There should be unobstructed access to the bulky household waste storage area for residents, to eliminate the movement through other equipment and storage rooms for access to bulky household waste storage. The floor is to be constructed with concrete to a minimum thickness of 75 mm, non-slip and smooth/even surface covered at all intersections. A minimum door width of 1800 mm is required to allow for easy movement of large items in and out of the room. Bulky storage rooms are required to be indoors or under cover to reduce weather damage to potentially reusable items. The floor must be graded to a central drainage point connected to the sewer and have a supply of water through a centralised mixing valve with hose cock.

	For all multi-unit dwellings of more than 20 units, additional space is required for recycling textile waste such as a clothes bin. The size required is 1m^2 per 50 units to a maximum 2m^2. This space should be in or attached to the storage area. Consideration should be given to allocating space for printer cartridge, toner bottle and mobile phone recovery bins as these items are able to be recovered by the private sector at no charge. Implementation of these types of recovery options will reduce the overall waste generated in these development sites. Wherever possible, bulky household materials should be segregated, with separate areas for recyclable metals, mattresses, garden waste and furniture. Each separate area should be clearly signposted.

Residential amenity

Controls	
C14.	Noise Residential dwellings must be adequately insulated from noise and smell if they are adjacent to or above: • chutes or waste storage facilities, or • chute discharge, or • waste compaction equipment, or • waste collection vehicle access points. Better practice principles that should be incorporated to reduce noise include: • Locating bin bays and collection points far enough away from residents as to reduce the impact of noise during waste collection. • Eliminating the need for collection vehicles to reverse. • Chutes, if installed, should be well insulated to avoid noise disturbing neighbouring units. • Select appropriate surfacing materials that will assist in minimising noise for pathways and driveways that bins will need to be wheeled over. Provide detail on how material will be transferred into bins at storage points to reduce noise impacts.

C15.	Chute Acoustic Requirements For all buildings with waste and recycling chutes, where possible chutes should not be situated adjacent to habitable rooms due to the noise from hopper use and waste falling down the shaft. Chutes must be designed to meet the minimum acoustic requirements for both airborne and impact noise protection. Note that a condition of consent will require a report from a specialist acoustic consultant demonstrating compliance with acoustic performance requirements. Performance requirements are given for both airborne and impact noise protection respectively in terms of a Weighted Sound Reduction Index with Spectrum Adaption Term ($R_W + C_{tr}$) and a Normalised Impact Sound Pressure level with Spectrum Adaption Term ($L_{n,W}$ + CI) as follows for waste chutes in residential premises. Any chute, duct or service carrying only residential waste and located in a building to serve, pass through or near a separate habitable area (non-residential or residential), is to be designed and built to be separated by a construction methodology that achieves the following minimum performance requirements: • Be of a discontinuous/vibration isolated construction methodology. • Be certified in design by an appropriately qualified acoustic consultant to the satisfaction of a lawful certifying authority to achieve an $R_W + C_{tr}$ of not less than 55 if the adjacent rooms are habitable rooms (includes a kitchen, laundry and hallway) and achieve a $D_{nT,w} + C_{tr}$ of not less than 50 in verification prior to occupation. • Be certified in design by an appropriately qualified acoustic consultant to the satisfaction of a lawful certifying authority to achieve an $L_{n,W}$ + CI of not more than 55 if the adjacent rooms are habitable rooms (includes a kitchen, laundry and hallway) and achieve a $Ln_{T,w}$ + CI of not more than 55 in verification prior to occupation.

C16.	Odour • For enclosed storage and service areas, the air flowing from interim storage areas and central residual waste rooms should not exit close to units. • Ventilation openings should be protected against flies and vermin and located as near the ceiling and floor as possible, but away from the windows of dwellings. • If a forced ventilation or air conditioning system is used for enclosed storage areas, it should: - be in accordance with the ventilation requirements of the Building Code of Australia and Australian Standard 1668.2 The use of Ventilation and Air Conditioning in Buildings; and - not be connected to the same ventilation system supplying air to the units.
C17.	Visual All waste management facilities and storage areas should be adequately screened, not readily visible from any public place and should blend in with the development. A poorly designed and located storage area can detract from the overall development, encourage misuse of the facilities provided and affect recycling outcomes.

Waste Management

Controls	
C18.	For all multi-unit dwellings, the developer must provide an Operational Waste Management Plan that establishes responsibility for the tasks involved in ongoing waste management, including: • Moving bins to and from the bin storage areas to the bin presentation area (if required) on collection day. • Moving recycling bins to bin storage areas as required. • Washing bins and maintaining storage areas to be kept in a serviceable condition that maximises amenity. • Managing communal composting/food recycling areas (if applicable). • Ensuring all residents are informed of the residual waste, recycling, organics and bulky waste arrangements. • Displaying and maintaining consistent signs on all bins and in all communal storage areas. • Keeping waste collection and storage areas free of clutter and dumped waste to minimise odour and vermin issues. It is required that body corporate or a facilities caretaker is responsible for the movement of bins to their collection point and their subsequent return, particularly if on-site collection is occurring.
C19.	Signage in waste storage compartments must encourage residents to wrap waste prior to placement in chutes, specify that no dangerous or bulky items be placed in chutes and provide information about what is acceptable in the recycling system.
C20.	Note that design of waste management systems must be in accordance with The Disability Discrimination Act (1992). Consider people with special needs when designing waste facilities, particularly for height and design of waste chutes inlets.

B4.4 Controls for Mixed Use Developments

Controls	
C1.	Where a development mixes residential with commercial uses, the waste handling, storage and collection system for residential waste (from the residential area) and commercial waste (from the commercial area) are to be completely separate and self-contained. They must have separate keys and locking systems.
C2.	The Waste Management Plan prepared for a mixed use development must identify the collection points and management systems for both residential and commercial waste streams.
C3.	The waste handling and management system for each component of the mixed development must comply with the relevant provisions of this DCP (eg. Separate residential and commercial collection areas).
C4.	Sufficient space must be allocated in each waste and recycling storage room to store the amount of waste likely to be generated in each respective part of the development.
C5.	Each waste and recycling room must be located in an area that is easily accessible for waste services collection vehicles and convenient to the users.
C6.	Measures must be taken to ensure that noise and odour from the commercial waste facilities does not impact on residents.
C7.	Commercial tenants in a mixed development must be actively discouraged from using the residential waste facilities.

C8.	The waste storage and recycling area shall be designed to enable each separately tenanted or occupied area within the building or complex to be provided with a designated and clearly identified space for the housing of sufficient commercial bins to accommodate the quantity of waste and recycling material likely to be generated.

Commercial/Industrial Premises

Controls	
C9.	A waste and recycling room must be provided on each floor level within a retail development. The waste and recycling area must have the capacity to store at least one (1) day's volume of waste and recycling likely to be generated on that floor level. Refer to Table B-O for waste generation rates.
C10.	Material from the waste and recycling room must be transferred to the centralised waste and recycling room or holding area daily or more frequently, as required.
C11.	If more than 10m³ of non-compacted waste and recycling is calculated to be generated per day (as described in the Waste Management Plan), the central waste and recycling room must be separate from the goods receivable dock or service vehicle bay area.

Controls	
C12.	The waste and recycling area should be flexible in design so as to allow for a variety of bin sizes and types and future changes in the use of the commercial/ industrial units.
C13.	The waste collection area shall be covered, drained to the sewer as per a Sydney Water Trade Waste Agreement and may need bunding depending on the material to be stored within the area.
C14.	All development applications involving demolition or construction are to be accompanied by a completed Waste Management Plan. A Waste Management Plan form may be obtained from Council's website or Council's Customer Service Centre.
C15.	Sufficient space shall be provided on-site for waste separation.
C16.	A well designed and located waste storage and recycling area and/or garbage and recycling room shall be provided on-site.
C17.	Clear access for staff and collection services is to be provided.
C18.	Facilities are to be carefully sited and well designed to not have an adverse impact on adjoining premises or amenity.
C19.	Where multiple occupancy (such as a suite of shops or an office complex) is proposed, communal facilities may be appropriate, particularly where: a) The design makes it difficult for all units to have access to a collection point; or b) Site characteristics restrict entry of vehicles.

C20.	The waste storage and recycling area shall have a concrete floor, suitably graded to allow drainage and be designed to enable each separately tenanted or separately occupied area within the building or complex to be provided with a designated and clearly identified space for commercial waste containers.
C21.	The waste storage and recycling area should be sited to allow easy vehicular access (preferably from the rear of the property) and opportunities for screen landscaping.
C22.	A building containing more than three storeys shall be provided with an acceptable method for transporting waste from each level to a garbage and recycling room. Space must be provided on each floor for temporary storage of waste material and recyclables. Ongoing management should be detailed in the Waste Management Plan.
C23.	For offices and commercial premises, particular attention should be paid to paper, cardboard, glass, aluminium, steel and plastic (1-7) recycling, with source separation at the waste storage and recycling area or garbage and recycling room.
C24.	For restaurants and other premises which deal with perishable food stuffs, special attention should be paid to food scrap generation. Specialised containment should be provided and a regular/daily collection service arranged.
C25.	Refrigerated garbage rooms should be provided when large volumes, perishables (such as seafood) and infrequent collection is proposed.
C26.	Grease traps must be provided, where appropriate. Contact should be made with Sydney Water to obtain their trade waste requirements.
C27.	Where special waste material is to be generated by professional services such as but not limited to medical centres, dentists and aged care facilities, special arrangements will be required which should be detailed in the Waste Management Plan.
C28.	Commercial developments are to provide storage space for garbage and recyclables in accordance with Table B-O below.

Table B-O Waste generation rates for Mixed Use Areas and Neighbourhood Centres

Type of premises	Waste generation	Recycling generation
Backpackers accomodation	40L/occupant/week	40L/occupant/week
Boarding house, guest house	60L/occupant/week	60L/occupant/week
Childcare	50L/100m²/day; plus Per 10 children aged 0 to 2: 75L waste per day; plus Per 10 children aged 2 to 3: 35L waste per day	50L/100m²/day
Food Premises		
Butcher	150L/100m² floor area/day	120L/100m² floor area/day
Delicatessen	150L/100m² floor area/day	120L/100m² floor area/day
Fish shop	150L/100m² floor area/day	120L/100m² floor area/day
Greengrocer	240L/100m² floor area/day	120L/100m² floor area/day
Restaurants	10L/1.5m² floor area/day	2L/1.5m² floor area/day dining
Supermarket	240L/100m² floor area/day	240L/100m² floor area/day
Takeaway	150L/100m² floor area/day	120L/100m² floor area/day
Hotel	5L/bed/day; plus 50L/100m²/bar area/day; plus 10L/1.5m² of dining area/day	120L/100m²/of bar and dining areas/day
Licensed club	50L/100m² of bar area/day; plus 10L/1.5m² of dining area/day	120L/100m² of bar and dining areas/day
Motel (without public restaurant)	5L/bed/day; plus 10L/1.5m² of dining area/day	1L/bed/day
Offices	10L/100m² floor area/day	40L/100m² floor area/day
Retail (other than food sales)		
Shop less than 100m² floor area	50L/100m² floor area/day	25L/100m² floor area/day
Shop over 100m² floor area	50L/100m² floor area/day	50L/100m² floor area/day
Showrooms	40L/100m² floor area/day	10L/100m² floor area/day

B5 Water conservation

Water conservation is an important element of an integrated ESD strategy. Measures can be implemented to match water quality with its intended use, to reduce water demand and use water more efficiently.

Applicants are required to satisfy the requirements of SEPP (BASIX) and Water Sensitive Urban Design Strategies.

Controls	
C1.	Water saving devices such as dual flush toilets, tap aerators, low water use dishwashers and washing machines must be provided to all new developments.
C2.	Spring return taps must be used for all public amenities.
C3.	Appliances and plumbing hardware should have a “AAA” Australian Standards Conservation Rating.
C4.	Implement fit for purpose substitution by matching water quality with its intended use. Roofwater should be retained on site for use externally, such as garden watering, cleaning and irrigation. The collection and storage of rainwater for toilet flushing should be considered. The recycling of grey water for toilet flushing or external use should also be considered.
C5.	The installation of insinkerators is not permitted.
C6.	Water conserving landscape practices, such as use of mulch, irrigation zoning, limited turf areas and flow regulators on hoses should be incorporated into design and management arrangements.
C7.	Minimum water requirements, include: • Drip irrigation to all planters/ on slab landscaping, except turf areas • Water efficient taps • Non-potable (recycle) water reticulation to all apartment WC’s and laundries (washing machine supply), the irrigation of gardens and the supply of carwash bays • Recycling of water from the fire pump testing system

B6 Urban Forest

Vegetation to which this Part applies is declared to be vegetation to which Part 2.3 of SEPP (Biodiversity and Conservation) 2021 applies.

Objectives

O1. To conserve and enhance the tree canopy and greenscape and to enhance visual amenity in the public domain

O2. To protect all protected and heritage trees.

B6.1 Tree maintenance

Objectives

O1. To conserve urban canopy and enhance visual amenity in the public domain

O2. To retain healthy trees of environmental and aesthetic value;

O3. To retain viable representative samples of native vegetation and biodiversity values wherever practicable;

O4. To facilitate the removal of undesirable exotics, noxious weeds, dangerous trees and any other inappropriate plantings, and to replace these with suitable species.

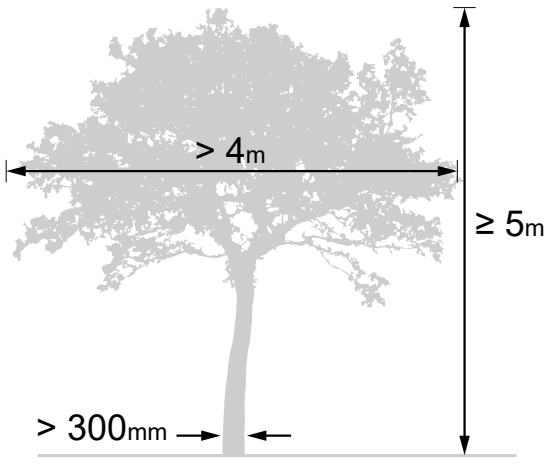


Figure B6.1 Diagram of a 'Protected Tree'. See Part L for definition

General Requirements

Controls	
C1.	A person must not ringbark, cut down, top, lop, remove, injure or wilfully destroy any protected or heritage tree, or other vegetation to which this development control plan applies without a permit granted by the Council. See also Figure B6.1.

Note: A protected tree is:

a) any tree with a height equal to or greater than 5 metres above ground level (existing); or

b) any tree that is under 5 metres in height that has a trunk diameter of more than 300mm at ground level (existing); or

c) has a canopy spread of over 4m; or

d) a native palm, cycad or mangrove, irrespective of its dimensions.

Note: A heritage tree is:

a) any tree that is identified individually or contained within a property identified in the Canada Bay Local Environmental Plan in Schedule 5 or shown on a Heritage Map.

Tree pruning and removal permit

Controls	
C2.	A permit is required for the pruning and/or removal of a Protected Tree. Note: Refer to controls below for circumstances where development consent is required for the pruning and/or removal of a tree.
C3.	Replacement planting must be provided in accordance with this DCP.

Note: Permits are issued in accordance with SEPP (Biodiversity and Conservation) 2021, Part 2.3.

Development Consent

Development consent will be required from Council if the following controls apply:

Controls	
C4.	The tree is a Protected Tree, and the tree is on land identified within the Canada Bay Local Environmental Plan as: a) A Heritage Item, or b) Within a Conservation Area.
C5.	Replacement planting must be provided in accordance with this DCP.

Note: Refer to Definitions contained within this DCP.

Exemptions

A person will be exempt from requiring a permit or development consent with respect to particular tree works if Council establishes that:

a) The tree was dead or that the works were limited to the removal of dead branches;

b) The tree was one of the following exempt species (provided the tree is not listed as a Heritage Item in an environmental planning instrument – in which case the prohibition applies):

Alnus jorullensis	Evergreen Alder
Bambusa spp	Bamboo
Celtris occidentalis	Sugarberry
Erythrina x sykesii	Indian Coral
Erythrina crista-galli	Coral Tree
Ficus elastica	Rubber Tree
Ligustrum spp	Privet
Nerium oleander	Oleander
Olea Africana	African olive
Populus spp	Poplar
Salix spp	Willow
Schefflera spp	Umbrella Tree
Syagrus romanzoffianum	Queen/Cocos Palm
Toxicodendron spp	Rhus Tree
Cinnamomum camphora (Camphor Laurel) or Liquidamber spp (Liquidamber) where the outside edge of the trunk of such tree is located within 3 metres of any single storey dwelling (not being an out building eg. Garage, carport, shed, etc).	Camphor Laurel or Liquidamber
A fruit tree grown for the purposes of fruit or fodder production except Acmena spp (Lilly Pilly), Syzygium spp (Lilly Pilly) or Elaeocarpus spp (Blueberry Ash).	Lilly Pilly or Blueberry Ash

c) The tree is a declared noxious weed in the local government area of the City of Canada Bay under the Noxious Weed Act 1993; and

d) The tree works were limited to the maintenance of a minimum clearance of five hundred (500) millimetres from domestic service leads as specified by Energy Australia, provided that the works were carried out by an Arborist of Australian Qualification Framework (AQF) level 3 and above, in accordance with the Australian Standards for the Pruning of Amenity Trees AS4373-2007.

B6.2 Assessment of trees

Objectives

O1. Providing a guide to the regulatory framework for the preservation of trees;

O2. Helping in establishing a coordinated approach to the assessment and management of trees.

Controls	
C1.	Council may issue a permit or development consent for the removal of a tree(s) if one of the following criteria are met: a) The tree is a poor specimen and is in decline and/or inappropriate for the location as deemed by Council; or b) The tree has caused significant structural damage and supporting documentation is provided to demonstrate there is an on-going problem with the tree and no other course of action will rectify the problem. Evidence will be required to demonstrate that the tree to be removed meets the above criteria. This evidence is to be in the form of an arborists' report or a structural engineers' report, or both.
C2.	Council may issue a permit or development consent for the pruning of tree(s) if the following criteria are met: a) The tree(s) have structural defects and or disease and remedial pruning (to AS4373-2007), will improve the health of the tree; and b) The tree(s) require crown thinning (no reduction in height permitted) to reduce weight within the tree if the tree is overhanging property or for other areas deemed appropriate i.e. access issues etc. A percentage no greater than 15% is generally issued. In some circumstances it may be necessary for you to supply, at your cost, an independent arborist's, structural, plumber's and or pest report. A comprehensive report must meet the criteria as outlined in Council's Guidelines for the Preparation of Reports available from Council. The Tree Management Officer will determine if such reports are necessary and such circumstances may include those where there is the possibility that the tree has been deliberately tampered with or extra supporting information is needed.

Emergency Procedures

Controls	
C3.	a) Where a tree(s) pose a potential hazard to property, the applicant should identify this on the application form. Council may expedite the assessment. No responsibility shall be taken by Council should a tree fail and cause damage or injury prior to inspection and the issue of the Tree Preservation Permit; b) Emergency Permits may be issued to applicants if deemed necessary by Council's Tree Management Officer(s); and c) In respect of potential hazard situations, tree problems do not usually occur in the short term, (except in the event of physical/mechanical damage i.e. storm activity etc)

B6.3 City of Canada Bay tree species

O1. To preserve and enhance native wildlife populations and habitat through appropriate planting of indigenous vegetation.

Indigenous species

Controls	
C1.	Trees selected for inclusion in landscaping should comprise native vegetation indigenous to Canada Bay and should be chosen from Table B-P in the first instance.

Native and exotic species

Controls	
C2.	Trees selected for inclusion in landscaping may comprise alternative native or exotic species from Table B-Q.

Table B-P Indigenous trees

Botanical Name	Common Name	Evergreen (E) Deciduous (D)	Indigenous (i) Native (n) Exotic (ex)	Mature height in urban tree conditions	Features	Suitability: Street Plaza	Suitability: Open space/Parkland	Suitability: Private Domain	Diversity: Family
Large indigenous trees									
Angophora costata	KAJIMBOURRA(D) Sydney Red Gum	E	i	8-20m	Open canopy, broad form, colourful bark, flowers on outer canopy, bird attracting	y	y	y	Myrtaceae
Angophora floribunda	BURRAM -BURRANG(D) or Rough Bark Apple	E	i	10-20m	Graceful upright form, medium canopy, showy flowers, bird and pollinator attracting	y	y	y	Myrtaceae
Eucalyptus botryoides	BANGALAY (D)	E	i	12-20m	Medium to open canopy, bird attracting		y		Myrtaceae
Eucalyptus globoidea	DTHAN DTHAANG(D) or White Stringybark	E	i	10-15m	Deep green foliage, bird attracting	y	y	y	Myrtaceae
Eucalyptus paniculata	PARRAGILGA (G) or Grey Ironbark	E	i	18-25m	Feature tree, bird attracting	y	y		Myrtaceae
Eucalyptus punctata	MAANDOWIE (D) or Grey Gum	E	i	18-25m	Textured and smooth salmon bark, bird attracting		y		Myrtaceae
Eucalyptus resinifera	Red Mahogany	E	i	18-25m	Feature tree, bird attracting	y	y		Myrtaceae
Ficus rubiginosa	BAIRA OR DTHAAMAN or Port Jackson Fig	E	i	8m x 12m	Interesting spreading buttress root system, long lived wide shade tree ideal for parks and open spaces		y		Moraceae
Syncarpia glomulifera	BOOREEAH or Turpentine	E	i	12-20m	Feature tree - predominately upright form, interesting leaves and fruit, bird attracting	y	y	y	Myrtaceae
Medium indigenous trees									
Acacia parramattensis	Sydney Green Wattle	E	i	6m	Long lived wattle, interesting seed pod, abundant flowers, bird and pollinator attracting	y	y	y	Fabaceae
Acmena smithii	Midjuburi (Cadigal) or Lilly Pilly	E	i	8-12m	Dense green canopy with vibrant red fruit, bush tucker	y	y	y	Myrtaceae
Angophora bakeri	Narrow-leafed apple	E	i	6-10m	Graceful upright form, medium canopy, showy flowers, bird and pollinator attracting	y	y	y	Myrtaceae

Banksia integrifolia	COURRIDJAH(D) or Coast Banksia	E	i	5-12m	Tall open canopy tree with silver leaves, showy flowers and interesting fruit, bird attracting, bush tucker	y	y	y	Proteaceae
Corymbia gummifera	MANNEN(D) or Red Bloodwood	E	i	8-15m	Small Eucalypt in urban situations, decorative bark and fruit, creamy white flowers on outer canopy, bird attracting		y		Myrtaceae
Elaeocarpus reticulatus	Blueberry Ash	E	i	8m	Upright tree with dense green foliage, white pink flowers and blue drupes, shade tolerant, bird attracting	y	y	y	Elaeocarpaceae
Eucalyptus robusta	CURRAMURRA (D) or Swamp Mahogany	E	i	10-15m	Interesting fruit, showy flowers, deep textured red and brown bark, wet areas, bird attracting	y	y		Myrtaceae
Glochidion ferdinandi	Cheese Tree	E	i	6m	Feature tree, interesting fruit, shade tolerant, wet areas	y	y	y	Phyllanthaceae
Melaleuca styphelioides	NAAMBARR(D) or Prickly Paperbark	E	i	8-12m	Decorative bark, showy flowers, wet areas, bush tucker	y	y		Myrtaceae
Melaleuca linariifolia	Snow in Summer	E	i	6m	Feature plant, showy flowers, bush tucker, wet areas	y	y	y	Myrtaceae
Small indigenous trees									
Acacia binervia	MYIMBARR(D) or Coastal Wattle	E	i	5m	Long lived wattle, small tree, beautiful silvery grey green foliage, fluffy spikes of golden flowers, fragrant wood	y	y	y	Fabaceae
Angophora hispida	BANDA (C) or Dwarf Apple	E	i	4m	Interesting rusty foliage and fruit, bird attracting	y	y	y	Myrtaceae
Leptospermum polygalifolium	YellowTea Tree	E	i	3-4m	Long lived white flowers, bird and pollinator attracting	y	y	y	Myrtaceae
Melaleuca nodosa	Ball Honeymyrtle	E	i	3m	Small paperbark tree, abundant flowers, bird and pollinator attracting	y	y	y	Myrtaceae
Homalanthus populifolius	Bleeding Heart	E	i	4 -5m	Attractive foliage (suitable for parks-plant with other clumps)	y	y	y	Euphorbiaceae
Syzygium paniculatum	Magenta Lilli Pilly	E	i	5-10m	Showy flowers and fruit, bird attracting, shade tolerant, bush tucker	y		y	Myrtaceae

Table B-Q Native and exotic trees

						Suitability			Diversity
Botanical Name	Common Name	Evergreen (E) Deciduous (D)	Indigenous (i) Native (n) Exotic (ex)	Mature height in urban tree conditions	Features	Street Plaza	Open space/Parkland	Private Domain	Family
Large native or exotic trees									
Agathis robusta	Queensland Kauri	E	n	25m	Feature tree		y		Araucariaceae
Corymbia maculata	YARRUN (D) or Spotted Gum	E	n	20-30m	Smooth long trunk with a high leafy crown	y			Myrtaceae
Corymbia exima	Yellow Bloodwood	E	n	10-12m	Interesting bark, bird and pollinator attracting	y		y	Myrtaceae
Elaeocarpus eumundi	Eumundi Quondong	E	n	10-18m	Tall narrow canopy, luscious green with rich red new growth	y			Elaeocarpaceae
Flindersia australis	Australian Teak	E	n	15-25m	Dense canopy, interesting fruit	y	y		Rutaceae
Fraxinus oxycarpa 'Raywood'	Claret Ash	D	e	10-15m	Deep red leaf colour, drought tolerant	y	y		Oleaceae
Fraxinus pennslvanica 'Urbanite'	Red Ash	D	e	12- 18m	Large spreading tree, drought tolerant	y	y		Oleaceae
Harpullia pendula	Tulipwood	E	n	10-15m	Dense dark green foliage, colourful orange capsules, tropical native that is drought tolerant	y	y	y	Sapindaceae
Lophostemon confertus	Brush Box	E	n	15m	Federation planting to be planted to compliment Brush Box feature streets only, dense round crown	y			Myrtaceae
Quercus palustris	Pin Oak	D	e	10-12m	Drought tolerant, colour in Autumn- park Tree	y	y		Fagaceae
Podocarpus elatus	DAALGAAL or Plum Pine	E	n	8-12m	Broad dense foliage, bush tucker, very hardy, needs good drainage	y	y		Podocarpaceae
Small to medium native or exotic trees									
Acer buergaranum	Trident Maple	D	e	8-12m				y	Sapindaceae
Acmena smithii - varieties	Lilly Pilly - various	E	n	3-8m	Dense green canopy with vibrant red fruit, bush tucker (varieties grow to different heights)	y		y	Myrtaceae
Alectryon subcinereus	Native Quince	E	n	4-6m	Attractive dense form, small pale pink flowers, coppery new growth, bird attracting. Not readily available.	y		y	Sapindaceae
Alphitonia excelsa	Red Ash	E	n	6m	For sheltered areas only, small tree with silvery underside to leaves	y		y	Rhamnaceae

Buckinghamia celsissima	Ivory Curl	E	n	5-8m	Dense foliage, scented white showy flower spikes	y		y	Proteaceae
Brachychiton discolor	Queensland lacebark	E/D	n	7m	Partly to completely deciduous hardy tree with red/pink flowers	y	y	y	Malvaceae
Callistemon viminalis	Weeping bottlebrush	E	n	6m	Vibrant red flowers, bird and pollinator attracting	y	y	y	Myrtaceae
Caesalpinia ferrea	Leopard Tree	E	e	6-8m	Smooth creamy dappled bark			y	Fabaceae
Cercis siliquastrum	Judas Tree	D	e	6m	For sheltered areas only, needs moist soils, prolific display of pink flowers in spring			y	Fabaceae
Corymbia ficifolia	Red flowering gum	E	n	5-8m	Great small tree for back yards, bird and pollinator attracting			y	Myrtaceae
Geijera parviflora	WILGA or Australian Willow	E	n	5-10m	Attractive drooping scented foliage, drought tolerant	y		y	Rutaceae
Guioa semiglauca	Wild Quince	E	n	6m	Small tree -shrub like	y		y	Sapindaceae
Ginkgo biloba	Maidenhair Tree	D	e	12m	Graceful leaves, requires moist soils		y	y	Ginkgoaceae
Hibiscus tiliaceus var rubra	Purple Leaf Hibiscus	E	n	5m	Hardy tropical tree with large maroon heart shaped leaves and sunny yellow flowers	y		y	Malvaceae
Hymenosporum flavum	Native Frangipani	E	n	5m	Showy fragrant flowers, shade tolerant	y		y	Pittosporaceae
Lagerstroemia indica	Crepe Myrtle	D	e	4m	Colorful flowers, drought tolerant	y		y	Lythraceae
Melaleuca bracteata	Black Tea Tree	E	n	5-10m	Spikes of scented white flowers in summer. Suitable medium tree for narrow streets and footpaths	y			Myrtaceae
Tristaniopsis laurina	OORAMMILLY(D) or Water Gum	E	n	6m	Drought tolerant small green tree with yellow flowers, 'Luscious' variety needs more water	y			Myrtaceae
Waterhousia floribunda	Weeping Lilly Pilly	E	n	6-10m	Deep green dense weeping glossy foliage, good shade tree	y	y	y	Myrtaceae
Zelkova serrata 'Green Vase'	Japanese Zelkova	D	e	10-12m	Vase shaped, autumn colour, hardy, drought tolerant	y		y	Ulmaceae

Aboriginal language/ area	D - Dharawal (Sydney south of Botany Bay, Sydney West)
	C- Dharag language of the Cadigal Clan (Sydney)
	G -Gumbaynggir (Mid -North NSW)

B6.4 Biodiversity

Objectives

O1. Maintain and enhance terrestrial biodiversity by protecting native fauna and flora.

Controls	
C1.	Development on land in Zone E2 Environmental Conservation, land identified as Environmentally Sensitive Land on the Environmentally Sensitive Land Map, or within a biodiversity corridor on the Biodiversity Corridor Map must not have a negative impact upon vegetation identified on the Biodiversity Map.

Note: Refer to Clause 6.3 of the Canada Bay LEP.

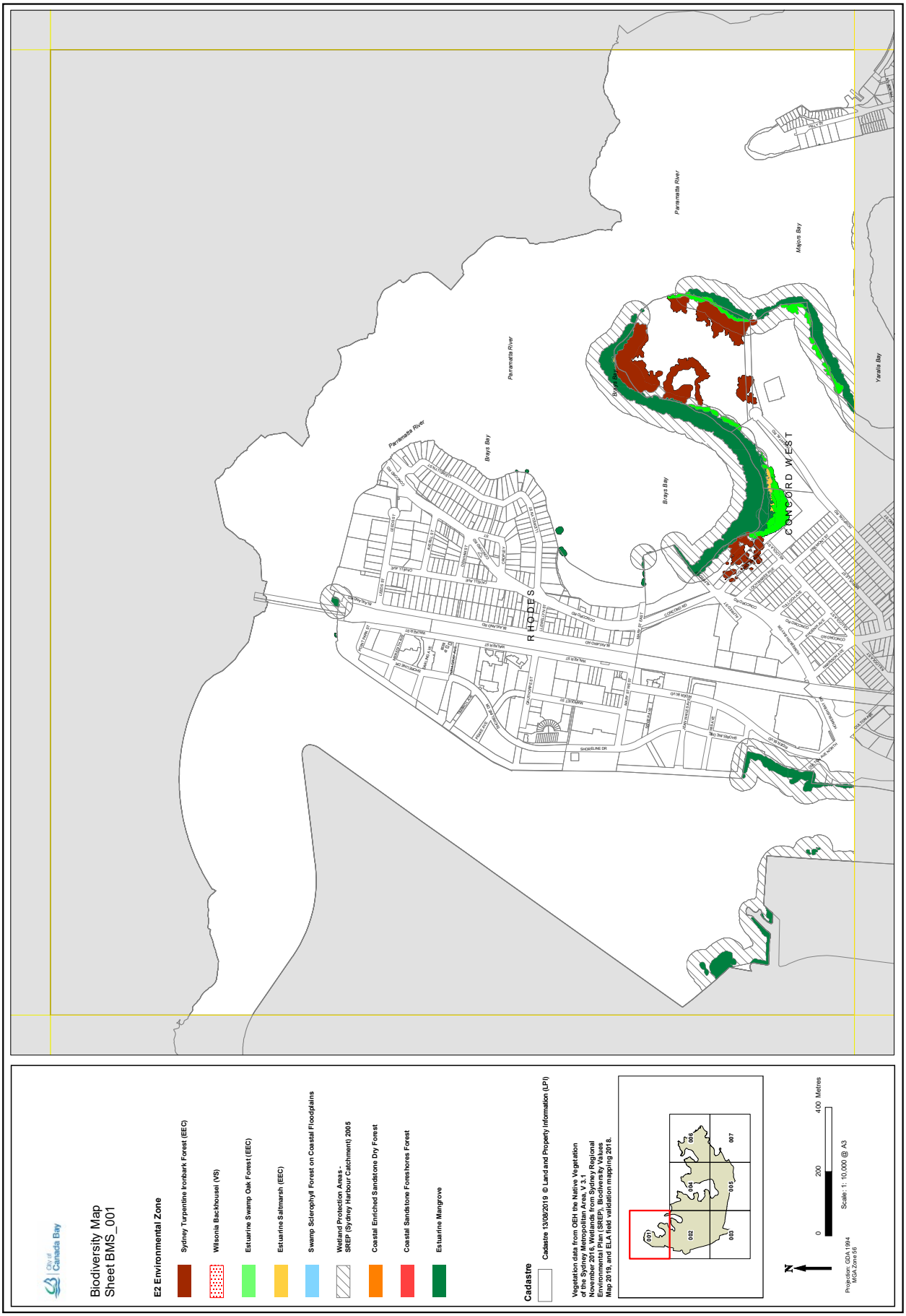


Figure B6.2 Biodiversity map - Sheet 1



Figure B6.3 Biodiversity map - Sheet 2

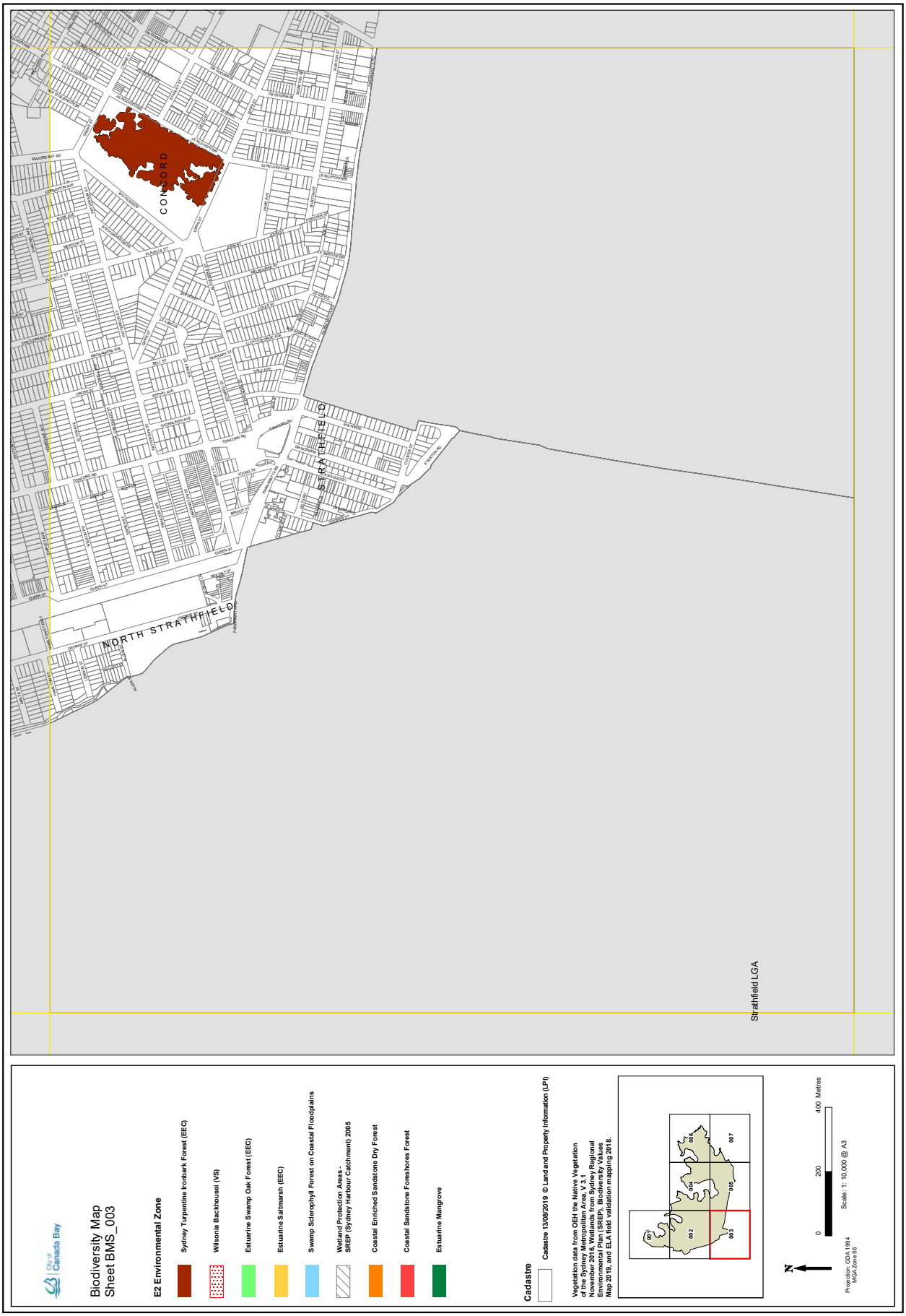


Figure B6.4 Biodiversity map - Sheet 3

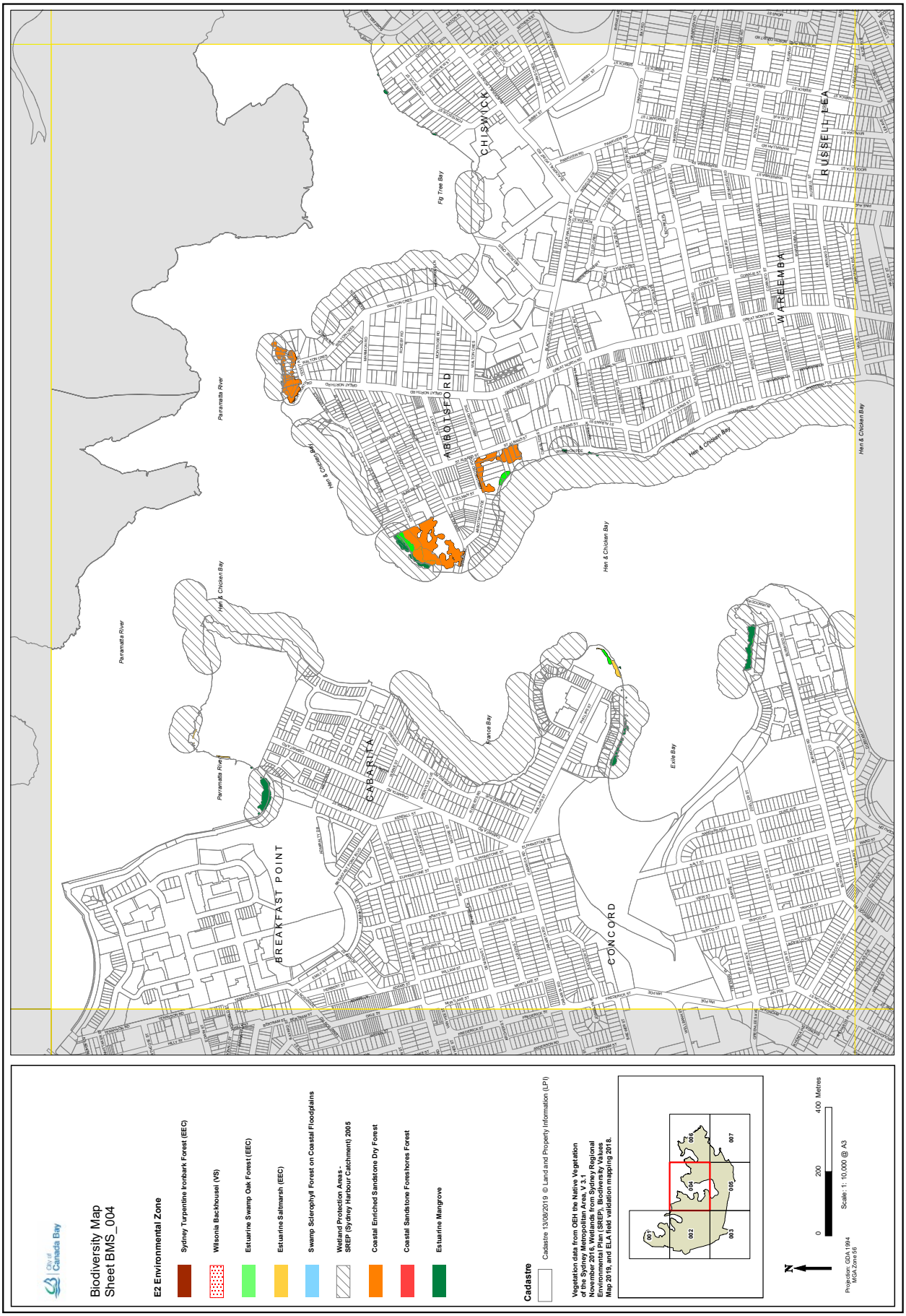


Figure B6.5 Biodiversity map - Sheet 4

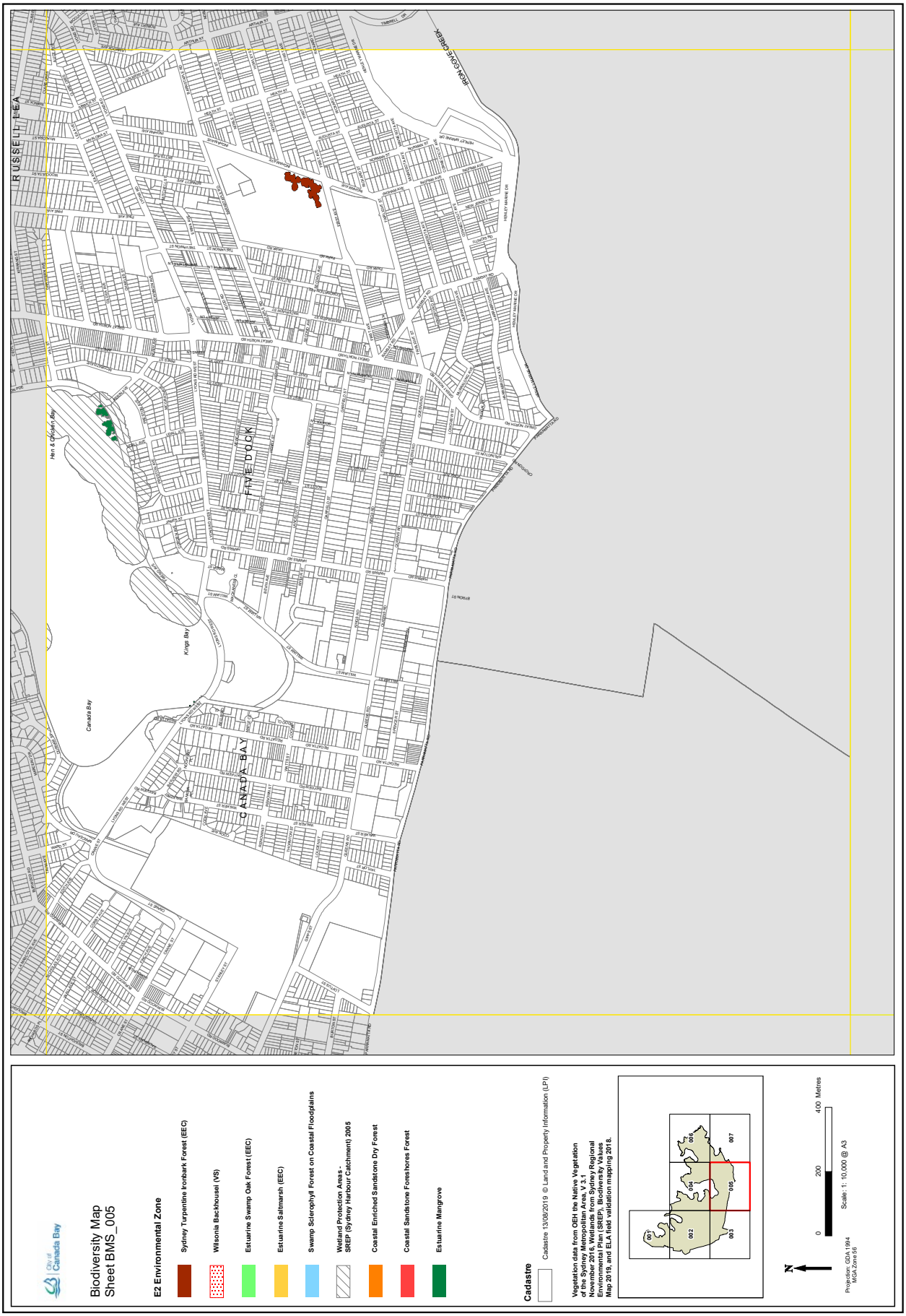


Figure B6.6 Biodiversity map - Sheet 5

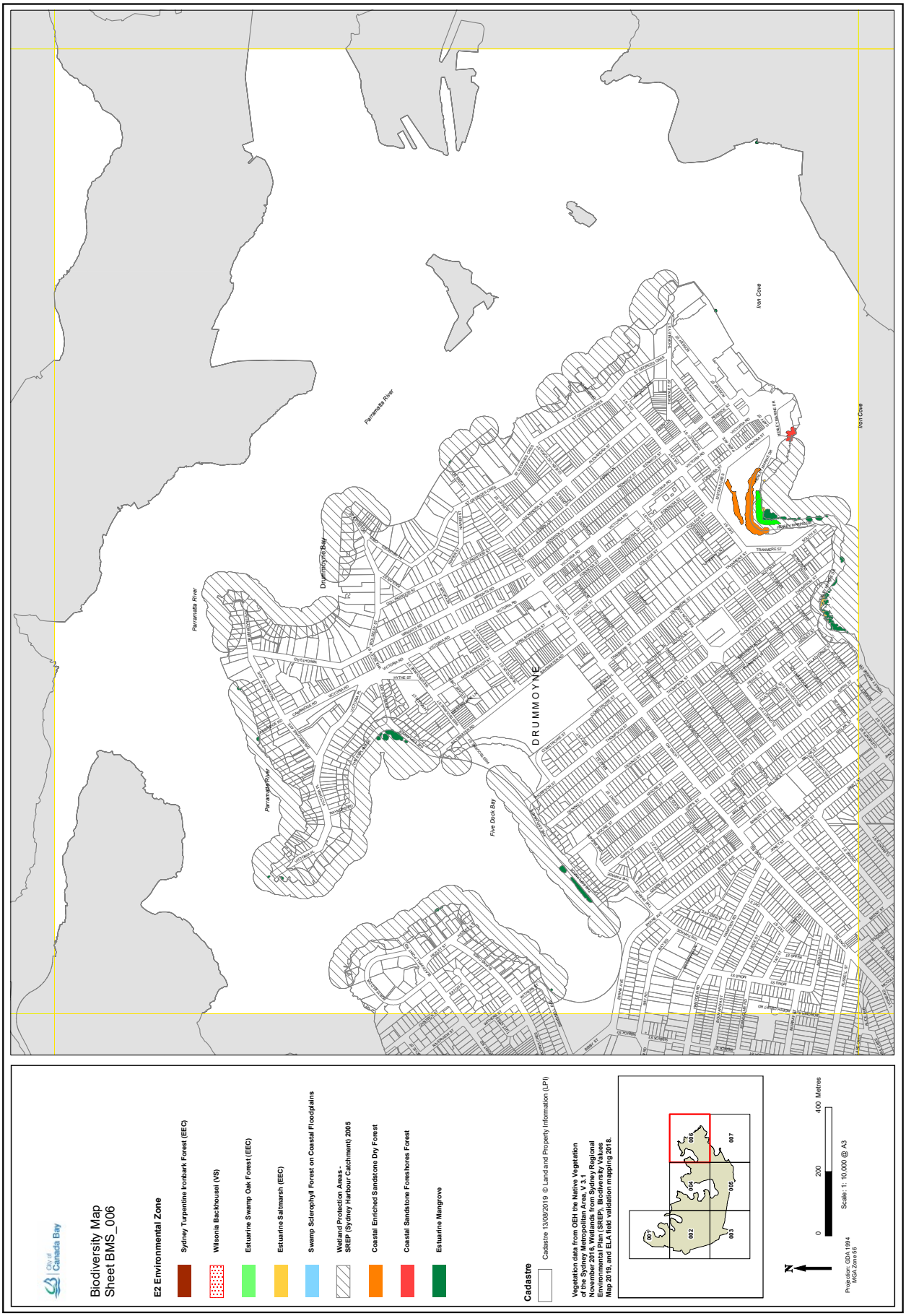


Figure B6.7 Biodiversity map - Sheet 6

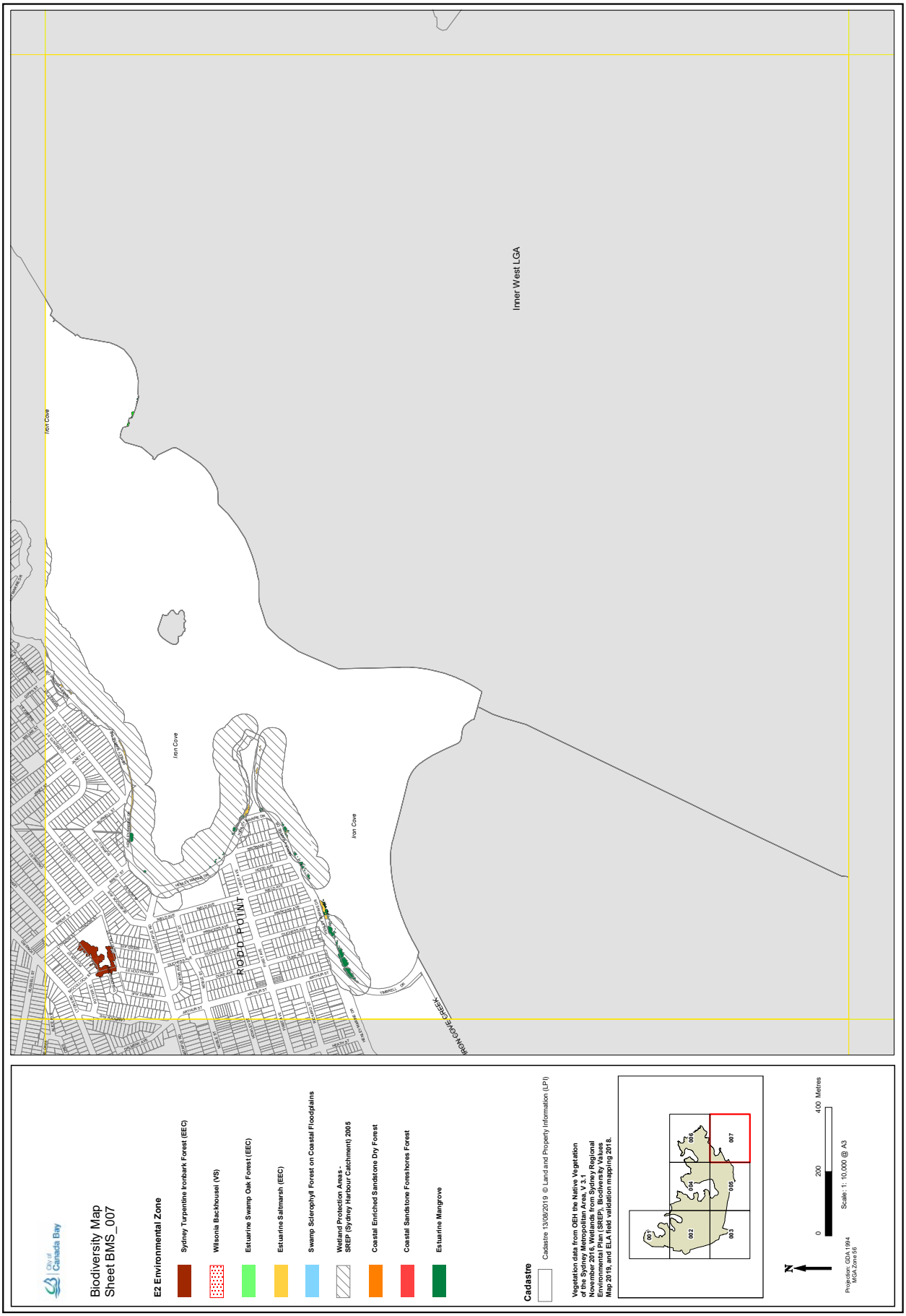


Figure B6.8 Biodiversity map - Sheet 7

B6.5 Habitat Connectivity

Biodiversity corridors provide linkages through urban areas to connect significant plant and animal communities remaining as endangered ecological communities, endangered populations, threatened or migratory species and their habitats. It is recognised that linkages to critical habitats may require reconstruction to play a significant role as part of a wildlife corridor or stepping stone for native flora and fauna.

Objectives

O1. Enhance and connect remnant and fragmented habitat on public and private land.

O2. Encourage plantings which increase habitat connectivity and tree canopy.

O3. Improve habitat, biodiversity and environmental performance of developments through landscaping.

Controls	
C1.	Where land is located within a Biodiversity Corridor (refer to Figure B6.9 to Figure B6.15), local indigenous species (including canopy trees, shrubs and groundcovers) are required (refer to separate part of DCP for list of Plants suitable for corridors and restoration planting).
C2.	Existing habitat features including rocky outcrops, waterbodies, trees, shrubs, ridgelines and ground cover vegetation are to be retained.
C3.	Trees, shrubs, ground cover vegetation, waterbodies, rockeries and green roofs and walls are to be included wherever possible, particularly in high density urban environments where opportunities for deep soil landscaping are limited and/ or where large walls face active areas of private and public use.

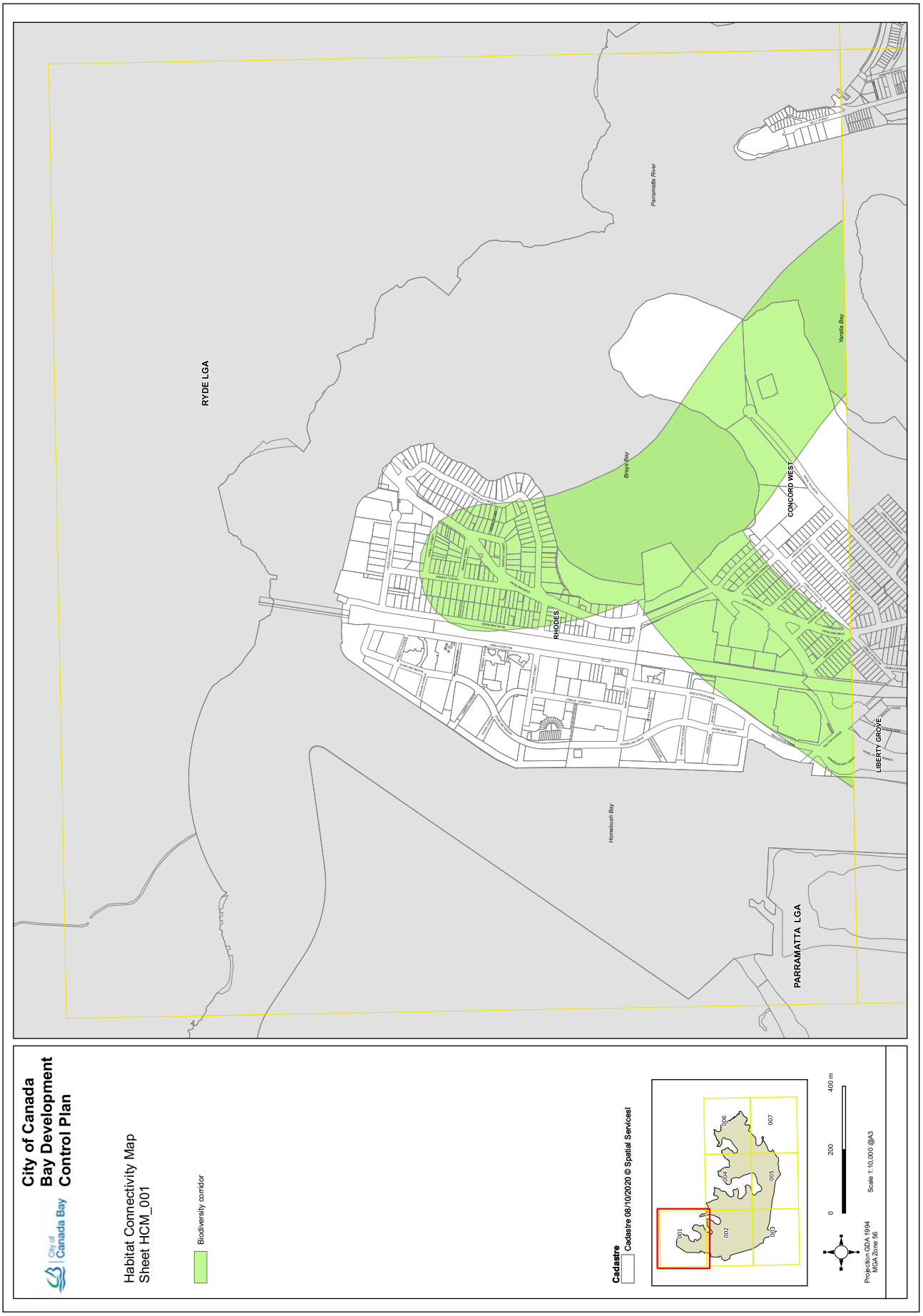


Figure B6.9 Habitat connectivity map - Sheet 1

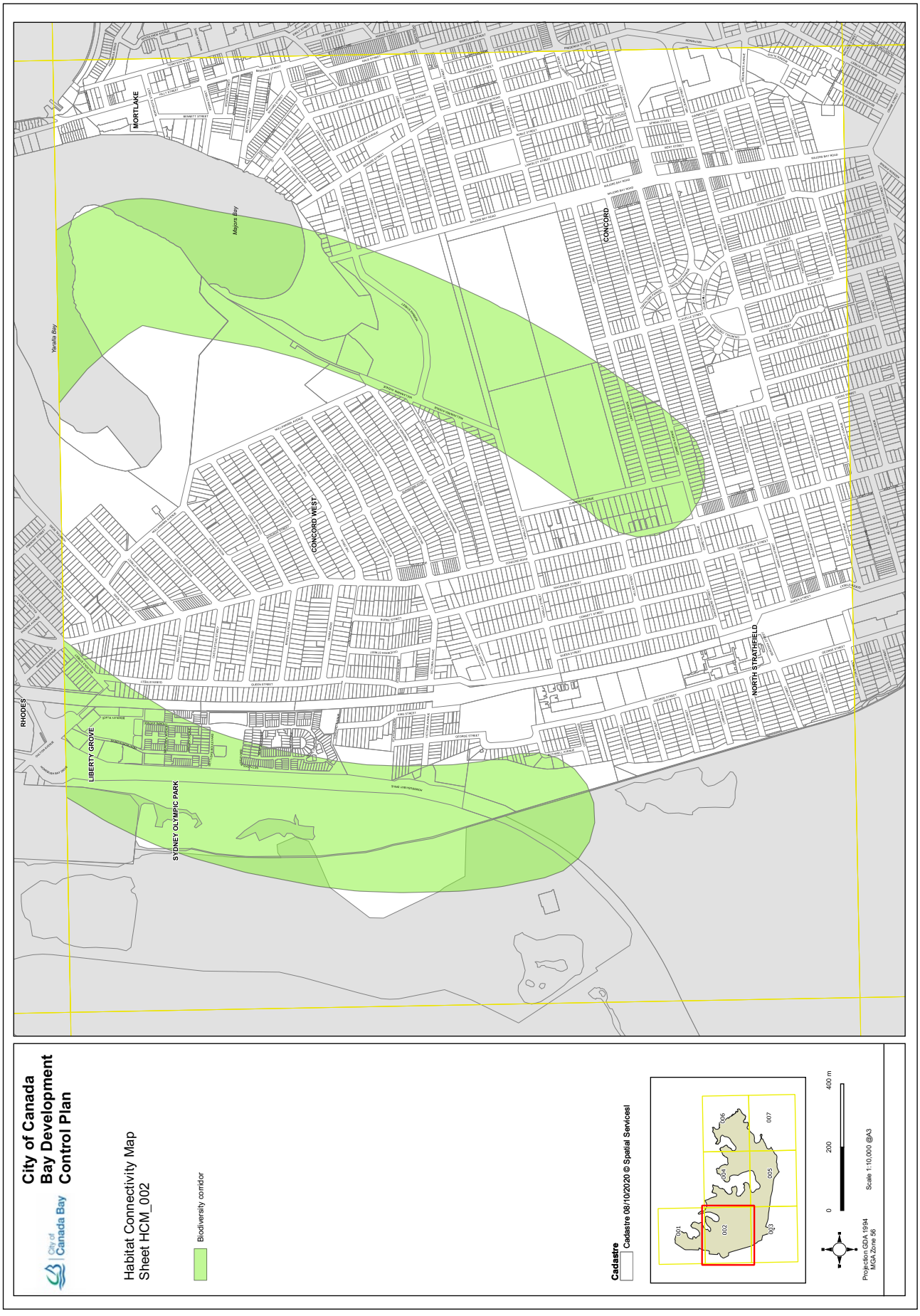


Figure B6.10 Habitat connectivity map - Sheet 2

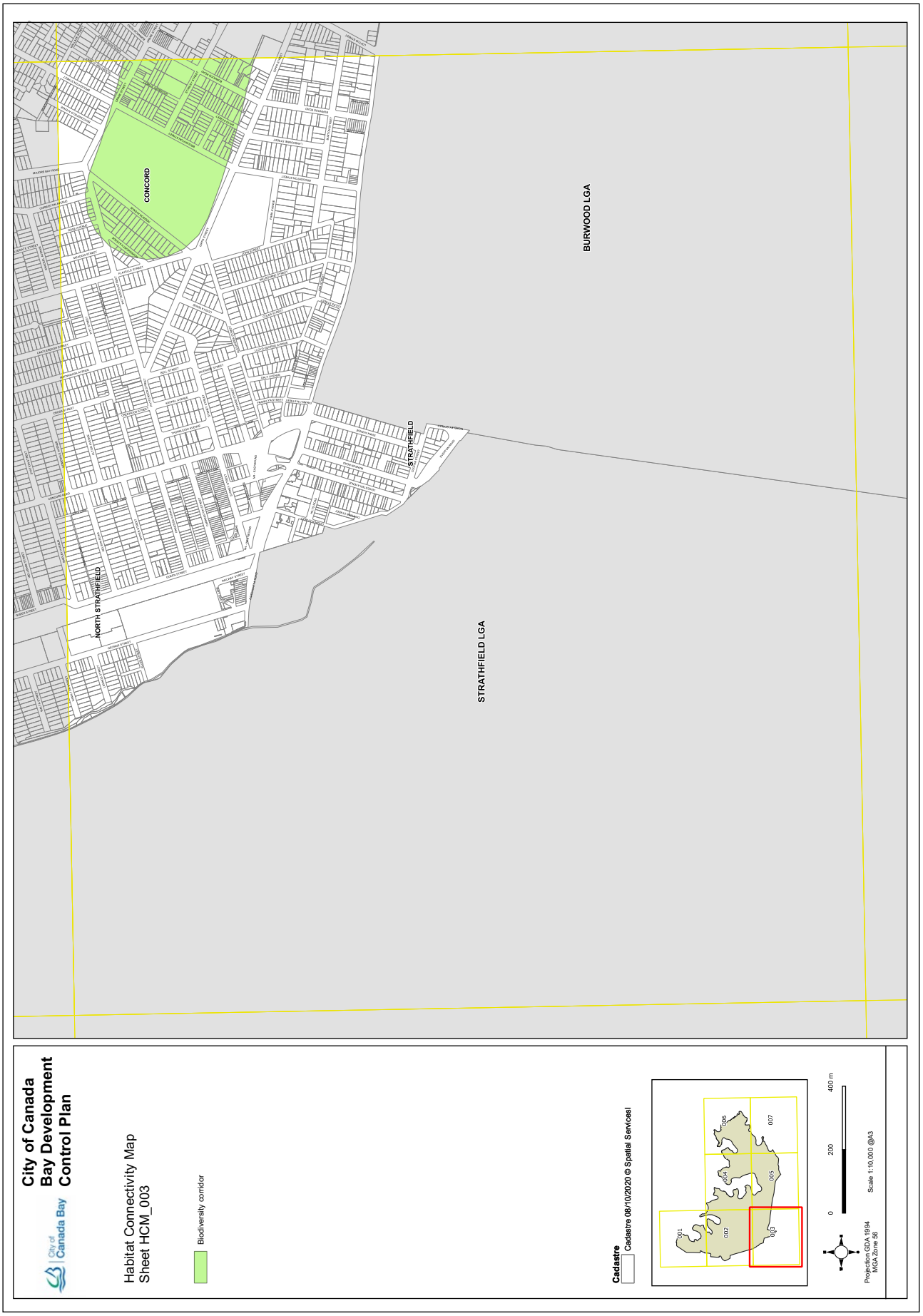


Figure B6.11 Habitat connectivity map - Sheet 3

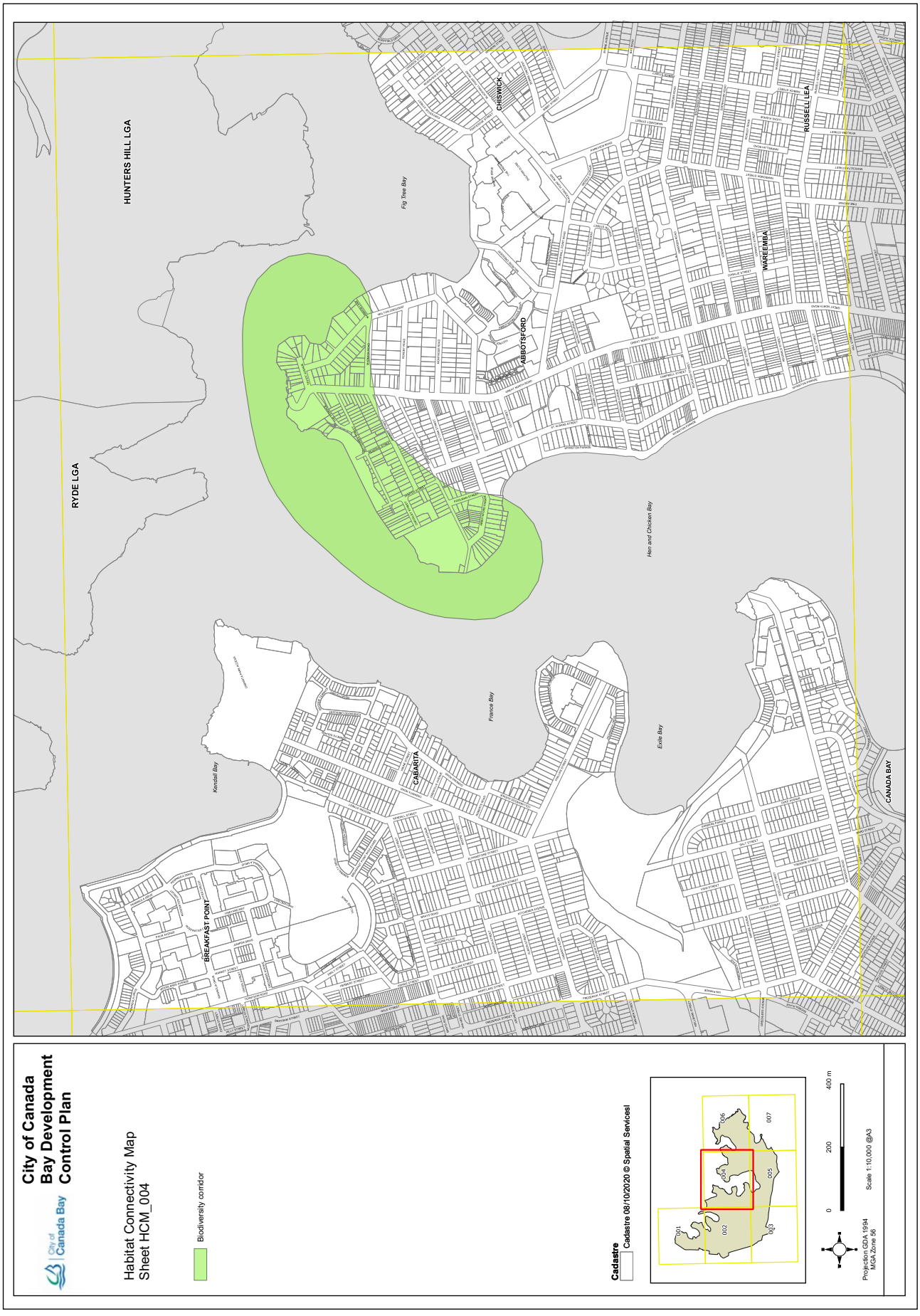


Figure B6.12 Habitat connectivity map - Sheet 4

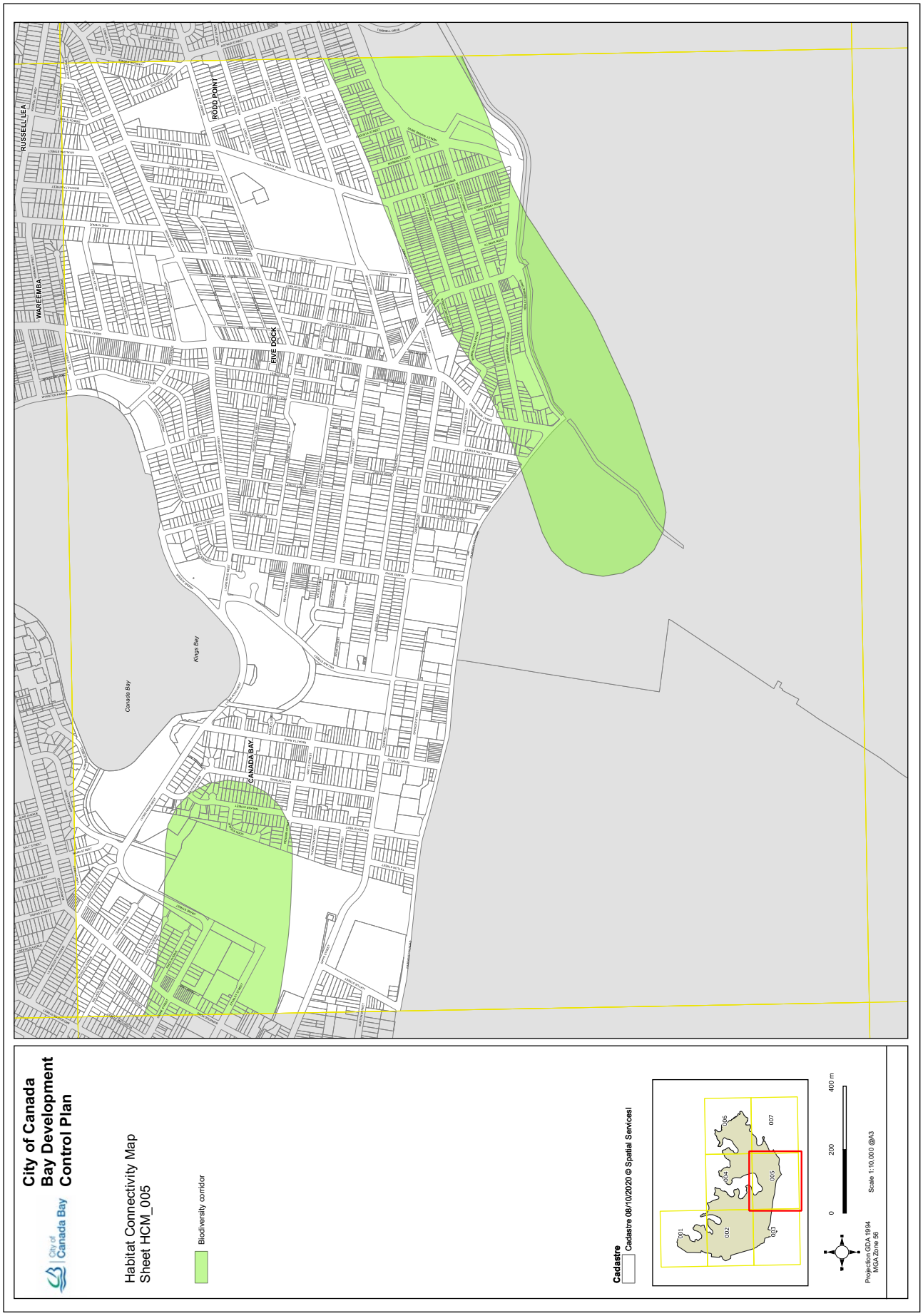


Figure B6.13 Habitat connectivity map - Sheet 5

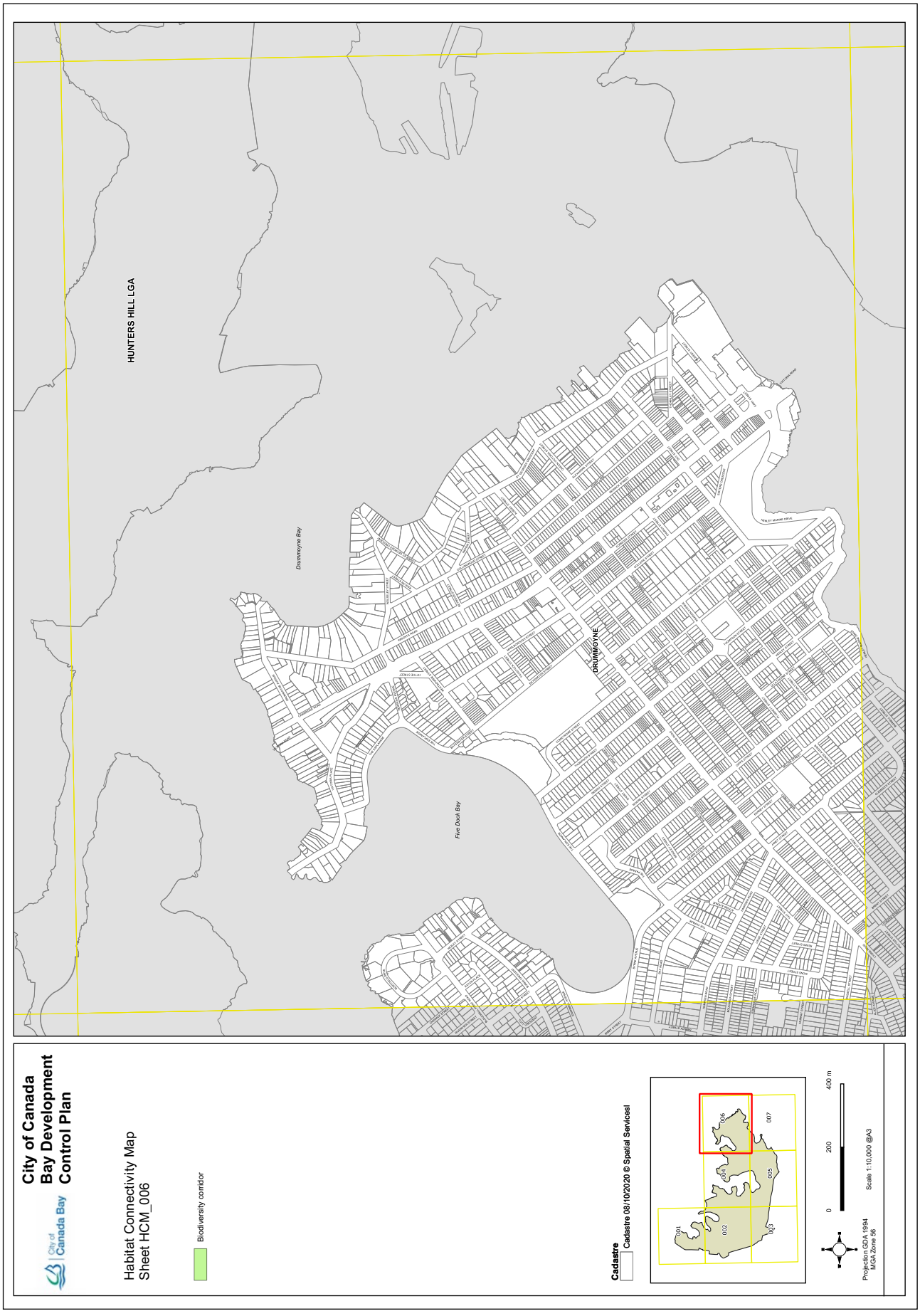


Figure B6.14 Habitat connectivity map - Sheet 6

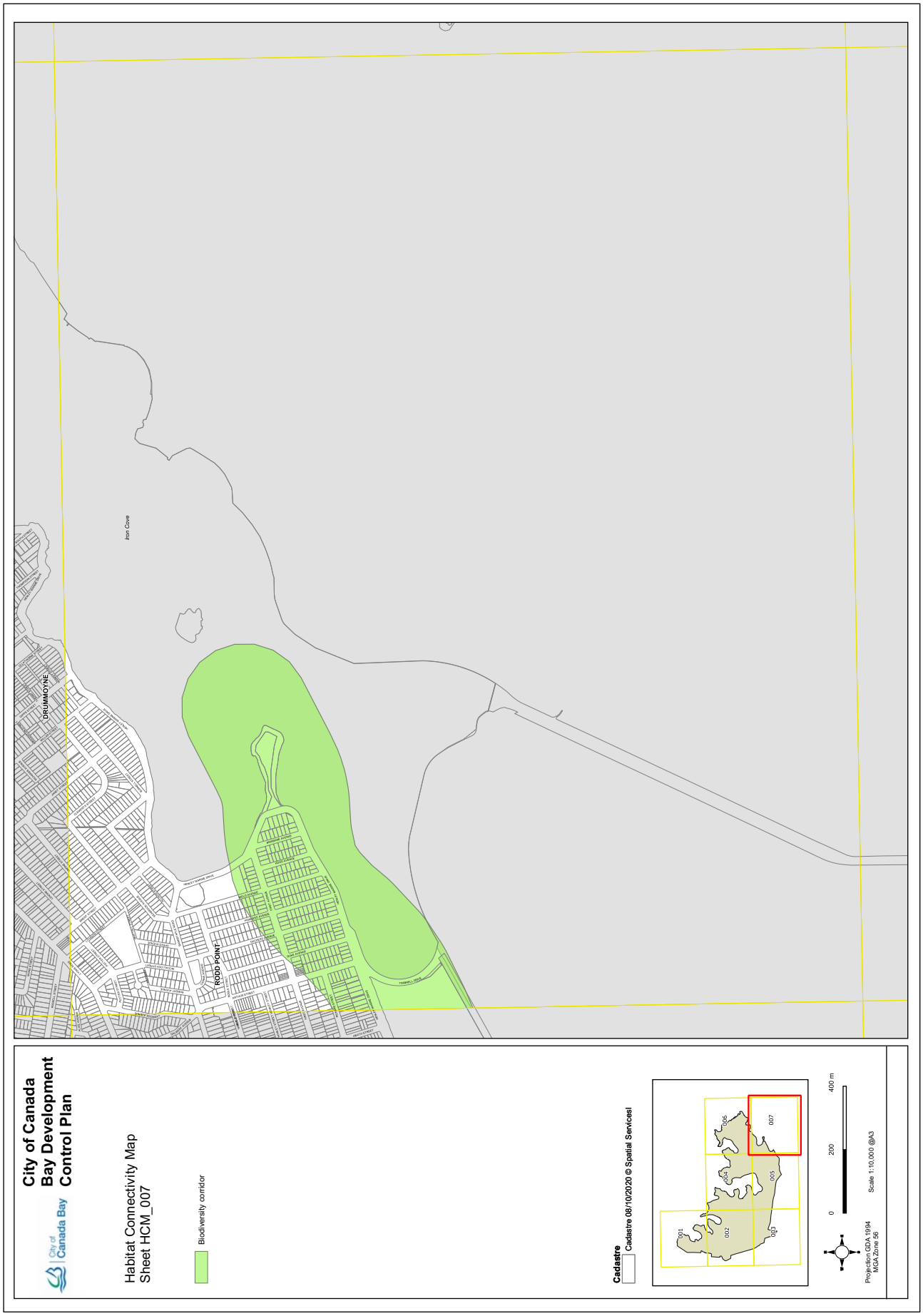


Figure B6.15 Habitat connectivity map - Sheet 7

B6.6 Plants suitable for corridors and restoration planting

Objectives

O1. Protect endangered flora and fauna through correct flora planting selection.

Controls	
C1.	When land is zoned E2 Environmental Conservation, or identified as Environmentally Sensitive Land, or located within a Biodiversity Corridor, plants must be selected from Table B-R where possible.

Table B-R Plants Suitable for Corridors and Restoration Planting

Strata	Scientific Name	Common Name	Notes
Turpentine Ironbark Forest			
Trees	*Acacia parramattensis*	Parramatta Green Wattle	Grows in forest on shale derived soils (clay) but occasionally on sandstone. Attracts a wide variety of fauna.
	Allocasuarina torulosa	Forest Oak	As understorey in open forest to tall open forest. Usually on higher-nutrient soils and in moister situations than A. littoralis. Very long-lived.
	Angophora. costata	Sydney Red Gum	Locally abundant large tree, on deep sandy soils or shallow soils on sandstone or heavy clay soils.
	A. floribunda	Rough Barked Apple	Medium tree, usually on deep alluvial sandy soils or on clay. Common along river edges.
	Elaeocarpus reticulatus	Blueberry Ash	Small narrow tree, mostly in gullies or along watercourses, common in forest or near rainforest.
	Eucalyptus acmenoides	White Mahogany	Medium Eucalypt occurring on heavy soils.
	E. globoidea	White Stringybark	Medium Eucalypt in dry sclerophyll forest or woodland on well-watered sandy or alluvial soils of moderate fertility.
	E. paniculata	Grey Ironbark	Tall straight tree of forested areas on heavier soils
	E. resinifera	Red Mahogany	Medium to large Eucalypt; locally abundant in forest on deeper soils of medium to high fertility.
	Syncarpia glomulifera	Turpentine	Widespread medium to large long-lived tree in forests on heavier fertile soils. Reliable nectar producer every October.
Shrubs	*Acacia. implexa*	Hickory Wattle	Very common tall wattle on clay soils. Forms small suckering stands if disturbed.
	Ac. longifolia	Sydney Golden Wattle	Short lived fast growing large wattle. Common in either sandy or clay soils post fire.
	Ac. myrtifolia	Myrtle Wattle	Small rounded shrub common on sandstone ridgetops also occasionally on clay soils in forest
	Breynia oblongifolia	Coffee Bush	Common regrowth shrub in forest. Soft red or black oily berries.
	Bursaria spinosa	Blackthorn	Common spiky tall shrub which prefers clay soils.
	Daviesia ulicifolia	Native Gorse Pea	Small prickly foliaged shrub. Adapted to clay soils.

	Indigofera australis	Native Indigo	Common pea. Flowers abundantly in spring.
	Kunzea ambigua	Tick Bush	Very common regrowth shrub in sandy soils or margins of forests on clay soils. Forms dense thickets. Good nectar production for fauna in summer. Perfumed.
	Leucopogon juniperinus	Bearded Heath	Spiky small understorey shrub in forest on clay or enriched sandy soil.
	Myrsine variabilis	Muttonwood	Small tree from coastal areas and forest on sandy soils. Black fruit.
	Ozothamnus diosmifolium	White Everlasting	Fast growing daisy with abundant heads of small clustered white daisy flowers. Clay or sandstone. A common pioneer species.
	Pittosporum revolutum	Rough Fruited Pittosporum	Small shrub on clay or sandstone. Tolerates shade. May form suckering clumps.
Ground Layer	*Austrostipa pubescens*	Spear Grass	Tuff rigid grass with heavy open seed head. Very long lived. Common in clay and sandstone soils.
	Commelina cyanea	Scurvy Weed	Grows in moist forest or woodland; sometimes weedy.
	Dianella caerulea	Blue Flax Lily	Forests or woodland, all soil types heavy shade to full sun. Very tough.
	Dichondra repens	Kidney Weed	Grows in forest, woodland and grassland, and weed of lawns; widespread.
	Dodonaea triquetra	Large-leaf Hop-bush	Abundant medium shrub post fire disturbance. Short lived heavy seeder.
	Echinopogon caespitosus	Tufted Hedgehog Grass	Tall tufted grass. Winter growing.
	Entolasia marginata	Right Angle Grass	Sheltered forests on either clay or sandstone soils with moisture. All year growing.
	Ent. stricta	Wiry Panic	Narrow slender upright long-lived grass on either clay or sandstone soils. All year growing.
	Imperata cylindrica	Blady Grass	Competitive spreading grass which forms dense colonies in all soil types. Thicker growth in full sun. Summer growing.
	Lepidosperma laterale	Variable Swordsedge	Tufted plant with stiff upright seed heads. Forest and woodlands on sandy soils.
	Lomandra longifolia	Common Mat Rush	Grows in a variety of habitats; very tough and long lived.
	Microlaena stipoides	Weeping Grass	Spreading tufted grass. Number of specific forms Common in many environments. All year growing.
	Oplismenus aemulus	Basket Grass	Prostrate spreading grass very common in many situations. Grows quickly in warmer months.
	Poa affinis	Tussock Grass	Soft tufted grass which forms meadows. Shady sheltered conditions on clay or moist sandy soils. Winter growing.
	Pratia purpurascens	White Root	Spreading small groundcover with white flowers. Abundant underground spreading roots and shoots.
	Pseuderanthemum variabile	Pastel Flower	Tiny hardy plant with pretty lilac coloured flowers. Deep rooted.

	Themeda australis	Kangaroo Grass	Tufted grass, very common in clay soils. Seeds reliably early summer. Long lived. Summer growing.
	Zieria smithii	Sandfly Zieria	Small aromatic shrub preferring sheltered site on either clay derived soils or enriched sandstone soils.
Vines	*Billardiera scandens*	Apple Berry	Common in forest or woodland on either clay or sandstone soils
	Clematis glycinoides	Headache Vine	Common in forest on either clay or sandstone soils
	Hardenbergia violacea	Sarsparilla	Very common post fire disturbance on either clay or sandstone soils.
	Kennedia rubicunda	Dusky Coral Pea	Scrambling fast growing vine on either clay or sandstone soils
	Pandorea pandorana	Wonga Wonga Vine	Widespread in moist soils. White tubular flowers.
	Tylophora barbata	Bearded Tylophora	Sheltered Forests on clay soils. Small plant.
Coastal Saltmarsh, Mangrove Forest and Swamp Oak Woodland			
Trees	*Casuarina glauca*	Swamp Oak	Tall narrow tree, in brackish situations along coastal waterways. Often forming pure stands.
Shrubs	*Aegiceras corniculatum*	River Mangrove	Shrub or tree mangrove in coastal and estuarine areas
	Avicennia marina	Grey Mangrove	Intertidal zones of estuarine areas
	Goodenia ovata	Hop Goodenia	Common pioneer plant in both forest of saltwater margins and Turpentine Ironbark Forest.
Ground Layer	*Baumea rubiginosa*	Bare Twig Rush	Evergreen with strappy green-yellow leaves grows upright with rigid stems which produce red-brown spiklets of flowers. Ideal for planting around ponds and in coastal landscapes and in mass planting. Full sun.
	Ficinia nodosa	Knobby Club Rush	Tufted dark green rush which grows near salt water. Formerly known as Isolepis nodosa.
	Juncus kraussii	Sea Rush	Large upright tufted rush common near saltwater in salt marsh environments.
	Sporobolus virginicus	Marine Couch	Tufted or creeping perennial pioneer grass. Good for stabilizing sand. Salt resistant. Will grow on brackish flats
	Suaeda australis	Seablite	Edible plant with pale green leaves and pink clusters of flowers in summer. Full sun to partly shaded in moist soils.
	Triglochin striata	Streaked Arrowgrass	Tufted or creeping perennial pioneer grass. Good for stabilizing shifting sand or dunes. Salt resistant. Will grow on brackish flats
	Suaeda australis	Native Couch	Low growing perennial grass. Good for lawns, all soil types, sun or shade, can be mown to promote growth.

Coastal Enriched Sandstone Dry Forest			
Trees	*Allocasuarina littoralis*	Black Oak	In woodland or occasionally tall heath, on sandy or otherwise poor soils. Rarely on clay soils in forest.
	Angophora costata	Sydney Red Gum	Locally abundant large tree, on deep sandy soils or shallow soils on sandstone or heavy clay soils.
	Banksia serrata	Old Man Banksia	Common large Banksia which flowers heavily in summer. Long lived tree in sandstone soil.
	Ceratopetalum gummiferum	NSW Christmas Bush	Tall shrub or small tree which grows in moist sheltered positions in deeper sandy soils. Very long lived. Abundant red fruit in summer.
	Elaeocarpus reticulatus	Blueberry Ash	Small narrow tree, mostly in gullies or along watercourses, common in forest or near rainforest.
	Eucalyptus pilularis	Blackbutt	Very tall Eucalypt common on fertile moist sandy soils and clay soils. Suits deeper gullies.
	E. piperita	Sydney Peppermint	Medium tree in forest along sandstone water courses and drier woodland hillsides on sandstone derived soils.
	Syncarpia glomulifera	Turpentine	Widespread medium to large long-lived tree in forests on heavier fertile soils. Reliable nectar producer every October.
Shrubs	*Acacia ulicifolia*	Prickly Moses	Sharp prickly small wattle common in forest or woodland chiefly on sandstone but also on clay soils.
	Ac. suaveolens	Sweet Wattle	Abundant wattle in woodland following fire disturbance. Slender short-lived fast-growing plant. Perfumed.
	Ac. terminalis	Sunshine Wattle	Uncommon ferny leafed wattle growing in forest on sandstone soils.
	Dillwynia retorta	Parrot Pea	Common small shrub of sandstone areas. Flowers profusely in early spring.
	Dodonaea triquetra	Large-leaf Hop-bush	Abundant medium shrub post fire disturbance. Short lived heavy seeder.
	Grevillea buxifolia	Grey Spider Flower	Very common Grevillea in sandstone country- both heath and woodland.
	G. linearifolia	White Spider Flower	Common understorey plant in forest on sandstone soils. Mature plants develop a weeping habit.
	G. sericea	Pink Spider Flower	Common Grevillea in woodland and heath.
	Hakea sericea	Needle Bush	Densely spiky upright shrub with abundant white flowers in winter or early spring. Sandstone soils or transition areas into clay soils.
	Kunzea ambigua	Tick Bush	Very common regrowth shrub in sandy soils or margins of forests on clay soils. Forms dense thickets. Good nectar production for fauna in summer. Perfumed.
	Leptospermum trinervium	Flaky Barked Tea tree	Tall shrub with distinctive flaky trunk and sparse foliage. Long lived heavy flowerer in spring.
	Lomatia silaifolia	Crinkle Bush	Small low shrub which grows on sandstone soils. Deeply divided foliage.
	Pultenaea daphnoides	Daphne Leaved Bush Pea	Grows in heath to wet sclerophyll forest on sandy soils.

Ground Layer	*Dianella caerulea*	Blue Flax Lily	Forests or woodland, all soil types heavy shade to full sun. Very tough.
	Entolasia marginata	Right Angle Grass	Sheltered forests on either clay or sandstone soils with moisture. All year growing.
	Entolasia stricta	Wiry Panic	Narrow slender upright long-lived grass on either clay or sandstone soils. All year growing.
	Lomandra longifolia	Common Mat Rush	Grows in a variety of habitats; very tough and long lived.
Vines	*Billardiera scandens*	Apple Berry	Common in forest or woodland on either clay or sandstone soils
	Hardenbergia violacea	Sarsparilla	Very common post fire disturbance on either clay or sandstone soils.
	Kennedia rubicunda	Dusky Coral Pea	Scrambling fast growing vine on either clay or sandstone soils
	Pandorea pandorana	Wonga Wonga Vine	Widespread in moist soils. Big plant.

B6.7 Replacement planting

Replanting requirements for trees removed from private land.

Objectives

O1. To enhance and expand the tree canopy when a tree is removed.

Controls	
C1.	If a tree (regardless of health or species) is proposed to be removed, a replanting ratio of 2:1 will apply, requiring the planting of two trees for every tree removed. Trees from the list of Canada Bay tree species provided in this DCP are to be given preference.
C2.	A 4:1 replanting ratio will apply where the tree to be removed is on land that is: a) In an E2 Environmental Conservation zone; or b) Environmentally Sensitive Land; or c) Identified as containing Biodiversity; or d) Within a Biodiversity Corridor. Locally indigenous species (including canopy trees, shrubs and groundcovers) must be given preference (refer to list of Plants suitable for corridors and restoration planting).
C3.	Approval of a tree permit will require compliance with this Part unless it can be demonstrated that there is insufficient available area for additional tree planting. All development proposed via a development application is to be designed to enable planting to Part 6.7 and 6.10 requirements.

B6.8 Wetlands and waterways

Wetlands and waterways play a critical function in ecological processes. Wetlands and waterways are valuable breeding sites for a large range of species and help sustain the food chain for wildlife. Wetlands also help purify water thereby improving the quality of the larger water bodies. Waterways also act as valuable corridors for wildlife.

It is essential that the connectivity between wetlands and waterways is recognised and equal attention is given to preserving and enhancing the quality of all elements.

Objectives

O1. Protect, restore and maintain ecological processes, natural systems and biodiversity within wetlands and waterways.

O2. Minimise sedimentation and pollution of wetlands and waterways.

O3. Restore degraded wetlands, wetland buffer areas, waterways and riparian zones.

O4. Ensure appropriate fire management regimes and hazard reduction techniques for wetlands, wetland buffer areas, waterways and riparian zones.

O5. Encourage best practice environmental design measures so that the sustainability of wetlands and waterways is maintained or improved.

Controls	
C1.	Development shall minimise changes to the local surface runoff and groundwater flows to ensure that appropriate water flow regimes are maintained to wetlands and waterways.
C2.	Stormwater flow is to mimic natural conditions and ensure a dispersed pattern of flow, avoiding newly created centralised or concentrated discharge points into the wetland or waterway.
C3.	Disturbance to stream and wetland sediments is to be minimised by regulated discharge of stormwater and dissipation of flows at discharge locations.
C4.	Development shall not result in detrimental changes to temperature, salinity, chemical makeup and sediment loads of water entering the wetland or waterway.
C5.	Where stormwater is proposed to be discharged to a wetland or waterway, pollution is to be reduced by installation of pollution and sediment control devices. Access to and cleaning of devices shall not compromise the wetland area's function or natural attributes. The following standards are to be met: a) Pollutant levels shall be below those outlined in the ANZECC (2001) Guidelines for the Protection of Aquatic Ecosystems. b) Pollution control devices shall be located so that they are not within a wetland or watercourse itself.
C6.	There shall be no clearing of indigenous vegetation within wetlands or riparian zones. Note: Any harm to or removal of marine vegetation including seagrass, macro algae and mangroves will require approval of NSW Fisheries.
C7.	There shall be no clearing of indigenous stream bank vegetation and aquatic habitat. Note: The progressive removal of exotic stream bank vegetation and the rehabilitation with locally native species is supported.
C8.	Removal of woody debris from wetlands and waterways should be minimised.
C9.	There shall be no in-stream blockages to fish passage. Note: Any blockage to fish passage (temporary or permanent) will require approval by NSW Fisheries.
C10.	Lateral connectivity between waterways and riparian vegetation must be maintained. Proposed landscaping will have to in part, reflect a natural environment in terms of finished levels and the distribution of vegetation.

B6.9 Threatened and migratory species

Threatened species are particular plants and animals that are at risk of extinction. Threatened species also include threatened populations and endangered ecological communities. Unless the processes that are threatening these species are controlled (habitat loss, pollution, competition from introduced plants or animals), they are at risk of disappearing.

In order to assist landowners in identifying where threatened species, populations and ecological communities are known to exist, all known sites in the City of Canada Bay have been mapped by Council (current at the time of publishing). These appear on the maps entitled “Threatened and Migratory Species” which form part of this DCP (see Figure B6.16 to Figure B6.22). For additional information refer to Council’s website.

Objectives

O1. To consider the impact of development on threatened species and ecological communities.

O2. To protect threatened and migratory species.

O3. To protect and enhance biodiversity.

Controls	
C1.	Development on land in Zone E2 Environmental Conservation and land identified as Environmentally Sensitive Land on the Environmentally Sensitive Land Map or within a biodiversity corridor on the Biodiversity Corridor Map must not have a negative impact upon vegetation identified on the Biodiversity Map.
C2.	Development must not have a negative impact upon individual species or biodiversity of locations of threatened and migratory species identified in the following maps.

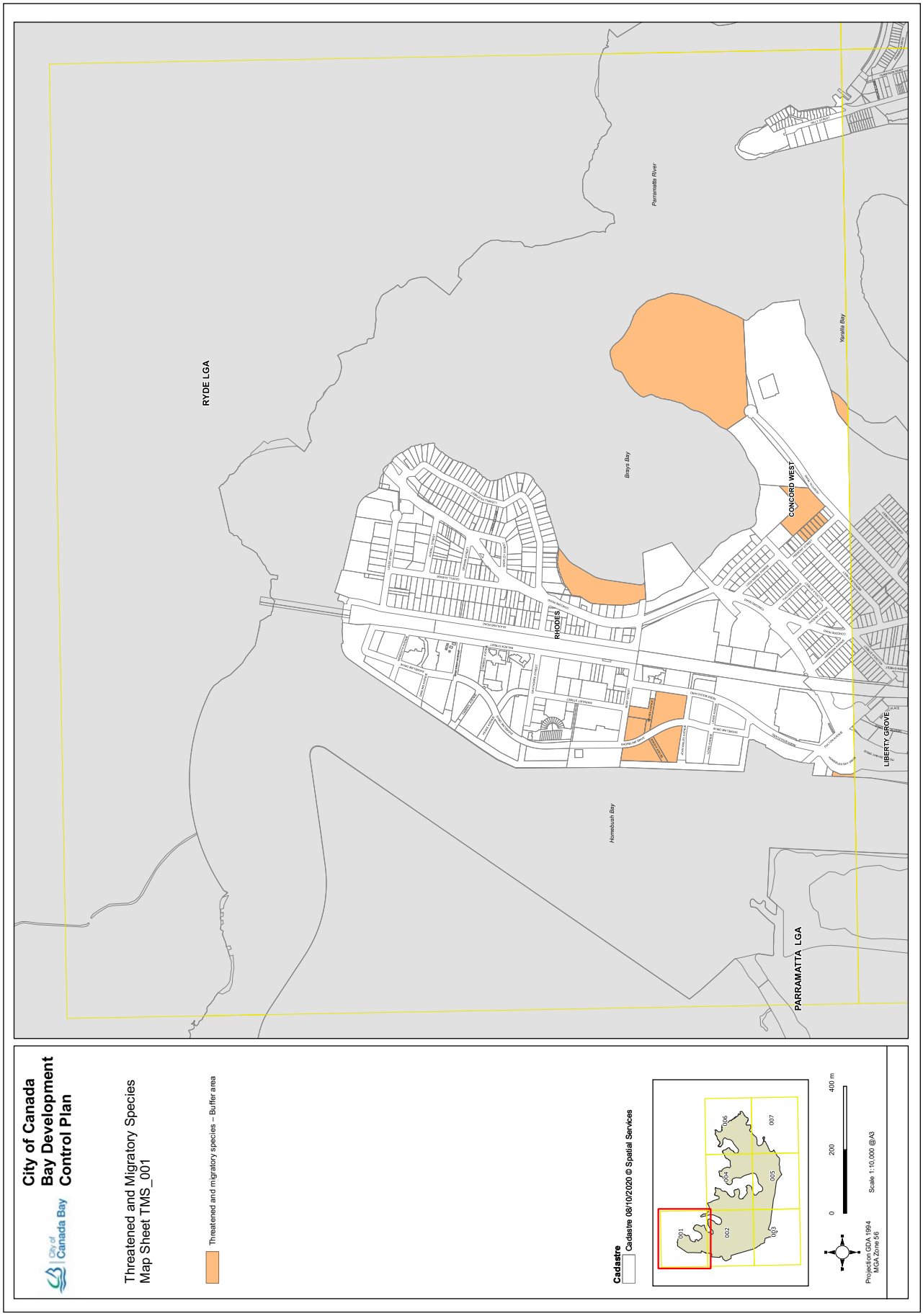


Figure B6.16 Threatened and migratory species map - Sheet 1

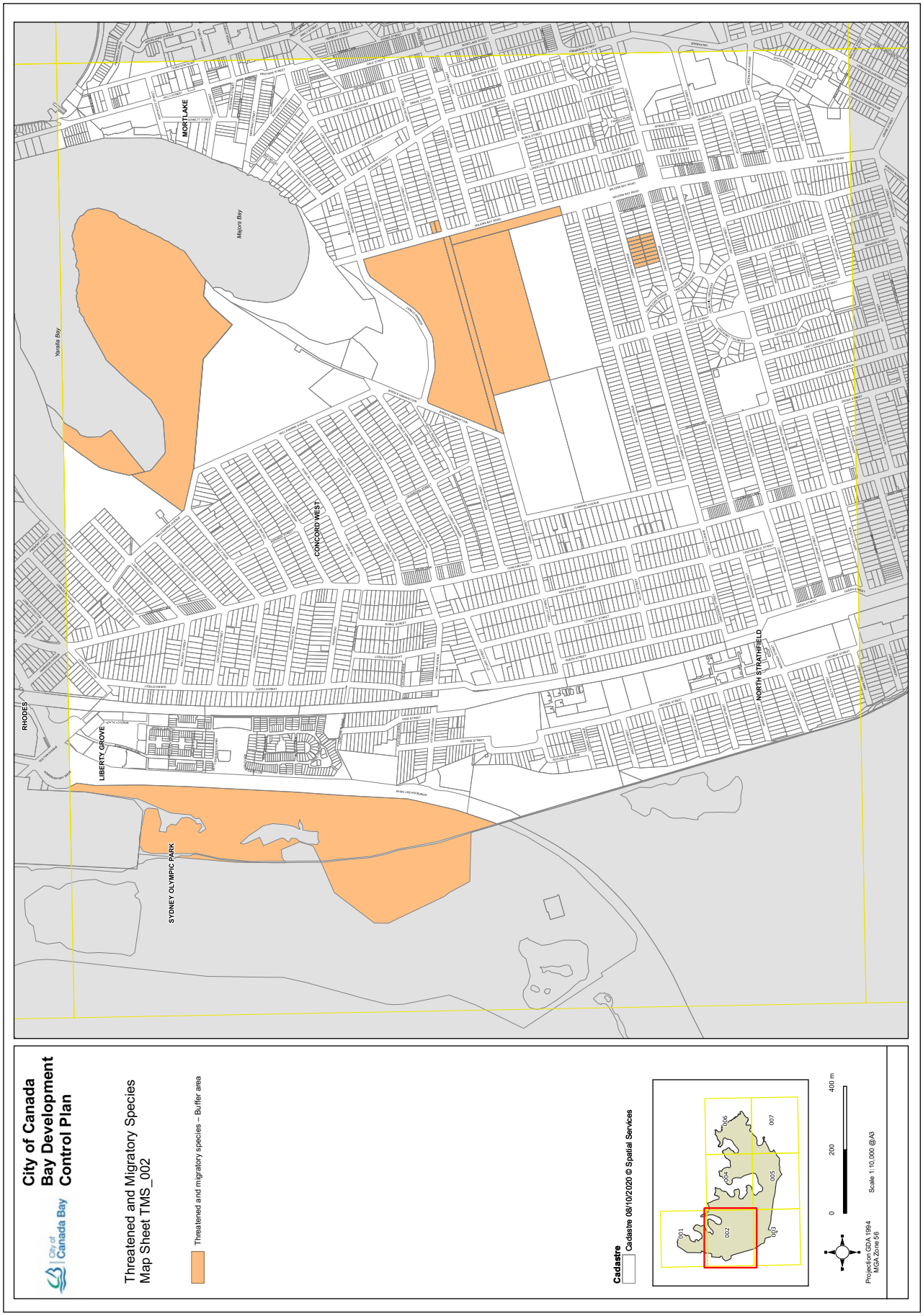


Figure B6.17 Threatened and migratory species map - Sheet 2

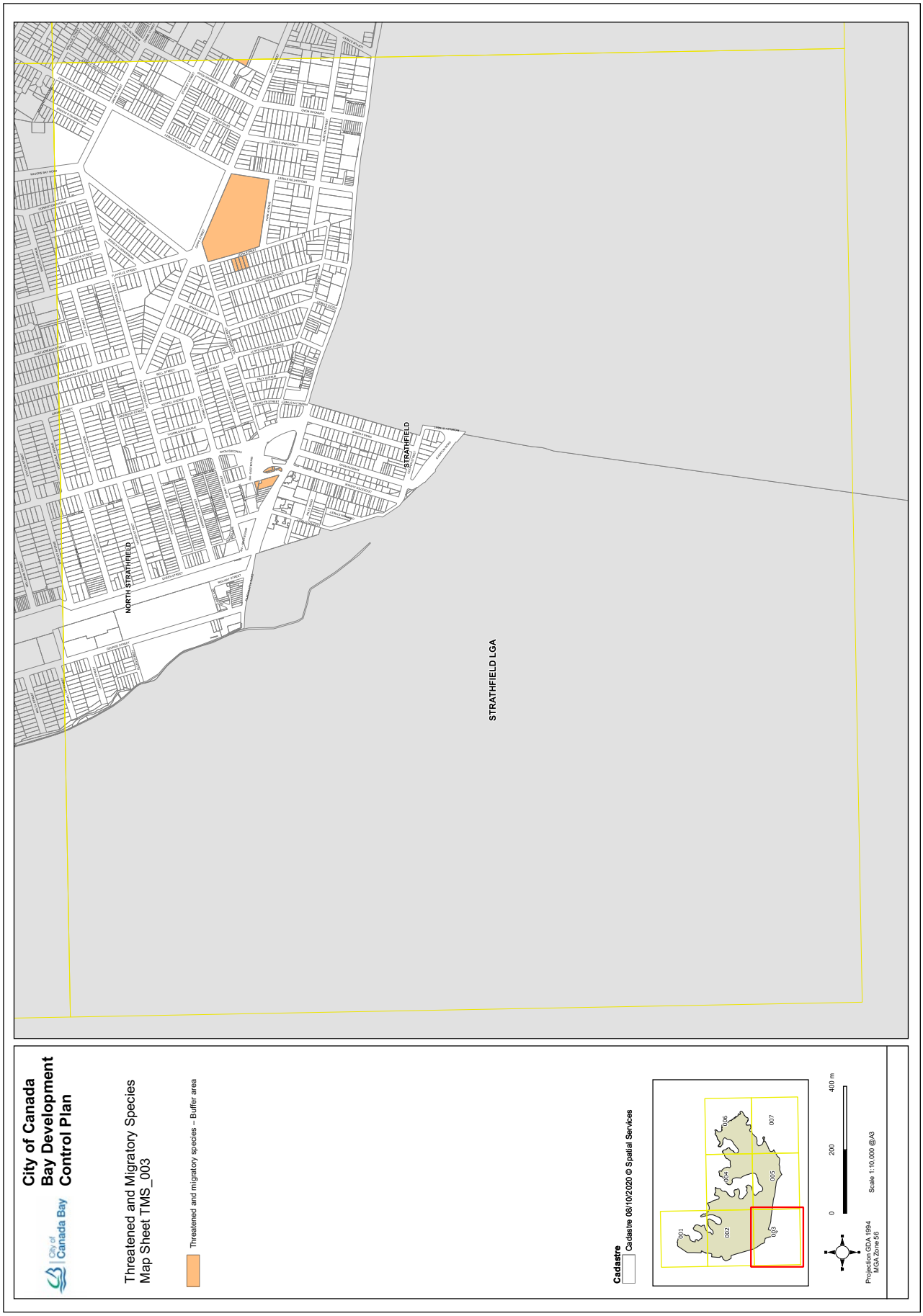


Figure B6.18 Threatened and migratory species map - Sheet 3

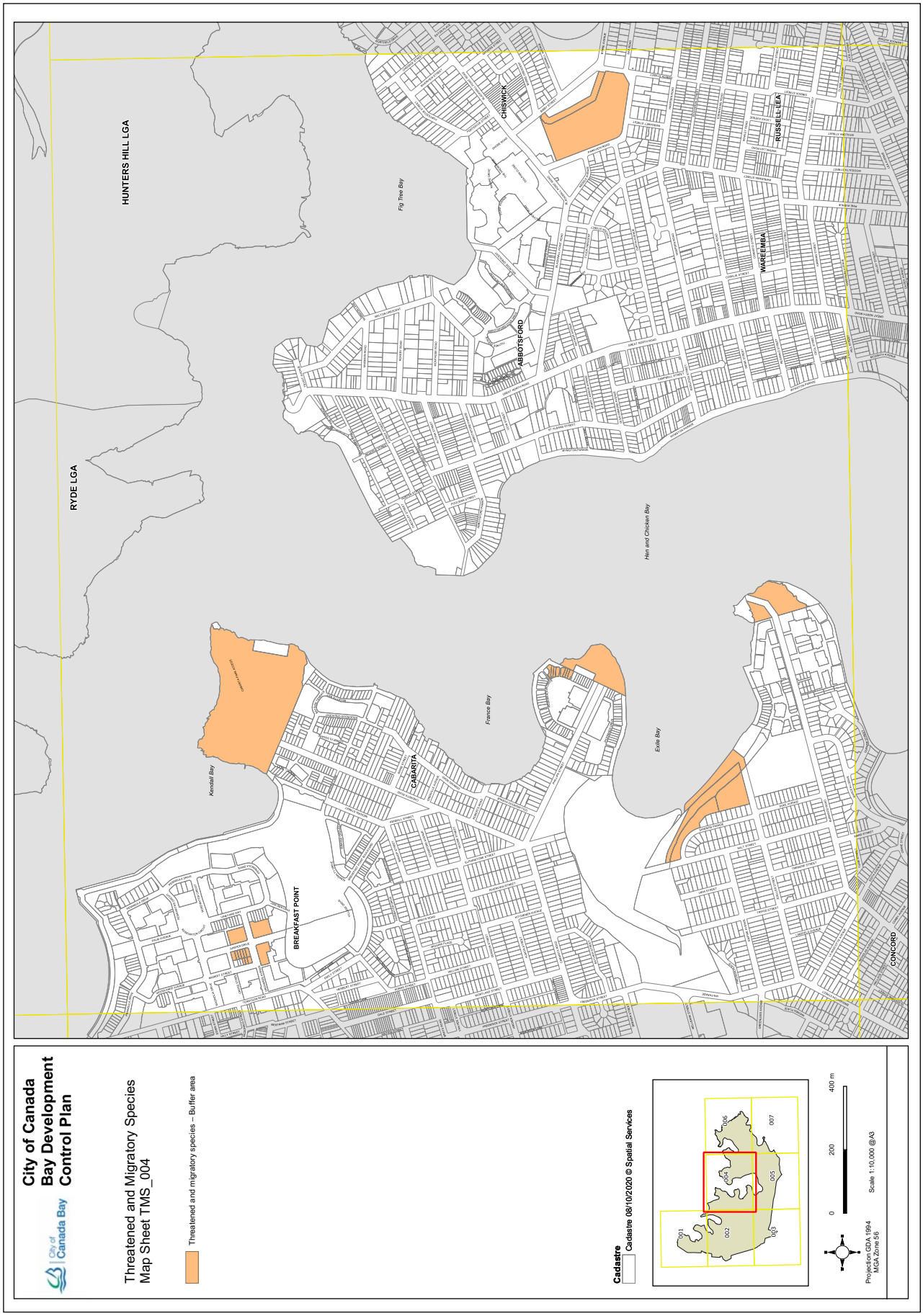


Figure B6.19 Threatened and migratory species map - Sheet 4

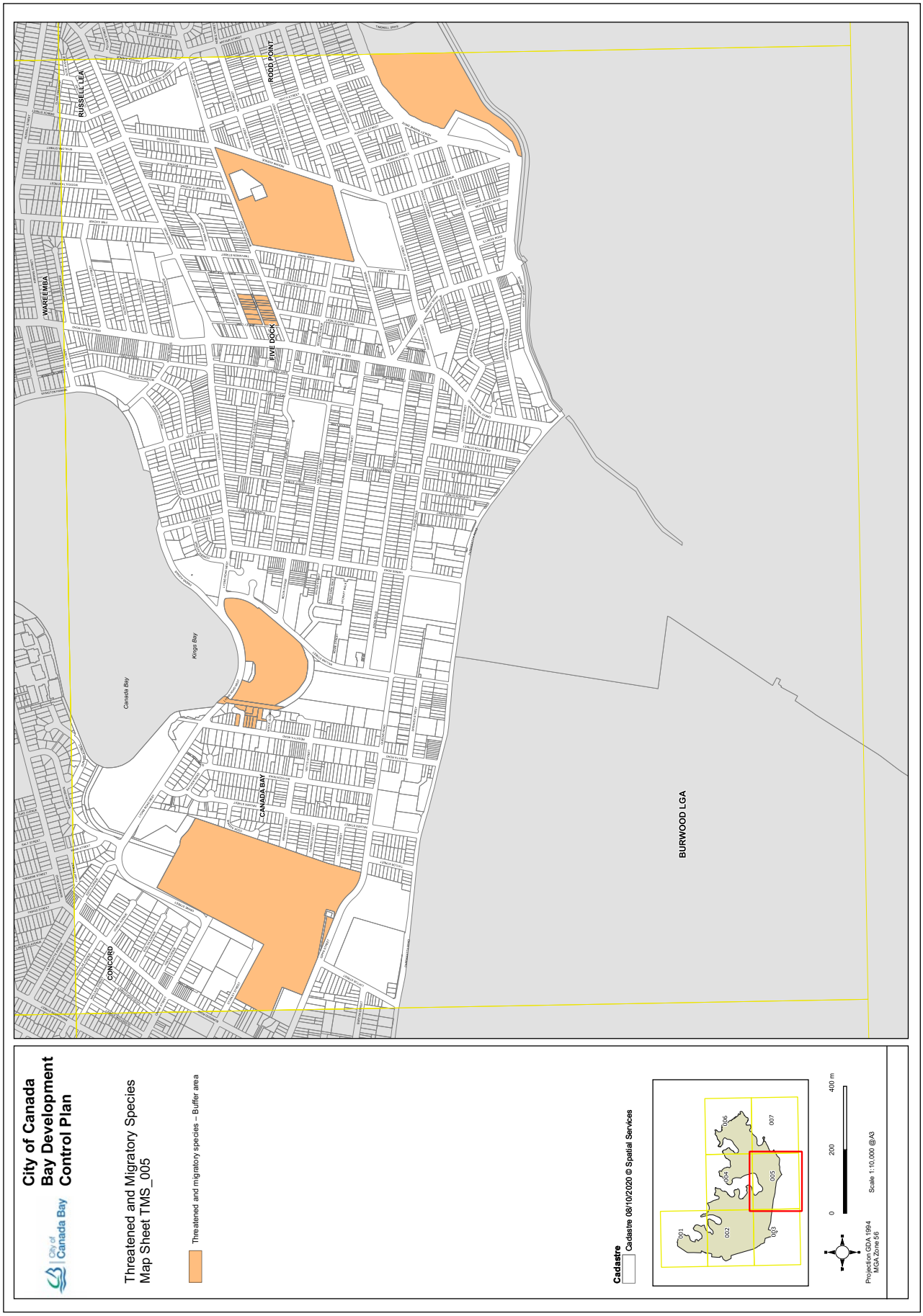


Figure B6.20 Threatened and migratory species map - Sheet 5

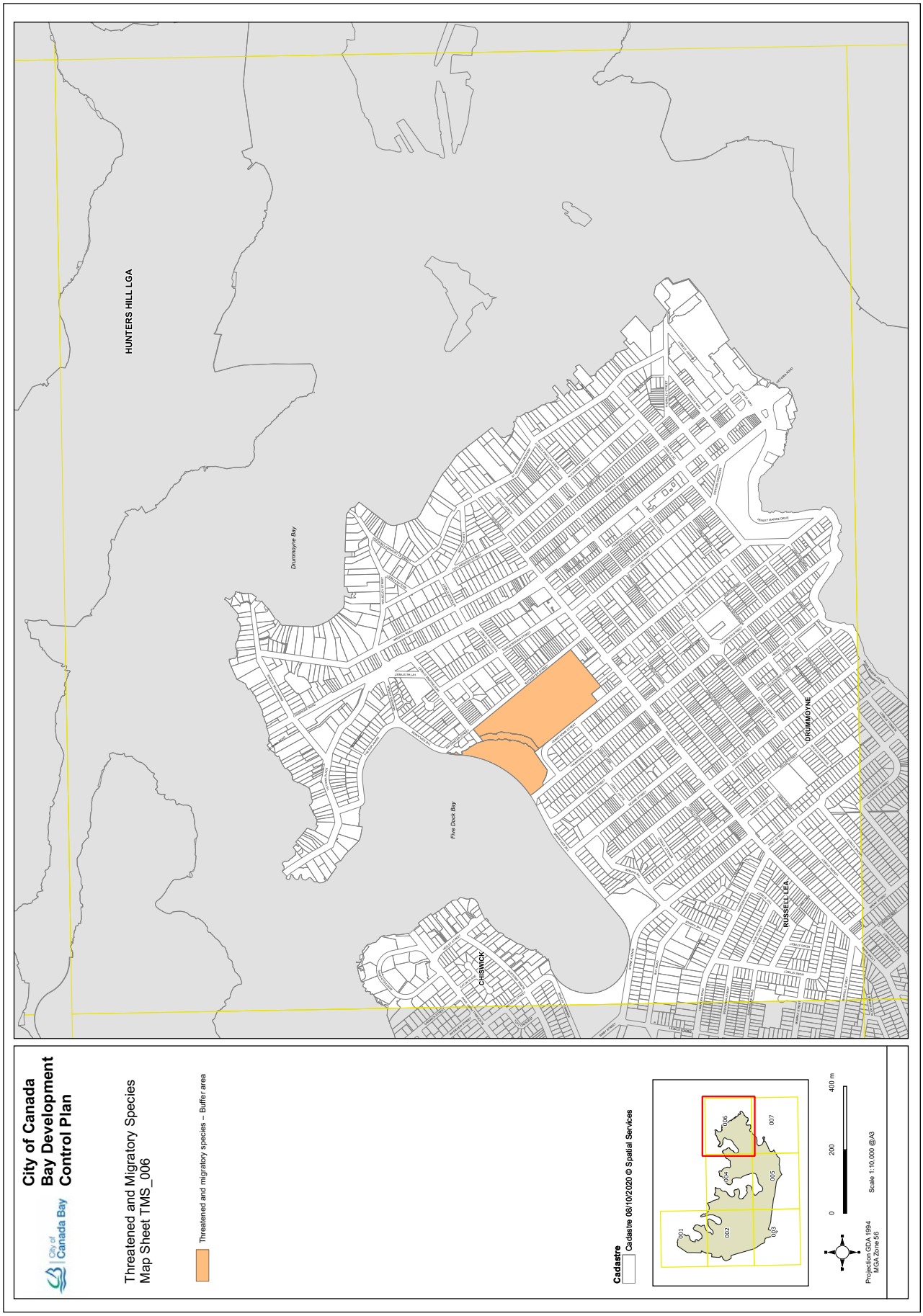


Figure B6.21 Threatened and migratory species map - Sheet 6

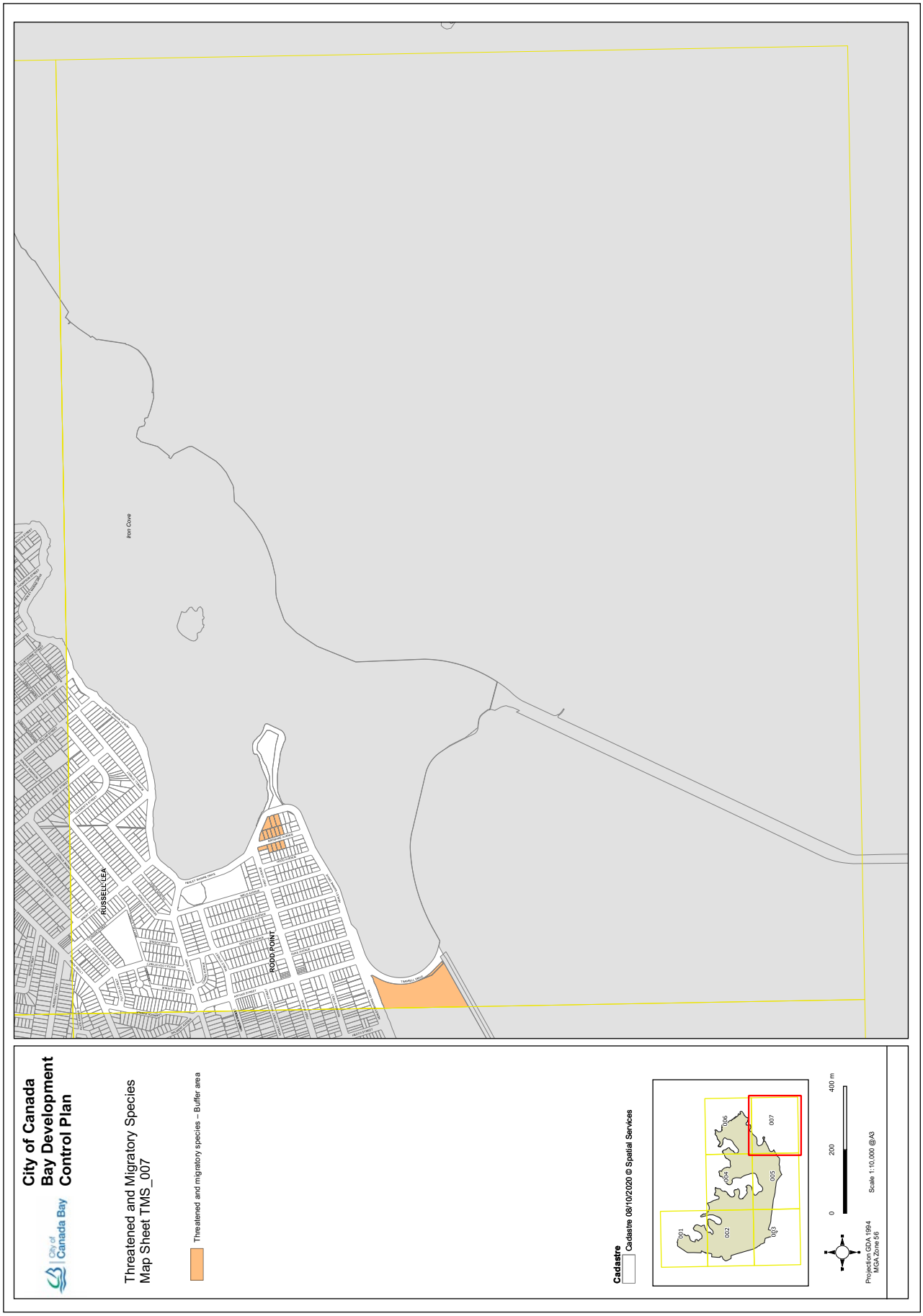


Figure B6.22 Threatened and migratory species map - Sheet 7

B6.10 Urban Tree Canopy

Urban trees play a critical role in creating healthy cities; they provide shelter, improve air quality, absorb carbon and rainfall, cool local environments, and support wildlife. Trees create attractive urban places, providing seasonal variation and creating memorable landmarks.

Collectively, urban trees make up an urban forest. A healthy and well-managed urban forest provides multiple environmental, social, and economic benefits.

Objectives

O1. To protect the urban forest by increasing the retention of existing trees on public and private land.

O2. To increase total canopy cover.

O3. To enhance the urban forest for amenity, liveability, and biodiversity benefits.

O4. Minimise conflicts between people, infrastructure and trees.

O5. To grow and protect a resilient and diverse urban forest.

Controls

C1. The following minimum number of canopy trees are to be accommodated on site for all development and development types, whether new or involving alterations and additions:

Lot/ dwelling	Minimum number of canopy trees
Less than 400sqm	2
Greater than 400 but less than 600	3
Greater than 600 but less than 800	4
Every additional 200sqm	1 additional tree

C2. If replacement planting is required in accordance with Part B6.7, the minimum number of canopy trees required on site in accordance with the above control shall be increased to accommodate the replacement planting in accordance with Part B6.7.

All proposed developments are to be designed to enable planting to these additional requirements unless, regardless of the design, it can be demonstrated that there is insufficient available area for additional tree planting.

C3. Trees are to be evenly distributed between the front and rear yard wherever possible.

C4. Trees that are to be accommodated within the front setback are to be provided in accordance with the table below:

Lot/ dwelling	Minimum number of canopy trees	Minimum height at maturity (m)	Minimum canopy spread at maturity (m)	Minimum permeable area (sqm)
Front setback <4.5m	1	6-8	5	10sqm 4.5m wide
Front setback >=4.5m	1	8-15	7	4.5 x 4.5

Controls

C5. Trees that are to be accommodated within the rear yard/private open space/ common open space are to be provided in accordance with the table below:

Lot/ dwelling	Minimum number of canopy trees	Minimum height at maturity (m)	Minimum canopy spread at maturity (m)	Minimum permeable area (sqm)
All	1	6-8	5	4.5 x 4.5

C6.	If a tree is proposed to be removed a replanting ratio of 2:1 or 4:1 will apply, up to the maximum prescribed for the site.
C7.	Trees are to be chosen from the list of Canada Bay tree species provided in this DCP, unless otherwise required by this DCP eg in areas designated to enhance biodiversity and habitat connectivity.
C8.	Advanced trees are to be used in all new or replacement planting.
C9.	Trees should be positioned to shade the large areas of hard surfacing exposed to the northern and western sun within the urban environment, such as the walls of buildings, roofing, driveways, roads and footpaths.
C10.	Where a common access way or driveway is provided, the canopy tree(s) should be located to provide shading to the access way or driveway, if practical. Additional planting should be provided along any driveway.
C11.	Structures on the site should be positioned to maximise the retention of existing trees, planting of new trees and establishment of a substantial tree canopy.
C12.	Structures (including services) must be located outside the canopy spread of trees to be retained. This applies to street trees, trees on site and on adjoining sites.
C13.	Trees are to be planted a minimum of 2m from a building, wall, fence or property boundary (including the front boundary).
C14.	Trees are to be planted a minimum distance of 5m from any other tree to prevent a conflict between the canopies.
C15.	Where land in the immediate vicinity has access to views (as considered in Access to views section of this DCP), the proposed trees will consist of open form species to allow views to be gained through the canopy. Note: It may not always be possible to protect a view.
C16.	Where there is no opportunity for deep soil planting of canopy trees there may be an opportunity for planting on a structure. In such circumstances the following minimum soil depths specified in the Apartment Design Guide (NSW Department of Planning and Environment, 2015) shall be applied:

Plant type	Definition	Soil volume	Soil depth	Soil area
Large trees	12-18m high, up to 16m crown spread at maturity	150m^3	1,200mm	10m x 10m or equivalent
Medium trees	8-12m high, up to 8m crown spread at maturity	35m^3	1,000mm	6m x 6m or equivalent
Small trees	6-8m high, up to 4m crown spread at maturity	9m^3	800mm	3.5m x 3.5m or equivalent

Note 1: Trees are to be cared for by the land owner until established to a size consistent with the definition of a Protected tree.

Note 2: The above table containing minimum soil depths for planting on a structure has been calculated assuming fortnightly irrigation. Any sub-surface drainage requirements are in addition to the above minimum soil depths.

B7 Engineering Requirements for Development

B7.1 Engineering works

Council has adopted a separate Civil Infrastructure Works Policy and Engineering Technical Specification which aims to provide engineering requirements for the following:

- Road and Footpath Works
- Vehicular Access
- Stormwater Management

Council requires that all future public infrastructure, development and building works within the Canada Bay Local Government Area comply with the Engineering Technical Specification to ensure that developments and construction of public domain areas are undertaken to aceptable standards.

A full copy of the Engineering Technical Specifications is provided as Appendix 2.

B7.2 Objectives

Road and Footpath Works

Objectives

O1. To provide adequate engineering standards for public domain areas, public road reserves and private access roads.

O2. To ensure that there is a benefit to the public resulting from development and the result is that the public is catered for by uniform infrastructure. Such infrastructure includes the road carriageway, footway, footpath, pavement, kerb and gutter, street trees, utility services, ancillaries and the like.

Vehicular Access

Objectives

O3. To ensure uniformity in the design and construction of vehicular crossings in the City of Canada Bay Local Government Area.

O4. To ensure that safe and convenient vehicular access can be provided to and from parking spaces for all properties.

Stormwater Management

Objectives

O5. To provide uniform guidelines and apply control systems to achieve consistency, in the assessment and conditioning of development applications, in relation to stormwater runoff from all development types.

O6. To minimise any adverse impact on properties caused by stormwater runoff from all development types.

O7. To ensure that the water quality of receiving waterways is not adversely affected by the discharge of pollutants such as nutrients and pathogens, from stormwater runoff as a result of development.

O8. To ensure that uniform stormwater controls are applied throughout the whole of the City of Canada Bay Council Local Government Area.

B8 Flooding Control

B8.1 Introduction

Flooding can be a significant issue that affects people and development in some areas of the City of Canada Bay. The hazard can vary through a wide range over short distances and should be assessed on a location by location basis.

This Section establishes Council's approach to flood related development control for the whole LGA. Council's approach to flooding is based on the requirements of the New South Wales Government's Flood Prone Land Policy and Floodplain Development Manual as amended (FDM 2005).

Different controls are applicable depending on the land use, level of potential flood inundation and flood hazard category.

B8.2 Relationship to other documents

In areas where Council has adopted a Flood Study or Floodplain Risk Management Study or Floodplain Risk Management Plan that sets a flood planning area and freeboards, these will take precedence over the following DCP controls where there is any inconsistency.

Reference should also be made to the Canada Bay Local Environmental Plan for requirements in relation to flood planning and considerations.

B8.3 Land to which this Flood Control clause applies

This section applies to:

- Land which is shown as 'Flood Planning Area' in a Flood Planning Map. Refer to Figure B8.1 to Figure B8.5.
- Land which is recommended to be shown as a Flood Planning Area by a publicly exhibited and/or adopted Flood Study prepared in accordance with the Floodplain Development Manual (FDM) (2005).
- Other land at or below the flood planning level.

Where Council is of the understanding that land subject of an application is or may potentially be affected by flooding, Council may require the applicant to prepare a flood study.

Abbreviations:

AEP: Annual Exceedance Probability

FDM 2005: Floodplain Development Manual

FRMP: Flood Risk Management Plan

FRMS: Flood Risk Management Study

Objectives

O1. To ensure the proponents of development and the community in general are aware of the potential flood hazard over the whole range of AEP and of the consequent risk and liability associated with the development and use of flood liable land.

O2. To manage flood liable land in manner that is economically and environmentally sustainable and socially responsible.

O3. To establish whether or not a proposed development or activity is appropriate to be carried out having regard to the economic, property, environmental and human impacts of flooding.

O4. To protect community by ensuring that developments with high sensitivity to flood risk (eg. critical public utilities) are sited and designed to provide reliable access, continued operability during emergencies, quick recovery and to generally minimise risk from flooding.

O5. To allow development with a lower sensitivity to the flood hazard to be located within the floodplain, subject to appropriate design and siting controls and provided that the potential consequences that could still arise from flooding remain acceptable.

O6. To prevent intensification of inappropriate development.

O7. To control the use of 'High Hazard' areas and Floodways, and wherever appropriate and feasible, allow for their conversion to natural waterway corridors.

O8. To ensure that proposed development does not expose existing development to increased risks associated with flooding.

O9. To ensure building design and location address flood hazard.

O10. To ensure that development does not result in unreasonable flood impacts upon the amenity or ecology of an area.

O11. To incorporate the principles of Ecologically Sustainable Development (ESD).

O12. To minimise the risk to life and property arising from flooding.

O13. To ensure the provision of appropriate access to and egress from areas affected by flooding including for extreme events.

O14. To provide controls to ensure that development is carried out in accordance with this Policy.

O15. To implement the principles of floodplain risk management as defined by the NSW Government's Flood Prone Land Policy and the FDM 2005.

Design Principles

D1. Development should not result in any increased risk to human life.

D2. The additional economic and social costs which may arise from damage to property from flooding should not be greater than that which can reasonably be managed by the property owner, property occupants and general community.

D3. Development should only be permitted where effective warning time is available for the evacuation of an area potentially affected by floods to an area free of risk from flooding.

D4. Development should only be permitted where reliable egress is available for the evacuation of an area potentially affected by floods to an area free of risk from flooding.

D5. Evacuation should be consistent with any relevant flood evacuation strategy or flood risk management plan where in existence.

D6. Development should not adversely increase the potential flood affectation on other development or properties, either individually or in combination with similar developments(s) that are likely to occur within the same catchment.

D7. Developments must make allowances for motor vehicles to be relocated to an area with substantially less risk from flooding within an effective warning time.

D8. Developments must provide an evacuation plan detailing procedures that would be in place for an emergency (such as warning systems, signage or evacuation drills).

D9. Flood mitigation measures associated with new developments should not result in significant impacts upon the amenity of an area by way of unacceptable overshadowing of adjoining properties, privacy impacts (eg. by unsympathetic house raising), alienation of otherwise usable open space or by being incompatible with the streetscape or character of the locality (including heritage).

D10. Raised structures shall be designed to cater for the forces of floodwaters. An Engineer's Certificate will be required for the structural design.

D11. Development is to be compatible with any relevant Floodplain Risk Management Study, Floodplain Risk Management Plan, Flood Studies, or Sub-Catchment Management Plan.

D12. Development must not divert flood waters, nor interfere with floodwater storage or the natural function of waterways.

D13. Filling of land up to the Probable Maximum Flood (PMF) must not adversely impact upon flood behaviour. This must be demonstrated by appropriate modelling.

D14. Development must consider the impact of flooding resulting from local overland flooding whether it is a result of Local Drainage or Major Drainage.

D15. Where hydraulic flood modelling is required, flow hazard categories should be identified and adequately addressed in the design of the development.

D16. Council strongly discourages basement car parks on properties within the floodplain. Where site conditions require a basement car park on a property within the floodplain, development applications must provide a detailed hydraulic flood study and design demonstrating that the proposed basement car park has been protected from all flooding up to and including the PMF event. An adequate emergency response and evacuation plan must also be provided where basement car parks are proposed in the floodplain.

B8.4 Flood planning maps

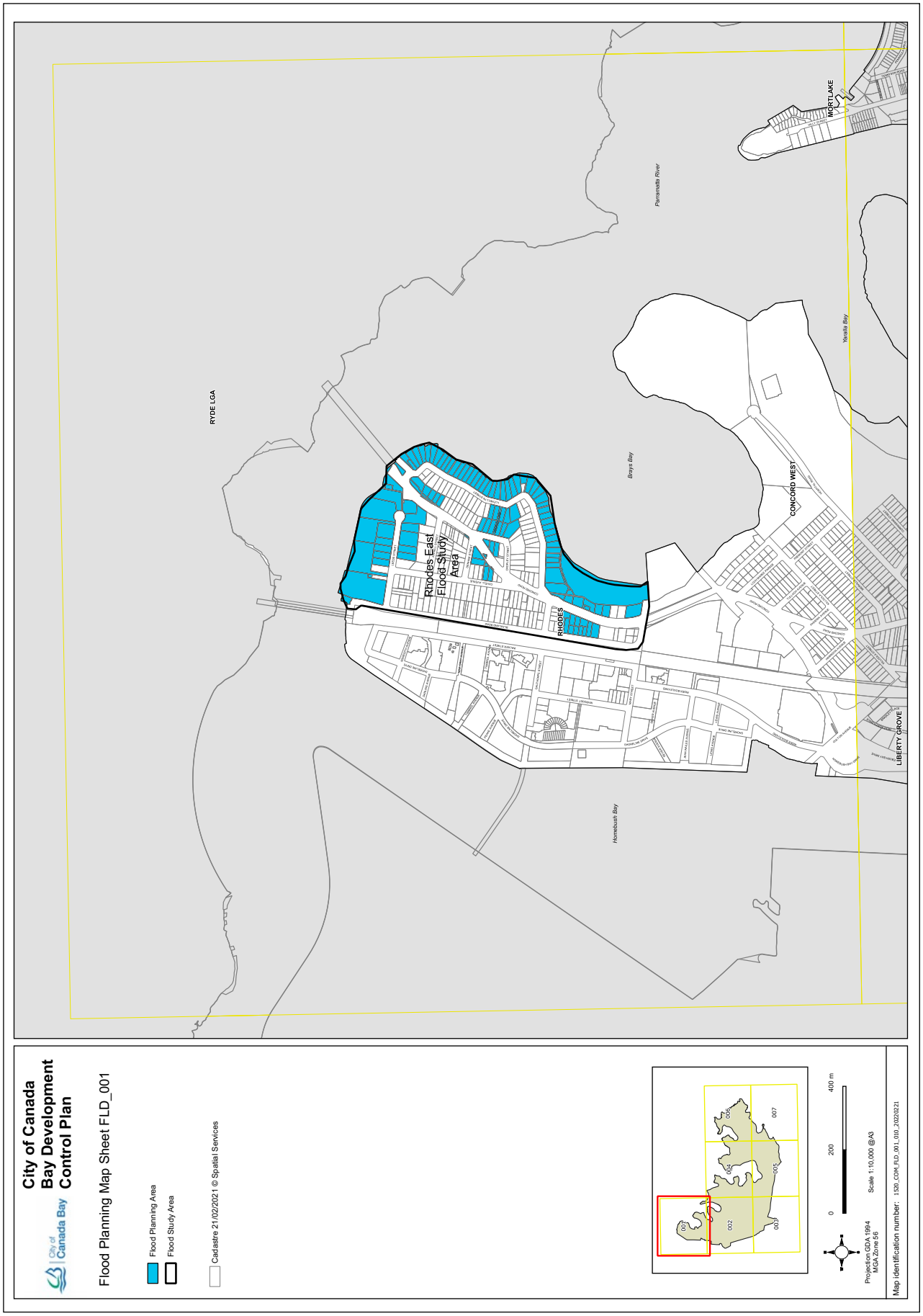


Figure B8.1 Flood Planning Map - Sheet 1

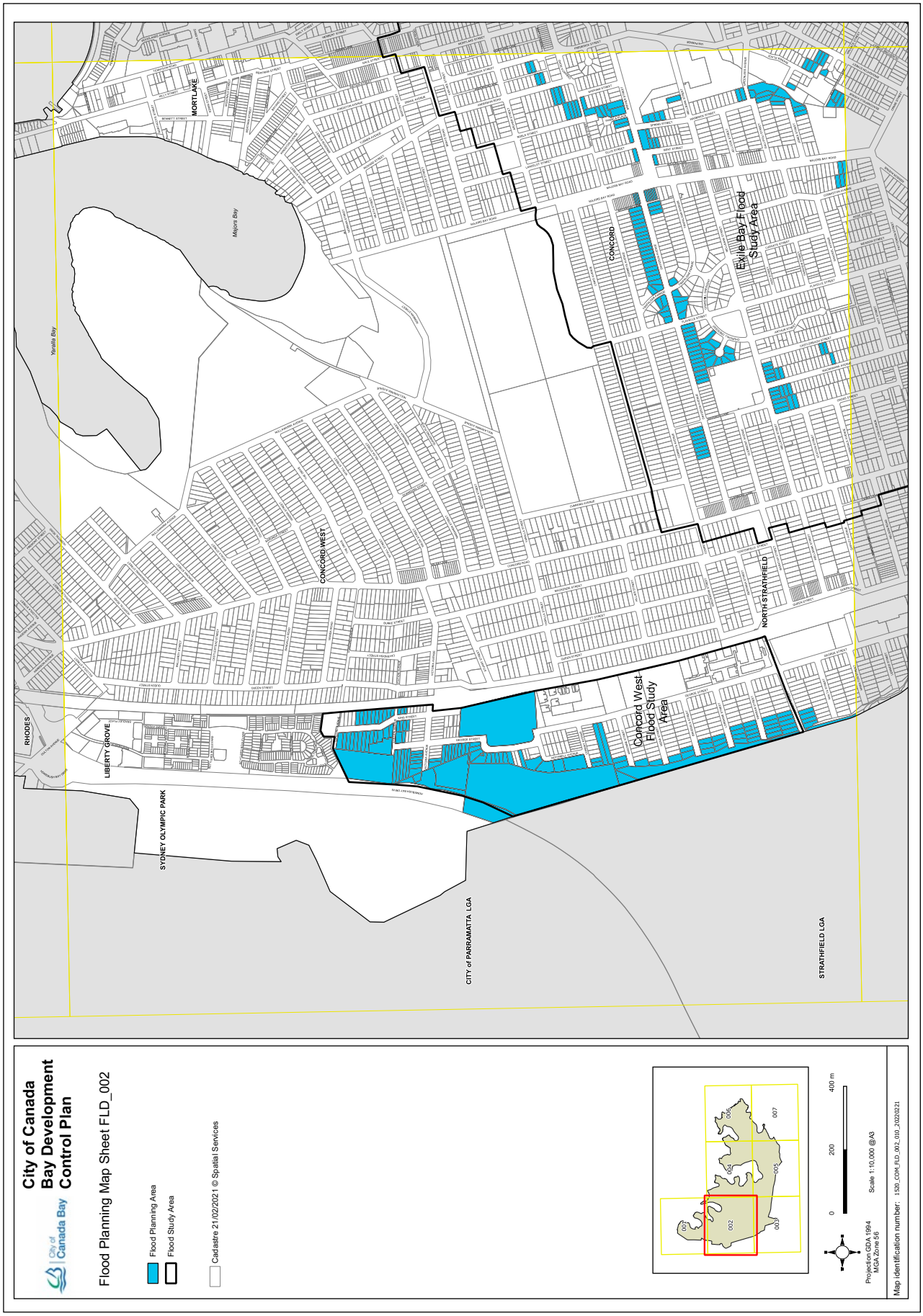


Figure B8.2 Flood Planning Map - Sheet 2

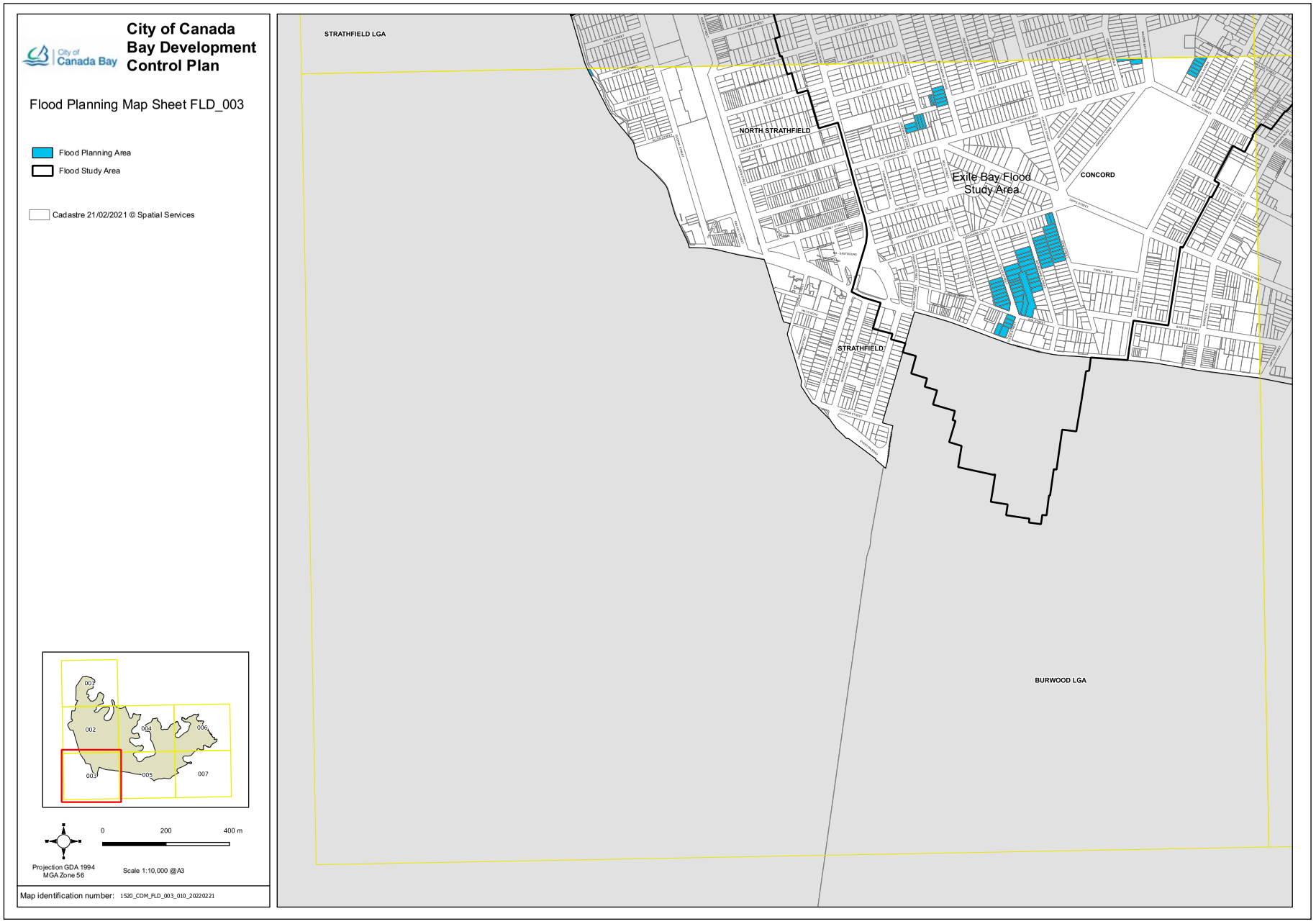


Figure B8.3 Flood Planning Map - Sheet 3

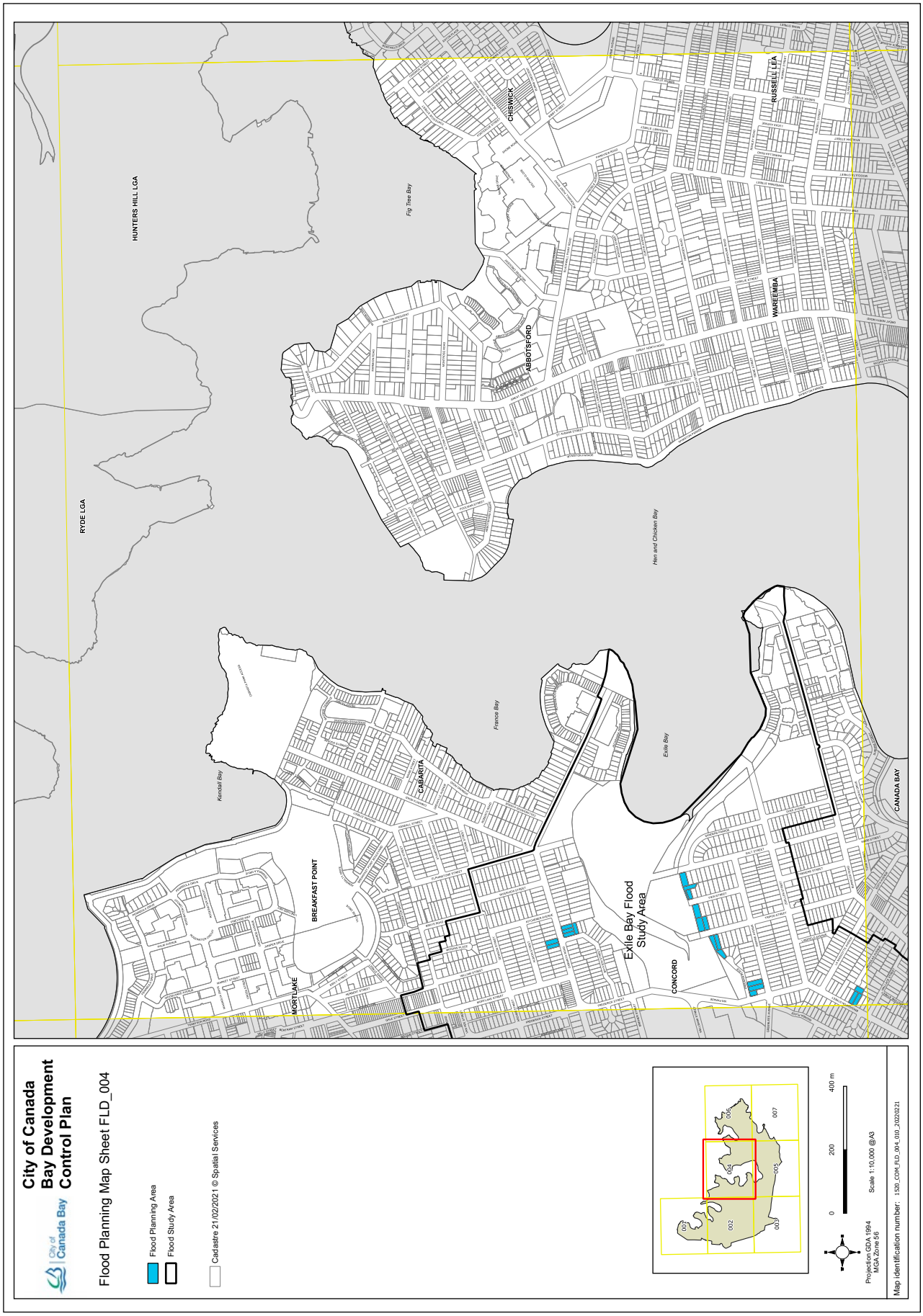


Figure B8.4 Flood Planning Map - Sheet 4

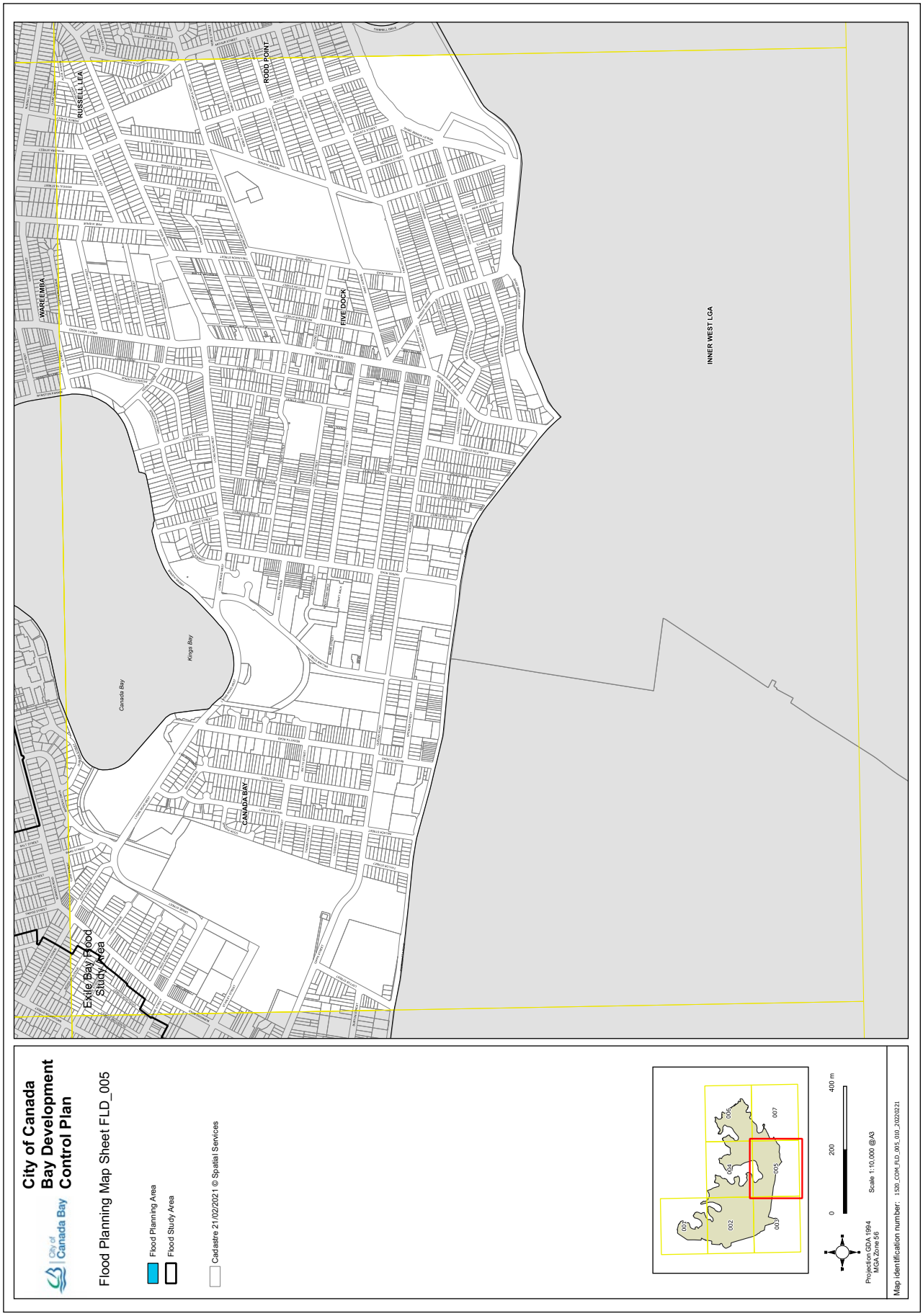


Figure B8.5 Flood Planning Map - Sheet 5

B8.5 Development Controls

All proposals are to have regard to the planning matrix at Table B-T. The procedure to determine which design standards apply to proposed development involves:

Step 1: identify the land use category of the development from Table B-T; and

Step 2: determine which flood risk category applies to the land (in some areas Council may have undertaken a formal flood study and published flood risk mapping or made the data available on application. Where Council is of the understanding that land subject of an application is or may potentially be affected by flooding, Council may require the applicant to prepare a flood study.); and

Step 3: apply the objectives and design principles as outlined in this section and then the design standards in the planning matrix at Table B-T as applicable to the floodplain and land use category, the numbers in Table B-T identify the controls which are applicable as detailed in B7.5 Details of Flood Controls (Flood Planning Matrix).

NOTE: An evacuation plan does not negate requirements for compliance with planning and building regulations.

Table B-S Land Use and Development Category Definitions

Sensitive Uses and Facilities	Community facilities or public administration buildings which may provide an important contribution to the notification and evacuation of the community during flood events(eg community buildings that may serve as evacuation centres); Facilities which involve concentrations of more vulnerable people; Child care centres; Hospitals; Residential care facilities; Seniors housing; Educational establishments. (See also “Concessional Development”)
Critical Uses and Utilities	Public utilities, community facilities or public administration buildings which provide direct emergency response. (Eg Police Stations, Ambulance Stations, SES Headquarters, Council Works Depots, Telecommunication facilities.) Hazardous industries; Hazardous storage establishments; Offensive industries; Offensive storage establishments; Liquid fuel depots; Undertakings which may cause pollution during flooding, are essential to evacuation during periods of flood or if affected during flood events would unreasonably affect the ability of the community to return to normal activities after flood events; Waste management facilities. (See also “Concessional Development”)
Subdivisions	Subdivision of land which involves the creation of additional allotments.
Filling	The net importation of fill material onto a site, except where: 1) final surface levels are raised by no more than 100mm over no more than 50% of the site; or 2) filling is no more than 800mm thick beneath a concrete building slab only. Earthworks involving both cut and fill shall not be considered to be filling provided that: 1) there is no net importation of fill material onto the site; and 2) there is no net loss of flood storage.
Residential	Residential accommodation unless more specifically included in the Sensitive Uses and Facilities category above or Commercial Industrial category below. (See also “Concessional Development”)

Commercial or Industrial	Bulky goods premises; Business Premises; Car parks; Depots; Entertainment facilities; Food and drink premises; Freight transport facilities; Funeral chapels; Funeral homes; Function centres; Hardware and building supplies; Heavy industries; Hotel accommodation; Industries; Landscape and garden supplies; Light industries; Materials recycling or recovery centres; Medical centres; Mixed use development; Office premises; Passenger transport facilities; Places of public worship; Public administration buildings (other than an essential community facility); Pubs; Recreation facilities (indoor); Registered clubs; Restricted premises; Retail Premises; Service stations; Sex services premises; Shop top housing; Tourist and visitor accommodation; Vehicle body repair workshops; Vehicle repair stations; Vehicle showrooms; Veterinary hospitals; Warehouse or distribution centres. (See also "Concessional Development")
Tourism Related Development	Advertising structures; Kiosks; Markets; Information and education facilities; Signage.
Open Space or Non-urban Uses	Recreation facilities (outdoor); Recreation areas and minor ancillary structures (e.g. Amenities blocks or kiosks) Boat launching ramps; Boat repair facilities; Boat sheds; Jetty; Animal boarding and training establishments; Environmental facilities; Helipad.
Concessional Development	Concessional development is any development or redevelopment that would normally not be permitted under this Plan, but may be permitted as a concession provided it:- 1) is kept clear of any floodway; and 2) involves an acceptably small (see below for limits) addition or alteration to an existing development that will not cause a significant increase in potential flood losses or risks or have an adverse impact on adjoining properties; or 3) redevelopment that achieves a substantial reduction of the extent of flood affectation relative to the existing situation provided that such redevelopments incorporate, to the fullest extent practical, design features and measures to reduce the existing potential for flood losses and personal risks and avoid any adverse impacts on adjoining properties – especially obstruction or diversion of floodwaters and loss of flood storage. **Limits for residential development. The maximum size of a concessional development is:** 1) a once-only addition or alteration to an existing dwelling of no more than 10% or 30m^2 (whichever is the lesser) of the habitable floor area which existed at the date of commencement of this Policy or Plan; or 2) the construction of an outbuilding with a maximum floor area of 20m^2. **Limits for other (non-residential) development** In the case of other development categories, the maximum size of a concessional development is a once-only addition to existing premises of no more than 10% of the floor area which existed at the date of commencement of this Policy or Plan.

Table B-T Flood Planning Matrix

Planning & Development Controls	Flood Risk Precincts																						
	Low Flood Risk									Medium Flood Risk									High Flood Risk									
Planning Consideration (the numbers below identify the controls which are applicable, as contained in section C7.5)	Sensitive Uses & Facilities	Critical Uses & Facilities	Subdivision	Filling	Residential*	Commercial & Industrial	Tourist Related Development	Open Space & Non-Urban	Concessional Development	Sensitive Uses & Facilities	Critical Uses & Facilities	Subdivision	Filling	Residential*	Commercial & Industrial	Tourist Related Development	Open Space & Non-Urban	Concessional Development	Sensitive Uses & Facilities	Critical Uses & Facilities	Subdivision	Filling	Residential*	Commercial & Industrial	Tourist Related Development	Open Space & Non-Urban	Concessional Development
Floor Level	3	3			2, 5	2, 5	2, 5							2, 5	2, 5	2, 5	2, 5	2, 5								1, 5	4, 5
Building Component	2	2												1	1	1	1	1								1	1
Structural Soundness	2	2												1	1	1	1	1								1	1
Flood Affection	2	2	2	1	2	2	2					1		1	1	1	2	1								1	1
Car Parking & Driveway Access	1, 3 5, 6, 8	1, 3 5, 6, 8			1, 3 5, 6, 8	1, 3 5, 6	1, 3 5, 6	2, 4 6, 7						1, 3 5, 6 7,8	1, 3 5, 6 7	1, 3 5, 6 7	2, 4 6,7	1, 5								2, 4 6, 7	1, 5
Evacuation	2, 4	2, 4 6	5		3, 4	4	4					5, 3, 4		3, 4, 6	3, 4, 6	3, 4, 6	1, 4	3, 6								1.4	3, 4 6
Management & Design	2, 3	2, 3 4	1									1		2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4								2, 3, 4	2, 3, 4

Colour Key Not Relevant Unsuitable Land Use * For redevelopment refer also to 'Concessional Development' provisions

Notes

i Canada Bay Local Environmental Plan 2013 identifies development permissible with consent in various zones. Notwithstanding, constraints to individual sites may preclude the granting of consent for certain forms of development on all or part of a site. The above matrix identifies where flood risks are likely to determine where certain development types will be considered "unsuitable" due to flood related risks.

ii Filling of site, where acceptable to Council, may change the FRP used to determine the controls applied in the circumstances of individual applications.

iii Any fencing that forms a part of a proposed development is subject to the relevant Flood Effects and Structural Soundness planning considerations of the applicable land use category. Fences may need to be of open design to address this cause.

iv Development within the floodplain may be subject to Clause 6.4 Limited Development On Foreshore Area and Foreshore building line provisions in the Canada Bay Local Environmental Plan 2013.

Note that the land above the PMF level is not captured by the above matrix.

B8.6 Details of the Flood Controls

(Flood Planning Matrix see Table B-T)

Floor Level

Controls	
C1.	Floor levels to be equal to or greater than the 20 year Average Recurrence Interval (ARI) flood level plus freeboard.
C2.	Habitable floor levels to be equal to or greater than the 100 year ARI flood level plus freeboard.
C3.	All floor levels to be equal to or greater than the Probable Maximum Flood (PMF) level.
C4.	Floor levels to be equal to or greater than the 100 year ARI flood level plus freeboard. Where this is not practical due to compatibility with the height of adjacent buildings, or compatibility with the floor level of existing buildings, or the need for access for persons with disabilities, a lower floor level may be considered. In these circumstances, the floor level is to be as high as practical, and, when undertaking alternations or additions, no lower than the existing floor level.
C5.	A restriction is to be placed on the title of the land, pursuant to S.88B of the Conveyancing Act, where the lowest habitable floor area is elevated more than 1.5m above finished ground level, confirming that the subfloor space is not to be enclosed.
C6.	Because of the particular catchment characteristics of the Concord West Precinct, additional requirement is for habitable floor levels to be at a minimum of RL 3.0m AHD. Refer to sections 9.3.3, 9.3.6, and 10.2.3 of the CWFS.

Building Components and Method

Controls	
C7.	All structures to have flood compatible building components below the 100 year ARI flood level plus freeboard.
C8.	All structures to have flood compatible building components below the PMF.

Structural Soundness

Controls	
C9.	An Engineer's report is required to certify that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a 100 year ARI flood level plus freeboard.
C10.	An Engineer's report is required to certify that the structure can withstand the forces of floodwater, debris and buoyancy up to and including a PMF level.

Flood Affectation

Controls	
C11.	An Engineer's report is required to demonstrate how and certify that the development will not increase flood affectation elsewhere, having regard to: a) loss of flood storage; b) changes in flood levels, flows and velocities caused by alterations to flood flows; and c) the cumulate impact of multiple potential developments in the vicinity.
C12.	The impact of the development on flooding elsewhere to be considered having regard to the three factors listed in C1 above.

Car Parking and Driveway Access

Controls	
C13.	The minimum surface level of open parking spaces or carports shall be as high as practical, but no lower than 0.1m below the 100 year ARI flood level. In the case of garages, the minimum surface level shall be as high as practical, but no lower than the 100 year ARI flood level.
C14.	The minimum surface level of open parking spaces or carports shall be as high as practical, but no lower than 0.3m above the 20 year ARI flood level.

C15.	Garages capable of accommodating more than 3 motor vehicles on land zoned for urban purposes, or enclosed car parking, must be protected from inundation by floods equal to or greater than the 100 year ARI flood. Ramp levels to be no lower than 0.5m above the 100 year ARI flood level.
C16.	The driveway providing access between the road and parking spaces shall be as high as practical and generally rising in the egress direction.
C17.	The level of the driveway providing access between the road and parking spaces shall be no lower than 0.2m below the 100 year ARI flood level.
C18.	Enclosed car parking and car parking areas accommodating more than 3 vehicles, with a floor below the 100 year ARI flood level, shall have adequate warning systems, signage, exits and evacuation routes.
C19.	Restraints or vehicle barriers to be provided to prevent floating vehicles leaving a site during a 100 year ARI flood.
C20.	Enclosed underground car parks shall have all potential water entry points protected from the PMF. The intent of this requirement is to mitigate the creation of life threatening circumstances and very high economic loss such as may occur with the complete inundation of an underground car park. Council may consider relaxation of this requirement if it can be shown by modelling that the catchment characteristics are such that the maximum depth of inundation is less than 300mm. Because of the particular catchment characteristics of the Concord West Precinct, an additional requirement within that precinct is for habitable floor levels to be at a minimum of RL 3.0m AHD. Refer to sections 9.3.3, 9.3.6, and 10.2.3 of the CWFS.

Evacuation

Controls	
C21.	Reliable access for pedestrians required during a 20 year ARI peak flood.
C22.	Reliable access for pedestrians and vehicles required to a publicly accessible location during the PMF peak flood.
C23.	Reliable access for pedestrians and vehicles is required from the site to an area of refuge above the PMF level, either on site (eg. second storey) or off site.
C24.	Applicant is to demonstrate the development is consistent with any relevant flood evacuation strategy or similar plan.
C25.	Applicant is to demonstrate that evacuation in accordance with the requirements of this DCP is available for the potential development resulting from the subdivision.
C26.	Adequate flood warning is available to allow safe and orderly evacuation without increased reliance upon SES or other authorised emergency services personnel.

Management and Design

Controls	
C27.	Applicant is to demonstrate that potential development as a consequence of a subdivision proposal can be undertaken in accordance with this clause, and any applicable flood study, FRMS and FRMP.
C28.	Site Emergency Response Flood Plan required where the site is affected by the 100 year ARI flood level (except for single dwelling-houses).
C29.	Applicant is to demonstrate that area is available to store goods above the 100 year flood level plus freeboard.
C30.	No storage of materials below the 100 year ARI flood level.

B9 Contaminated land

Objectives

O1. Minimise the risk to human and environmental health on land contaminated by past uses.

O2. To ensure each development application includes information sufficient to allow Council to meet its obligation to determine whether development should be restricted due to the presence of contamination.

O3. To facilitate appropriate site remediation to ensure the land is suitable for the intended use.

Note: These obligations are outlined in State Environmental Planning Policy No.55 at the time of adoption of this plan.

Controls	
C1.	All development must take precautionary steps to prevent the release of substances that cause contamination of soil, surface water, air or groundwater.
C2.	Proposals for the development of contaminated land or potentially contaminated land will need to determine: a) The extent to which land is contaminated (including both soil and groundwater contamination) and; b) Whether the land is suitable in its contaminated state (or will be suitable after remediation) for the purpose for which the development is proposed to be carried out, and; c) Whether the land requires remediation to make the land suitable for the intended use prior to that development being carried out, and; d) If the land has been previously investigated or remediated, development cannot be carried out until Council has considered the nature, distribution and levels of residues remaining on the land and Council has determined that the land is suitable for the intended use.
C3.	In accordance with Clause 9(f) of SEPP 55, Council specifies the following additional works as Category 1 remediation works: a) Remediation work within 40m of an open drainage channel, creek or water body. b) Remediation work involving treatment of groundwater. c) Remediation work involving on-site treatment of contaminated soil e.g., soil stabilisation, land-farming, soil washing or thermal desorption. d) Remediation work involving on-site capping or containment of contaminated soils. e) Remediation work on a site where off site migration of contaminants has occurred. f) Remediation work involving the removal of Petroleum and other Underground Storage Tanks.

B10 Crime prevention through environmental design

Objectives

O1. Provide a safe environment and minimise opportunities for criminal and anti-social behaviour.

Controls	
C1.	Active spaces and windows of habitable rooms within buildings are to be located to maximise casual surveillance of streets, laneways, parking areas, public spaces and communal courtyard space.
C2.	In commercial, retail or public buildings, facilities such as toilets and parents rooms are to be conveniently located and designed to maximise casual surveillance to facility entries.
C3.	Minimise blind-corners, recesses and other external areas that have the potential for concealment or entrapment.
C4.	Building entries are to be clearly visible, unobstructed and easily identifiable from the street, other public areas and other development. Where practicable lift lobbies, stairwells, hallways and corridors should be visible from the public domain.
C5.	Ground floors of non-residential buildings, the non-residential component of mixed use developments, and the foyers of residential buildings, are to be designed to enable surveillance from the public domain to the inside of the building at night.
C6.	Pedestrian routes from car parking spaces to lift lobbies are to be as direct as possible with clear lines of sight along the route.
C7.	Where dwelling units have individual main entries directly from a public space, the entry is to include a clearly defined transitional space between public and private areas.
C8.	Building details such as fencing, drainpipes and landscaping are to be designed so that illegitimate access is not facilitated by the opportunity for foot or hand-holds, concealment and the like.

B11 Energy efficiency

Objectives

O1. To encourage designs that make provision for current or future installation of energy efficient technologies.

Controls	
C1.	Roof forms shall be designed to allow for current or future installation of solar panels without adverse impacts on the amenity of neighbours or the streetscape.
C2.	Space should be provided within the building for the current or future installation of battery storage.

B12 Subdivision and allotment size

Subdivision is the division of land into two or more parts for separate occupation, use or disposition.

Objectives

O1. To minimise any likely impact of subdivision and future development on the amenity of neighbouring properties.

O2. To ensure lot size and dimension are able to accommodate a dwelling and provide adequate open space and car parking consistent with the relevant requirements of this DCP.

O3. To ensure lot size and dimension take into account the slope of the land and existing vegetation identified in the site analysis.

O4. To ensure lot size and dimensions enable dwellings or future dwellings to be sited to protect natural or cultural features including heritage items and retain special features such as trees and views.

Where relevant, Torrens Title subdivision standards are contained on the Lot Size Map to the Canada Bay Local Environment Plan.

Controls	
C1.	The minimum frontage to the street for normal allotments is:

Allotment type	Minimum frontage to street
Normal allotment	14.0m
Hatchet–shaped allotment	4.0m

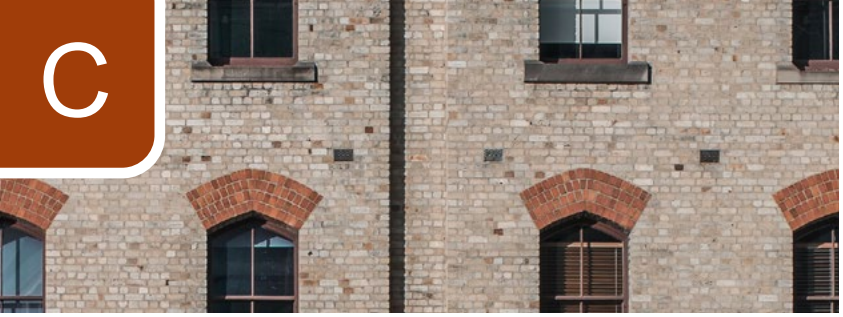
Controls	
C2.	Where the subdivision of an allotment is creating: a) A single battle-axe allotment, the minimum width of an access handle is 4.0 metres; or b) Two or more battle-axe allotments, the minimum width of an access handle is 4.0 metres plus a passing bay at 30 metre intervals.

In each case, a 0.5 metre wide landscape strip is to be provided on the outer edge of the access handle.

Controls	
C3.	A secondary dwelling must not be subdivided. It is to be located on the same lot of land as the principal dwelling and not being an individual lot within a strata plan or a community title scheme.

This page was intentionally left blank

C







PART C - HERITAGE

C1 Heritage reports to accompany development applications

C1.1 Statement of heritage impact C-3
C1.2 Conservation policy C-3
C1.3 Conservation management plan C-3
C1.4 Requirements for heritage reports C-3

C2 Development of heritage items

C2.1 Setting C-5
C2.2 Scale C-5
C2.3 Form and detailing C-6
C2.4 Materials and colours C-6
C2.5 Doors and windows C-7
C2.6 Car parking C-8
C2.7 Fencing C-9
C2.8 Landscape elements including paving and driveways C-9
C2.9 Outbuildings C-10
C2.10 Services C-10
C2.11 Demolition C-11
C2.12 Subdivision C-11
C2.13 Signs C-11
C2.14 Adaptive reuse C-13
C2.15 Structural Integrity C-14
C2.16 Conservation Works C-14
C2.17 Secondary dwellings C-15

C3 Development in the vicinity of a heritage item or a heritage conservation area

C3.1 General C-16
C3.2 Scale C-17
C3.3 Siting C-17
C3.4 Materials and Colours C-18
C3.5 Landscaping C-18

C4 Development in Heritage Conservation Areas

C4.1 General C-19
C4.2 Scale C-20
C4.3 Form and detailing C-21
C4.4 Siting C-23
C4.5 Materials and colours C-23
C4.6 Doors and Windows C-24
C4.7 Car parking C-25
C4.8 Fencing C-26
C4.9 Landscape elements including paving and driveways C-27
C4.10 Outbuildings C-28
C4.11 Services C-28
C4.12 Demolition C-29
C4.13 Subdivision C-29
C4.14 Signs C-30
C4.15 Conservation Works C-31
C4.16 Secondary Dwellings C-32

C1 Heritage reports to accompany development applications

Decisions affecting a heritage items or place within a conservation area need to be based on a clear analysis of why a place is significant and how proposals affecting the place have been designed to minimise the impact on the significance of the place. Depending on the significance of the place, strategies or policies to ensure the retention of the significance of the place might need to be developed. For this reason, different types of reports may be required for development proposals affecting places in a conservation area and heritage items.

The following outlines the different types of reports and when they may be required.

Please confirm with Council's heritage advisor if heritage report is needed

C1.1 Statement of heritage impact

A statement of heritage impact analyses and justifies the impact or place in a conservation area, or development in the vicinity of a heritage item of conservation area. Ideally, the impact would be such that the significance of the heritage item is not compromised, but rather enhanced by, for example, its stabilisation or repair and, where appropriate, restoration, reconstruction, adaptive re-use or sympathetic new development.

A statement of heritage impact is required to accompany a building or development application. It should be succinct. Pertinent documents, such as physical condition reports, can be attached. Evidence may be included as to why alternative solutions are not viable.

A statement of heritage impact is to include the following:

- A brief history of the subject site
- A brief description of the subject site including comprehensive photographs
- For heritage items, a comprehensive assessment of heritage significance undertaken in accordance with the Heritage Council guideline Assessing Heritage Significance, including a grading of significance of the items built fabric and spaces, and garden elements.
- A description of the proposed works
- The impact of the proposal on heritage significance
- Any mitigation measures
- Why more sympathetic solutions were not viable
- Relevant heritage controls of this DCP
- Relevant policies in a conservation management document
- For conservation areas, reference could also be made to Design in Context Guidelines for Infill Development in the Historic Environment.

C1.2 Conservation policy

A conservation policy explains the principles to be followed to retain or reveal an item's significance. The aim is to show how the heritage significance of the item can be enhanced and maintained. This relies on a full understanding of the item's significance and a review of the constraints and opportunities arising out of that significance.

The policy should be a positive set of guidelines for enhancing a heritage asset and its significance — not a set of restrictive rules. Heritage items that are restrained by inappropriate policies are in danger of having no viable use and are therefore likely to be neglected, falling into disrepair. The policy should be closely-related and cross-referenced to the statement of significance and to the significance of various elements of the item. Some parts of a heritage item, for example, might be more adaptable to a new use; or it may be essential to retain and enhance some views to, and from, the heritage item.

A conservation policy should be concise, and acceptable to all the parties involved in managing the item's future.

C1.3 Conservation management plan

A conservation management plan states the conservation policy and the statement of significance and looks in more detail at achieving the future viability of the item and retaining the maximum heritage significance in future development proposals.

C1.4 Requirements for heritage reports

The following table outlines what type of Heritage Report is required for a development application.

Table C-A Requirements for heritage reports

Heritage listing	Type of development	Type of heritage report required
Site within a Conservation Area	Demolition – partial or complete	Statement of Heritage Impact
	Change of Use	Statement of Heritage Impact
	Additions and Alterations	Statement of Heritage Impact
	New Development	Statement of Heritage Impact
	Subdivision	Statement of Heritage Impact
	Change of external material (re–roofing, re–cladding, rendering, replacement of windows or joinery)	Statement of Heritage Impact
	Installation of new services	Statement of Heritage Impact
	Landscape work including new fences and driveways, tree removal	No report required
	Change of colour scheme	No report required
	New signage	No report required
	Major Works	Conservation Management Management Plan (or Conservation Management Strategy if agreed by Council)
Heritage item of local significance In some cases, such as where major work is proposed to a heritage item, or where there are compliance issues, a Conservation Management Plan maybe required.	Demolition – partial or complete	Statement of Heritage Impact
	Change of Use	Statement of Heritage Impact
	Additions and Alterations	Statement of Heritage Impact
	New Development	Statement of Heritage Impact
	Subdivision	Statement of Heritage Impact
	Change of external material (re–roofing, re–cladding, rendering, replacement of windows or joinery)	Statement of Heritage Impact
	Installation of new services	Statement of Heritage Impact
	Landscape work including new fences and driveways, tree removal	Statement of Heritage Impact
	New Signage	Statement of Heritage Impact
	Change of colour scheme	No report required
Heritage item of state significance	Demolition – complete or major partial	Conservation Management Plan
	Demolition – minor partial	Conservation Policy
	Change of Use	Conservation Management Plan
	Minor Additions and alterations	Conservation Policy
	Major Additions and alterations	Conservation Management Plan
	Subdivision	Conservation Management Plan
	Change of colour scheme	Conservation Policy
	New development adjacent to heritage item	Statement of Heritage Impact
	New development on the site of a heritage item	Conservation Management Plan
	Change to external material (re–roofing, re–cladding, replacement of windows or joinery)	Conservation Policy
	Installation of new services	Conservation Policy (a Conservation Management Plan might be required if the building is undergoing a major services upgrade)
	Fire Upgrade	Conservation Policy
	Landscape work – minor	Conservation Policy
	Landscape work including new fences and driveways, tree removal	Conservation Management Plan
	New Signage	Conservation Policy

C2 Development of heritage items

Heritage items have been identified as places that should be retained and conserved for future generations. The heritage significance of these places must be understood and respected when designing future development.

C2.1 Setting

Setting is the area around a heritage item that contributes to its heritage significance and may include the visual catchment of a heritage item. Topography, trees, gardens, outbuildings, fencing, and pavement can all contribute to the setting of a heritage item. Where a heritage item is a landmark, it is particularly important that new development does not obscure its visual presence in the streetscape and/or townscape. Secondary dwellings are generally not acceptable on the site of a heritage item due to the adverse impact on the visual curtilage and landscape setting of heritage items.

Objectives

O1. To provide an appropriate visual setting for heritage items, including landscaping, fencing and car parking.

O2. To ensure that new development respects the contribution of a heritage item to the streetscape and/or townscape.

Controls	
C1.	Elements that contribute to the setting of a heritage item, including things such as landscaping, fences, driveways, seawalls etc must be retained.
C2.	Alterations and additions should be located at the rear.
C3.	Ancillary structures at places of heritage significance such as secondary dwellings, swimming pools and outbuildings should be located at the rear so that they do not impact on the setting of the heritage item.
C4.	Cut and fill or other work that changes the landform around a heritage item should generally be limited to 1m. Basements under heritage items are not acceptable
C5.	Secondary dwellings are only possible on sites that are large enough to retain a landscape setting around the house commiserate with the scale of the house, including a backyard with trees.
C6.	Secondary dwellings must not detract from the setting of a heritage item.

C2.2 Scale

Scale is the size of a building and its relationship with its surrounding buildings or landscape. It is important that new development at places of heritage significance respects the scale of the existing buildings and/or landscape elements that contribute to the significance of the place.

Objective

O1. To ensure that additions to a heritage item and new buildings on the site of a heritage item are of a scale consistent with the heritage item.

O2. To ensure that the heritage item remains the visually dominant element on the site.

Controls	
C1.	Alterations and additions to a heritage item should not be larger in scale than the heritage item and should preferably be single storey.
C2.	Development of a larger scale than the heritage item is allowable only if the new development is visually subservient, will not detract from the aesthetic qualities of the place, and important views of the heritage item.

C2.3 Form and detailing

The form of a building is its overall shape and volume and the arrangement of its parts. The rooflines of buildings, and elements such as chimneys, parapet walls, verandahs etc are often important elements of the form of a heritage item. It is also important that alterations and additions do not reduce the structural integrity of an existing building.

Objectives

O1. To ensure that important elements of the form of a heritage item are not obscured or destroyed by alterations and additions.

O2. To ensure that the form of a heritage item retains its importance in the streetscape and/or townscape.

O3. To ensure that important interior spaces are retained.

O4. To ensure that alterations and additions do not have a detrimental impact on the structural integrity of a heritage item.

Controls	
C1.	Important elements of a heritage item, such as walls, roofs, windows, doors, chimneys, parapets, decorative elements, verandahs, joinery, gable ventilators, etc must not be demolished, must retain their integrity (including structural integrity), and must not be obscured by alterations and additions.
C2.	Verandahs on the front and sides of a heritage item must not be infilled.
C3.	Additions should be attached to the original part of the building as wings, linked pavilions or skillions at the back of the house. Additions should not be higher than the ridgeline of the existing building and the existing roof over the main body of the building must be retained. Pavilion additions must be set slightly apart from the original house and connected with a lower built element.
C4.	New development, and alterations and additions to heritage buildings, must not to detract from the visual importance of the heritage item.
C5.	Mock historical details should not be applied, as they will not be of any heritage value themselves and can confuse our understanding of what is ‘old’ and ‘new’.
C6.	“Pop top” additions (an additional form extruding above the roof rather than above the external walls below) are not acceptable.
C7.	Important interior spaces and elements must be retained.
C8.	Alterations and additions must result in a final building that is a visually cohesive whole.

C2.4 Materials and colours

The selection of materials and colours is very important to the aesthetic qualities of most built heritage items. Development that includes changing roof materials, re-skinnning of brickwork, rendering or painting of face brickwork and inappropriate textured finishes can degrade the character of a heritage item.

Additions and alterations on the site of a heritage item should take into consideration the original materials of the heritage item. While it is not always necessary to match the materials of the original building, new materials and colours should be carefully selected to ensure they complement the original building.

Objectives

O1. To ensure that original materials that contribute to the significance of heritage items are not obscured.

O2. To ensure that colours of paintwork on heritage items are consistent with the significance of the heritage item.

O3. To ensure that external materials and colours of new development relate well to the materials and colours of the heritage item.

Controls	
C1.	Original materials of heritage items must not be replaced with different materials or materials of different colour.

C2.	Non-original materials of heritage items that are being replaced shall be replaced with material that matches the original material as closely as possible.
C3.	Painting or rendering original face brick walls is not permitted, and re-skinning may exceptionally be considered where condition of fabric does not allow its further retention. Timber houses may be re-clad with timber weatherboards of a profile to match existing. Re-roofing should use materials matching the original.
C4.	The detail and texture of original rendered finishes should not be changed.
C5.	Materials for additions and alterations to heritage items should be harmonious with the original materials of the heritage item.
C6.	Colour schemes for heritage items should have a hue and tonal relationship with traditional colour schemes for the period and style of the heritage item.
C7.	The use of fluorescent paint and primary colours on heritage items is not permitted.
C8.	The use of modern finishes including stencilled concrete for driveways is not permitted.
C9.	Where it is not possible to retain an original building or landscape component, the new component is to match the original.
C10.	Missing original components of the heritage item should be replaced.

C2.5 Doors and windows

The spacing, proportions and detailing of doors and windows of heritage items usually contributes greatly to their aesthetic appeal. Altering windows and doors or adding new openings can dramatically affect the character of a building.

Objectives

O1. To retain original windows and doors that contribute to the aesthetic quality and/or significance of a heritage item.

O2. To reinstate lost details that contributed to the aesthetic qualities and/or significance of a heritage item.

O3. To retain the proportions of walls and openings that contribute to the aesthetic quality of a heritage item.

O4. To ensure that original or significant doors and windows are not obscured or altered by fittings and additions.

Controls	
C1.	Original or significant windows and doors in important elevations of a heritage item must be conserved.
C2.	Where original or significant windows and doors in important elevations of a heritage item have been removed, and replacement of the new joinery is proposed, the original windows and/or doors must be reconstructed.
C3.	Roller shutters, security bars and grilles are not permitted on window and door openings that have a frontage to the street or that are adjacent to public open space.
C4.	Additions to external doors, including security screens and grilles, must not obscure or distort the original form of doors or the character and significance of the building.

C5.	New windows and doors in important elevations of a heritage item must be: a) carefully located to retain the original relationship of solids and voids; and b) of proportions, materials and details similar to existing windows and door openings in the building.
C6.	New dormer and roof windows of a house should be located on rear roof slopes in preference to roof slopes visible from the street.
C7.	New dormer windows visible from the street are only be possible on houses of style and period appropriate for dormer windows. These dormers must be: a) located to complement the original design of the building; and b) of proportions and details to complement the original character of the building.
C8.	Extensive areas of glazing are not permitted unless this feature was a feature of the original design of the building visible from the public realm.
C9.	New skylights are not permitted in roof slopes visible from the public realm.

C2.6 Car parking

Garages and carports can have the greatest detrimental impact on the aesthetic qualities of heritage items. Garages and carports in front of the building line obscure views of the buildings and break the rhythm and pattern of the streetscape. The proportions of garage doors do not relate to the smaller and more vertical proportions of windows and doors that are usually found on heritage items.

Objective

O1. To ensure that, where possible, garages and carports are designed to minimise the visual impact on views of heritage items.

Controls	
C1.	Original or significant garages should be retained and conserved.
C2.	Garages and carports must be detached and located as far behind the front building alignment as possible. The minimum setback is 3 metres from the main wall (not a verandah wall).
C3.	Garages must not be incorporated into the main body of the heritage item or the front façade of a heritage item.
C4.	Where a new garage or carport is on the same side of a building as a side verandah, the garage or carport must be detached and located entirely behind the end of the verandah by at least 1m.
C5.	Garages and carports must not be integrated with any auxiliary structure or secondary dwelling.
C6.	New car parking structures must be visually recessive. Garages and carports must be single storey.
C7.	Double garages, unless located in the backyard behind the main building, are not acceptable.
C8.	Basement parking is not permitted.

C2.7 Fencing

Fencing, particularly fencing facing the street, is of particular importance in establishing the setting of a heritage item. Fencing should complement the style and scale of the house.

Objectives

O1. To conserve gates and fences that are early or contemporary with heritage items.

O2. To ensure that new fences and gates are in keeping with the character of the heritage item.

O3. To ensure that the aesthetic quality of the heritage item is not diminished by inappropriate fencing.

Controls	
C1.	Fencing and gates that are original or early components of the heritage item must not be demolished.
C2.	Fences that return from the front fence to the front wall of the house must not be higher than the front fence.
C3.	New fencing and gates to a heritage item should be of a style and scale that is consistent with the style of the building.
C4.	Unless documentary or physical evidence is provided to establish a greater height, fencing forward of the building line constructed of solid material such as masonry, should not be greater than 900mm in height above the adjacent public footpath level.
C5.	Unless documentary or physical evidence is provided to establish a greater height, fencing forward of the building line constructed of (non-solid) material such as timber pickets, metal palisades or wrought metal should not be greater than 1.2m in height above the adjacent public footpath level.
C6.	Original face brick or sandstone fencing to a heritage item must not be painted.
C7.	Colorbond steel fences are not acceptable.
C8.	Side and rear boundary fences behind the building line must be traditional lapped timber paling fences.

C2.8 Landscape elements including paving and driveways

Landscape elements are of great importance in contributing to the aesthetic quality of heritage items. The design of front gardens usually provides a setting for the building and reinforces the character of the heritage item.

Objectives

O1. To retain important landscape elements that contribute to the significance of heritage items.

O2. To reinforce the qualities of the heritage item through appropriate landscaping.

Controls	
C1.	Original driveways and footpath crossings that relate to a heritage item must be retained. The design and materials of the original driveway should be retained, and if missing, replaced.
C2.	New driveways should be pairs of driveway strips of off-white or red oxide concrete, or brick on edge, with grass or ground cover between.
C3.	There must be only one driveway and the width of the driveway must be minimised. Double driveways and footpath crossings are not permitted.
C4.	Original or early garden layouts and plants that contribute to the significance of the heritage item must be retained.
C5.	New trees must be planted in the case where it is proposed to remove existing trees.
C6.	Established trees, shrubs, boundary planting and garden layouts that contribute to the significance of the heritage item must be retained. This includes trees in the public domain which may be affected by development.

C7.	When designing new gardens, surviving plants and garden elements which indicate the basic garden structure, must be incorporated into new appropriate designs that complement the style of the building.
C8.	Garden space must be sufficient to accommodate a large spreading tree, lawn, and shrubbery, in the backyard of a house.

C2.9 Outbuildings

Early or significant outbuildings, such as sleep-outs, shade-houses and pergolas, are important in contributing to the aesthetic quality, setting and story of use and development of a place.

New outbuildings such as garden sheds, outhouses, gazebos and pool pavilions can easily detract from the setting of heritage items. The location and setting of these must be carefully considered so that they have minimal impact on important views of heritage items.

Objective

O1. To minimise visual intrusion on views of heritage items due to outbuildings.

O2. To ensure original significant outbuildings are conserved.

Controls	
C1.	Original significant outbuildings, including sleep-outs, shade-houses and pergolas, must be retained and conserved.
C2.	New outbuildings and other auxiliary structures must be located in the rear yard of heritage items.
C3.	Outbuildings and other auxiliary structures must be single storey and designed so that they have no impact on important views of heritage items.
C4.	Outbuildings and other auxiliary structures must not be integrated with a garage or carport.
C5.	Double garages, unless located in the backyard behind the main building, are not acceptable.

C2.10 Services

Careful consideration must be given to the introduction of new services so that they do not adversely affect the positive aesthetic qualities of a place or important building fabric or landscaping. New services include things such as lifts, air-conditioning, telecommunications, water management, fire protection measures, solar panels etc.

Objective

O1. To ensure that new services are designed and located so they do not adversely affect the aesthetic values of the place.

O2. To ensure that new services do not require the removal or obstruction of built and landscape features that contribute to the heritage values of the place.

Controls	
C1.	New services must not damage built and landscape features that contribute to the heritage significance of a place.
C2.	New services must be located where they do not disrupt the aesthetic qualities of a place.
C3.	Air-conditioning units must not be located on roofs if this would result in the units being visible from the public domain.
C4.	Telecommunication elements such as conduits and junction boxes must not be located on front facades.
C5.	Storm water detention tanks, water storage tanks and the like must not be located within the front setback, except in the case that they are located below a driveway.
C6.	Kiosk substations and fire hydrant boosters must be located where they will have the least visual impact, and must be integrated into the landscape scheme.

C7.	Services such as solar panels, television aerials and satellite dishes are to be located on roof slopes facing the rear of heritage items.
C8.	Services should not be higher than the main ridge line of a building that is or is part of a heritage item and shall be located so that they are not visible from the public realm.
C9.	Lifts, if required, must be installed where existing building fabric and spaces have little or no significance.
C10.	Fire services must respect existing building fabric and details, including minimising changes and being appropriately located.
C11.	New service must not interrupt significant spaces and building fabric.

C2.11 Demolition

Full demolition of heritage items is generally not permissible. Partial demolition of heritage items is possible subject to the merits of the proposal.

Outbuildings that relate to heritage items can be demolished if the demolition does not impact on the significance of the heritage item.

Objective

O1. To retain buildings that are of heritage significance or components of the site that contributes to the significance of a heritage item.

Controls	
C1.	Buildings that are listed as heritage items or contribute to the significance of a heritage item should not be demolished.
C2.	Partial demolition of a heritage item or its significant components, should only be allowed when it can be established that the partial demolition will have acceptable impact on the significance of the heritage item, or when the condition of fabric is such that its failure is imminent. In the latter case, a reconstruction of demolished fabric may be required.

C2.12 Subdivision

The grounds associated with a building provide a setting for a heritage item. The grounds of a heritage item can also ensure that important views to or from a heritage item are available. Subdivision can result in the loss of the setting of a heritage item and should only be done if an adequate curtilage can be retained.

Objectives

O1. To ensure that subdivision of a heritage item does not result in a loss of appropriate curtilage for the heritage item.

O2. To ensure that subdivision of a heritage item does not potentially result in development that would obscure important views to or from the heritage item.

Controls	
C1.	Subdivision of an allotment that includes a heritage item should not be allowed unless an adequate curtilage of the heritage item is retained.
C2.	The relationship between key elements that are important to the heritage item must be maintained.
C3.	Subdivision of land that includes a heritage item is not allowed unless it can be established that proposed or future development on the created allotments will not adversely impact on the setting of a heritage item or important views to or from the heritage item.

C2.13 Signs

Many commercial buildings built in the late nineteenth and early twentieth century incorporate areas on the main façade designed for locating a sign to identify the business operating within. This allows for appropriate signage while the unity of the streetscape is retained.

Residential heritage items can be obscured by inappropriate signage. For most late nineteenth century and early twentieth century buildings, house names are often incorporated into the building or placed on a small sign fixed to a wall near the front door.

Objectives

O1. To allow for appropriate signage on heritage items.

O2. To ensure the original details of heritage items are not obscured by inappropriate signage.

Controls	
C1.	All commercial signs on a heritage item or a building in heritage conservation area are to be restrained in visual prominence, of design compatible with style of the building, of high standard of materials, construction and graphics, and carefully placed in an appropriate location avoiding damage to the significant fabric.
C2.	Any sign proposed for a heritage item is to be consistent with the recommendations of any approved Signs Strategy forming part of a development consent or the policies and recommendations of any Conservation Management Plan applying to the heritage item.
C3.	Signage should include clear business identification by name and type, and should not include contact details, products offered or promotional messages. Graphics may be assessed for potential impact on heritage values.
C4.	New signs should be located in areas or elements of buildings that have traditionally been used for signage. Signs between the awning level and the parapet of a heritage item or a building in heritage conservation area are not permissible.
C5.	Shops in heritage listed buildings or in conservation areas are limited two signs per frontage, and other commercial tenants one sign per frontage from these types: a) Awning fascia sign, b) Under-awning sign, and c) Above-entry (hamper) sign.
C6.	In addition to the above, commercial tenants including shops are permitted traditional gilded lettering to glass. Areas under lettering should be limited to 5% of the overall glass area.
C7.	In addition to the above, commercial tenants including shops are permitted intrinsic sign types, such as written in the pavement, in tile work, etc. Any new intrinsic signs are to be designed and installed sympathetically with regard to existing intrinsic signs. In cases this may result in the potential locations for new signs being restricted or unavailable. Significant intrinsic signs in lead lighting or windows, painted on walls or as raised lettering in render must be conserved in situ. Any other significant existing signs need to be retained.
C8.	Internally illuminated signs are not permitted on a heritage item or a building in heritage conservation area unless they are a reconstruction of an original significant sign.
C9.	Externally illuminated signs are permitted only where cabling and conduit supplying power to the sign is completely concealed and does not involve intervention in or damage to significant fabric.
C10.	The installation of any sign on a heritage item is to be carried out in a reversible manner without damage to the significant fabric. In the case of a sign affixed to any stone or brick wall of a heritage item the sign is to be fixed in such a way that stone is not damaged and any fixings are put only onto mortar joints.
C11.	The consent authority shall have regard to the name of a heritage item and whether or not the name is significant before allowing its building name sign to be changed. On some buildings this may mean that the building name may not be changed.

C2.14 Adaptive reuse

Adaptive reuse of buildings is a process that changes a place that is no longer suitable for its original purpose, to a place that can be used for a new purpose. It is desirable both for environmental sustainability and heritage conservation.

Reusing historic buildings has long term benefits for the community. Adaptive reuse allows buildings that are valued by the community to be retained for future generations. Sometimes it is the only way a place can be conserved for the future.

In many cases, adaptive reuse will involve few if any changes to a building. Where changes are needed to a building of heritage significance, it is important to first understand why the place is significant. Changes should then ensure that significant aspects of the place are conserved and that new development respects the significance of the place.

All buildings have “embodied energy”: the energy consumed by all the processes involved in producing materials, delivering them to site and constructing the building. New buildings have high energy costs. In 2001, new buildings accounted for about 40% of annual energy and raw materials consumption. According to the Australian Greenhouse Office, the reuse of building materials can save approximately 95% of embodied energy. Adaptive reuse of buildings is also an important part of sustainable development.

General

Objectives

O1. To encourage adaptive reuse of buildings which are no longer suitable for their original use.

O2. To ensure that adaptive reuse of heritage items respects the significance of the place.

O3. To ensure that the impacts of adaptive reuse on heritage items is minimised.

Controls	
C1.	Where original use is discontinued, adaptive reuse which requires minimal change to fabric may be considered.
C2.	Where adaptive reuse requires unacceptable degree of change due to legislative compliance, alternative solutions may be sought, or the proposed change of use may not be supported.

Building Design

Objectives

O4. To ensure that alterations and additions to a building as a result of adaptive reuse relate to the architectural qualities of the existing building.

O5. To ensure that changes to the building as a result of adaptive reuse can be interpreted in the future as belonging to its applicable historical period.

Controls	
C3.	Additions to a building as part of adaptive reuse should be designed to respect the original architectural qualities of the building such as building form, façade articulation, fenestration pattern, parapet profile and detail, materials and colours.
C4.	Retention of only the facades of the building is not acceptable.
C5.	New work necessary in the adaptive reuse of a heritage item should be distinguishable from original work on a close inspection.

Structure

Objective

O6. To retain original building structure and fabric.

Controls	
C6.	Fire engineered solutions should be sought to allow retention of original structural systems that would otherwise not meet “deemed to comply” provisions of the Building Code of Australia.

C2.15 Structural Integrity

Objectives

O1. To ensure alterations and additions do not have a detrimental impact on the structural integrity of the heritage item.

Controls	
C1.	Alterations and additions are to be supported by a report, prepared by a suitably qualified and practicing structural engineer, certifying that the works will not jeopardise the structural integrity of the building, and will not cause existing finishes and details to fail.

C2.16 Conservation Works

Conservation works to a heritage item help to ensure that the heritage values of a place will be retained and enhanced. They are particularly important in circumstances where original features are in poor conditions, have been unsympathetically altered, or are missing. Conservation works must be guided by advice from suitably qualified and experienced people

Objectives

O1. To retain and enhance the heritage values of heritage items.

O2. To ensure that heritage items are enhanced through replacement of irreparable or missing elements and the reinstatement of important original interior spaces.

O3. To ensure authentic restorations or reconstruction, based on documentary (research) or physical evidence.

Controls	
C1.	Comprehensive conservation works to the heritage item and, if appropriate, its grounds, must be undertaken in the case of subdivision.
C2.	Where a large addition or extensive alterations are proposed to a heritage item, conservation works are to be undertaken to the item.
C3.	Adaptive re-use proposals must include conservation works.
C4.	Conservation works must be undertaken to the heritage item when a secondary dwelling is proposed.
C5.	Conservation works must be described in a detailed schedule and using detail drawings and submitted with the development application.
C6.	Originally open verandahs that have been enclosed should be reinstated as open verandahs.
C7.	Important features, elements and spaces that have been lost should be reinstated.

C2.17 Secondary dwellings

Secondary dwellings are desired by many people for family members or to provide an additional source of income. However, they need to be carefully designed and sited in order to ensure that the setting of the heritage item is not adversely affected. The backyard, as well as the front garden, forms part of the setting of a heritage item, often containing elements that have an important relationship to the original house, such as original garages, as well as trees and other significant garden components. In most cases it is likely that a secondary dwelling on the site of a heritage item is not appropriate with regard to its heritage impacts. It is important that secondary dwellings do not constrain the ability of an existing residence to meet the needs of a contemporary family, for instance by such things as a large family/kitchen/dining area overlooking and opening to a good sized backyard.

Objectives

O1. To ensure that secondary dwellings do not detract from the heritage significance of the item.

O2. To ensure that the heritage items which were designed as single family homes are not constrained in their ability to be changed and added to in order to meet the needs of a contemporary family.

O3. To ensure that heritage items retain an appropriate visual curtilage.

O4. To ensure that elements on a site that contribute to the heritage values of the item are not lost as a result of a secondary dwelling.

Controls	
C1.	Secondary dwellings must be visually subservient to the heritage item by a considerable degree. They must be single storey unless incorporated into a two storey house.
C2.	Secondary dwellings, where appropriate, must be of minimal footprint and scale.
C3.	Secondary dwellings must not result in the loss of an appropriate setting for a heritage item, in particular, a good sized backyard able to be planted with tall trees which have a spreading canopy as these must be provided.
C4.	In the case of houses that are heritage items, secondary dwellings must not constrain the ability of a house to function well for a contemporary family, as this would place the heritage house at risk of potential future unsympathetic changes.
C5.	A secondary dwelling formed by adding a second storey to an existing garage is not permitted.
C6.	Secondary dwellings must not be integrated with a garage or carport.

C3 Development in the vicinity of a heritage item or a heritage conservation area

Development near heritage items and a heritage conservation areas can have adverse impacts on these places if they detract from their setting. This may be as a result of blocking views, introducing new constructions that are unsympathetic to the streetscape or area, and/or by removing trees or other landscape elements.

New development can also have an adverse impact by reducing the landmark qualities of a heritage item. New development in the vicinity of a heritage item should take into consideration the importance of that item in the local streetscape or townscape, and the impact of the proposed new development on the streetscape setting. Where a heritage item has importance as a landmark, it is particularly important that new development in the vicinity of the heritage item does not obscure its visual presence in the streetscape and/or townscape.

New development may also have an adverse impact on the setting of heritage conservation areas by introducing development that is sharply in contrast with the character of the existing setting or with the desired future character of a precinct.

Setting is the area around a heritage item or heritage conservation area that contributes to its heritage significance and may include the visual catchment of a heritage item. Topography, trees, gardens, fencing, and pavement can all contribute to the setting.

C3.1 General

Objectives

O1. To provide an appropriate visual setting for heritage items and heritage conservation areas, including through appropriate landscaping, fencing and car parking.

O2. To ensure the setting of heritage items and heritage conservation areas is not compromised by new development.

O3. To ensure that new development respects the contribution of heritage items and heritage conservation areas to the streetscape and/or townscape.

O4. To ensure that new development in the vicinity of a heritage item does not detract from the importance of the heritage item in the streetscape.

Controls	
C1.	Development in a streetscape of buildings of consistent style, form and materials, in the vicinity of a heritage item or a heritage conservation area must incorporate elements of the dominant style, form, massing, height, and materials in the streetscape, including the rhythm of buildings in the streetscape and the pattern of openings.
C2.	New development in the vicinity of a heritage item or a heritage conservation area must not visually dominate the setting of a heritage item or a heritage conservation area.
C3.	Development in the vicinity of heritage items and heritage conservation area must not adversely affect the setting by introducing an uncharacteristic building or element.
C4.	Important views to or from a heritage item must not be impacted or obscured by new development.
C5.	Car parking of new development must not be a visually prominent streetscape element or to markedly different from that of the heritage item or heritage conservation area in the vicinity.
C6.	Development adjacent to a heritage item or a heritage conservation area must not jeopardise the structural integrity of the heritage item and components of its site, nor the structural integrity of components (including buildings) of a heritage conservation area.

C3.2 Scale

Scale is the size of a building and its relationship with its surrounding buildings or landscape. Buildings of inappropriate scale, in the vicinity of a heritage item, can detract from its contribution to the streetscape and/or townscape.

Objective

O1. To ensure that new development in the vicinity of a heritage item is of a scale that does not undermine the significance of the heritage item.

Controls	
C1.	Development in the vicinity of a heritage item should not have a scale, bulk or height that is incongruous with the setting of the heritage item.
C2.	Development of a larger scale is allowable only if the new development will not be visible from the public realm.
C3.	The form of proposed new development of a larger scale must be modulated to reduce its apparent bulk.

C3.3 Siting

Siting relates to the position of the building on the site and includes the orientation of a building in relation to the street as well as the setbacks of the building from the boundaries.

Setbacks define the overall footprint of a building and the outer extremities of that building in relation to the front, side and rear boundaries.

Setbacks of buildings in the vicinity of heritage items can be of importance in ensuring the retention of important views to and from the heritage item. In some cases, it is also necessary to consider the potential impact of the building on important landscape elements associated with the heritage item.

Objectives

O1. To ensure new development in the vicinity of a heritage item is sited so that it does not obscure important views to or from the heritage item.

O2. To ensure that new development in the vicinity of a heritage item does not adversely impact landscape elements that are, or are associated with, a heritage item.

Controls	
C1.	The setback of new development (including alterations and additions) in the vicinity of a heritage item should ensure that important views to or from the heritage item are not adversely impacted.
C2.	The setbacks of new development in the vicinity of a heritage item or heritage conservation area should ensure that landscape elements associated with the heritage item or heritage conservation area retain the important aspects of their relationship with the heritage item or heritage conservation area.
C3.	The setbacks of new development in the vicinity of a built heritage item should generally be equal to or greater than that of the heritage item.
C4.	The side and front setbacks of new development must be similar to the spacing of contributory buildings in the heritage conservation area in the vicinity.
C5.	New buildings must conform to the orientation pattern of the heritage item or heritage conservation area.

C3.4 Materials and Colours

New development should take into consideration the dominant original materials of heritage items in the vicinity of the development. Materials should be selected so that attention is not drawn away from the heritage item to the new development.

Objective

O1. To ensure that new development in the vicinity of a heritage item does not detract from the importance of the heritage item in the streetscape.

O2. To ensure that external materials and colours off new development in the vicinity of heritage conservation areas are compatible with those of the conservation area.

Controls	
C1.	Materials and colours for development in the vicinity of a heritage item shall be selected to avoid stark contrast of the adjacent development where this would result in the visual importance of the heritage item being reduced.
C2.	Materials for new development in the vicinity of a conservation area must be compatible with the materials and colours of the dominant contributory buildings in the conservation area.

C3.5 Landscaping

Landscape elements make an important contribution to the setting of heritage items and heritage conservation areas.

Objective

O1. To ensure new development in the vicinity of a heritage item or heritage conservation area retains and enhances the landscape setting of heritage items and conservation areas.

O2. To ensure that landscape elements that contribute to the significance of a heritage item or heritage conservation area, but that may not be part of the heritage item or heritage conservation area, are retained.

Controls	
C1.	Established tree canopies must be retained. Development must not adversely affect the health and viability of a tree.
C2.	Established gardens that contribute to the setting of a heritage item or heritage conservation area must be retained.
C3.	New front fences must be visually compatible with the front fence of the heritage item in the vicinity or those of the heritage conservation area in the vicinity.
C4.	Landscape elements that have a significant historical or aesthetic relationship to the heritage item or heritage conservation area must be retained and protected.

C4 Development in Heritage Conservation Areas

Heritage Conservation Areas (Conservation Areas) usually have a strong streetscape or townscape character resulting from development of similar style, scale, form and materials during a relatively short period of time. However, a conservation area is more than a place that looks good because of its streetscape, design, neighbourhood amenity, or the individual buildings it contains. Conservation Areas have a sense of place which is hard to define and hard to replace. This is because their character reflects not just the buildings in the area, but also the reasons for the buildings, the changing social and economic conditions over time, and the physical responses to those changes.

For development within a conservation area, it is important to appreciate the character and significance of that area when designing additions, alterations or infill development. An analysis of key aspects of each Conservation Area is given in Appendix 1. Appendix 1 also provides maps indicating if a property is considered to be a contributory item to the conservation area (i.e. it is considered to contribute to the heritage value of the Conservation Area) or whether it is considered to be neutral in the conservation area or whether it is considered to be infill development (i.e. it does not contribute to the heritage value of the Conservation Area).

For work to buildings within a conservation area, the following guidelines should be read in conjunction with the description and analysis of the relevant conservation area found in Appendix 1.

The following outlines the criteria for determining whether a place is considered to be contributory, neutral or infill within the conservation area.

- Contributory: Built during a period directly relating to the significance of the conservation area as identified in the statement of significance for the conservation area. The original form of the building is substantially intact, or where they have been altered, are recognisable and unsympathetic changes are reversible.
- Neutral: Neutral buildings are those that neither contribute nor detract from the history and character of a conservation area.
- Detracting: Detracting buildings are buildings that are intrusive in a heritage conservation area. They do not represent a key period of significance and detract from the character of a heritage conservation area.

C4.1 General

Setting relates to the space and details around buildings in a conservation area that contribute to its heritage significance and may include the visual catchment of a conservation area. Street trees, gardens, fencing and pavement can all contribute to the setting of a conservation area. The setback of buildings from the street and the space between buildings also contribute to the setting of a place.

Objectives

O1. To maintain and enhance the existing character of the streetscape of a conservation area.

O2. To ensure that new development respects the established patterns in the streetscape of a conservation area, including setbacks, siting, landscaped settings, carparking and fencing.

O3. To ensure that the character of the conservation area is retained and enhanced.

O4. To ensure contributory buildings, places and components of conservation areas are to be retained and not demolished.

O5. To enhance the contribution of neutral and detracting buildings, places and components to the conservation area.

Controls	
C1.	Contributory buildings and components of a heritage conservation area must be retained, conserved, and enhanced.
C2.	Neutral buildings must be retained and their contribution to the conservation area greatly enhanced, unless it can be demonstrated that this is not feasible, and that the replacement building and the associated works, will make a greater contribution to the conservation area than the existing building and associated site elements eg gardens, trees and fences.

C3.	Detracting buildings and site elements are encouraged to be demolished or altered so long as the replacement building and associated site works will make a greater contribution to the conservation area than the existing building and its associated site elements eg gardens, trees and fences.
C4.	New work in a heritage conservation area is to respect the relevant contributory components of that conservation area.
C5.	New development must be consistent with the streetscape rhythm of contributory buildings in the conservation area.
C6.	New buildings must conform to the orientation pattern of existing contributory buildings in the conservation area.
C7.	No new structures can be built forward of the established street building line – on both primary and secondary street frontages.
C8.	The established landscape character of the locality, including the height of the tree canopy and density of boundary landscape plantings, must be retained in any new development.
C9.	Additions are to be set behind the main body of the existing house so that they have limited visibility.
C10.	The heritage item, where contributory, is to be the visually dominant element of a site.
C11.	Maintain the historical pattern of development of individual buildings on separate allotments of land separated by garden space.
C12.	Maintain front garden areas with lawns and associated pathways as traditional garden settings for houses.
C13.	Development must follow the natural slope of grounds. Cuts, excavation or infill of natural ground levels should be limited to 1 metre.
C14.	Conservation works to contributory buildings and elements of the conservation area must be undertaken if the following is proposed. • a large addition • adaptive re-use • a secondary dwelling
C15.	Conservation works must be described in a detailed schedule with accompanying detail drawings and must be lodged with the development application.

C4.2 Scale

Scale is the size of a building and its relationship with its surrounding buildings or landscape. It is important that new development in conservation areas respects the scale of the existing buildings and/or landscape elements that contribute to the significance of the conservation area.

Objectives

O1. To ensure that new development in or in the vicinity of a conservation area is of a scale consistent with the existing development in the vicinity of the site that contributes to the character of the heritage conservation area.

O2. To ensure that additions and alterations to a building within a conservation area are of a scale consistent with the contributory buildings in the conservation area.

O3. To ensure that landmark buildings which will generally be surrounded by buildings of lower scale are not diminished by large scale development in the vicinity.

Controls	
C1.	Development must keep and repeat the single storey scale of contributory buildings in the conservation area, and the maximum wall height must relate to nearby contributory buildings or heritage items (notwithstanding landmark mansions, public buildings, schools etc).
C2.	New buildings should utilise architectural language compatible to that of the area and the adjacent streetscape, including scale, roof form and slope, massing, proportions, fenestration patterns, materials, finishes, colours and other features.
C3.	First floor additions are not permitted if they require changes to the main roof of an existing house.
C4.	Rear additions are to be formed within existing side setbacks of the house.
C5.	The maximum wall height of a pavilion extension should not exceed the wall height of the existing house, as measured externally from the ground to under the eaves. Links to rear pavilion additions should be lower (set below the existing eaves) and the roof space above the original house should not be integrated with the addition.
C6.	The scale of proposed alterations and additions must not overwhelm that of the main body of the existing building. The main body of the existing building must remain the visually dominant built form in the streetscape. In the case of a house, the main part of the house is generally set under the main roof.
C7.	Side walls must not exceed 7 metres in length.
C8.	Council may consider an addition taller than the main body of a house provided: a) the addition has a pavilion form; b) the original roof design and features are retained and remain clearly apparent; c) the scale of the building does not disrupt the continuity of the scale and character of houses when viewed from the street; d) the roof space above the original house is not integrated with the addition; e) the addition is visually recessive; f) conservation works to the existing house are undertaken; and, g) other relevant development controls are satisfied.

C4.3 Form and detailing

The form of a building is its overall shape and volume and the arrangement of its parts. The rooflines of buildings, and elements such as chimneys, parapet walls, verandahs etc can contribute greatly to the character of an area.

Objectives

O1. To ensure that new development in a conservation area relates positively to the dominant forms of existing contributory buildings in the conservation area.

O2. To ensure that buildings that contribute to the character of a conservation area retain their importance in the streetscape and/or townscape.

O3. To encourage authentic restoration or reconstruction based on documentary (research) or physical evidence.

Controls	
C1.	Preferred forms of additions are linked pavilions or skillion extensions. Additions to front or side of an existing dwelling are not allowed. An alternative option, which will be considered on its merits, is to extend the existing roof over a single storey addition. In this case the new roof must match the form and slope of the existing roof and be set below the existing main ridge.
C2.	Important elements of the form of a contributory building, such as main roof forms, chimneys, parapet walls, verandahs etc, must be retained, must also retain their integrity (including structural integrity), and must not be obscured by alterations and additions.
C3.	The roof forms of new buildings must complement the original roof forms of nearby contributory buildings.
C4.	The roof forms of additions must complement that of the existing main roof of the house, if it is a contributory building.
C5.	Chimneys and roof features (eg ventilation gablets and louvres) must not be removed from contributory buildings.
C6.	Additions and alterations to existing buildings that contribute to the character of a conservation area should not detract from the original form of the existing building as viewed from the public realm.
C7.	Additions should utilise architectural language compatible to that of the original building. This includes scale, massing, roof form and slope, proportions, fenestration patterns, materials, finishes, colours and other externally visible features.
C8.	The treatment of the street façade of new development should relate to existing nearby buildings that contribute to the conservation area. This should include consideration of the massing and modifications of the building, proportions of verandahs, rhythm of openings, and height.
C9.	Keep existing roof forms on original houses visible in their original form. Additional rooms above the existing main body of the house should be within the existing roof space as seen from the street, ventilated by flat in-plane windows facing the rear. Alterations of roof form, dormer windows, or mansard roofs are not supported.
C10.	Open verandahs visible from the public domain are to be retained.
C11.	Inappropriate changes, such as the enclosure of front verandahs, are to be reversed.
C12.	“Pop top” style roof additions are not permitted.
C13.	Original features of contributory buildings in conservation areas are to be retained and repaired. If missing, they are to be replaced.
C14.	New work in heritage conservation areas comprised of shopping strips must: • relate to the established forms, massing, proportions, and details of the conservation area; • ensure the street wall height reflects the established wall height (generally two storeys); • ensure that the contributory buildings remain the prominent built elements in the streetscape; • ensure that contributory buildings that have more than their front façade visible retain their three dimensional form; • avoid “facadism” (the retention of only the front façade); • ensure that the rhythm of buildings in the streetscape is maintained; and, • ensure that additional storeys, if permitted, are set well back and are visually recessive in mass, scale, materiality and colours.

C4.4 Siting

Siting relates to the position of the building on the site and includes the orientation of a building in relation to the street as well as the setbacks of the building from the boundaries.

Most buildings in a conservation area are oriented to the street frontage. The regular orientation of buildings contributes to the pattern and rhythm of the streetscape.

Setbacks define the overall footprint of a building and the outer extremities of that building in relation to the front, side and rear boundaries. In conservation areas, setbacks are of greater importance in establishing the continuity of the streetscape. Side setbacks are also of importance in providing separation between buildings and establishing a rhythm in the streetscape. Rear setbacks are also important as they provide space a backyard where trees can be planted. The canopies of trees in the backyard is an important characteristic of many of Council's heritage conservation areas.

Objectives

O1. To retain the established pattern buildings and gardens in the streetscape.

Controls	
C1.	The front setback for new work is to be consistent with the existing front setbacks typical for the street for contributory development, or in the case where setbacks differ, the front setback is to be the average of the setbacks of the immediately adjoining buildings on either side.
C2.	Side setbacks (including alterations and additions) must match the pattern of adjacent and nearby contributory development. In the case of residential areas, this will often include a greater setback on one side of the development to provide vehicular access at the side of a property.
C3.	The orientation of development must follow the established pattern of contributory development in the conservation area.
C4.	Development must be sited to avoid harming the health and viability of existing trees that contribute to the conservation area.
C5.	Rear setbacks must be sufficient to ensure a good sized back yard is retained/provided. The size must be sufficient to plant an appropriately sized tree.
C6.	Additions are to be located behind the original main body of the existing house.

C4.5 Materials and colours

The quality of many of the conservation areas in Canada Bay is reinforced by the use of a cohesive palette of materials and colours. Use of sympathetic materials and colours can help new development to blend into existing streetscapes.

Development that includes changing roof materials, reskinning, rendering or painting of face brickwork can degrade the character of a conservation area.

New development should take into consideration the dominant original materials of contributory development in the conservation area. Where there are contributory buildings of differing materials in close proximity to the proposed development, the building that reflects the dominant period of development in the conservation area should be given greater consideration when selecting materials.

Objectives

O1. To encourage external materials consistent with the original materials of existing contributory building stock in a conservation area.

O2. To encourage colour schemes which complement the style of the building and character of the conservation area.

Controls	
C1.	Original materials of contributory buildings in conservation areas should not be replaced with different materials, or with materials of different colours.

C2.	Development must use materials and colours predominant in the conservation area, such as face brick, clay tiles, and painted timber Do not use hearted, speckled, multicoloured or textured bricks in light colours, or glazed roof tiles. Preference is given to materials in darker, recessive colours.
C3.	Non-original materials of existing contributory buildings in conservation areas that are being replaced shall, if possible, be replaced with material that matches the original material as closely as possible.
C4.	Painting, rendering, bagging or re-skinning of face brickwork and sandstone is not permitted.
C5.	Painting or rendering original face brick walls is not permitted, and re-skinning may exceptionally be considered where condition of fabric does not allow its further retention. Timber houses are to be re-clad with timber weatherboards of a profile to match the existing.
C6.	Materials must be compatible with the existing house if it is contributory, and with the original materials of the dominant contributory buildings in the conservation area.
C7.	Colour schemes must have a hue and tonal relationship similar to that of traditional colour schemes for the dominant style of development in the conservation area
C8.	The use of fluorescent paint and primary colours is not permitted.
C9.	Re-roofing should use materials matching original.
C10.	The use of modern finishes, including stencilled concrete for driveways, is not permitted.
C11.	Additions must utilise same or similar materials as the existing house, or lighter weight materials.

C4.6 Doors and Windows

The spacing, proportions and detailing of doors and windows of buildings in or in the vicinity of conservation areas usually contributes to the quality of the streetscape. Altering windows and doors or adding new openings can dramatically affect the character of a building and gradually erode the character and streetscape of a conservation area.

Objectives

O1. To retain original door and window details of contributory buildings in conservation areas.

O2. To ensure that original or significant doors and windows are not obscured or altered by fittings and additions.

O3. To ensure that fenestration patterns and proportions are consistent with original development in the conservation area.

Controls	
C1.	Extensive areas of glazing are not permitted for doors and windows visible from the public realm on buildings.
C2.	Original door and window openings visible from the public realm on contributory buildings should not be widened.
C3.	Original doors and windows visible from the public realm on contributory buildings should be conserved.
C4.	Roller shutters, security bars and grilles are not permitted on window and door openings that have a frontage to the street or that are adjacent to public open space.
C5.	Additions to external doors, including security screens and grilles, should not obscure or distort the form of doors or the original character of buildings.

C6.	New door and window openings to contributory buildings that are visible from the public realm should be of proportions and details that relate to existing door and window openings.
C7.	Where non-original joinery to doors and windows that are visible from the public realm is being replaced, the details of the new joinery should be based evidence of the original joinery to doors and windows in the building.
C8.	Skylights should be located on rear roof slopes where they will not be visible in the public realm.
C9.	Dormer windows are not appropriate.
C10.	Doors and windows for new development (including alterations and additions) must be sympathetic to the character of the conservation area.

C4.7 Car parking

Garages and carports can have the greatest detrimental impact on the aesthetic qualities of conservation areas. Garages and carports in front of the building line obscure views of the contributory buildings and break the rhythm and pattern of the streetscape. The proportions of garage doors does not relate to the smaller and more vertical proportions of windows and doors usually found on contributory buildings within conservation areas.

Objective

O1. To ensure that, where possible, garages and carports are designed to minimise the visual impact on the streetscape of conservation areas.

Controls	
C1.	Where garages have historically been located in backyards, this placement is required. Where this is not the case, garages and carports must be located as far behind the front building alignment as possible and at least 1m behind front wall.
C2.	Garages and carports should not be incorporated into the building.
C3.	Where possible, garages are to be located on the rear lane.
C4.	Maintain the established pattern of one opening per allotment for car access. Any new vehicular crossover must avoid tree protection zones of street trees.
C5.	Driveways and crossovers should be made of concrete, bitumen, gravel, dark bricks or other non-obtrusive material. Wheel tracks with central grass/planting are preferred to fully paved driveway space.
C6.	Carports may be sited beside the house only where they: a) are constructed of light weight frame of timber or metal, without enclosures b) stand at least 1 m back from the front wall of the building (not the front wall of the verandah/porch), and c) are fully detached from the building and do not obstruct light into the building.
C7.	Garage may be sited beside the house if they are set back at least 3 metres from the front wall of the house (not the front wall of a verandah or porch).
C8.	Hardstand car spaces set in the front gardens are in most cases not acceptable. In cases where they are considered appropriate, they must be a single car space, and paved with dry pressed smooth faced bricks set on edge. The creation of a hardstand space must not require extensive excavation, changes to the front of the existing building, or the loss of important landscape elements.
C9.	Garages and carports must be sized for a single car unless they are set in the backyard or are not visible.
C10.	Carports and garages must not adversely impact on original architectural features.

C11.	Attics above garages are permitted where the garage is located on a rear lane provided: a) the attic is wholly contained within the roof space; b) the garage has a maximum height of 5.4 metres; and, c) the roof slope is between 30° and 40°.
C12.	Basement parking is not permitted.

C4.8 Fencing

Fencing (including gates), particularly fencing facing the street, is of particular importance in conservation areas. Consistent and uniform fencing can contribute significantly to the streetscape and character of a conservation area. Fencing should complement the style and scale of the house. Inappropriate fencing can detract from the streetscape by interrupting the pattern of development and by obscuring views.

Objectives

O1. To conserve gates and fences that are early or contemporary with contributory buildings in a conservation area.

O2. To ensure new fences and gates are consistent with the character of the conservation area and in particular with contributory housing in a conservation area.

O3. To ensure that the quality of the streetscape or townscape in a conservation area is not diminished by inappropriate fencing in or in the vicinity of a conservation area.

Controls	
C1.	Keep existing fences that are contemporary and contribute to the understanding of the history and development of the area.
C2.	For new developments, use new front low brick fences (under 1.2m high) designed to match the materials of the house and associated metal gates on front boundaries of properties. Sliding gates and automated gates are not supported.
C3.	For contributory houses, allow new front fences under 1.2m high appropriate to style and period of the house, including wire mesh, timber, or brick. New timber picket fences are supported only where these are a historical feature of the area. Low brick fences topped with timber railings are not supported. Lych gates and arbours may be acceptable if accurate reconstructions of originals. Sliding gates and automated gates are not supported.
C4.	Unless documentary or physical evidence is provided to establish a greater height, fencing forward of the building line constructed of solid material such as masonry, should not be greater than 900mm in height above the adjacent public footpath level. In all cases, the height of fencing should relate to the style of the house and width of the allotment.
C5.	Unless documentary or physical evidence is provided to establish a greater height, fencing forward of the building line constructed of material such as timber pickets, metal palisades or wrought metal should not be greater than 1.2m in height above the adjacent public footpath level.
C6.	Original face brick or sandstone fencing in a conservation area should not be painted.
C7.	Original sandstone walls are to be retained and repaired if necessary.
C8.	Side and back boundary fences must be traditional lapped timber paling fences. Colorbond steel fences are not permitted.
C9.	The width of the driveway gates must be minimised.
C10.	Driveway gates must not be sliding gates.

C4.9 Landscape elements including paving and driveways

Landscape elements are of great importance in contributing to the aesthetic quality of conservation areas. They can often be landmarks and contribute to the setting of a building. The design of front gardens provides a setting for the house and reinforces the character of the place. In many conservation areas, street plantings are an integral part of the original design of the area.

Objectives

O1. To retain important landscape elements and the landscape setting that contribute to the significance of conservation areas.

O2. To reinforce the original and significant qualities of the conservation area through appropriate landscaping.

Controls	
C1.	Street trees in conservation areas should not be removed to allow for new development.
C2.	Original garden features as well as established trees, shrubs, boundary planting and garden layouts that contribute to the significance of the conservation area must be retained and conserved. If original landscaping elements have been removed they should be reinstated.
C3.	New front gardens must complement the style of the building and character of the conservation area.
C4.	A front path leading from the front gate to the front door must be provided. It must be separated from the driveway by a garden bed or lawn unless there is evidence that there was not a separate front path.
C5.	When designing new gardens, reference should be made to surviving plants and garden elements which indicate the basic garden structure, and can be worked into new appropriate designs
C6.	Front gardens must be deep soil with the only paved areas being the front path and the driveway. Shrubs must be planted in a garden bed along the front boundary. An appropriate sized tree should also be planted in the front garden.
C7.	Storm water detention tanks must not be located in the front garden unless they are under the driveway.
C8.	Existing driveways and footpath crossings that relate to original development in a conservation area should not be relocated.
C9.	Double driveways and footpath crossings will not be permitted in conservation areas.
C10.	New driveways should be pairs of driveway strips constructed of off-white or red oxide coloured concrete, or brick on edge, with grass or ground cover between. Alternatively, the driveway could be brick on edge (if wheel strips not used).
C11.	A garden bed planted with shrubs must be provided along the boundary side of any driveway and hard stand car parking space.
C12.	New paving must be appropriate to the style of the building and character of the conservation area.
C13.	Keep at least 60% of the site as garden space. Council will consider a minimum garden space of 50% where allotments are less than 700 m^2. Swimming pools, paved hard stands and other artificial areas are not considered part of garden space.
C14.	Backyards must be largely comprised of deep soil areas capable of supporting a tree commensurate with the size of the backyard. The backyard must have at least one tree.

C4.10 Outbuildings

Early or significant outbuildings, such as sleep-outs, shade-houses and pergolas are important in contributing to the aesthetic quality, setting and story of use and development of a place.

New outbuildings such as garden sheds, outhouses, gazebos and pool pavilions can easily detract from the quality of the streetscape. The location and setting of these must be carefully considered so that they have minimal impact on the streetscape.

Objective

O1. To minimise visual intrusion on the streetscape of the conservation area and views from public places due to outbuildings.

Controls	
C1.	Original or significant outbuildings including sleep-outs, shade-houses and pergolas should be retained and conserved.
C2.	Outbuildings should be located in the rear yard of properties within a conservation area.
C3.	Outbuildings should be single storey and designed so that they have no impact, on the streetscape and setting.

C4.11 Services

Careful consideration must be given to the introduction of new services so that they do not adversely affect the positive aesthetic qualities of a place or important building fabric or landscaping. New services include things such as lifts, air-conditioning, telecommunications, water management, fire protection measures, solar panels etc.

Objectives

O1. To ensure that new services are designed and located so they do not adversely affect the aesthetic values of the place.

O2. To ensure that new services do not require the removal or obstruction of built and landscape features that contribute to the heritage values of the place.

Controls	
C1.	New services must not damage built and landscape features that contribute to the heritage significance of a place.
C2.	New services must be located where they do not disrupt the aesthetic qualities of a place.
C3.	Air-conditioning units must not be located on roofs if this would result in the units being visible from the public domain.
C4.	Telecommunication elements such as conduits and junction boxes must not be located on front facades.
C5.	Storm water detention tanks, water storage tanks and the like must not be located within the front setback, except in the case that they are located below a driveway.
C6.	Kiosk substations and fire hydrant boosters must be located where they will have the least visual impact, and must be integrated into the landscape scheme.
C7.	Services such as solar panels, television aerials and satellite dishes are to be located on roof slopes facing the rear of a property in conservation areas.
C8.	Services should not be higher than the main ridge line of a building and should be located so that they are not visible from the public realm in a conservation area.

C4.12 Demolition

Demolition of buildings within a conservation area can gradually diminish the qualities of the conservation area. It is important that contributory buildings in the conservation area are retained.

Objective

O1. To retain the contributory buildings in a conservation area.

Controls	
C1.	Contributory buildings within a conservation area must not be demolished.
C2.	Post WWII additions to contributory buildings in a conservation area that are not visible from the public realm may be demolished subject to assessment of the contribution that the additions make to the heritage value of the conservation area.
C3.	Demolition of rear outbuildings is generally acceptable.
C4.	Demolition of original garages is permitted if it can be demonstrated that they are no longer functional. In this case an archival photographic record will be required.
C5.	Demolition of important elements and features, such as original main roofs, verandahs, windows, and front fences, is not permitted

C4.13 Subdivision

The subdivision patterns of many conservation areas is important in the existing streetscape. The regular sizes of blocks together with the regular setbacks of buildings helps to establish a rhythm to the streetscape. Consolidation of allotments often results in larger buildings that have an undesirable impact on the pattern of the streetscape. Similarly, subdivision of allotments can result in development with inadequate setbacks and/or narrow allotments that break the pattern of the streetscape.

Objective

O1. To retain subdivision patterns that contribute to the rhythm of streetscapes in conservation areas.

Controls	
C1.	Consolidation of allotments of an early subdivision within a heritage group or heritage conservation area is not allowed.
C2.	Subdivision of allotments of an early subdivision within a conservation area is not allowed.
C3.	New subdivision within a heritage group or heritage conservation area must reinforce the original pattern of development within the heritage group or heritage conservation area.

C4.14 Signs

Many commercial buildings built in the late nineteenth and early twentieth century incorporate areas on the main façade designed for locating a sign to identify the business operating within. This allows for appropriate signage while the unity of the streetscape is retained.

Residential streetscapes in conservation areas can be obscured by inappropriate signage. On most late nineteenth century and early twentieth century buildings, house names are incorporated into the building or placed on a small sign fixed to a wall near the front door.

Church signage must be consistent with the original placement and extent of signage.

Objectives

O1. To allow for appropriate signage on commercial buildings in conservation areas

O2. To ensure the original details of buildings in conservation areas are not obscured by inappropriate signage.

O3. To ensure that signage does not have a detrimental impact on residential parts of conservation areas.

Controls	
C1.	All commercial signs are to be restrained in visual prominence, of design compatible with style of the building, of high standard of materials, construction and graphics, and carefully placed in an appropriate location avoiding damage to the significant fabric.
C2.	Signage should include clear business identification by name and type, and should not include contact details, products offered or promotional messages. Graphics may be assessed for potential impact on heritage values.
C3.	New signs should be located in areas or elements of buildings that have traditionally been used for signage. Signs between the awning level and the parapet of a heritage item or a building in heritage conservation area are not permissible.
C4.	Shops are limited two signs per frontage, and other commercial tenants one sign per frontage from these types: a) Awning fascia sign, b) Under-awning sign, and c) Above-entry (hamper) sign.
C5.	In addition to the above, commercial tenants including shops are permitted traditional gilded lettering to glass. Areas under lettering should be limited to 5% of the overall glass area.
C6.	In addition to the above, commercial tenants including shops are permitted intrinsic sign types, such as written in the pavement, in tile work, etc. Any new intrinsic signs are to be designed and installed sympathetically with regard to existing intrinsic signs. In cases this may result in the potential locations for new signs being restricted or unavailable. Significant intrinsic signs in lead lighting or windows, painted on walls or as raised lettering in render must be conserved in situ. Any other significant existing signs need to be retained.
C7.	Internally illuminated signs are not permitted unless they are a reconstruction of an original significant sign.
C8.	Externally illuminated signs are permitted only where cabling and conduit supplying power to the sign is completely concealed and does not involve intervention in or damage to significant fabric.
C9.	The original name of building must be retained where it is significant.

C4.15 Conservation Works

Conservation works help to ensure that the heritage values of a place will be retained and enhanced. They are particularly important in circumstances where original features are in poor conditions, have been unsympathetically altered, or are missing. Conservation works must be guided by advice from suitably qualified and experienced people.

Objectives

O1. To retain and enhance the heritage values of a conservation area.

O2. To ensure that heritage conservation areas are enhanced through replacement of irreparable or missing elements and the reinstatement of important original elements of a building or garden.

O3. To ensure authentic restorations or reconstruction, based on documentary (research) or physical evidence.

Controls	
C1.	Comprehensive conservation works must be undertaken: • in the case of subdivision of a contributory property; • where a large addition or extensive alterations are proposed; and, • when a secondary dwelling is proposed
C2.	Conservation works must reinstate missing original features and repair damaged original elements. Conservation works can encompass front gardens and front fences as well as buildings. Originally open verandahs that have been enclosed should be reinstated as open verandahs.
C3.	Conservation works must be described in a detailed schedule with accompanying detail drawings and must be lodged with the development application.

C4.16 Secondary Dwellings

Secondary dwellings (granny flats) are desired by many people for family members or to provide an additional source of income. They can be additions to the existing dwelling, a conversion of part of the existing dwelling, or the construction of a detached dwelling. In each case need to be carefully designed to ensure that the heritage values and character of the heritage conservation area are not adversely affected. It is important that secondary dwellings do not constrain the ability of an existing residence to meet the needs of a contemporary family, for instance by such things as a large family/kitchen/dining area overlooking and opening to a good sized backyard, as this may put pressure on the existing house to be unsympathetically altered.

Secondary dwellings depend for their amenity on the amenity of the property on which they are located. They therefore need to share in this amenity eg the private space of the backyard.

Secondary dwellings facing rear lanes should be accessed through the front of the property as rear lanes typically do not have continuous footpaths and do not have active surveillance.

Objectives

O1. To ensure that secondary dwellings do not detract from the heritage significance of the heritage conservation area.

O2. To ensure that single family homes are not constrained in their ability to be changed and added to in order to meet the needs of a contemporary family.

O3. To ensure that existing houses retain an appropriate visual curtilage.

O4. To ensure that elements on a site that contribute to the heritage values of a heritage conservation area are not lost as a result of a secondary dwelling.

Controls	
C1.	Secondary dwellings must be visually subservient to the main house by a considerable degree.
C2.	Secondary dwellings must be single storey unless they are incorporated into a two storey house.
C3.	Secondary dwellings, where separate structures, must be located in the backyard, and must be set back from the side and rear boundaries sufficient to allow a garden setting around the secondary dwelling, unless the secondary dwelling is located adjacent to a rear lane.
C4.	In the case of houses that are heritage items, secondary dwellings must not constrain the ability of a house to function well for a contemporary family, as this would place the heritage house at risk of potential future unsympathetic changes.
C5.	Secondary dwellings must not result in the loss of any landscape features that contribute to the heritage values and character of the conservation area, in particular, a good sized backyard able to be planted with trees, the canopies of which contribute to the streetscape.
C6.	A path from the front gate associated with the house to the entrance of the secondary dwelling must be provided. The primary entry to secondary dwellings must not be from a rear lane.

D







PART D - LOCAL CHARACTER AREAS

Housing character in Canada Bay D-2

Late Victorian Cottages (1880-1895) D-2

Victorian Italianate Houses (1880-1895) D-3

Federation Houses (1896-1918) D-4

California Bungalow Style Houses (1918-1930) D-5

Moderne Bungalows (1930s) D-6

NOTE: Information will be added to this section following further studies and consultations.

Housing character in Canada Bay

The dominant housing styles in a street often contribute to the amenity of an area. In this regard, many of the streets in Canada Bay have groups of houses with consistent form, scale and materials.

It is not their specific historical significance nor individual architectural merits that makes houses so crucial to the character of Canada Bay,but more significantly their value as a grouping of complementary houses.

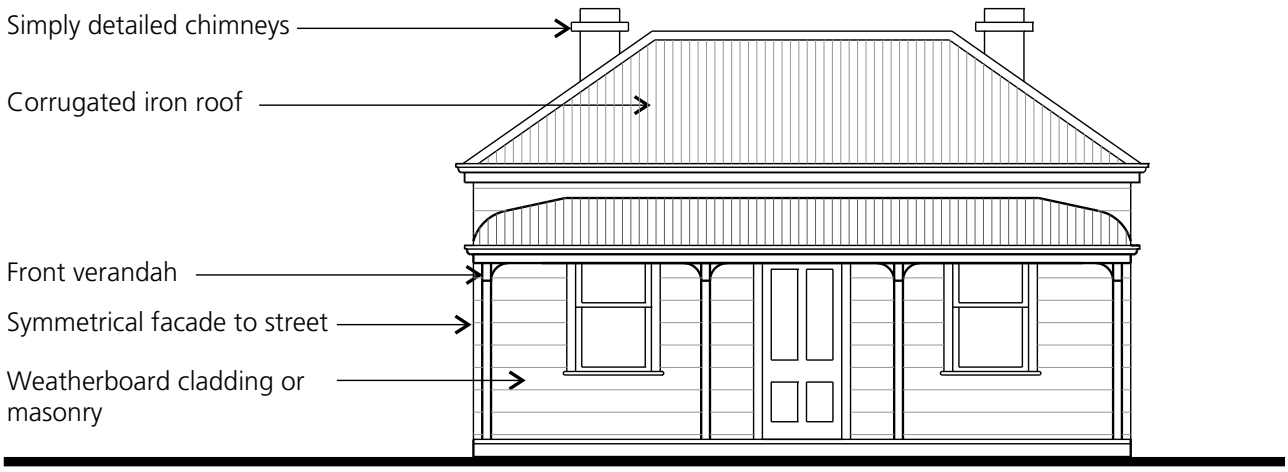
Alterations to houses are possible, but only where the character of the street is maintained. This means that changes to (including first floor additions) and even replacement of these houses is possible, but the overwhelming criteria is the reinforcement of the original streetscapes.

Although examples of other housing types are found in Canada Bay, there are five predominant styles which have fundamentally shaped the visual character of Canada Bay's streets:

Late Victorian Cottages (1880-1895)

Throughout Canada Bay there are still examples of late Victorian cottages built during the 1880s and 1890s. Most of these are clad with weatherboard and corrugated iron roofing, although some have been built of brick and roofed with slates. Most are simple, symmetrically fronted workers' cottages which show a strong Georgian influence.

These cottages are now rare and as such they are the last remnants of the early formative years of the suburban development of Canada Bay during the second half of the 19th century. Their conservation is therefore extremely important.



Stylised example of a Victorian Cottage

Victorian Italianate Houses (1880-1895)

Canada Bay has some good examples of Victorian Italianate houses built in the 1880s and 1890s. These houses are usually built of rendered masonry with a roof of slates (sometimes replaced with tiles). The houses have asymmetric fronts, often with a projecting wing terminating a verandah. Bay windows are common in these houses and the window and door openings are usually embellished with decorative rendered details.

A small number of these houses survive in the older parts of Canada Bay and illustrate the early years of the suburban development of the area. Their conservation is extremely important.

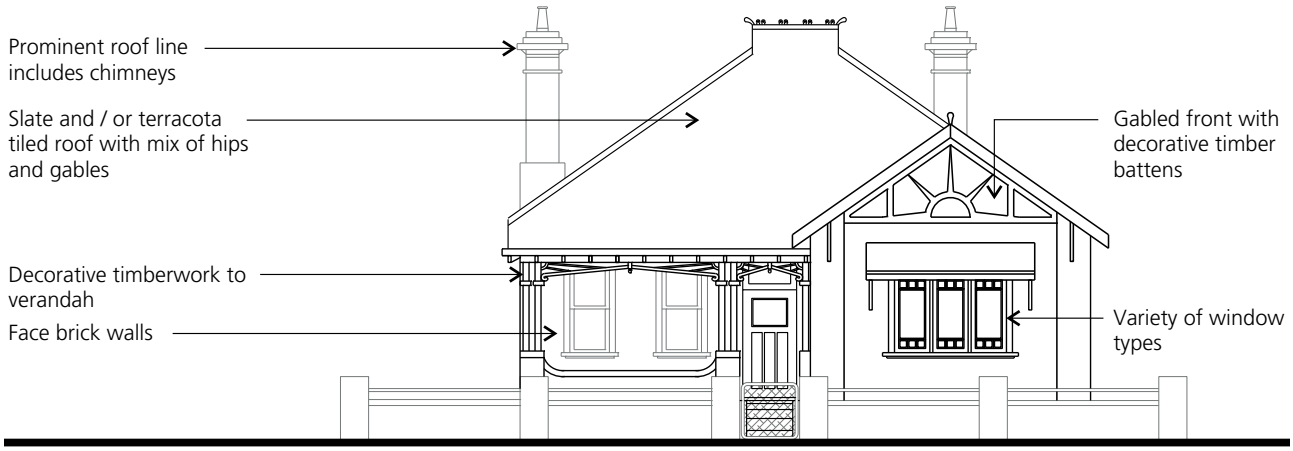


Stylised example of a Victorian House

Federation Houses (1896-1918)

In some parts of Canada Bay, there are very fine examples of Federation Period houses, also known as Queen Anne Style or Edwardian houses. These were built around the turn of the century and in the years leading up to World War 1. These houses showed an interest in the use and expression of natural materials such as brick, timber, slate and tiles. The design of the house was usually deliberately asymmetric with interest taken in creating interesting roof forms. Generous verandahs are a typical feature of the period.

These houses are significant in the area because they represent the first signs of coming middle class affluence and the growth of Australian nationalism in Canada Bay. They are also the first indicators of the suburbanisation of Canada Bay. These houses, particularly where they survive in groups, are also extremely important to the heritage and period character of Canada Bay.

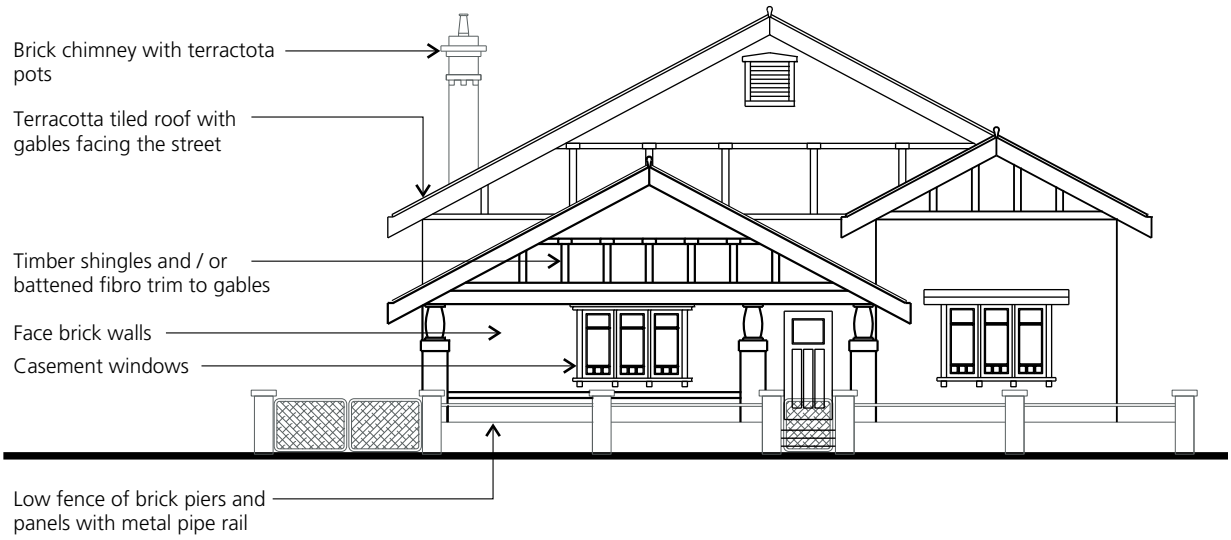


Stylised example of a Federation House

California Bungalow Style Houses (1918-1930)

The California Bungalow Style cottage was influenced by the low pitched, ranch style houses of California advertised in popular magazines of the 1920s. The Australian version of the style incorporated terracotta tiled and/or slate roofing with brick walls. It is typically identified by the use of low slung gabled roofs facing the street. A verandah will usually be found under one of the gables

Due to its popularity amongst working class families and small builders the Californian Bungalow became the typical house style in the 1920s and early 1930s, the period when much of Canada Bay underwent its greatest development. Concord in particular has large areas where the California Bungalow is the dominant style of housing. Large groups of California Bungalow style houses have created some very attractive streetscapes.



Stylised example of a California Bungalow

Moderne Bungalows (1930s)

When the Great Depression began in 1929, many of the newer subdivisions of Canada Bay remained incomplete, and entire sections remained either unsold or undeveloped. Many of these sites remained vacant throughout the early 1930s, and by the time that they were developed during the late 1930s, a general change in social mood and community taste had occurred.

The vibrancy and spirit of hope evoked by the Californian Bungalow style cottages gave way to a more sombre and less costly version of the Australian suburban house, which is known as the Moderne Bungalow style. The style of house was similar in bulk, scale and typical floor plan to previous house styles of the area, but it was characterised by a marked simplification of external features and a relatively sombre choice of brickwork and roof tile colour emphasised by the low horizontal lines.

Roofs were usually simple hipped forms, sometimes with a secondary hipped roof over a deep verandah with heavy brick piers. Embellishment was often limited to small areas of decorative brickwork and simple bay windows.

Some areas of Canada Bay, particularly towards the west, have very good examples of this style in large groups. The Moderne bungalows of Canada Bay blend very well with the Californian Bungalow style houses, and reinforces the early Inter-War character of many of Canada Bay's streets.



Stylised example of a Moderne Bungalow

E







PART E - SINGLE DWELLINGS, SEMI-DETACHED DWELLINGS, DUAL OCCUPANCIES AND SECONDARY DWELLINGS

E1 Land to which Part E applies E-2

E2 Design Quality E-3

E2.1 Design of dwelling houses, semi-detached dwellings, dual occupancies and secondary dwellings E-3

E2.2 Materials, colour schemes and details E-7

E3 Environmental criteria and residential amenity E-8

E3.1 Topography E-8

E3.2 Harbour foreshore development and foreshore access E-8

E3.3 Solar access to neighbours E-10

E3.4 Solar access to dwellings within the development E-10

E3.5 Solar access for solar panels E-10

E3.6 Solar access general guidelines E-11

E3.7 Shade guidelines E-11

E3.8 Visual and acoustic privacy E-12

E3.9 Traffic and transport corridor amenity impacts E-15

E3.10 Access to views E-16

E3.11 Safety and security E-17

E4 General Controls E-18

E4.1 Frontage E-18

E4.2 Building setbacks E-18

E4.3 Street orientation and presentation E-24

E4.4 Height of buildings E-25

E4.5 Bulk and Scale E-32

E4.6 Landscaped area E-32

E4.7 Parking and access E-34

E4.8 Private open space E-34

E5 Ancillary structures E-35

E5.1 Fencing E-35

E5.2 Site facilities E-37

E1 Land to which Part E applies

Part E generally applies to the land in the following areas:

- R1 General Residential zone
- R2 Low Density Residential zone

E2 Design Quality

E2.1 Design of dwelling houses, semi-detached dwellings, dual occupancies and secondary dwellings

Objectives

New buildings and alterations and additions should:

O1. Reflect the dominant building pattern of the streetscape with regard to the location, spacing and proportion of built elements in the streetscape.

O2. Complement and conserve the visual character of the street and neighbourhood through appropriate building scale, form, detail and finish.

O3. Reinforce existing streetscape features such as building setbacks, alignments, heights and fence design.

O4. Ensure that development conserves and respects significant streetscape items (such as street tree planting) and points of interest (such as views to waterways).

Street presentation

Controls	
C1.	Buildings adjacent to the street should address the street by having a front door and/ or living room addressing the street. The frontage of buildings should by their design, and the location of entries (including pedestrian pathways), be readily apparent from the street.
C2.	Roller shutters, security bars and grilles are not permitted on window and door openings that have a frontage to the street or that are adjacent to public open space.

Front facade articulation

Controls	
C3.	New buildings and additions should be designed with an articulated front façade - See Figure E2.1. The front façade should comply with the following requirements: • Where a garage is attached to a dwelling it must not be located within the primary façade; and • The secondary building façade should be set back a minimum of 1.5 metres from the primary building façade.
C4.	Entry alcoves recessed into, or protruding from, the front facade will not be considered as an articulated front facade.
C5.	Secondary building façade must not exceed 55% of the total site frontage and must be setback 1.5m from the primary building façade.
C6.	Primary building façade must not exceed 40% of the total site frontage.
C7.	The ground floor of the primary building facade must contain a habitable living room with a window.
C8.	Upper levels, including balconies must not extend further forward than the ground floor primary or secondary façade.

Refer to Figure E2.1

Roof design

Controls	
C9.	Use a similar roof pitch, form and materials to those predominantly identified in the Streetscape Character Analysis.
C10.	Where the prevailing roof form identified in the streetscape character analysis comprises a pitched roof, the roof pitches should be a minimum of 25 degrees.

C11.	Where it is considered that the streetscape will not be significantly altered and on the basis of improving the solar access or view corridors of nearby residential properties, Council may consider lower roof pitches than 25 degrees.
C12.	Designs for a dwelling in a conservation area or for additions to a heritage item must have an eave consistent with the existing dwelling(s) in the first instance, or have a minimum eave overhang of 450mm (excluding the gutter).
C13.	Dormers are not to have a height of more than 1.5 metres from base to ridge.

Verandahs

Controls	
C14.	Existing original verandahs should be retained.
C15.	The enclosure of original verandahs visible in the streetscape is not permitted. Enclosed verandahs are intrusive elements and should be re-opened and restored wherever possible.



Figure E2.1 - Example of front facade articulation control

Balconies

Controls	
C16.	The enclosure of balconies visible in the streetscape is not permitted. Balconies on existing housing visible in the streetscape should not be enclosed. Existing enclosed balconies should be re-opened and restored wherever possible.

Additions to semi-detached dwellings

Controls	
C17.	Any alteration and addition to an individual semi should recognise it as being one pair or group of similar, identical or complementary buildings. In this regard, any extension should be carefully integrated with the building to which it is attached, both in its present form and on the assumption that the adjoining owner may wish to undertake extensions in the future.
C18.	First floor additions should be set back from the principal street frontage of the building, in order to maintain a substantial portion of the existing roof unaltered over the front of the building and to locate the bulk of new development towards the rear. First floor additions should be set back beyond the apex or main ridge of the principal roof form of the building and should retain chimneys
C19.	The choice of materials utilised on additions and alterations to a semi-detached dwelling should complement the building as a whole.

Design of attached dual occupancies

Objective

O5. Ensure that the design of attached dual occupancies complements and enhances the character and streetscape of their locality and protects the amenity of neighbouring properties.

Controls	
C20.	Attached dual occupancies should be designed to have the appearance of a typical, single occupancy dwelling house when viewed from the street or a public place.
C21.	Attached dual occupancies where both dwellings are oriented towards the same street frontage are to ensure that one dwelling does not extend into the rear yard further than 5 metres beyond the other dwelling.
C22.	Attached dual occupancies should reflect the building form and roof lines of adjoining dwellings, where a pattern is established by a group of adjoining houses.

Driveways and access ways for attached dual occupancies

Controls	
C23.	No more than one third of the width of the frontage of a property should be used for driveways and access ways.
C24.	The provision of access to garages and additional parking spaces for dual occupancy dwellings should minimise paved surfaces to the front of the building.
C25.	Garages for each dwelling within an attached dual occupancy should be single car width only.
C26.	Where all existing dwellings are located to the left or right side of their respective allotment and have a side driveway, this pattern should also be observed by the design of the attached dual occupancy.

Driveways and access ways for secondary dwellings

Controls	
C27.	Access to parking spaces for both the secondary dwelling and principal dwelling are to be via a common or shared driveway.
C28.	Where the principal dwelling has a secondary street frontage, a second vehicular access for the secondary dwelling is to be considered.

Note: Parking is not required to be provided for a secondary dwelling.

E2.2 Materials, colour schemes and details

Objectives

O1. To ensure that the choice of external materials, colour schemes and building details on new development and existing houses visible from a public place, reinforces and enhances any identifiable visual cohesiveness or special qualities evident in the street and the adjoining locality.

O2. To encourage complementary and sympathetic wall treatments on new development and existing houses that are consistent with the architectural style of existing dwellings found in the street and the adjoining locality.

O3. To encourage roof forms and materials consistent with the positive qualities evident in the street and the adjoining locality.

O4. To encourage verandahs/balconies etc. that are consistent with original structures evident in the street and the adjoining locality.

O5. To permit flexibility in the choice of materials to meet the practical requirements of energy efficiency, construction and maintenance costs.

Controls

The colour and surface finish of external building materials should minimise the overall visual impact of new development and be sympathetic to the surrounding locality as identified in the relevant Character statement and the Streetscape Character Analysis submitted with the application.

Walls/ masonry

Controls	
C1.	Use darker face brick in streetscapes which predominantly exhibit this external finish.
C2.	Retain or incorporate existing sandstone fences, walls or wall bases into the design of the building.

Roof finish

Controls	
C3.	Terracotta coloured (orange/red) roof tiles should be utilised in streets where this is the predominant roof colour.

Balconies

Controls	
C4.	First floor balcony balustrades facing the street should use a different material to the main wall finish.

Colour schemes

Controls	
C5.	Subject to the Streetscape Character Analysis, no large expansive surface of predominantly white, light or primary colours which would dominate the streetscape or other vista should be used.
C6.	New development should incorporate colour schemes that have a hue and tonal relationship with the predominant colour schemes found in the street.
C7.	Matching buildings in a row should be finished in the same colour, or have a tonal relationship.

General

Controls	
C8.	All materials and finishes utilised should have low reflectivity.

E3 Environmental criteria and residential amenity

E3.1 Topography

Objectives

O1. To ensure that the natural topography and landform is maintained and the amount of excavation is minimised.

Controls	
C1.	Natural ground level should be maintained within 900mm of a side and rear boundary.
C2.	Cut and fill should not alter natural or existing ground levels by more than 600mm.
C3.	Habitable rooms (not including bathrooms, laundries and storerooms) are to be located above existing ground level.
C4.	Rock outcrops, overhangs, boulders, sandstone platforms or sandstone retaining walls are not to be removed or covered.
C5.	Soil depth around buildings should be capable of sustaining trees as well as shrubs and smaller scale gardens.

E3.2 Harbour foreshore development and foreshore access

Objectives

O1. To recognise, protect and enhance the natural, scenic, environmental, cultural and heritage qualities of the foreshore of the City of Canada Bay.

O2. To ensure the Parramatta River foreshore is developed and promoted as a community asset in public ownership or with unrestricted public access.

O3. Sydney Harbour is to be recognised as a public resource, owned by the public, to be protected for the public good:

- The public good has precedence over the private good whenever and whatever change is proposed for Sydney Harbour and its foreshores.
- Protection of the natural assets of Sydney Harbour has precedence over all other interests.
- The public good includes but is not restricted to the existing views, vistas and amenity available from the public and private domain.

Controls	
C1.	Building forms should follow the natural topography and maintain and enhance vegetation cover as viewed from the Parramatta River. For example, buildings are not to be cantilevered.
C2.	Roof lines should be below the tree canopy backdrop to maintain the importance of any treeline.
C3.	Buildings should be designed and constructed to present a recessive appearance when viewed from the Parramatta River through the use of materials, colours, wall articulation, building form and landscaping. Glass elevations and excessive use of windows resulting in reflectivity and glare will not be permitted.

C4.	Pergolas, boatsheds and other structures are to be designed and constructed to complement the overall appearance of the development. Such structures are to be no more than one storey in height.
C5.	Swimming pools and spa pools constructed within the foreshore setback are to have no more than 300mm of the pool wall visible above existing ground level.
C6.	Swimming pool and spa pool walls are to be suitably treated to complement the natural foreshore and where visible, are to be sandstone and to incorporate suitable screen landscaping.
C7.	Boundary fences are not permitted within 8.0 metres of the mean high water mark.
C8.	Retaining walls are to have a maximum height of 500mm.
C9.	Hard surfaces and artificial surfaces, such as paving, within the Foreshore Building Line Area must be limited to swimming pool surrounds or modest walkways between the residential building and foreshore structures such as swimming pools or boat ramps.
C10.	Mature trees or significant landscaping are not to be removed to locate foreshore structures.
C11.	Any development on the foreshore should: a) Enhance the existing flora of the allotment; b) Where appropriate, include native trees which will be 12 metres or greater at maturity; and c) Avoid introduced species known to seed freely or spread easily.

Protection of the natural foreshore

Controls	
C12.	Development on foreshore properties must not significantly alter the topography and must preserve natural foreshore features including cliffs, rock outcrops, rock shelfs and beaches.
C13.	Seawalls or retaining walls are not permitted in areas where the foreshore is in its natural state.
C14.	Where seawalls or retaining walls are permitted, they must be constructed of coarse, rock-faced stone or with stone facing (preferably sandstone) and not protrude more than 1.0m above the mean high water mark.
C15.	Slipways and stairs are to be designed and constructed to closely conform with the character of the natural foreshore.

Foreshore access

Please refer to the Canada Bay LEP for considerations in relation to the provision of foreshore access.

Controls	
C16.	Public access along the foreshore should be provided by means of (as a minimum) a 3 metre strip of land between mean high water mark and the development. The access may be secured by means of a registered covenant, agreement or instrument in favour of the Council (as provided for in the Conveyancing Act 1919) that burdens the relevant land, or by means of an obligation contained in a planning agreement that is entered into between the relevant landowner, the Council, or both.
C17.	Public access to the foreshore over public land is not to be obstructed by the location of foreshore structures.

E3.3 Solar access to neighbours

Objectives

O1. To minimise the amount of overshadowing of neighbouring developments and outdoor spaces to maintain their amenity.

Controls	
C1.	Direct sunlight to all north facing windows of habitable rooms of adjacent dwellings should not be reduced to less than 3 hours between 9.00am and 3.00pm on 21 June (mid-winter).
C2.	Where windows currently receive less than 3 hours, direct sunlight cannot be reduced.
C3.	Direct sunlight to 50% of the principal private open space should not be reduced to less than 3 hours between 9.00am and 3.00pm on 21 June (mid-winter).
C4.	Where 50% of the principal private open space currently receive less than 3 hours, direct sunlight cannot be reduced.

E3.4 Solar access to dwellings within the development

Objectives

O1. To maximise solar access to living areas and private open space in order to improve residential amenity.

Controls	
C1.	The proposed development shall receive a minimum of 3 hours of direct sunlight to all living room windows between 9.00am and 3.00pm on 21 June (mid-winter).
C2.	Direct sunlight to 50% of the principal private open space should not be reduced to less than 3 hours between 9.00am and 3.00pm on 21 June (mid-winter).

E3.5 Solar access for solar panels

Objectives

O1. Buildings should be sited and designed to ensure that the capacity of existing rooftop solar energy facilities on buildings on adjoining lots are not unreasonably reduced.

Controls	
C1.	New development should be sited and designed to avoid overshadowing of existing and potential roof top solar panels on adjacent and nearby properties.

Note:

a) A development that complies with all relevant planning controls is more reasonable than one that contravenes them. Where an impact arises as a result of non-compliance with one or more planning controls, even a moderate impact is unreasonable.

b) It must be recognised that the local government area is in an urban environment comprising narrow lots and dwellings located in close proximity to each other. For this reason it may not always be possible to retain the same level of solar access. In particular, an east-west (or similar) lot orientation is a difficult orientation to develop and it is often not possible to ensure that the same level of solar access is retained as currently exists.

c) Where scale of development complies with relevant standards and controls Council will not seek to protect solar access to solar panels.

E3.6 Solar access general guidelines

The numerical guidelines will be applied with the following principles in mind, where relevant:

a) The ease with which sunlight access can be protected is inversely proportional to the density of development. At low densities, there is a reasonable expectation that a dwelling and some of its open space will retain its existing sunlight. (However, even at low densities there are sites and buildings that are highly vulnerable to being overshadowed.) At higher densities sunlight is harder to protect and the claim to retain it is not as strong.

b) The amount of sunlight lost should be taken into account, as well as the amount of sunlight retained.

c) Overshadowing arising out of poor design is not acceptable, even if it satisfies numerical guidelines. The poor quality of a proposal's design may be demonstrated by a more sensitive design that achieves the same amenity without substantial additional cost, while reducing the impact on neighbours.

d) For a window, door or glass wall to be assessed as being in sunlight, regard should be had not only to the proportion of the glazed area in sunlight but also to the size of the glazed area itself. Strict mathematical formulae are not always an appropriate measure of solar amenity. For larger glazed areas, adequate solar amenity in the built space behind may be achieved by the sun falling on comparatively modest portions of the glazed area.

e) For private open space to be assessed as receiving adequate sunlight, regard should be had of the size of the open space and the amount of it receiving sunlight. Self-evidently, the smaller the open space, the greater the proportion of it requiring sunlight for it to have adequate solar amenity. A useable strip adjoining the living area in sunlight usually provides better solar amenity, depending on the size of the space. The amount of sunlight on private open space should ordinarily be measured at ground level but regard should be had to the size of the space as, in a smaller private open space, sunlight falling on seated residents may be adequate.

f) Overshadowing by fences, roof overhangs and changes in level should be taken into consideration. Overshadowing by vegetation should be ignored, except that vegetation may be taken into account in a qualitative way, in particular dense hedges that appear like a solid fence.

g) In areas undergoing change, the impact on what is likely to be built on adjoining sites should be considered as well as the existing development.

E3.7 Shade guidelines

Well-designed and correctly positioned shade provides protection from UV radiation where it is needed, at the right time of day and at the right time of year.

Objectives

O1. Ensure outdoor spaces are comfortable to use in all seasons.

O2. Protect users from direct and indirect sources of UV radiation.

O3. To provide well-designed shade.

Controls	
C1.	Take into consideration Cancer Council NSW Guidelines to Shade.
C2.	Ensure the shade structure is an adequate size. Larger shade structures have more area that is not affected by indirect UV radiation reflecting in from the sides.
C3.	Consider using barriers for side as well as overhead protection. Vertical screening with plants and trellises or opaque louvres can help to block indirect UV radiation, while still allowing breezes to flow through.
C4.	Extend overhead barriers past use areas. Make sure there is at least one metre of overhang past the actual area of use.
C5.	Avoid highly reflective surfaces. Choose surfaces that reflect minimal UV radiation.
C6.	Consider the arrangement of existing structures. A large number of small shade structures can be grouped together to form a single larger canopy for greater protection.
C7.	Use a combination of built shade and natural shade to adequately shade an area.

E3.8 Visual and acoustic privacy

Objectives

O1. Ensure the siting and design of a building provides a high level of visual and acoustic privacy for residents and neighbours in dwellings and private open space.

O2. To provide personal and property security for residents and visitors.

Controls	
C1.	Openable first floor windows should be located so as to face the front or rear of the building. Where it is impractical to locate windows other than facing an adjoining building, the windows should be off-set to avoid a direct view of windows in adjacent buildings.
C2.	Balconies should be located so as to face the front or rear of the building. No balconies are permitted on side elevations.
C3.	Provide a minimum sill height of 1.5 metres from finished floor level to windows on a side elevation which serves habitable rooms and has a direct outlook to windows or principal private open space (not being front yard) of adjacent dwellings or alternatively use fixed obscure glass.
C4.	Upper level balconies to the rear of a building should be set back a minimum of 2.0 metres from any side boundary and should have a maximum depth of 1.8 metres.
C5.	Upper level balconies that face side or rear boundaries will not be permitted when the upper level setback is less than 6.0 metres.
C6.	Provide suitable screen planting on a rear boundary that will achieve a minimum mature height of 6.0 metres where the rear upper floors are proposed to be less than 7.0 metres off a rear boundary.
C7.	Ground floor decks, patios and the like should not be greater than 500mm above natural ground level. If structures such as these are expansive and are sought on sloping ground, they should be designed to step down in relation to the topography of the site.
C8.	Where the visual privacy of adjacent properties is likely to be significantly affected from windows, doors and balconies, or where external driveways and/or parking spaces are located close to bedrooms of adjoining buildings, one or more of the following alternatives are to be applied: a) Fixed screens of a reasonable density (minimum 85% block out) should be provided in a position suitable to alleviate loss of privacy; b) Where there is an alternative source of natural ventilation, windows are to be provided with translucent glazing and fixed permanently closed; c) Windows are off-set or splayed to reduce privacy effects; d) An alternative design solution is adopted which results in the reduction of privacy effects; and e) Suitable screen planting or planter boxes are to be provided in an appropriate position to reduce the loss of privacy of adjoining premises. Note: This option will only be acceptable where it can be demonstrated that the longevity of the screen planting has been provided for eg. Automatic watering systems.
C9.	The introduction of acoustic measures to reduce traffic/aircraft noise should not detract from the streetscape value of individual buildings.
C10.	Habitable rooms for detached dual occupancy development are to have a minimum separation of nine (9) metres.

Use of rooftops of buildings and garages

Controls	
C11.	No trafficable outdoor spaces are permitted on the uppermost rooftop of a building or on garage roofs, such as roof decks, patios, gardens and the like, however; Outdoor roof space may be considered for buildings on steeply sloping sites where this is the dominant characteristic in the immediate vicinity as demonstrated by the Streetscape Character Analysis and there are no noise, privacy or amenity issues.

Refer to Figure E3.1, Figure E3.2, Figure E3.3 and Figure E3.4

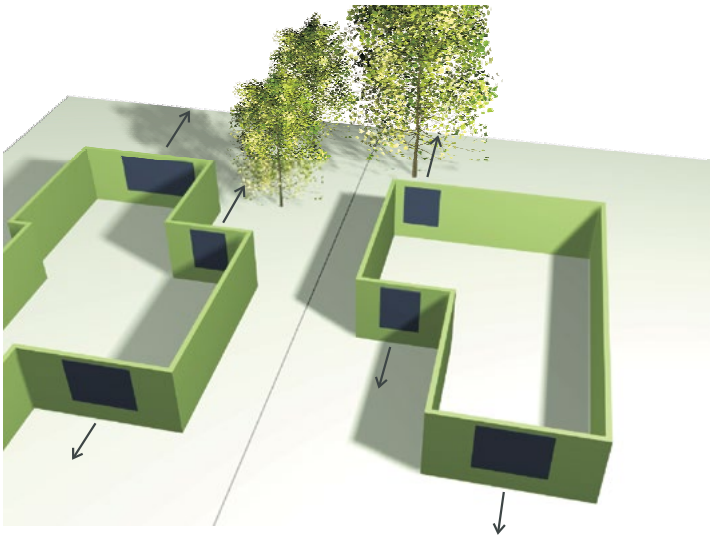


Figure E3.1 - Illustrated examples of appropriate measures to protect privacy - Orientation for private outlook

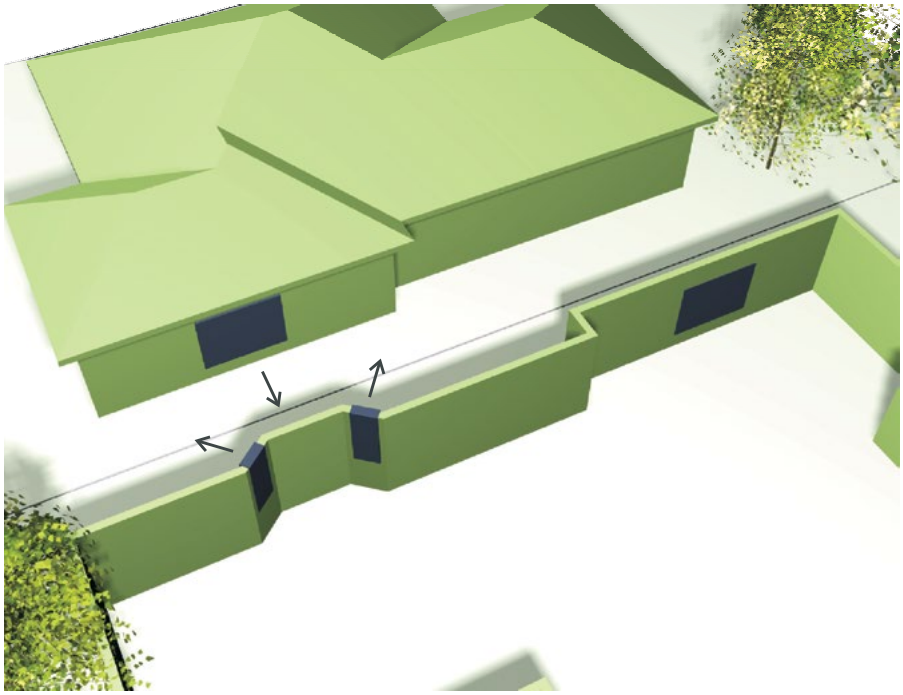


Figure E3.2 - Illustrated examples of appropriate measures to protect privacy - Splay windows

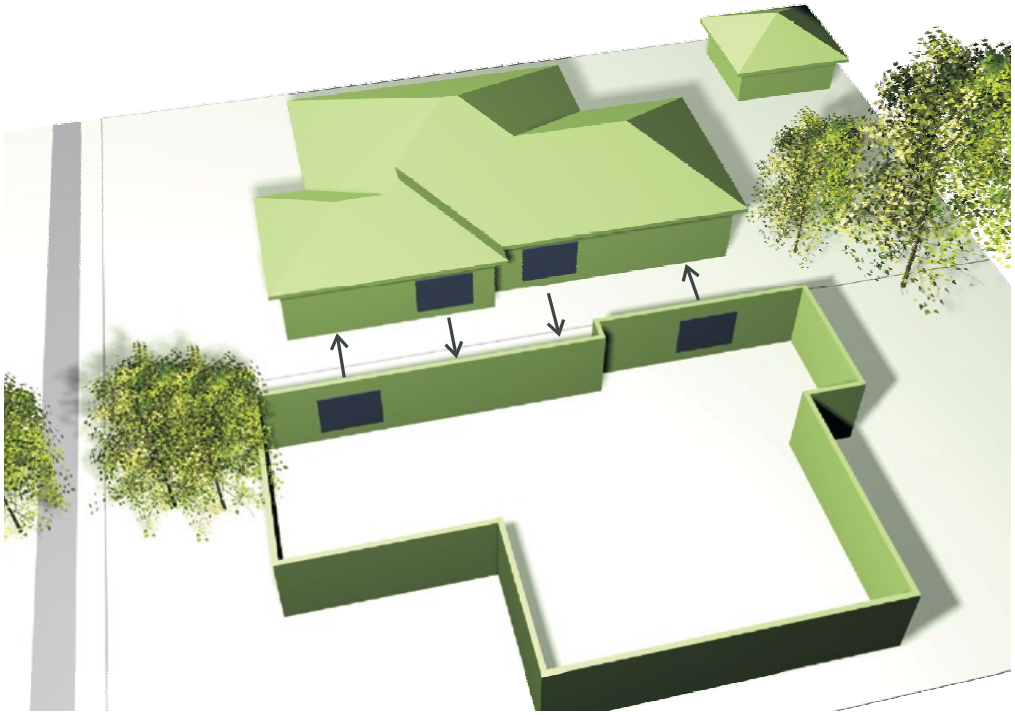


Figure E3.3 - Illustrated examples of appropriate measures to protect privacy - Offset windows

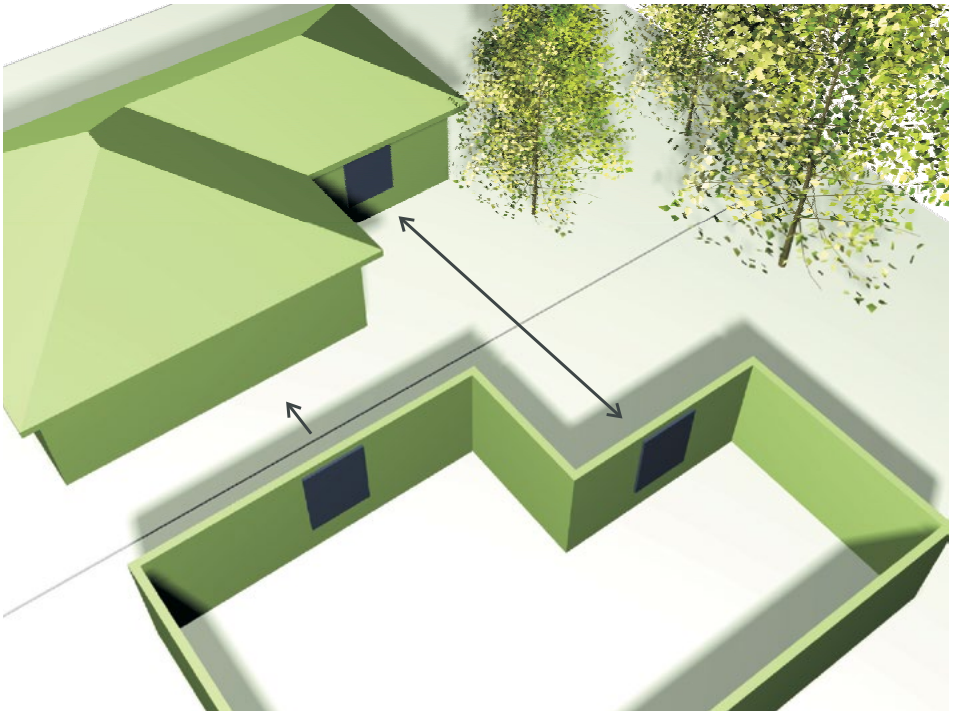


Figure E3.4 - Illustrated examples of appropriate measures to protect privacy - Separation between rooms

E3.9 Traffic and transport corridor amenity impacts

Objectives

O1. To protect building users from negative impacts (noise, air quality, vibration) from road and rail corridors.

Controls	
C1.	Development must consider the provisions of SEPP (Infrastructure) 2007 and *Development Near Rail Corridors and Busy Roads Interim Guidelines* and the design approaches illustrated in Figure E3.5 and Figure E3.6.
C2.	For residential components of new development, noise sensitive areas (living rooms, bedrooms) are located away from road and rail corridors.
C3.	Windows located towards road and rail corridors are to be double-glazed (or have laminated glazing) and have acoustic seals.
C4.	Internal habitable rooms of dwellings are to be designed to achieve internal noise levels of no greater than 50dBA.

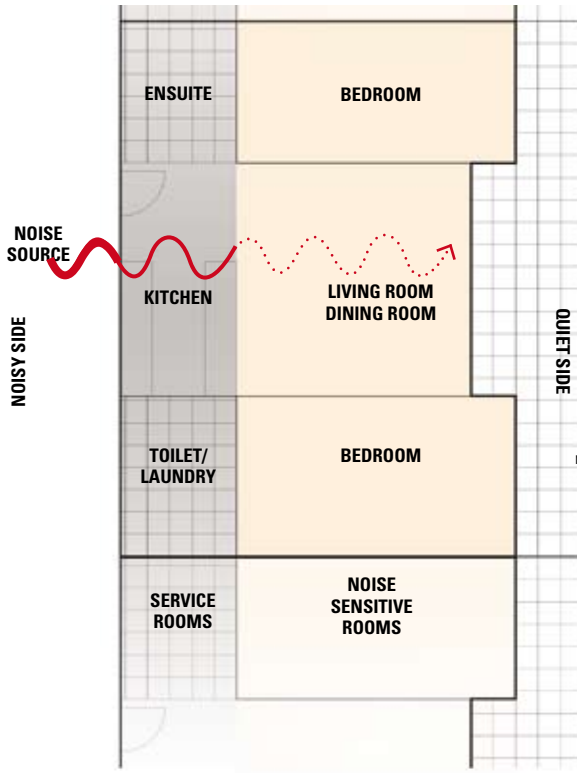


Figure E3.5 - Single Dwellings – locating noise sensitive rooms away from road noise

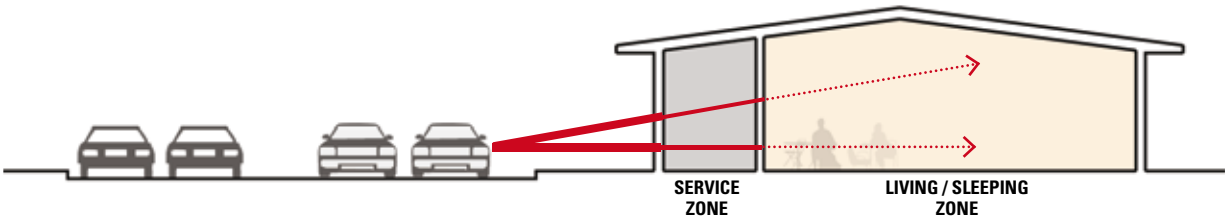


Figure E3.6 - Illustrated examples of appropriate measures to protect privacy - Offset windows

E3.10 Access to views

Objectives

O1. To protect and enhance opportunities for vistas and public views from streets and public places.

O2. To ensure views to and from the site are considered at the site analysis stage.

O3. To recognise the value of views from private dwellings and encourage view sharing based on the following four controls.

O4. To recognise the value of view sharing whilst not restricting the reasonable development potential of the site.

O5. Protect and enhance scenic and cultural landscapes.

To determine whether a development is satisfactory in relation to the Objectives pertaining to access to views, the following controls will be applied:

Controls	
C1.	Development should seek to protect water views, iconic views and whole views. Water views are valued more highly than land views. Iconic views (eg of the Harbour Bridge or the City skyline) are valued more highly than views without icons. Whole views are valued more highly than partial views (eg a water view in which the interface between the land and water is visible is more valuable than one in which it is obscured). An icon should be a prominent identifying feature of the landscape and should be commonly held by the wider community as having iconic status.
C2.	Development should seek to protect views from the front and rear of buildings and where views are obtained from a standing position. The expectation to retain side views and sitting views is often unrealistic.
C3.	Development should seek to protect views from living areas and minimise the extent of impact. The impact on views from living areas is more significant than from bedrooms or service areas (though views from kitchens are highly valued because people spend so much time in them). The impact may be assessed quantitatively, but in many cases this can be meaningless. For example, it is unhelpful to say that the view loss is 20% if it includes the Harbour Bridge. Council will attempt to assess the view loss qualitatively as negligible, minor, moderate, severe or devastating.
C4.	Development in view affected areas should not only be designed to meet relevant development controls but also be designed to achieve view sharing. A development that complies with all planning controls is more reasonable than one that breaches them. Where an impact on views arises as a result of non-compliance with one or more planning controls, even a moderate impact is unreasonable. A complying proposal of a more skillful design could provide the applicant with the same development potential and amenity and reduce the impact on the views of neighbours.
C5.	Ensure development in foreshore and peninsula localities do not adversely impact upon views to and from Parramatta River and Sydney Harbour, from within and outside the local government area.
C6.	Development applications in foreshore and peninsula localities are required to include photomontages or computer modelling to illustrate the visual effects of the proposal as viewed from nearby public domain within and outside the LGA.

Note: In some cases, Council will insist on the erection of height poles/building templates to indicate the height of the proposed development together with written and/or photographic montages to ensure that view losses are minimal. Template construction is to be to the satisfaction of Council officers and is to be certified by a registered surveyor upon erection.

E3.11 Safety and security

Objectives

O1. To facilitate a safe physical environment by promoting crime prevention through design.

O2. To facilitate the security of residents and visitors and their property and enhance community safety and well-being.

O3. To ensure a development relates well with the public domain and contributes to an active pedestrian-orientated environment.

O4. Effective use of fencing or other means to delineate private and public areas.

Controls	
C1.	Ensure lighting is provided to all pedestrian paths, shared areas, parking areas and building entries for multi unit development.
C2.	High walls which obstruct surveillance are not permitted.
C3.	The front door of a dwelling house should be visible from the street.
C4.	Buildings adjacent to public streets or public spaces should be designed so residents can observe the area and carry out visual surveillance. At least one window of a habitable room should face the street or public space.
C5.	A Council approved street number must be displayed at the front of new development or the front fence of such development.
C6.	Roller shutters, security bars and grilles are not permitted on window and door openings that have a frontage to the street or that are adjacent to public open space.
C7.	Fences higher than 900mm should be of an open semi-transparent design.
C8.	Balconies and windows should be positioned to allow observation of entrances.
C9.	Proposed planting must not obstruct the building entrance from the street or sightlines between the building and the street frontage.
C10.	Blank walls facing a rear laneway should be avoided as they attract graffiti.
C11.	Pedestrian and vehicular entrances must be designed so as to not be obstructed by existing or proposed plantings.
C12.	If seating is provided in communal areas of a development it should generally only be located in areas of active use where it will be regularly used.
C13.	Development on properties which adjoin a rear laneway must provide at least one habitable room window in the rear elevation capable of overlooking the laneway. If appropriate to the site context and neighbouring property privacy considerations, a balcony on the rear elevation would be an appropriate alternative.

E4 General Controls

E4.1 Frontage

Objective

O1. To ensure lot dimensions are able to accommodate residential development and provide adequate open space and car parking consistent with the relevant requirements of this DCP.

Controls	
C1.	The minimum frontage requirements specified in the Canada Bay Local Environmental Plan shall be achieved.
C2.	Any dwelling within a dual occupancy or semi-detached dwelling development is to have a minimum width of 7m if the dwellings have parking accessed from the primary street and do not have consolidated basement parking with a single entry or parking accessed from a rear lane or secondary frontage. The minimum width may be reduced to 5m if the dwellings have consolidated basement parking with a single entry, or parking accessed from a rear lane or secondary frontage.

E4.2 Building setbacks

Setbacks define the overall footprint of a building and the outer extremities of that building in relation to the front, side and rear boundaries.

Appropriate street setback controls can contribute to the public domain by enhancing the streetscape character and the continuity of street facades. Street setbacks also enhance the setting of a building. Canada Bay Council places particular emphasis on continuing the building alignment in uniform streetscapes.

Rear setbacks provide space for planting, including trees, which will achieve a reasonable height and canopy and provide for adequate open space for the amenity of residents. Rear setbacks also promote privacy between residents of adjoining properties, particularly where development is greater than single storey.

Objectives

O1. To integrate new development with the established setback character of the street.

O2. Preserve significant vegetation which contributes to the public domain and allows for street landscape character to be enhanced.

O3. Ensure adequate separation between buildings consistent with the established character and rhythm of built elements in the street.

O4. To ensure adequate separation between buildings for visual and acoustic privacy.

O5. Maximise solar access to achieve amenity for neighbours.

Front setbacks - primary street

Controls	
C1.	The front setback of all residential buildings is to be a minimum of 4.5 metres or no less than the Prevailing Street Setback, whichever is the greater. The “Prevailing Street Setback” is the setback calculated by averaging the setback of five (5) adjoining residential properties on both sides of the development. Where there are fewer than five residential properties or a non-residential use property between a street end or corner and the development site, the “Prevailing Street Setback” is the setback calculated by averaging the setback of the five next residential properties fronting the street (if any) on both sides of the property. *Note: In many instances, the front setback of buildings in Canada Bay is 7.5 metres or greater and development in these areas will be required to comply with this prevailing setback.*

C2.	No balconies, entry porches or verandahs are permitted to encroach within the front setback. The only encroachments permitted within the front setback are restricted to eaves and awnings for weather protection but no supporting columns or posts.
C3.	Secondary dwellings must be located behind the front building line of the principal dwelling;
C4.	Where a site has more than one street frontage (other than a lane) and a dwelling is proposed to the rear of the site, the development must acknowledge the prevailing setback of both streets.

Note: On a site with two street frontages, the primary street is considered to be the one to which the property is addressed.

Front setbacks - parallel road lot

Controls	
C5.	If the secondary street (other than a lane) is at the rear of the property, any dwelling facing the secondary street is to use the secondary street as its primary street and be designed to comply with the Front setback – primary street controls.

Front setbacks - corner lot

Controls	
C6.	If the secondary street (other than a lane) is at the side of the property, any dwelling proposed to the rear of the site must acknowledge the prevailing street setback of the secondary street.
C7.	Any dwelling that faces the primary street must have a secondary street (side setback) of a minimum of 2m for the first 25m measured from the corner.
C8.	Any dwelling to the rear of the site is to face the secondary street and is to use the secondary street as its primary street and be designed to comply with the Front setback – primary street controls.
C9.	The prevailing street setback for the secondary frontage is to be applied from 25m from the corner to the existing rear boundary of the site.

Refer to Figure E4.1, Figure E4.2, Figure E4.3 and Figure E4.4

Side setbacks

Controls	
C10.	All developments are to comply with the following numerical requirements:

Development	Minimum distance from side boundary of parent lot
Dwelling houses	• Single storey dwellings are to be set back a minimum of 900mm from side boundaries. • The second storey of all dwellings are to be set back a minimum of 1500mm from side boundaries.
Dual occupancies	• Single storey dual occupancies are to be set back a minimum of 900mm from side boundaries. • The second storey of all dual occupancies is to be set back a minimum of 1500mm from side boundaries.
Secondary dwellings	• Front Dwelling (within principal dwelling) – all walls are to be set back a minimum of 900mm for single storey buildings and 1500mm for the 2nd storey com-ponent of two storey buildings. • Rear Dwellings – all walls are to be set back a minimum of 1500mm.

Note 1: Upper floor setbacks may be achieved by stepping the building in, integrating any proposed upper floor within the roof form or by setting back both the ground and first floors from the side boundaries.

Note 2: Sites that have more than one street frontage (other than a lane) will have additional setback requirements.

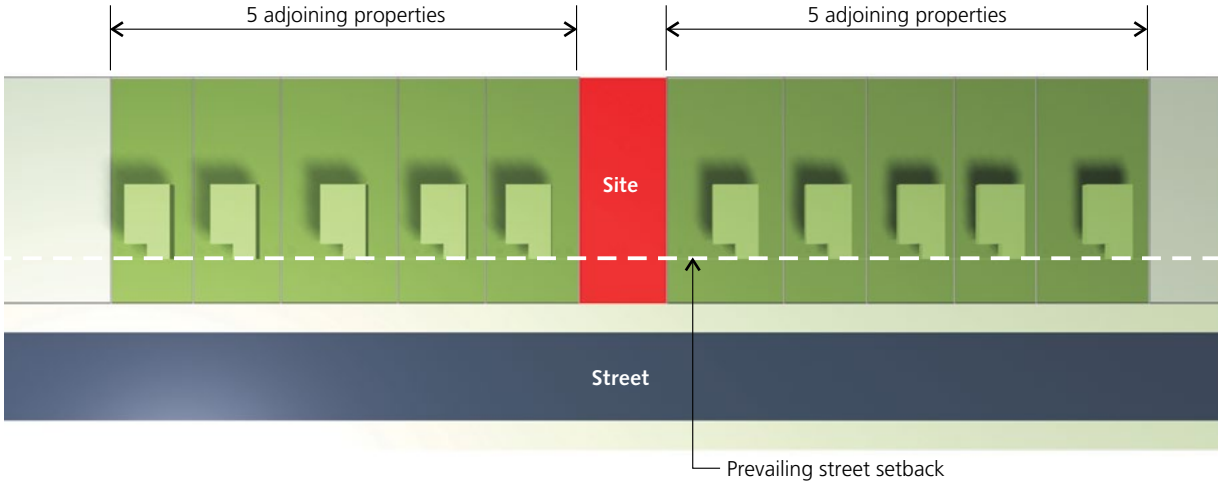


Figure E4.1 Calculation of the prevailing street setback

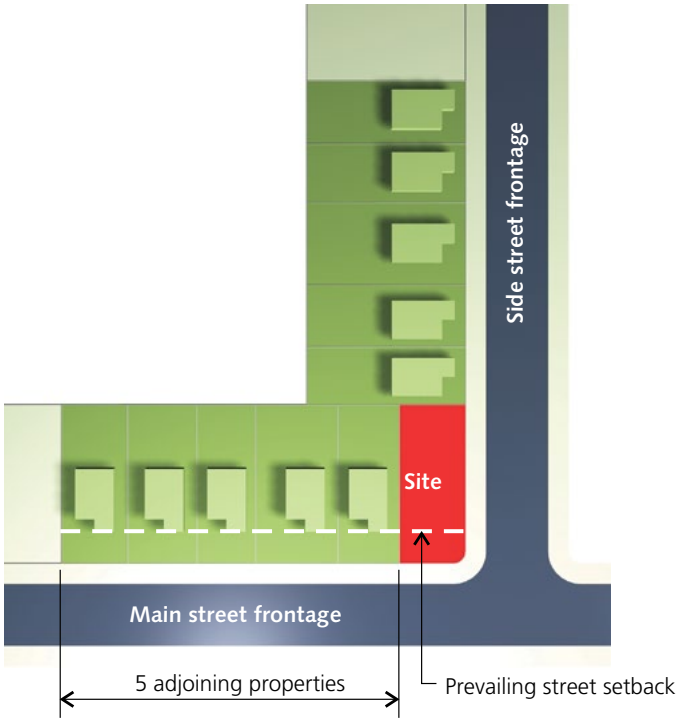


Figure E4.2 Calculation of the prevailing street setback on a corner development site



Figure E4.3 Prevailing street setback near corner sites



Figure E4.4 Prevailing street setback near corner sites

Rear setbacks – single street frontage

Controls	
C11.	All development (not including an outbuilding) is to have a minimum rear setback of 6.0 metres.
C12.	Any living room located on an upper floor is to have a minimum rear setback of 9.0m.

Rear setbacks – corner lot

Controls	
C13.	The dwelling oriented to the secondary frontage shall have a minimum setback to the rear boundary of the parent lot of 1.5 metres and a minimum setback to the side boundary (at rear of dwelling) of 4 metres.
C14.	Any living room located on an upper floor is to be oriented towards the street frontage, and not extend through to the rear, to minimise overlooking of side and rear boundaries.

Basement setbacks

Controls	
C15.	Basement excavation for all development is limited to the area of the building at ground level. The excavation setback includes the driveway access to the basement.
C16.	The outer edge of excavation, piling and all subsurface walls including driveway excavation to basement car parking for dwelling houses should not be less than 900mm from any boundary.

Outbuildings

Controls	
C17.	Outbuildings are to be located behind the main building alignment and should have a minimum setback of 900mm to side and rear boundaries. However, reduced side and rear boundary setbacks may be considered on merit where: a) they are consistent with the setbacks of outbuildings in the vicinity; b) they require no maintenance (including roof gutters); c) there are no adverse impacts to the amenity of the adjoining properties; and d) the total area of all outbuildings (including any secondary dwellings) does not exceed 35m^2.

Secondary dwellings

Controls	
C18.	A secondary dwelling is to be located behind the main building alignment and should have a minimum setback of 900mm to side and rear boundaries. However, reduced side and rear boundary setbacks may be considered on merit where: a) they are consistent with the setbacks of outbuildings/similar structures in the vicinity; b) they require no maintenance (including roof gutters); c) there are no adverse impacts to the amenity of the adjoining properties; and d) there are no other structures on the site with similarly reduced setbacks.

C19.	For the conversion of an existing building, or part of an existing building, being the principal dwelling, outbuilding, garage or similar structure into a secondary dwelling, applicants must demonstrate that the setbacks of the existing structure have minimal impact on the following: a) Scale and streetscape of the surrounding locality; b) Surrounding properties, particularly in respect to overshadowing, loss of privacy, and visual intrusion; c) Solar access for the secondary and the principal dwelling; and d) Heritage items or heritage conservation area.

Advisory Notes

Notwithstanding compliance with the above numerical controls, Council may require building setbacks to be increased if necessary to reduce bulk, overshadowing, visual impact, view loss, privacy concerns and to retain existing trees on site.

Any Foreshore Building Line will continue to apply and overrides any setback provisions in this plan.

E4.3 Street orientation and presentation

Objectives

O1. Ensure that development contributes to the activity, safety, amenity and quality of streets and the public domain.

O2. Present appropriate frontages to adjacent streets and public domain in terms of scale, finishes and architectural character.

O3. Provide legible and accessible entries from the street and the public domain.

O4. Minimise and ameliorate the effect of blank walls (with no windows or entrances) at the ground level.

O5. Minimise amenity impacts upon adjoining sites.

Controls	
C1.	Buildings shall be aligned and oriented to all street frontages.
C2.	Buildings must address all street frontages through the provision of habitable rooms, windows and doors and architectural features.
C3.	At a minimum, the front façade of a dwelling shall orientate the front door and a window of a habitable room on the ground floor to address the principal street frontage. If the site has more than one street frontage and more than one dwelling is proposed then this is to be applied to all frontages.
C4.	Buildings are to have a street address and provide a direct line of sight from a street to the principal dwelling entry or entries.
C5.	Provide individual entries directly from the street to any ground floor dwellings next to the street.
C6.	Development that exposes the blank side of an adjoining building or has a party wall to the public domain is to be designed with a visually interesting treatment of high quality design applied to that wall.



Figure E4.5 Undesired development - dwellings not orientated towards the street frontage

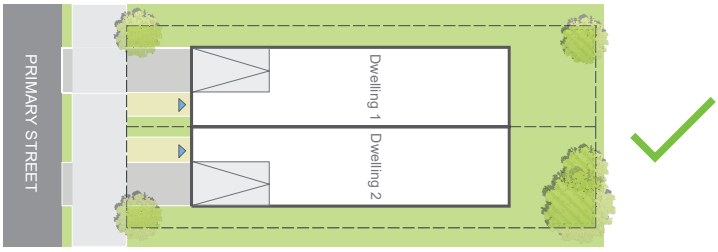


Figure E4.6 Desired development - dwellings are orientated towards the street frontage



Figure E4.7 Desired development on lots with more than one street frontage - dwellings are orientated towards all streets

E4.4 Height of buildings

Height is an important control because it has a major impact on the physical and visual amenity of a place. Building height is also critical in addressing impacts from development such as solar access, privacy and view loss.

Objectives

O1. To ensure that buildings are compatible with the height, bulk and scale of the existing and desired future character of the locality.

O2. To minimise visual impact, disruption of views, loss of privacy and loss of sunshine to existing residential development.

O3. To minimise the adverse impact on Conservation Areas, Heritage Items and contributory buildings.

O4. To reduce the visual impact of development when viewed from the Parramatta River as well as other public places such as parks, roads and community facilities.

Controls	
C1.	Single dwellings, dual occupancies and secondary dwellings are not to exceed the building height plane projected at an angle of 45 degrees over the site from a vertical distance of 5.0 metres above ground level at any boundary of the site.
C2.	The following maximum building storey limits must not be exceeded:

Single street frontage

Dwelling type	Maximum storeys
Dwelling house	Two (2) storeys
Attached dual occupancy	Two (2) storeys (dwellings side by side)
Detached dual occupancy	Two (2) storeys (dwellings side by side)
Semi-detached dwelling	Two (2) storeys (dwellings side by side)
Secondary dwelling	Two (2) storey if within principal dwelling One (1) storey if rear dwelling
Outbuilding	One (1) storey

Two or more street frontages

Dwelling type	Maximum storeys
Dwelling house	Two (2) storeys
Attached dual occupancy	Two (2) storeys (dwellings side by side) Two (2) storeys front dwelling, two (2) storey rear dwelling, if rear dwelling is facing secondary frontage
Detached dual occupancy	Two (2) storeys (dwellings side by side) Two (2) storeys front dwelling, one (1) storey rear dwelling, if both dwellings face primary frontage Two (2) storeys front dwelling, two (2) storey rear dwelling, if rear dwelling is facing secondary frontage
Semi-detached dwelling	Two (2) storeys (dwellings side by side)
Secondary dwelling	Two (2) storey if within principal dwelling One (1) storey if rear dwelling
Outbuilding	One (1) storey

Internal lot

Dwelling type	Maximum storeys
Any dwelling	One (1) storey
Outbuilding	One (1) storey

Note 1: Reference should be made to the Building Height Maps which accompany the Canada Bay Local Environmental Plan.

Note 2: On a site with two street frontages, the dwelling facing the primary street frontage is considered to be the front dwelling.

Note 3: For the purpose of calculating the number of street frontages a lane is not considered to be a street frontage.

Controls	
C3.	The rear dwelling of a detached dual occupancy, or a secondary dwelling located to the rear of a site, with only one street frontage must have a ground floor ceiling no higher than 3.6 metres when measured vertically at any point above existing ground level.

Attics above dwellings

Controls	
C4.	The use of an attic room within the roof space of a dwelling house is permitted for habitable purposes, provided that: a) no external balconies are proposed for the attic room; b) the attic room does not increase the bulk of the building; c) it does not compromise the privacy of adjacent properties.

Attics above garages and outbuildings

Controls	
C5.	A single storey structure with an attic above is only permissible if: a) it is adjacent to a rear lane; b) the height does not exceed 5.4m; c) amenity to adjacent sites is maintained; d) No external balconies are proposed for the attic room; e) The attic room does not increase the bulk of the building; f) It does not compromise the privacy of adjacent properties; g) The roof pitch of a rear lane building must be between 30° and 40°; h) Any structure on a lot adjoining a rear lane is to be clearly subservient to the principal dwelling.

Refer to Figure E4.8, Figure E4.9, Figure E4.10, Figure E4.11 and Figure E4.12

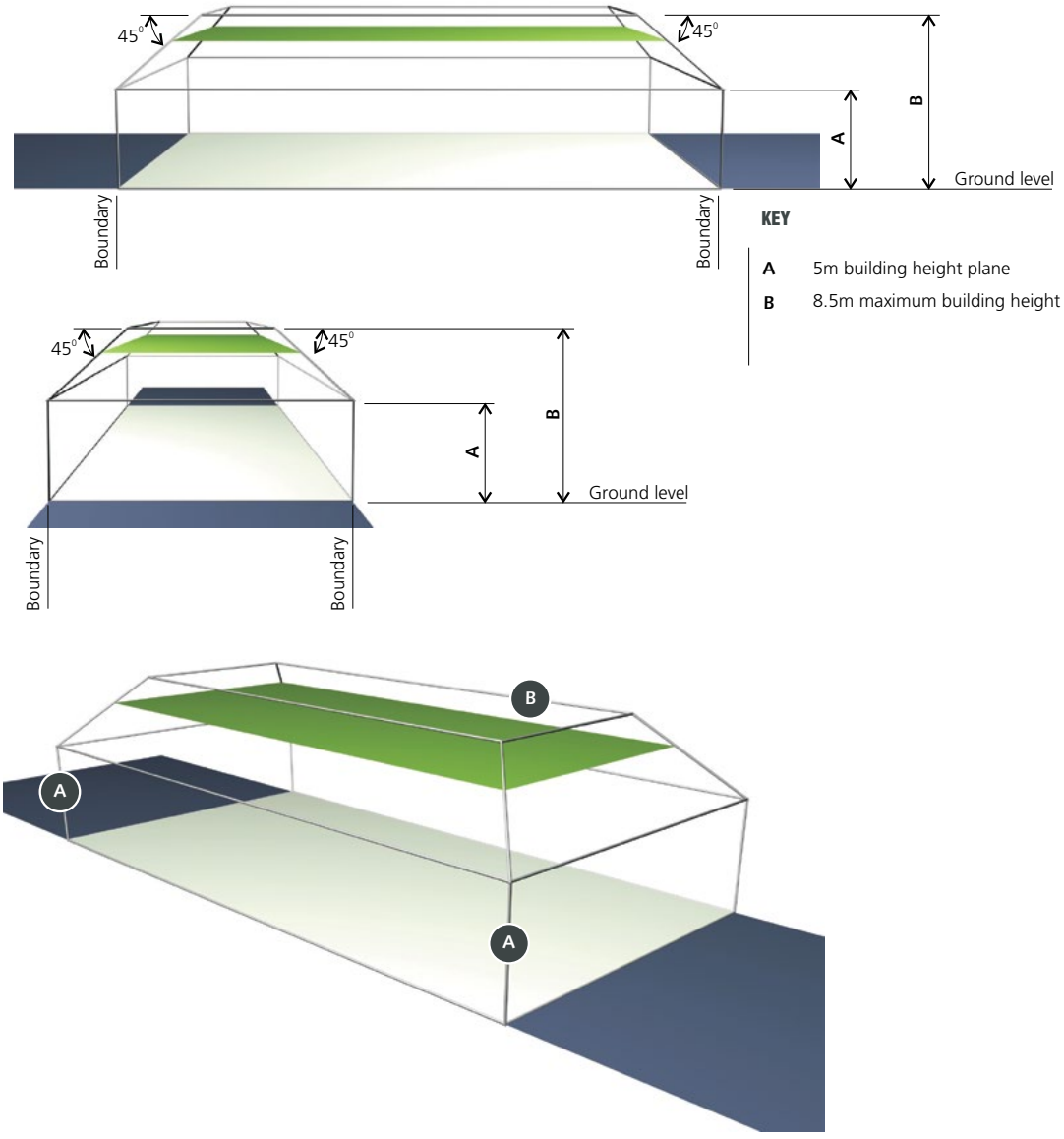


Figure E4.8 Height plane envelope on a level site

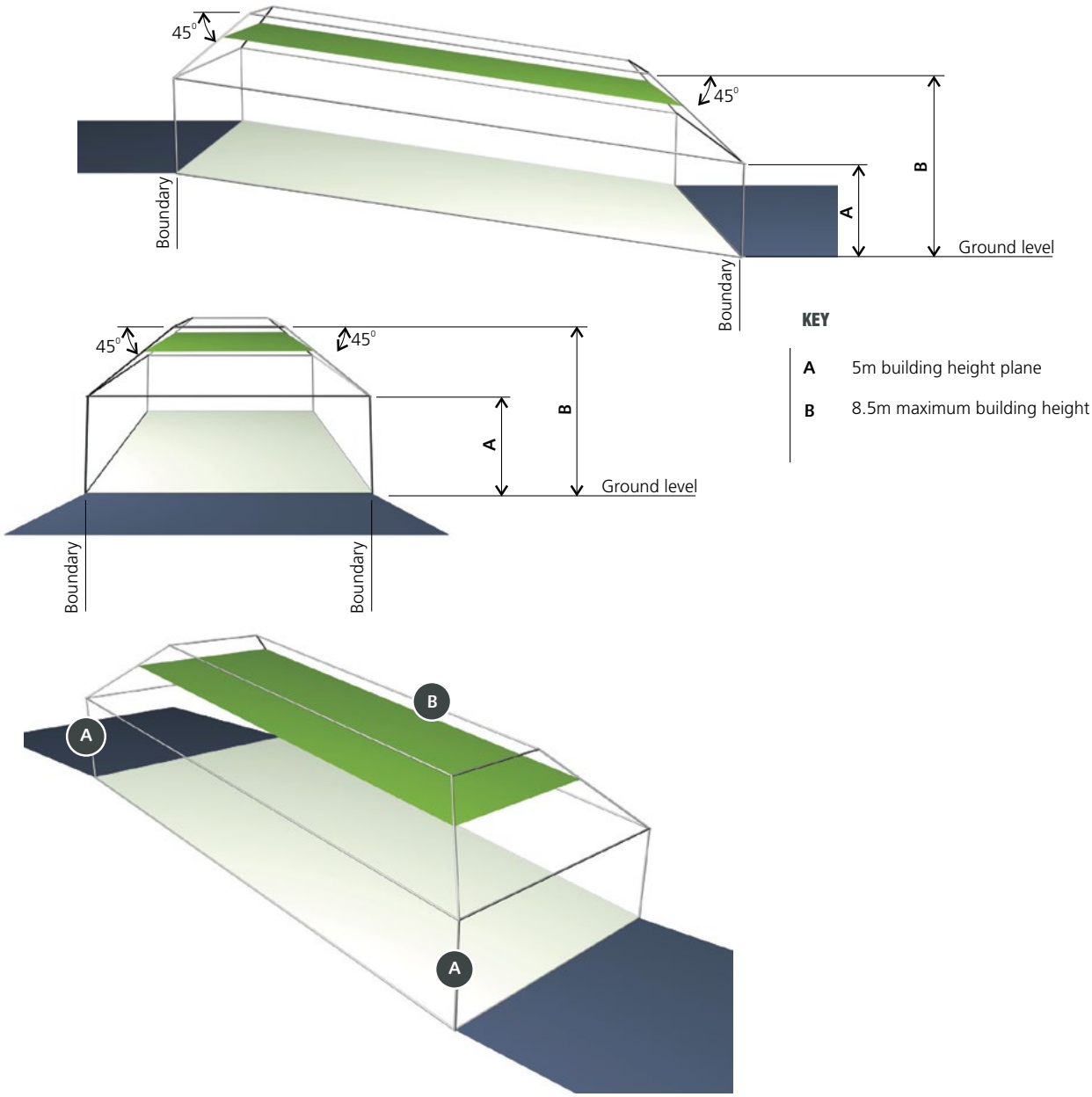


Figure E4.9 Height plane envelope on a sloping site

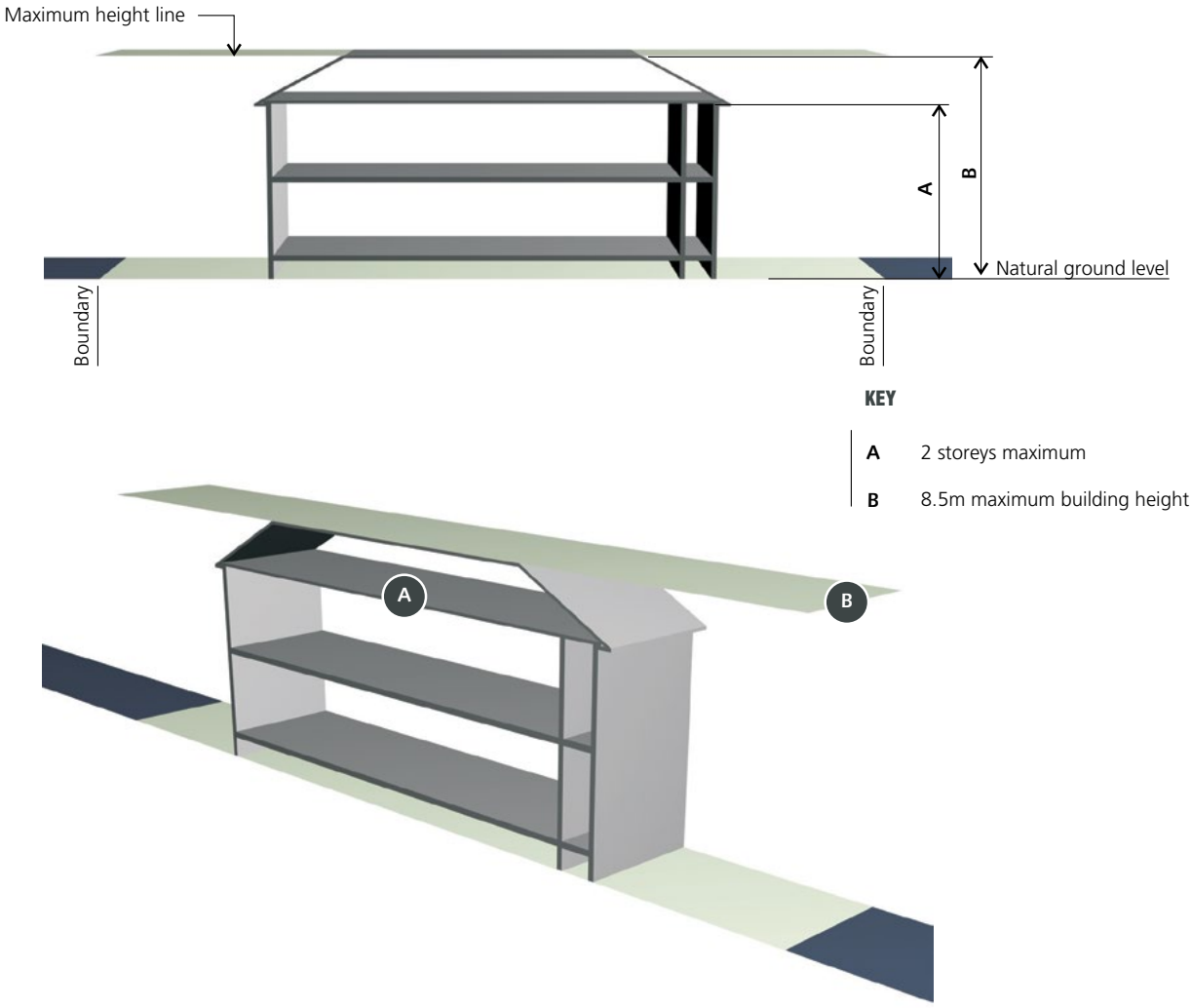


Figure E4.10 Maximum building height and maximum number of storeys on a level site

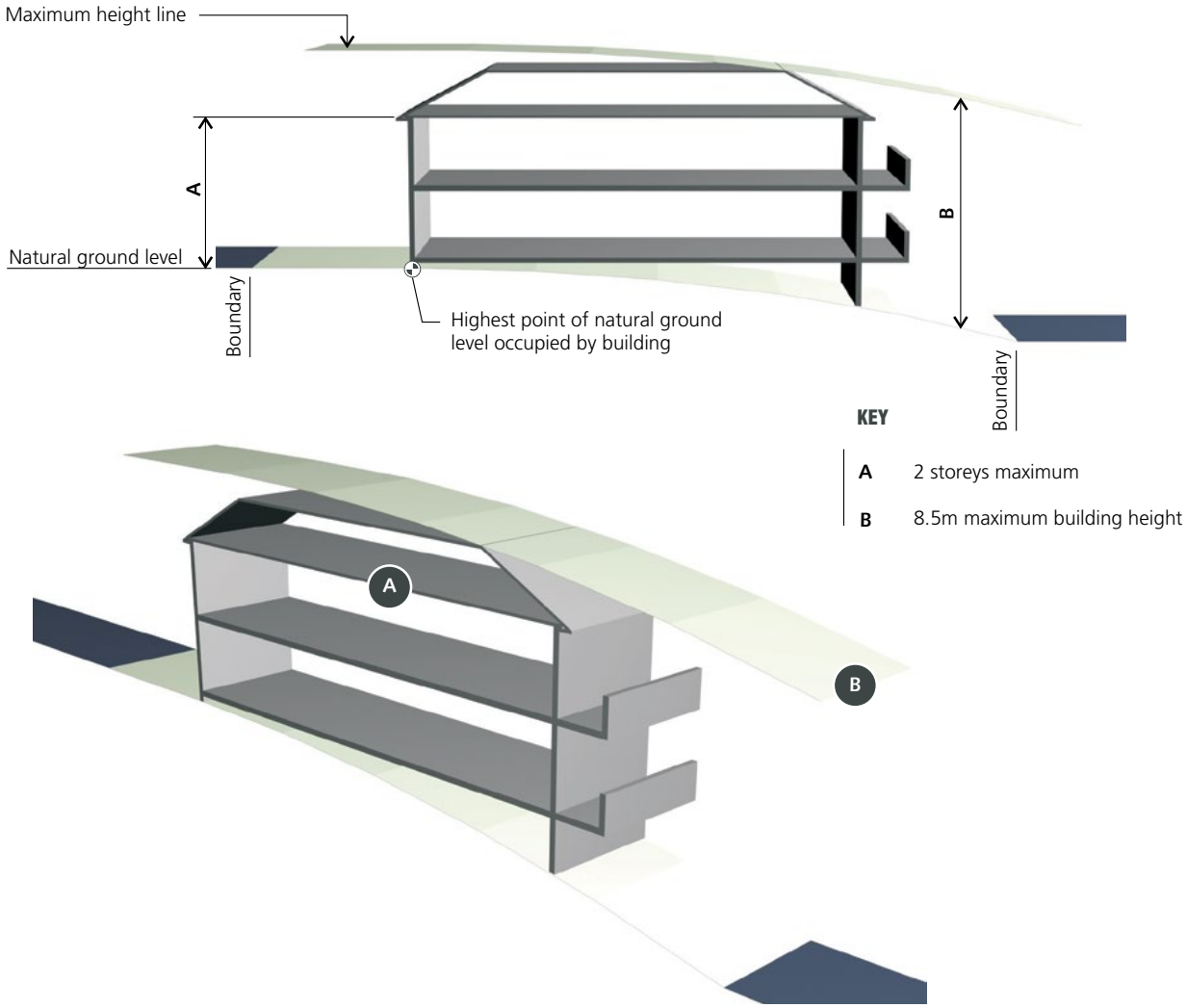


Figure E4.11 Maximum building height and maximum number of storeys on a sloping site

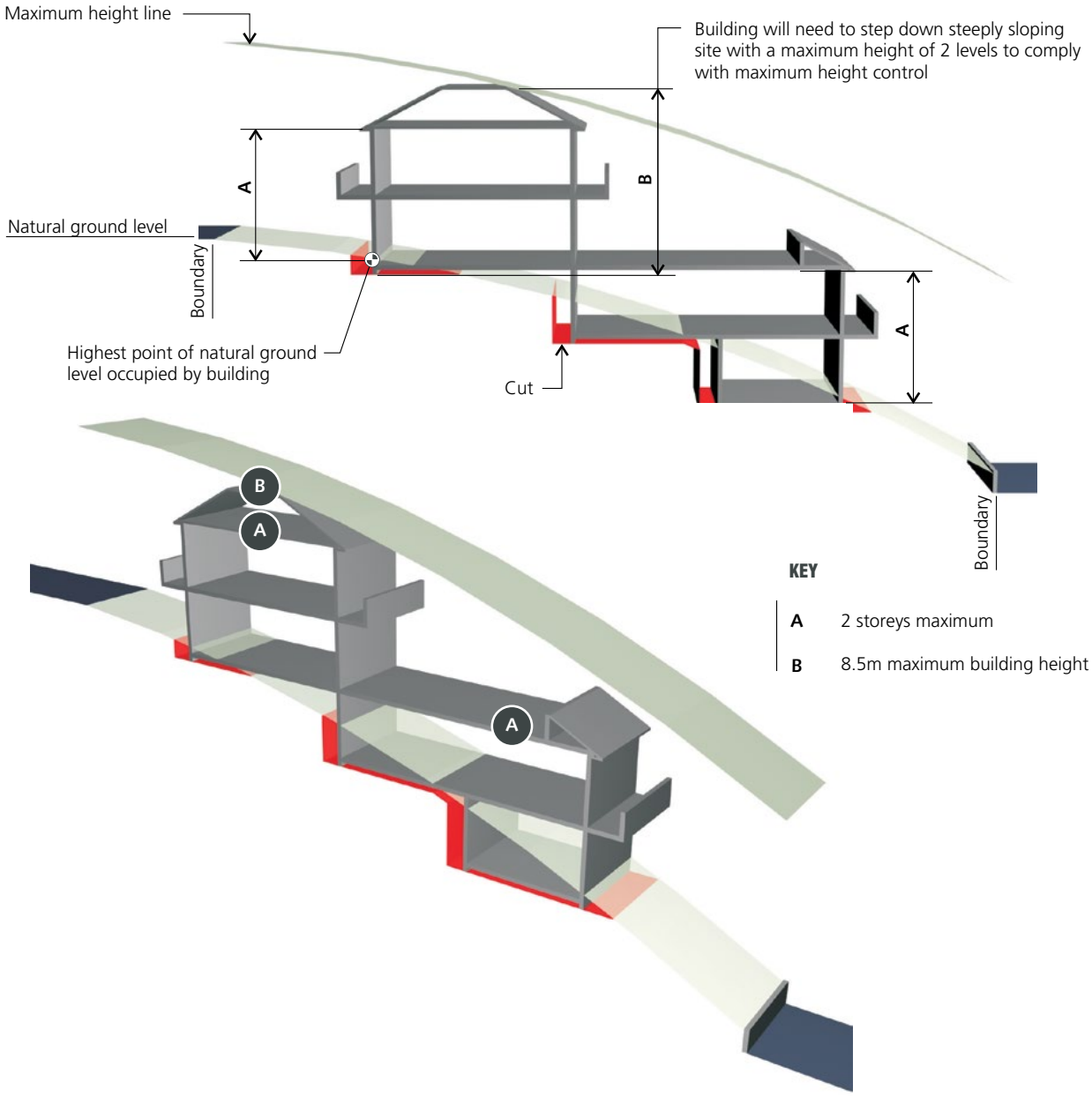


Figure E4.12 Maximum building height and maximum number of storeys on a steep site

E4.5 Bulk and Scale

Objectives

O1. To ensure that buildings are compatible with the bulk and scale of the desired future character of the locality.

O2. To minimise the effects of voids in the bulk and scale of buildings.

Controls	
C1.	Large void areas are considered to contribute to the overall mass of a building. Any void areas proposed must demonstrate its necessity for the specific functional outcomes of the building.
C2.	Notwithstanding compliance with any relevant standards, applicants must demonstrate that the bulk and relative mass of development is acceptable in terms of the following impacts upon the street and adjoining dwellings: a) Overshadowing and privacy considerations; b) Streetscape considerations (bulk and scale); c) Building setbacks; d) Parking and landscape requirements; e) Visual impact and impact upon existing views; f) The existence of significant trees on site; g) The size and shape of the allotment; and h) Site topography.

Note: Compliance with the maximum FSR and height standards does not guarantee approval if bulk and scale is considered to be excessive.

E4.6 Landscaped area

Objectives

O1. To enhance the existing streetscape.

O2. To enhance the quality & amenity of the built form.

O3. To provide privacy and shade.

O4. To minimise the extent of hard paved areas and facilitate rain-water infiltration.

O5. To preserve and enhance native wildlife populations and habitat through appropriate planting of indigenous vegetation.

O6. To provide large consolidated areas of landscaping that are usable and sustainable and that can be maintained long term.

Controls	
C1.	Landscape areas need to be consistent with the definition in Part K of the DCP. Note: Synthetic turf, permeable paving and gravel do not form part of landscaped area calculation.
C2.	Landscaping that has an area of less than 1.5m x 1.5m must not be included in landscaped area calculations.
C3.	Landscaping within the side setback must not be included in landscaped area calculations.
C4.	Landscaped area is to be provided in accordance with the following table:

Dwelling Type	Minimum landscape area as percentage of parent lot site area	Minimum percentage of front setback to be landscaped	Minimum percentage of the lot area behind the building line to be landscaped
Single dwellings	35%	50%	50%
Secondary dwellings	35%	50%	50%
Dual occupancies	35%	35%	50%

Note: Landscaped area percentage is to be calculated on the total site area of the parent lot and is to be distributed evenly between dwellings of a similar size with a greater proportionate distribution to larger dwellings.

Controls	
C5.	Existing trees are to be retained and integrated into a new landscaping scheme, wherever possible. Suitable replacement trees should be provided.
C6.	Minimum soil depth for balcony gardens is 800mm.
C7.	The majority of the front building setback and private courtyard areas of all development should comprise landscaping, where possible, in accordance with the definition in this DCP.
C8.	If more than one dwelling is proposed then the minimum percentage of front setback to be landscaped will apply to each dwelling.
C9.	If more than one dwelling is proposed and the dwellings are oriented to different frontages then the minimum percentage of front setback to be landscaped is 50% (to be applied to each frontage).
C10.	A significant landscaped setting is to be established for pathways and paved areas.
C11.	Pathways and driveways are to be located a minimum of 1.0 metres from common boundaries.
C12.	Any development on the foreshore should: a) Enhance the existing flora of the allotment; b) Plant native trees with a mature height greater than 12.0 metres; c) Avoid introduced species known to seed freely or spread easily by rhizomes or vegetative means.

Deep soil zones

Controls	
C13.	A deep soil zone must not contain any buildings, structures, services or impervious surfaces.
C14.	A minimum of 50% of the landscaped area must be provided as a deep soil zone.
C15.	A minimum of 50% of the deep soil zone area must be provided in the front setback and 50% in the rear setback.
C16.	A deep soil zone must have a minimum dimension of 2m (L) x 2m (W).

E4.7 Parking and access

Refer to Part B - General Controls

E4.8 Private open space

Objectives

O1. To ensure private open space provides each dwelling with a space for outdoor activities and functions as an extension of the living area.

O2. To enhance the built environment by providing open space for landscaping.

Controls	
C1.	The provision of private open space for residential development is to be in accordance with the following table:

Type of Development	Minimum private open space area (per dwelling)	Minimum private open space dimensions (per dwelling)
Single dwellings	40m^2	5m x 5m
Dual occupancies	40m^2	4m x 4m
Secondary dwellings	40m^2	4m x 4m

Controls	
C2.	A development should locate the private open space behind the front building line.
C3.	At least one portion of the private open space with a minimum area of 40m^2 should be adjacent to and visible from the main living and/or dining rooms and be accessible from those areas.
C4.	Development should take advantage of opportunities to provide north facing private open space to achieve comfortable year round use.

E5 Ancillary structures

E5.1 Fencing

Fencing is an important streetscape element and can indicate the architectural period of an area. Consistent and uniform front fencing contributes significantly to the streetscape and character of an area.

For the purpose of this DCP, front fencing is any fence between the front alignment of a building and the street boundary.

Whilst privacy and security of individual households is an important consideration, high blank fencing along the street has a negative impact on the streetscape, personal safety and security by reducing the opportunities for overlooking of private areas. The construction of high blank front fencing is therefore not desirable and should be avoided.

Objectives

O1. To maintain and enhance the character of streetscapes within the Canada Bay LGA.

O2. To ensure that views from streets are maintained and not negated by excessively high fences.

O3. To reduce the impact of front fencing on the streetscape and encourage fencing consistent with the existing streetscape pattern and in sympathy with the general topography and the architectural style of the existing dwelling or new development.

O4. To ensure that materials used in front fencing are of high quality and are in keeping with the existing streetscape character.

O5. To retain and re-use original fences and gates.

O6. To reinstate traditional period fences and gates on street frontages (including side streets) that is of an appropriate architectural style to complement existing buildings.

Height of front fencing

Controls	
C1.	Front fencing and side fencing forward of the building line constructed of a solid material such as brick/masonry, lapped and capped, timber, brushwood and the like should not exceed 900mm (including piers) in height above the footpath level.

Refer to Figure E4.13

C2.	Front fencing and side fencing forward of the building line, constructed of visually transparent material such as timber picket/ metal grill, should not exceed 1.2m in height above the footpath level. Visually transparent components should be no less than 40% of the fence structure and should be distributed evenly along the entire length of the fence.

Refer to Figure E4.14

C3.	From the building line, side fences are to taper down to the height of the front fence line.
C4.	In the case of sloping streets, the height limitations may be averaged, with regular steps.
C5.	Solid fences greater than 1.2 m will only be considered in a streetscape which is shown in the Streetscape Character Analysis to exhibit in excess of 70% high solid fence forms. In such circumstance the appearance of the fence should be softened by: a) Providing a continuous landscaped area of not less than 600mm wide on the street side of the fence, planted with tree and shrub species selected on the basis of low maintenance attributes; and b) The use of openings and variations in colour, texture or materials to create visual interest.

Design of fences

Controls	
C6.	Avoid painting or rendering original masonry and sandstone fencing.
C7.	New fencing should complement any original fencing found on adjoining properties and in the street in terms of style, height, materials, colour, texture, rhythm of bays and openings. Note: Blank walls disrupt established fencing patterns and should be avoided.
C8.	Fencing and associated walls must be positioned so as not to interfere with any existing trees.

Materials

Controls	
C9.	Materials of construction will be considered on their merit, with regard being given to materials of construction of other contributory fences in the vicinity and/or that of the building on the allotment where such materials enhance the streetscape – with a general prohibition on the following materials: a) Cement block; b) Metal sheeting, profiled, treated or pre-coated. c) Fibro, flat or profile; d) Brushwood; and e) Barbed wire.

General

Controls	
C10.	Gates and doors are to be of a type which do not encroach over the street alignment during operation.
C11.	Fencing is to be designed and constructed in accordance with the requirements of a front fence wherever dwellings have a front façade to a street; irrespective of whether there are dwellings within the same development fronting a primary street.

Advisory Notes

All controls are subject to the provision of adequate sight lines for emerging vehicles to enable surveillance of pedestrian and vehicle traffic.

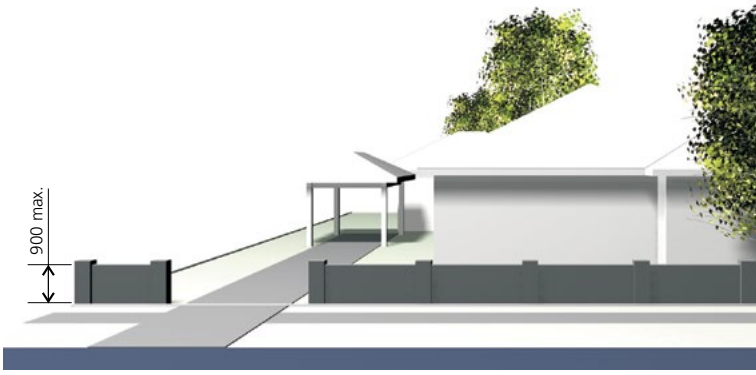


Figure E4.13 Example of solid front fencing with a height of 900mm

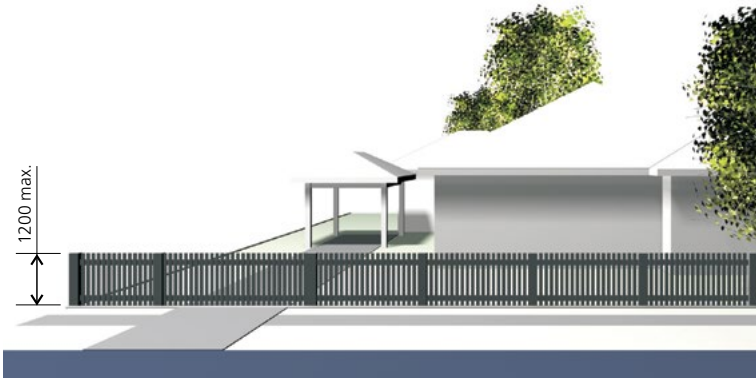


Figure E4.14 Example of open front fencing with a height of 1200mm

E5.2 Site facilities

Site facilities include:

- Air conditioners;
- outbuildings;
- TV aerials and satellite reception dishes;
- mail boxes;
- garbage storage and collection areas;
- external storage areas;
- clothes drying areas;
- external laundry facilities and
- swimming pools and spas.

Proposals need to ensure adequate and appropriate provision of site facilities. These need to be accessible and not create amenity problems such as smell and unsightliness. The impact of site facilities on the overall appearance of the site and on the local streetscape needs to be considered.

The design of site facilities for multi-unit dwellings needs particular consideration as these facilities are shared. They need to be designed and located so that they are accessible by all residents and do not detract from the amenity of any residence.

Objectives

O1. To ensure that adequate provision is made for site facilities.

O2. To ensure that site facilities are functional and accessible to all residents.

O3. To ensure that site facilities are easy to maintain.

O4. To ensure that site facilities are thoughtfully and sensitively integrated into development, are unobtrusive and not unsightly.

Air Conditioners

Controls	
C1.	Air conditioning units must be sited so that they are not visible from the street.
C2.	Air conditioning units must not be installed on the front façade of a building, within window frames or otherwise obscure a window.
C3.	Air conditioning units must not obscure architectural details visible from the street.
C4.	The noise level from air conditioning systems is not to exceed the L aeq 15 minute by 5dBA measured at the property boundary.
C5.	Air conditioning units must not be installed where they will likely have a negative visual or acoustic impact upon neighbours.

Outbuildings and outdoor structures

Controls	
C6.	Outbuildings and outdoor structures should be located behind the front building line. This clause does not apply to any required waste storage area for multi dwelling housing and residential flat buildings, front fences or carports permissible under the provisions of this DCP.
C7.	Windows and doors of outbuildings should face into the rear yard, or be frosted, if facing into a neighbour's property.

Clothes drying facilities

Controls	
C8.	Adequate open air clothes drying facilities should be provided that are easily accessible to all residents and are visually screened from the street and adjoining premises.

Numbering of buildings

Controls	
C9.	Street numbers are to be placed on the building in accordance with Council's street numbering system and be visible from the primary street frontage.

Public utilities

Controls	
C10.	For new development and substantial alterations to existing premises provision must be made for connection to future underground distribution mains. In such developments the following must be installed: • an underground service line to a suitable existing street pole; or • sheathed underground consumers mains to a customer pole erected near the front property boundary (within 1 metre). Council may require the bundling of cables in the area surrounding the development to reduce the visual impact of the overhead cables. For further details see Energy Australia requirements.

Mail boxes

Controls	
C11.	All mail boxes should be designed in a manner that enhances the visual presentation of the building(s) they serve.
C12.	Mail box structures should not dominate the street elevation.
C13.	Individual mail boxes should be located close to each ground floor dwelling entry where individual street entries are provided.
C14.	All mail boxes must comply with the requirements of Australia Post.

Swimming pools and spas

Controls	
C15.	Swimming pools and spas should be located behind the front building line.
C16.	For corner allotments or where the property has two street frontages, the location of swimming pools/spas is not to be in the primary frontage.
C17.	Swimming pools/spas should be positioned so that the coping is a minimum of 800mm from the property boundary.
C18.	In-ground swimming pools should be built so that the top of the swimming pool is as close to the existing ground level as possible. On sloping sites this will often mean excavation of the site on the high side to obtain the minimum out of ground exposure of the swimming pool at the low side.
C19.	Provided one point on the swimming pool or one side of the swimming pool is at or below existing ground level, then one other point or one other side may be up to 500mm above existing ground level.

Tennis Courts

Controls	
C20.	Tennis courts are to be sited at the rear of properties.
C21.	For corner allotments or where the property has two street frontages, the location of tennis courts is not to be in the primary frontage.
C22.	A minimum of five (5) metres should be maintained between the tennis court fencing and habitable rooms of any dwelling.
C23.	Tennis courts should be positioned having regard to the location of habitable rooms both on site and on adjoining properties and to the maintenance of appropriate private open space.
C24.	Screen planting should be provided between court fencing and the nearest property boundary or any dwelling on an adjoining property.
C25.	The court playing surface should be of a material that minimises light reflection.
C26.	Flood lighting is generally not permitted unless it can be demonstrated the lighting and use of the court at night will not interfere with neighbour amenity.
C27.	Fencing material is to be a recessive colour.
C28.	Fences are to be set back a minimum of 1.5 metres from boundaries.
C29.	Cut and fill associated with the construction of a tennis court should not unreasonably intrude into the natural topography of the land.

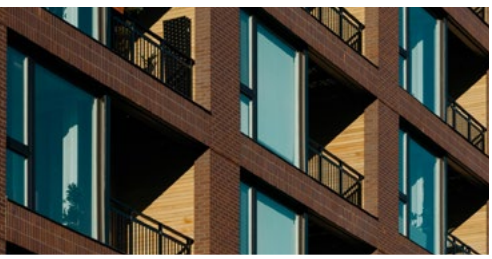
TV antennae and satellite dishes

Controls	
C30.	Satellite dishes, telecommunication antennae and ancillary facilities are to be: a) Located away from the front and side boundaries; b) Installed so that they do not encroach upon any easements, rights of ways, vehicular access or parking spaces required for the property, and c) Painted in colours selected to match the colour scheme of the building.
C31.	Satellite dishes where they are situated in rear yards are to be less than 1.8m above ground.
C32.	Only one (1) telecommunications/TV antennae will be permitted for each residential flat building.

This page was intentionally left blank

F







PART F - MULTI-DWELLING HOUSING, MULTI DWELLING HOUSING (TERRACES), MANOR HOUSES AND RESIDENTIAL FLAT BUILDINGS

F1 Land to which Part F applies F-3

F2 Design Quality F-3

F2.1 Design Quality of Residential Apartment Development F-3

F2.2 Materials, colour schemes and details F-4

F3 Environmental criteria and residential amenity F-5

F3.1 Topography F-5

F3.2 Harbour foreshore development and foreshore access F-5

F3.3 Solar access to neighbours F-7

F3.4 Solar access to dwellings within the development F-7

F3.5 Solar access for solar panels F-7

F3.6 Solar access general guidelines F-8

F3.7 Shade guidelines F-8

F3.8 Visual and acoustic privacy F-9

F3.9 Traffic and transport corridor amenity impacts F-12

F3.10 Access to views F-13

F3.11 Safety and security F-14

F3.12 Access to public transport F-14

F4 General Controls F-15
F4.1 Frontage F-15
F4.2 Building setbacks F-15
F4.3 Street orientation and presentation F-20
F4.4 Height of buildings F-22
F4.5 Bulk and Scale F-26
F4.6 Landscaped area F-26
F4.7 Parking and access F-28
F4.8 Private open space F-28
F4.9 Common open space F-29
F4.10 Alterations and additions F-30
F5 Ancillary structures F-33
F5.1 Fencing F-33
F5.2 Site facilities F-35
F6 Public Art F-38

F1 Land to which Part F applies

Part F generally applies to the land in the following areas:

- R1 General Residential zone
- R3 Medium Density Residential zone
- R4 High Density Residential zone

Note: The land located within the Five Dock Town Centre that is zoned R3 and that has a boundary to Barnstaple Road, Waterview Street or Second Avenue is excluded from Part F. See Part G for more information.

F2 Design Quality

F2.1 Design Quality of Residential Apartment Development

The Objectives and controls contained within this part of the DCP support the design quality principles of State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development (SEPP 65).

The Principles apply to proposals subject to SEPP 65, that is, residential buildings that comprise or include:

a) 3 or more storeys (not including levels below ground levels provided for car parking or storage, or both, that protrude less than 1.2 metres above ground level), and

b) 4 or more self-contained dwellings (whether or not the building includes uses for other purposes, such as shops), but do not include a Class 1a building or a Class 1b building under the Building Code of Australia (e.g townhouses or villas where dwellings are side by side).

This DCP adopts design quality principles contained within the SEPP65 and the Apartment Design Guide, NSW Department of Planning and Environment, July 2015.

Note: Where there is an inconsistency between SEPP65/ADG and this DCP, the SEPP65/ADG will prevail.

F2.2 Materials, colour schemes and details

Objectives

O1. To ensure that the choice of external materials, colour schemes and building details on new development and existing houses visible from a public place, reinforces and enhances any identifiable visual cohesiveness or special qualities evident in the street and the adjoining locality.

O2. To encourage complementary and sympathetic wall treatments on new development and existing houses that are consistent with the architectural style of existing dwellings found in the street and the adjoining locality.

O3. To encourage roof forms and materials consistent with the positive qualities evident in the street and the adjoining locality.

O4. To encourage verandahs/balconies etc. that are consistent with original structures evident in the street and the adjoining locality.

O5. To permit flexibility in the choice of materials to meet the practical requirements of energy efficiency, construction and maintenance costs.

Controls

The colour and surface finish of external building materials should minimise the overall visual impact of new development and be sympathetic to the surrounding locality as identified in the relevant Character statement and the Streetscape Character Analysis submitted with the application.

Walls/ masonry

Controls	
C1.	Use darker face brick in streetscapes which predominantly exhibit this external finish.
C2.	Retain or incorporate existing sandstone fences, walls or wall bases into the design of the building.

Roof finish

Controls	
C3.	Terracotta coloured (orange/red) roof tiles should be utilised in streets where this is the predominant roof colour.

Balconies

Controls	
C4.	First floor balcony balustrades facing the street should use a different material to the main wall finish.

Colour schemes

Controls	
C5.	Subject to the Streetscape Character Analysis, no large expansive surface of predominantly white, light or primary colours which would dominate the streetscape or other vista should be used.
C6.	New development should incorporate colour schemes that have a hue and tonal relationship with the predominant colour schemes found in the street.
C7.	Matching buildings in a row should be finished in the same colour, or have a tonal relationship.

General

Controls	
C8.	All materials and finishes utilised should have low reflectivity.

F3 Environmental criteria and residential amenity

F3.1 Topography

Objectives

O1. To ensure that the natural topography and landform is maintained and the amount of excavation is minimised.

Controls	
C1.	Natural ground level should be maintained within 900mm of a side and rear boundary.
C2.	Cut and fill should not alter natural or existing ground levels by more than 600mm.
C3.	Habitable rooms (not including bathrooms, laundries and storerooms) are to be located above existing ground level.
C4.	Rock outcrops, overhangs, boulders, sandstone platforms or sandstone retaining walls are not to be removed or covered.
C5.	Soil depth around buildings should be capable of sustaining trees as well as shrubs and smaller scale gardens.

F3.2 Harbour foreshore development and foreshore access

Objectives

O1. To recognise, protect and enhance the natural, scenic, environmental, cultural and heritage qualities of the foreshore of the City of Canada Bay.

O2. To ensure the Parramatta River foreshore is developed and promoted as a community asset in public ownership or with unrestricted public access.

O3. Sydney Harbour is to be recognised as a public resource, owned by the public, to be protected for the public good:

- The public good has precedence over the private good whenever and whatever change is proposed for Sydney Harbour and its foreshores.
- Protection of the natural assets of Sydney Harbour has precedence over all other interests.
- The public good includes but is not restricted to the existing views, vistas and amenity available from the public and private domain.

Controls	
C1.	Building forms should follow the natural topography and maintain and enhance vegetation cover as viewed from the Parramatta River. For example, buildings are not to be cantilevered.
C2.	Roof lines should be below the tree canopy backdrop to maintain the importance of any treeline.
C3.	Buildings should be designed and constructed to present a recessive appearance when viewed from the Parramatta River through the use of materials, colours, wall articulation, building form and landscaping. Glass elevations and excessive use of windows resulting in reflectivity and glare will not be permitted.

C4.	Pergolas, boatsheds and other structures are to be designed and constructed to complement the overall appearance of the development. Such structures are to be no more than one storey in height.
C5.	Swimming pools and spa pools constructed within the foreshore setback are to have no more than 300mm of the pool wall visible above existing ground level.
C6.	Swimming pool and spa pool walls are to be suitably treated to complement the natural foreshore and where visible, are to be sandstone and to incorporate suitable screen landscaping.
C7.	Boundary fences are not permitted within 8.0 metres of the mean high water mark.
C8.	Retaining walls are to have a maximum height of 500mm.
C9.	Hard surfaces and artificial surfaces, such as paving, within the Foreshore Building Line Area must be limited to swimming pool surrounds or modest walkways between the residential building and foreshore structures such as swimming pools or boat ramps.
C10.	Mature trees or significant landscaping are not to be removed to locate foreshore structures.
C11.	Any development on the foreshore should: a) Enhance the existing flora of the allotment; b) Where appropriate, include native trees which will be 12 metres or greater at maturity; and c) Avoid introduced species known to seed freely or spread easily.

Protection of the natural foreshore

Controls	
C12.	Development on foreshore properties must not significantly alter the topography and must preserve natural foreshore features including cliffs, rock outcrops, rock shelfs and beaches.
C13.	Seawalls or retaining walls are not permitted in areas where the foreshore is in its natural state.
C14.	Where seawalls or retaining walls are permitted, they must be constructed of coarse, rock-faced stone or with stone facing (preferably sandstone) and not protrude more than 1.0m above the mean high water mark.
C15.	Slipways and stairs are to be designed and constructed to closely conform with the character of the natural foreshore.

Foreshore access

Please refer to the Canada Bay LEP for considerations in relation to the provision of foreshore access.

Controls	
C16.	Public access along the foreshore should be provided by means of (as a minimum) a 3 metre strip of land between mean high water mark and the development. The access may be secured by means of a registered covenant, agreement or instrument in favour of the Council (as provided for in the Conveyancing Act 1919) that burdens the relevant land, or by means of an obligation contained in a planning agreement that is entered into between the relevant landowner, the Council, or both.
C17.	Public access to the foreshore over public land is not to be obstructed by the location of foreshore structures.
C18.	Development in the vicinity of Parramatta River must assist in improving access to the river and ferry wharves, through the provision of publicly accessible through-site links for pedestrian access and wayfinding signage.

F3.3 Solar access to neighbours

Objectives

O1. To minimise the amount of overshadowing of neighbouring developments and outdoor spaces to maintain their amenity.

Controls	
C1.	Direct sunlight to all north facing windows of habitable rooms of adjacent dwellings should not be reduced to less than 3 hours between 9.00am and 3.00pm on 21 June (mid-winter).
C2.	Where windows currently receive less than 3 hours, direct sunlight cannot be reduced.
C3.	Direct sunlight to 50% of the principal private open space should not be reduced to less than 3 hours between 9.00am and 3.00pm on 21 June (mid-winter).
C4.	Where 50% of the principal private open space currently receive less than 3 hours, direct sunlight cannot be reduced.

F3.4 Solar access to dwellings within the development

Objectives

O1. To maximise solar access to living areas and private open space in order to improve residential amenity.

Controls	
C1.	The proposed development shall receive a minimum of 3 hours of direct sunlight to all living room windows between 9.00am and 3.00pm on 21 June (mid-winter).
C2.	Direct sunlight to 50% of the principal private open space should not be reduced to less than 3 hours between 9.00am and 3.00pm on 21 June (mid-winter).

F3.5 Solar access for solar panels

Objectives

O1. Buildings should be sited and designed to ensure that the capacity of existing rooftop solar energy facilities on buildings on adjoining lots are not unreasonably reduced.

Controls	
C1.	New development should be sited and designed to avoid overshadowing of existing and potential roof top solar panels on adjacent and nearby properties.

Note:

a) A development that complies with all relevant planning controls is more reasonable than one that contravenes them. Where an impact arises as a result of non-compliance with one or more planning controls, even a moderate impact is unreasonable.

b) Overshadowing arising out of poor design is not acceptable, even if it satisfies numerical guidelines.

c) Council will consider:

d) Size, orientation and topography.

e) Existing amount of solar access to nearby properties.

f) The extent to which existing roof top solar panels on an adjoining lot are overshadowed by existing buildings or other permanent structures.

g) Whether existing roof top solar panels on an adjoining lot are appropriately located.

h) The effect of overshadowing on the existing rooftop solar panels on an adjoining lot.

i) It must be recognised that the local government area is in an urban environment comprising narrow lots and dwellings located in close proximity to each other. For this reason it may not always be possible to retain the same level of solar access. In particular, an east-west (or similar) lot orientation is a difficult orientation to develop and it is often not possible to ensure that the same level of solar access is retained as currently exists.

F3.6 Solar access general guidelines

The numerical guidelines will be applied with the following principles in mind, where relevant:

a) The ease with which sunlight access can be protected is inversely proportional to the density of development. At low densities, there is a reasonable expectation that a dwelling and some of its open space will retain its existing sunlight. (However, even at low densities there are sites and buildings that are highly vulnerable to being overshadowed.) At higher densities sunlight is harder to protect and the claim to retain it is not as strong.

b) The amount of sunlight lost should be taken into account, as well as the amount of sunlight retained.

c) Overshadowing arising out of poor design is not acceptable, even if it satisfies numerical guidelines. The poor quality of a proposal's design may be demonstrated by a more sensitive design that achieves the same amenity without substantial additional cost, while reducing the impact on neighbours.

d) For a window, door or glass wall to be assessed as being in sunlight, regard should be had not only to the proportion of the glazed area in sunlight but also to the size of the glazed area itself. Strict mathematical formulae are not always an appropriate measure of solar amenity. For larger glazed areas, adequate solar amenity in the built space behind may be achieved by the sun falling on comparatively modest portions of the glazed area.

e) For private open space to be assessed as receiving adequate sunlight, regard should be had of the size of the open space and the amount of it receiving sunlight. Self-evidently, the smaller the open space, the greater the proportion of it requiring sunlight for it to have adequate solar amenity. A useable strip adjoining the living area in sunlight usually provides better solar amenity, depending on the size of the space. The amount of sunlight on private open space should ordinarily be measured at ground level but regard should be had to the size of the space as, in a smaller private open space, sunlight falling on seated residents may be adequate.

f) Overshadowing by fences, roof overhangs and changes in level should be taken into consideration. Overshadowing by vegetation should be ignored, except that vegetation may be taken into account in a qualitative way, in particular dense hedges that appear like a solid fence.

g) In areas undergoing change, the impact on what is likely to be built on adjoining sites should be considered as well as the existing development.

F3.7 Shade guidelines

Well-designed and correctly positioned shade provides protection from UV radiation where it is needed, at the right time of day and at the right time of year.

Objectives

O1. Ensure outdoor spaces are comfortable to use in all seasons.

O2. Protect users from direct and indirect sources of UV radiation.

O3. To provide well-designed shade in private buildings or developments in or adjoining public places that are likely to have significant visitation.

Controls	
C1.	Communal areas and areas that are accessible by the public must take into consideration Cancer Council NSW Guidelines to Shade.
C2.	Ensure the shade structure is an adequate size. Larger shade structures have more area that is not affected by indirect UV radiation reflecting in from the sides.
C3.	Consider using barriers for side as well as overhead protection. Vertical screening with plants and trellises or opaque louvres can help to block indirect UV radiation, while still allowing breezes to flow through.
C4.	Extend overhead barriers past use areas. Make sure there is at least one metre of overhang past the actual area of use.
C5.	Avoid highly reflective surfaces. Choose surfaces that reflect minimal UV radiation.
C6.	Consider the arrangement of existing structures. A large number of small shade structures can be grouped together to form a single larger canopy for greater protection.
C7.	Use a combination of built shade and natural shade to adequately shade an area.

F3.8 Visual and acoustic privacy

Objectives

O1. Ensure the siting and design of a building provides a high level of visual and acoustic privacy for residents and neighbours in dwellings and private open space.

O2. To provide personal and property security for residents and visitors.

Controls	
C1.	Openable first floor windows should be located so as to face the front or rear of the building. Where it is impractical to locate windows other than facing an adjoining building, the windows should be off-set to avoid a direct view of windows in adjacent buildings.
C2.	Balconies should be located so as to face the front or rear of the building. No balconies are permitted on side elevations.
C3.	Provide a minimum sill height of 1.5 metres from finished floor level to windows on a side elevation which serves habitable rooms and has a direct outlook to windows or principal private open space (not being front yard) of adjacent dwellings or alternatively use fixed obscure glass.
C4.	Upper level balconies to the rear of a building should be set back a minimum of 2.0 metres from any side boundary and should have a maximum depth of 2.0 metres.
C5.	Upper level balconies that face side or rear boundaries will not be permitted when the upper level setback is less than 6.0 metres.
C6.	All balconies should be recessed unless special circumstances, as determined by Council, are considered to exist.
C7.	Provide suitable screen planting on a rear boundary that will achieve a minimum mature height of 6.0 metres where the rear upper floors are proposed to be less than 7.0 metres off a rear boundary.
C8.	Ground floor decks, patios and the like should not be greater than 500mm above natural ground level. If structures such as these are expansive and are sought on sloping ground, they should be designed to step down in relation to the topography of the site.
C9.	Where the visual privacy of adjacent properties is likely to be significantly affected from windows, doors and balconies, or where external driveways and/or parking spaces are located close to bedrooms of adjoining buildings, one or more of the following alternatives are to be applied: a) Fixed screens of a reasonable density (minimum 85% block out) should be provided in a position suitable to alleviate loss of privacy; b) Where there is an alternative source of natural ventilation, windows are to be provided with translucent glazing and fixed permanently closed; c) Windows are off-set or splayed to reduce privacy effects; d) An alternative design solution is adopted which results in the reduction of privacy effects; and e) Suitable screen planting or planter boxes are to be provided in an appropriate position to reduce the loss of privacy of adjoining premises. Note: This option will only be acceptable where it can be demonstrated that the longevity of the screen planting has been provided for eg. Automatic watering systems.
C10.	The introduction of acoustic measures to reduce traffic/aircraft noise should not detract from the streetscape value of individual buildings.
C11.	Habitable rooms for multi-dwelling development are to have a minimum separation of nine (9) metres.

Use of rooftops of buildings and garages

Controls	
C12.	No trafficable outdoor spaces are permitted on the uppermost rooftop of a building or on garage roofs, such as roof decks, patios, gardens and the like, however; Outdoor roof space may be considered for buildings on steeply sloping sites where this is the dominant characteristic in the immediate vicinity as demonstrated by the Streetscape Character Analysis and there are no noise, privacy or amenity issues.

Refer to Figure F3.1, Figure F3.2, Figure F3.3 and Figure F3.4

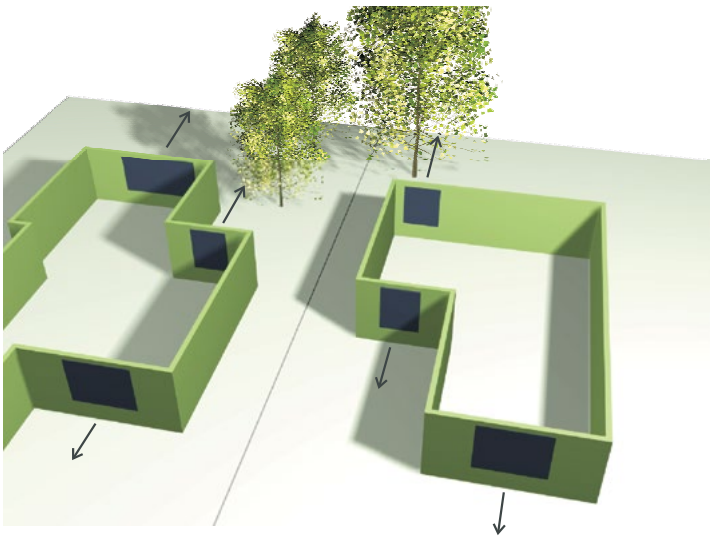


Figure F3.1 - Illustrated examples of appropriate measures to protect privacy - Orientation for private outlook

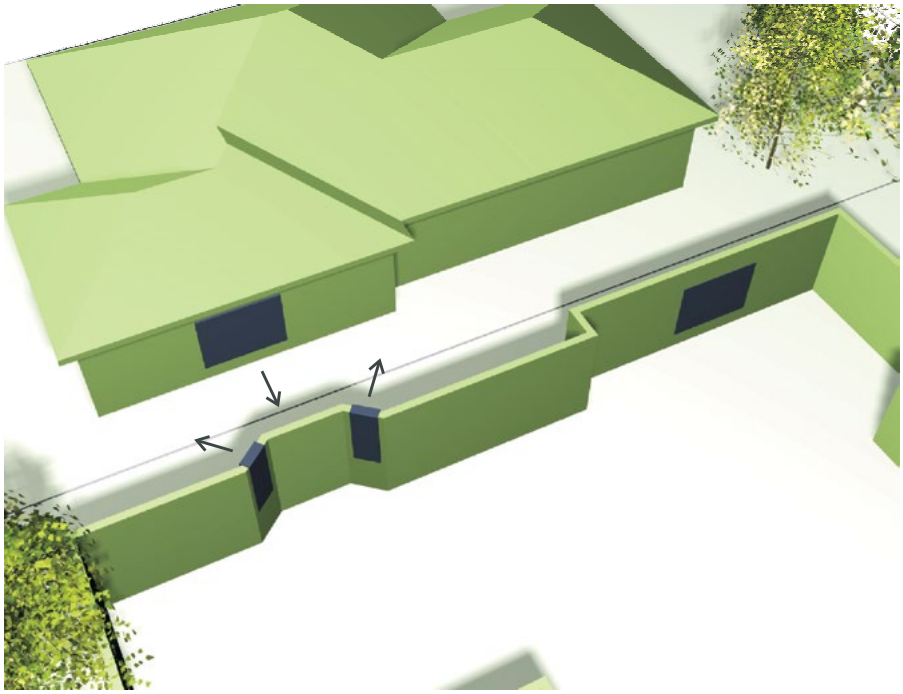


Figure F3.2 - Illustrated examples of appropriate measures to protect privacy - Splay windows

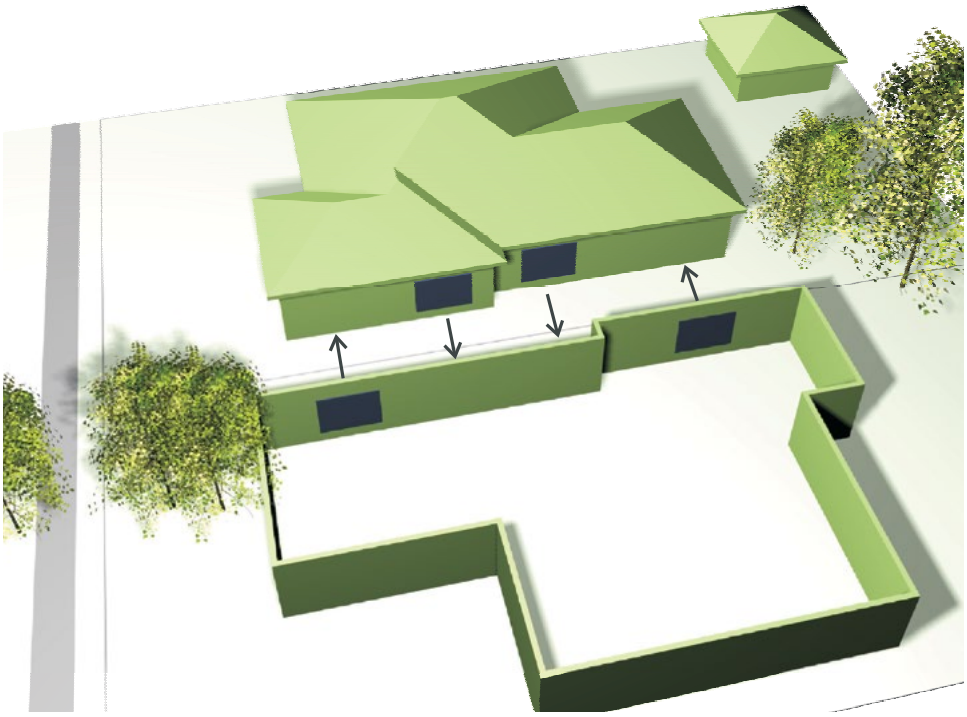


Figure F3.3 - Illustrated examples of appropriate measures to protect privacy - Offset windows

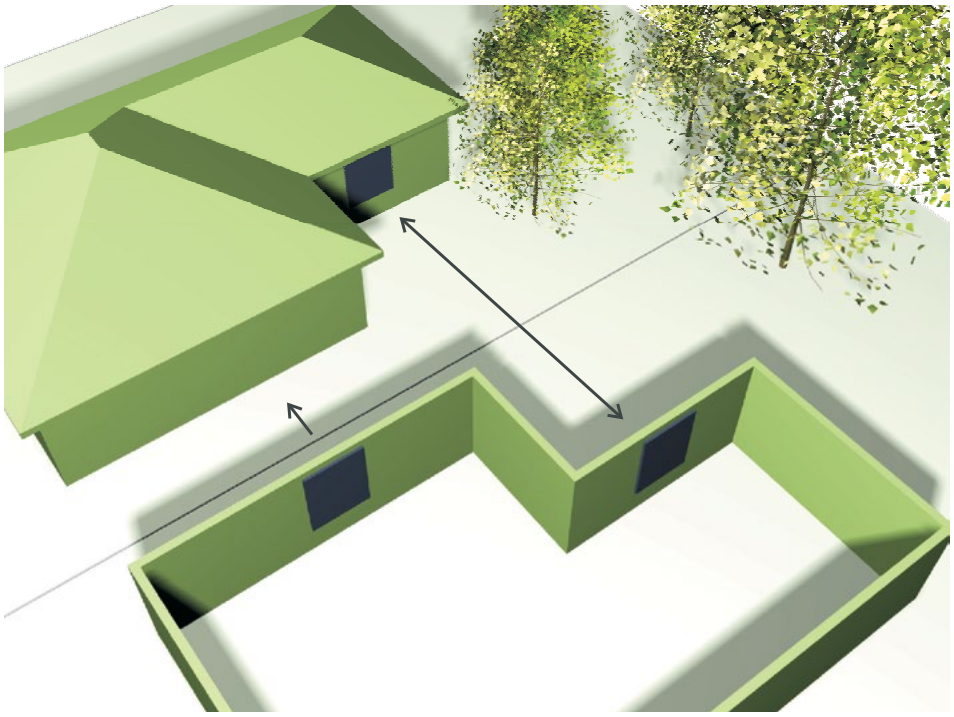


Figure F3.4 - Illustrated examples of appropriate measures to protect privacy - Separation between rooms

F3.9 Traffic and transport corridor amenity impacts

Objectives

O1. To protect building users from negative impacts (noise, air quality, vibration) from road and rail corridors.

Controls	
C1.	Development must consider the provisions of SEPP (Infrastructure) 2007 and *Development Near Rail Corridors and Busy Roads Interim Guidelines* and the design approaches illustrated in Figure F3.5.
C2.	For residential components of new development, noise sensitive areas (living rooms, bedrooms) are located away from road and rail corridors.
C3.	Windows located towards road and rail corridors are to be double-glazed (or have laminated glazing) and have acoustic seals.
C4.	Internal habitable rooms of dwellings are to be designed to achieve internal noise levels of no greater than 50dBA.

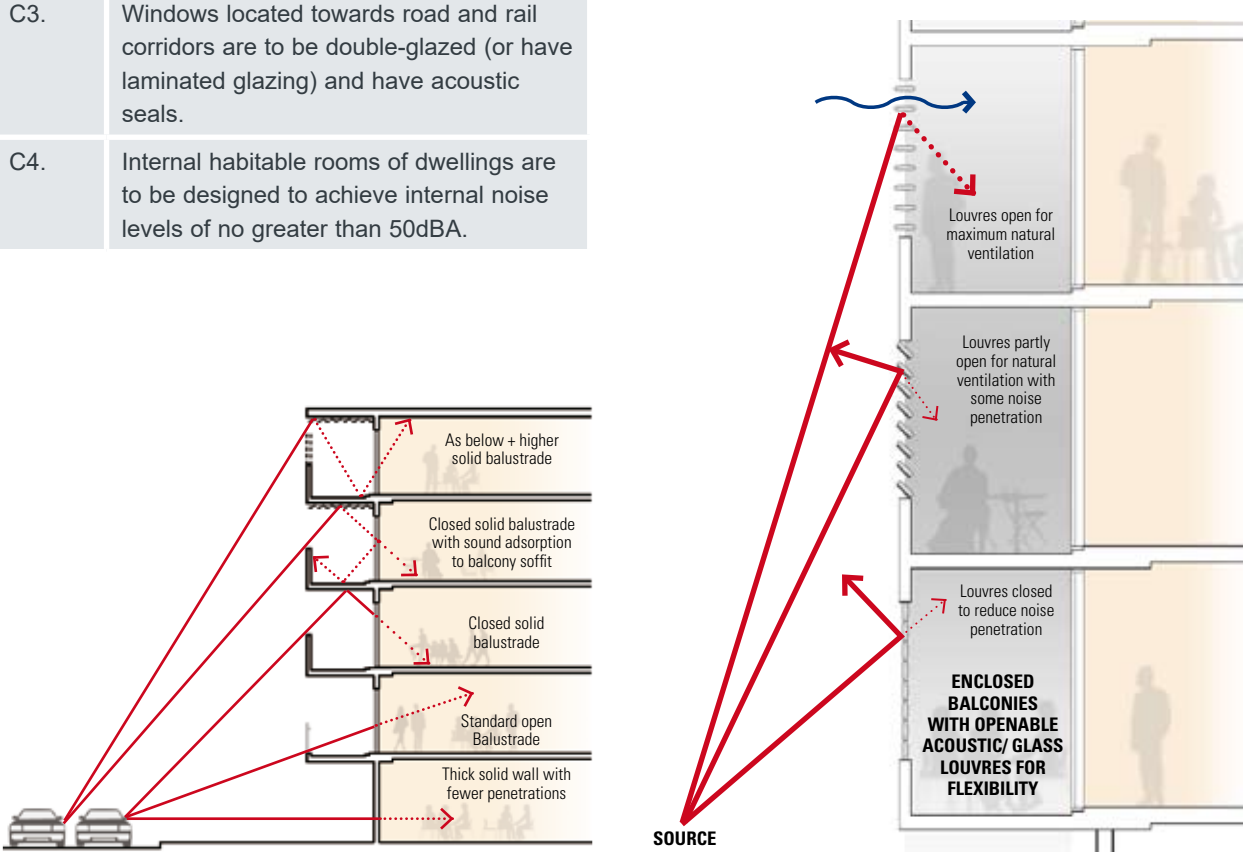


Figure F3.5 - Noise mitigating facade treatments
(Source: Development Near Rail Corridors And Busy Roads Interim Guideline, NSW)

F3.10 Access to views

Objectives

O1. To protect and enhance opportunities for vistas and public views from streets and public places.

O2. To ensure views to and from the site are considered at the site analysis stage.

O3. To recognise the value of views from private dwellings and encourage view sharing based on the following four controls.

O4. To recognise the value of view sharing whilst not restricting the reasonable development potential of the site.

O5. Protect and enhance scenic and cultural landscapes.

To determine whether a development is satisfactory in relation to the Objectives pertaining to access to views, the following controls will be applied:

Controls	
C1.	Development should seek to protect water views, iconic views and whole views. Water views are valued more highly than land views. Iconic views (eg of the Harbour Bridge or the City skyline) are valued more highly than views without icons. Whole views are valued more highly than partial views (eg a water view in which the interface between the land and water is visible is more valuable than one in which it is obscured). An icon should be a prominent identifying feature of the landscape and should be commonly held by the wider community as having iconic status.
C2.	Development should seek to protect views from the front and rear of buildings and where views are obtained from a standing position. The expectation to retain side views and sitting views is often unrealistic.
C3.	Development should seek to protect views from living areas and minimise the extent of impact. The impact on views from living areas is more significant than from bedrooms or service areas (though views from kitchens are highly valued because people spend so much time in them). The impact may be assessed quantitatively, but in many cases this can be meaningless. For example, it is unhelpful to say that the view loss is 20% if it includes the Harbour Bridge. Council will attempt to assess the view loss qualitatively as negligible, minor, moderate, severe or devastating.
C4.	Development in view affected areas should not only be designed to meet relevant development controls but also be designed to achieve view sharing. A development that complies with all planning controls is more reasonable than one that breaches them. Where an impact on views arises as a result of non-compliance with one or more planning controls, even a moderate impact is unreasonable. A complying proposal of a more skillful design could provide the applicant with the same development potential and amenity and reduce the impact on the views of neighbours.
C5.	Ensure development in foreshore and peninsula localities do not adversely impact upon views to and from Parramatta River and Sydney Harbour, from within and outside the local government area.
C6.	Development applications in foreshore and peninsula localities are required to include photomontages or computer modelling to illustrate the visual effects of the proposal as viewed from nearby public domain within and outside the LGA.

Note: In some cases, Council will insist on the erection of height poles/ building templates to indicate the height of the proposed development together with written and/ or photographic montages to ensure that view losses are minimal. Template construction is to be to the satisfaction of Council officers and is to be certified by a registered surveyor upon erection.

F3.11 Safety and security

Objectives

O1. To facilitate a safe physical environment by promoting crime prevention through design.

O2. To facilitate the security of residents and visitors and their property and enhance community safety and well-being.

O3. To ensure a development relates well with the public domain and contributes to an active pedestrian-orientated environment.

O4. Effective use of fencing or other means to delineate private and public areas.

Controls	
C1.	Ensure lighting is provided to all pedestrian paths, shared areas, parking areas and building entries for multi unit development.
C2.	High walls which obstruct surveillance are not permitted.
C3.	Buildings adjacent to public streets or public spaces should be designed so residents can observe the area and carry out visual surveillance. At least one window of a habitable room should face the street or public space.
C4.	A Council approved street number must be displayed at the front of new development or the front fence of such development.
C5.	Roller shutters, security bars and grilles are not permitted on window and door openings that have a frontage to the street or that are adjacent to public open space.
C6.	Fences higher than 900mm should be of an open semi-transparent design.
C7.	Balconies and windows should be positioned to allow observation of entrances.
C8.	Proposed planting must not obstruct the building entrance from the street or sightlines between the building and the street frontage.
C9.	Blank walls facing a rear laneway should be avoided as they attract graffiti.
C10.	Pedestrian and vehicular entrances must be designed so as to not be obstructed by existing or proposed plantings.
C11.	If seating is provided in communal areas of a development it should generally only be located in areas of active use where it will be regularly used.
C12.	Development on properties which adjoin a rear laneway must provide at least one habitable room window in the rear elevation capable of overlooking the laneway. If appropriate to the site context and neighbouring property privacy considerations, a balcony on the rear elevation would be an appropriate alternative.

F3.12 Access to public transport

Objectives

O1. To facilitate safe and easy walkable access to major public transport hubs and local centres.

Controls	
C1.	Developments in the vicinity of major public transport hubs (including Metro and railway stations) and local centres are to be designed to support the planning of walkable access including: a) Upgrading of footpaths b) Improving accessibility c) Creating new through-site links/routes d) Planting shade trees e) Lighting f) Passive visual surveillance

F4 General Controls

F4.1 Frontage

Objective

O1. To ensure lot dimensions are able to accommodate residential development and provide adequate open space and car parking consistent with the relevant requirements of this DCP.

Controls	
C1.	The minimum frontage requirements specified in the Canada Bay Local Environmental Plan shall be achieved.
C2.	Any dwelling within a manor house, multi dwelling housing, or residential flat building development is to have a minimum width of 7m if the dwellings have parking accessed from the primary street and do not have consolidated basement parking with a single entry or parking accessed from a rear lane or secondary frontage. The minimum width may be reduced to 5m if the dwellings have consolidated basement parking with a single entry, or parking accessed from a rear lane or secondary frontage.

F4.2 Building setbacks

Setbacks define the overall footprint of a building and the outer extremities of that building in relation to the front, side and rear boundaries.

Appropriate street setback controls can contribute to the public domain by enhancing the streetscape character and the continuity of street facades. Street setbacks also enhance the setting of a building. Canada Bay Council places particular emphasis on continuing the building alignment in uniform streetscapes.

Rear setbacks provide space for planting, including trees, which will achieve a reasonable height and canopy and provide for adequate open space for the amenity of residents. Rear setbacks also promote privacy between residents of adjoining properties, particularly where development is greater than single storey.

Objectives

O1. To integrate new development with the established setback character of the street.

O2. Preserve significant vegetation which contributes to the public domain and allows for street landscape character to be enhanced.

O3. Ensure adequate separation between buildings consistent with the established character and rhythm of built elements in the street.

O4. To ensure adequate separation between buildings for visual and acoustic privacy.

O5. Maximise solar access to achieve amenity for neighbours.

Front setbacks - primary street

Controls	
C1.	The front setback of all residential buildings is to be a minimum of 4.5 metres or no less than the Prevailing Street Setback, whichever is the greater. The "Prevailing Street Setback" is the setback calculated by averaging the setback of five (5) adjoining residential properties on both sides of the development. Where there are fewer than five residential properties or a non-residential use property between a street end or corner and the development site, the "Prevailing Street Setback" is the setback calculated by averaging the setback of the five next residential properties fronting the street (if any) on both sides of the property. *Note: In many instances, the front setback of buildings in Canada Bay is 7.5 metres or greater and development in these areas will be required to comply with this prevailing setback.*
C2.	No balconies, entry porches or verandahs are permitted to encroach within the front setback. The only encroachments permitted within the front setback are restricted to eaves and awnings for weather protection but no supporting columns or posts.
C3.	Where a site has more than one street frontage (other than a lane) and a dwelling is proposed to the rear of the site, the development must acknowledge the prevailing setback of both streets.

Note: On a site with two street frontages, the primary street is considered to be the one to which the property is addressed.

Front setbacks - parallel road lot

Controls	
C4.	If the secondary street (other than a lane) is at the rear of the property, any dwelling facing the secondary street is to use the secondary street as its primary street and be designed to comply with the Front setback – primary street controls.

Front setbacks - corner lot

Controls	
C5.	If the secondary street (other than a lane) is at the side of the property, any dwelling proposed to the rear of the site must acknowledge the prevailing street setback of the secondary street.
C6.	Any dwelling that faces the primary street must have a secondary street (side setback) of a minimum of 2m for the first 25m measured from the corner.
C7.	Any dwelling to the rear of the site is to face the secondary street and is to use the secondary street as its primary street and be designed to comply with the Front setback – primary street controls.
C8.	The prevailing street setback for the secondary frontage is to be applied from 25m from the corner to the existing rear boundary of the site.

Refer to Figure F4.1, Figure F4.2, Figure F4.3 and Figure F4.4

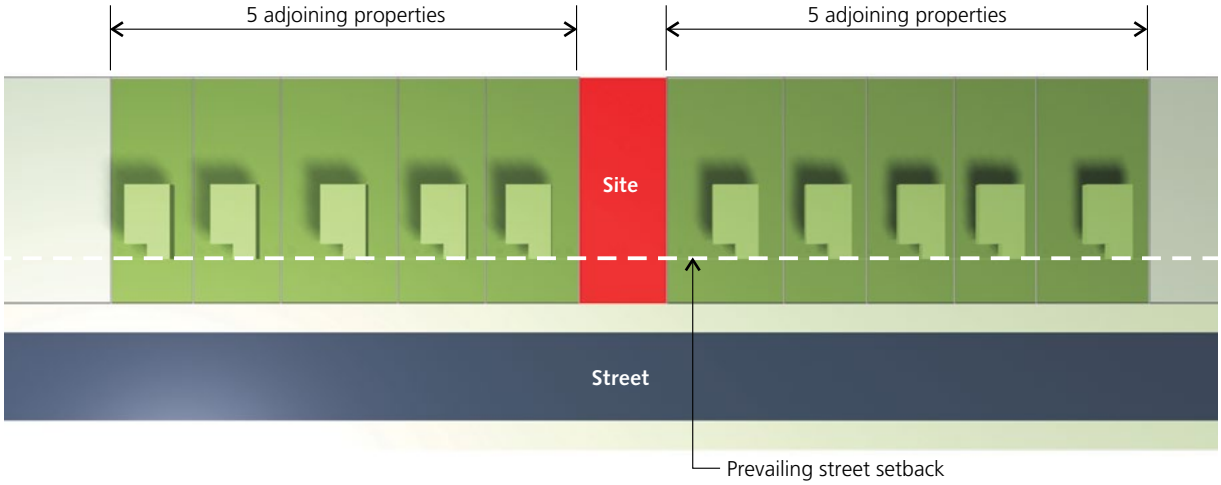


Figure F4.1 Calculation of the prevailing street setback

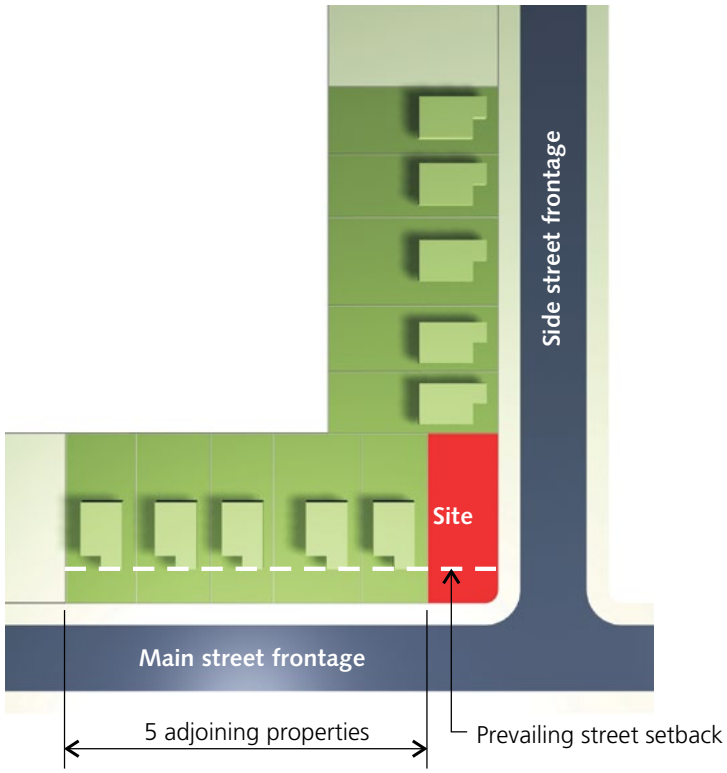


Figure F4.2 Calculation of the prevailing street setback on a corner development site



Figure F4.3 Prevailing street setback near corner sites



Figure F4.4 Prevailing street setback near corner sites

Side setbacks

Controls	
C9.	All developments are to comply with the following numerical requirements:

Development	Minimum distance from side boundary of parent lot
Multi-dwelling housing	• All walls are to be set back a minimum of 1500mm.
Multi dwelling housing (terraces)	• All walls are to be set back a minimum of 1500mm.
Manor houses	• All walls are to be set back a minimum of 1500mm.
Residential flat buildings	• All walls are to be set back a minimum of 5000mm.

Note 1: Upper floor setbacks may be achieved by stepping the building in, integrating any proposed upper floor within the roof form or by setting back both the ground and first floors from the side boundaries.

Note 2: Sites that have more than one street frontage (other than a lane) will have additional setback requirements.

Rear setbacks – single street frontage

Controls	
C10.	All development (not including an outbuilding) is to have a minimum rear setback of 6.0 metres.
C11.	Any living room located on an upper floor is to have a minimum rear setback of 9.0m.

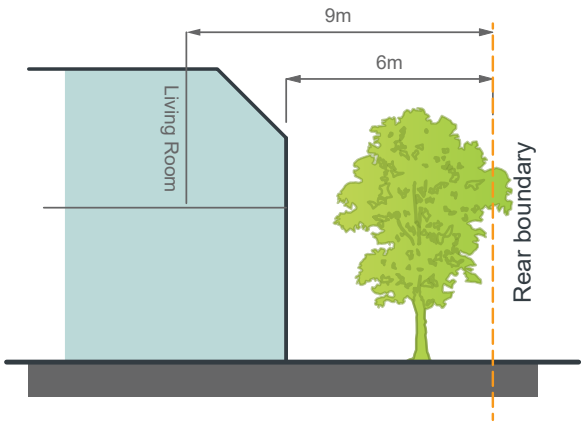


Figure F4.5 Minimum rear setback diagram

Rear setbacks – corner lot

Controls	
C12.	The dwelling oriented to the secondary frontage shall have a minimum setback to the rear boundary of the parent lot of 1.5 metres and a minimum setback to the side boundary (at rear of dwelling) of 4 metres.
C13.	Any living room located on an upper floor is to be oriented towards the street frontage, and not extend through to the rear, to minimise overlooking of side and rear boundaries.

Basement setbacks

Controls	
C14.	Basement excavation for all development is limited to the area of the building at ground level. The excavation setback includes the driveway access to the basement.
C15.	Where it can be demonstrated the site is so constrained (for example by its width) that it is impossible to provide basements without extending beyond the permitted side and rear setbacks, excavation up to but no closer than 3.0 metres to a site boundary will be considered.

Internal setbacks

Controls	
C16.	If two or more rows of dwellings are proposed in Multi-Dwelling Housing or Residential Flat Buildings, an internal setback of 12.0 metres is required between rows.

Outbuildings

Controls	
C17.	Outbuildings are to be located behind the main building alignment and should have a minimum setback of 900mm to side and rear boundaries. However, reduced side and rear boundary setbacks may be considered on merit where: a) they are consistent with the setbacks of outbuildings in the vicinity; b) they require no maintenance (including roof gutters); c) there are no adverse impacts to the amenity of the adjoining properties; and d) the total area of all outbuildings (including any secondary dwellings) does not exceed 35m^2.

However, reduced side and rear boundary setbacks may be considered on merit where:

a) they are consistent with the setbacks of outbuildings in the vicinity;
b) they require no maintenance (including roof gutters);
c) there are no adverse impacts to the amenity of the adjoining properties; and
d) the total area of all outbuildings does not exceed 35m^2.

Advisory Notes

Notwithstanding compliance with the above numerical controls, Council may require building setbacks to be increased if necessary to reduce bulk, overshadowing, visual impact, view loss, privacy concerns and to retain existing trees on site.

Any Foreshore Building Line will continue to apply and overrides any setback provisions in this plan.

F4.3 Street orientation and presentation

Objectives

O1. Ensure that development contributes to the activity, safety, amenity and quality of streets and the public domain.

O2. Present appropriate frontages to adjacent streets and public domain in terms of scale, finishes and architectural character.

O3. Provide legible and accessible entries from the street and the public domain.

O4. Minimise and ameliorate the effect of blank walls (with no windows or entrances) at the ground level.

O5. Minimise amenity impacts upon adjoining sites.

Controls	
C1.	Buildings shall be aligned and oriented to all street frontages.
C2.	Buildings must address all street frontages through the provision of habitable rooms, windows and doors and architectural features.
C3.	At a minimum, the front façade of a dwelling shall orientate the front door and a window of a habitable room on the ground floor to address the principal street frontage. If the site has more than one street frontage and more than one dwelling is proposed then this is to be applied to all frontages.
C4.	Buildings are to have a street address and provide a direct line of sight from a street to the principal dwelling entry, common building entry or entries. Where a development comprises a number of buildings with a variety of orientations, a major part of the overall development is to face the street;
C5.	Provide individual entries directly from the street to any ground floor dwellings next to the street.

C6.	Buildings are to be designed to maximise the number of entries, visible internal uses at ground level, and include high quality finishes and public art to enhance the public domain.
C7.	Development that exposes the blank side of an adjoining building or has a party wall to the public domain is to be designed with a visually interesting treatment of high quality design applied to that wall.
C8.	Ground floor tenancies and building entry lobbies are to: a) have entries at the same level as the adjacent footpath or public domain; b) have finished floor levels between 0-1.0m above or below the adjacent footpath or public domain entry; c) provide opportunities for direct surveillance of the adjacent street or public domain at maximum intervals of 6m; and d) be elevated up to 1.0m above ground level for privacy for ground floor residential uses.
C9.	Lanes are to be fronted by entries to dwellings, retail and/or commercial uses where practicable.
C10.	Align breaks between buildings with nearby streets, lanes and pedestrian links to enable view connections.

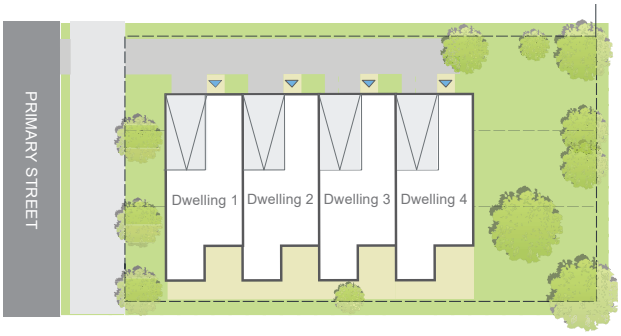


Figure F4.6 Undesired development, dwellings not orientated towards the street frontage

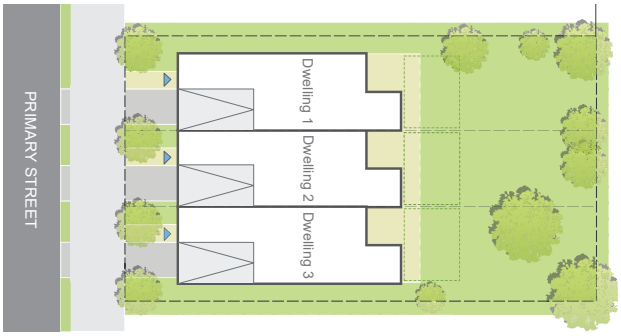


Figure F4.7 Desired development, where dwellings are orientated towards the street frontage

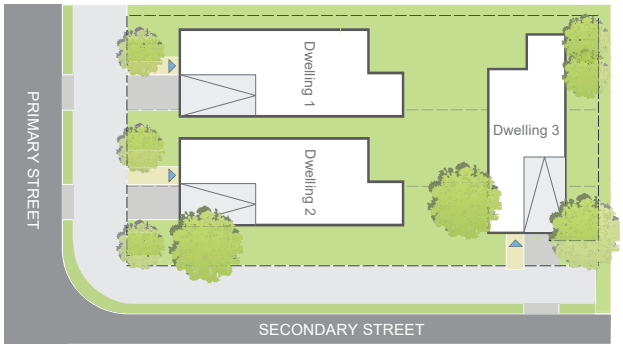


Figure F4.8 Desired development on lots with more than one street frontage where dwellings are orientated towards all streets

F4.4 Height of buildings

Height is an important control because it has a major impact on the physical and visual amenity of a place. Building height is also critical in addressing impacts from development such as solar access, privacy and view loss.

Objectives

O1. To ensure that buildings are compatible with the height, bulk and scale of the existing and desired future character of the locality.

O2. To minimise visual impact, disruption of views, loss of privacy and loss of sunshine to existing residential development.

O3. To minimise the adverse impact on Conservation Areas, Heritage Items and contributory buildings.

O4. To reduce the visual impact of development when viewed from the Parramatta River as well as other public places such as parks, roads and community facilities.

Controls	
C1.	The following maximum building heights should not be exceeded:

Dwelling type	Maximum storeys
Manor houses	Two (2) storey where LEP maximum height 8.5m > Two (2) storey where LEP maximum height >8.5m
Multi-dwelling housing	Two (2) storey
Multi-dwelling (terraces)	Two (2) storey where LEP maximum height 8.5m Three (3) storey where LEP maximum height 9.0m
Residential flat building	Two (2) storey where LEP maximum height 8.5m > Two (2) storey where LEP maximum height >8.5m
Outbuildings	One (1) storey

Note 1: Reference should be made to the Building Height Maps which accompany the Canada Bay Local Environmental Plan.

Note 2: On a site with two street frontages, the dwelling facing the primary street frontage is considered to be the front dwelling.

Note 3: For the purpose of calculating the number of street frontages a lane is not considered to be a street frontage

Controls	
C2.	Multi dwelling housing (terraces) must not exceed two storeys unless it complies with the requirements set out in Clause 4.3 of the Canada Bay Local Environmental Plan. Refer also to Figure F4.12.

Attics above dwellings

Controls	
C3.	The use of an attic room within the roof space of a dwelling house is permitted for habitable purposes, provided that: a) no external balconies are proposed for the attic room; b) the attic room does not increase the bulk of the building; c) it does not compromise the privacy of adjacent properties.

Attics above garages and outbuildings

C4.	A single storey structure with an attic above is only permissible if: a) it is adjacent to a rear lane; b) the height does not exceed 5.4m; c) amenity to adjacent sites is maintained; d) No external balconies are proposed for the attic room; e) The attic room does not increase the bulk of the building; f) It does not compromise the privacy of adjacent properties; g) The roof pitch of a rear lane building must be between 30o and 40o; h) Any structure on a lot adjoining a rear lane is to be clearly subservient to the principal dwelling.

Refer to Figure F4.9, Figure F4.10, Figure F4.11 and Figure F4.12

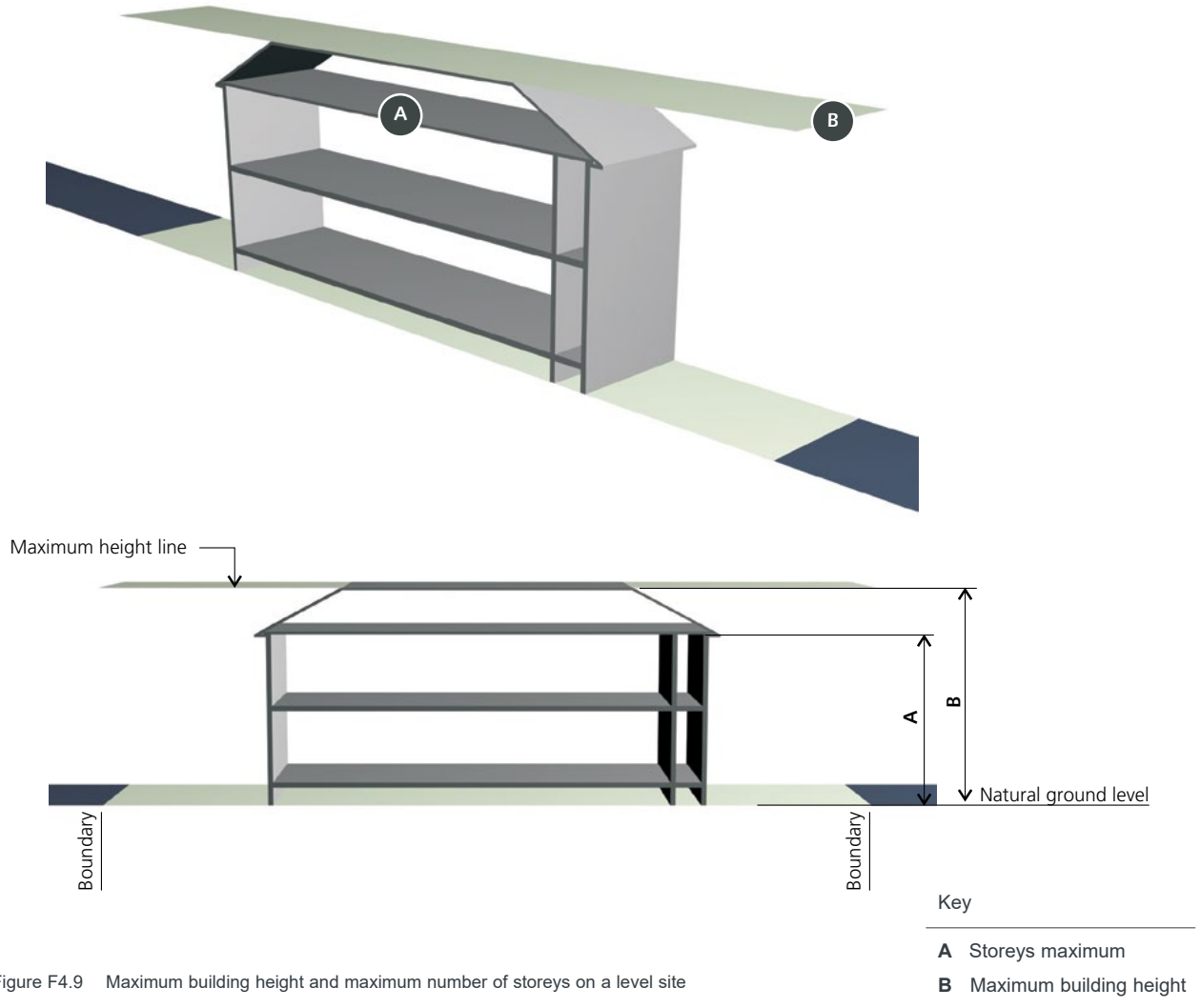


Figure F4.9 Maximum building height and maximum number of storeys on a level site

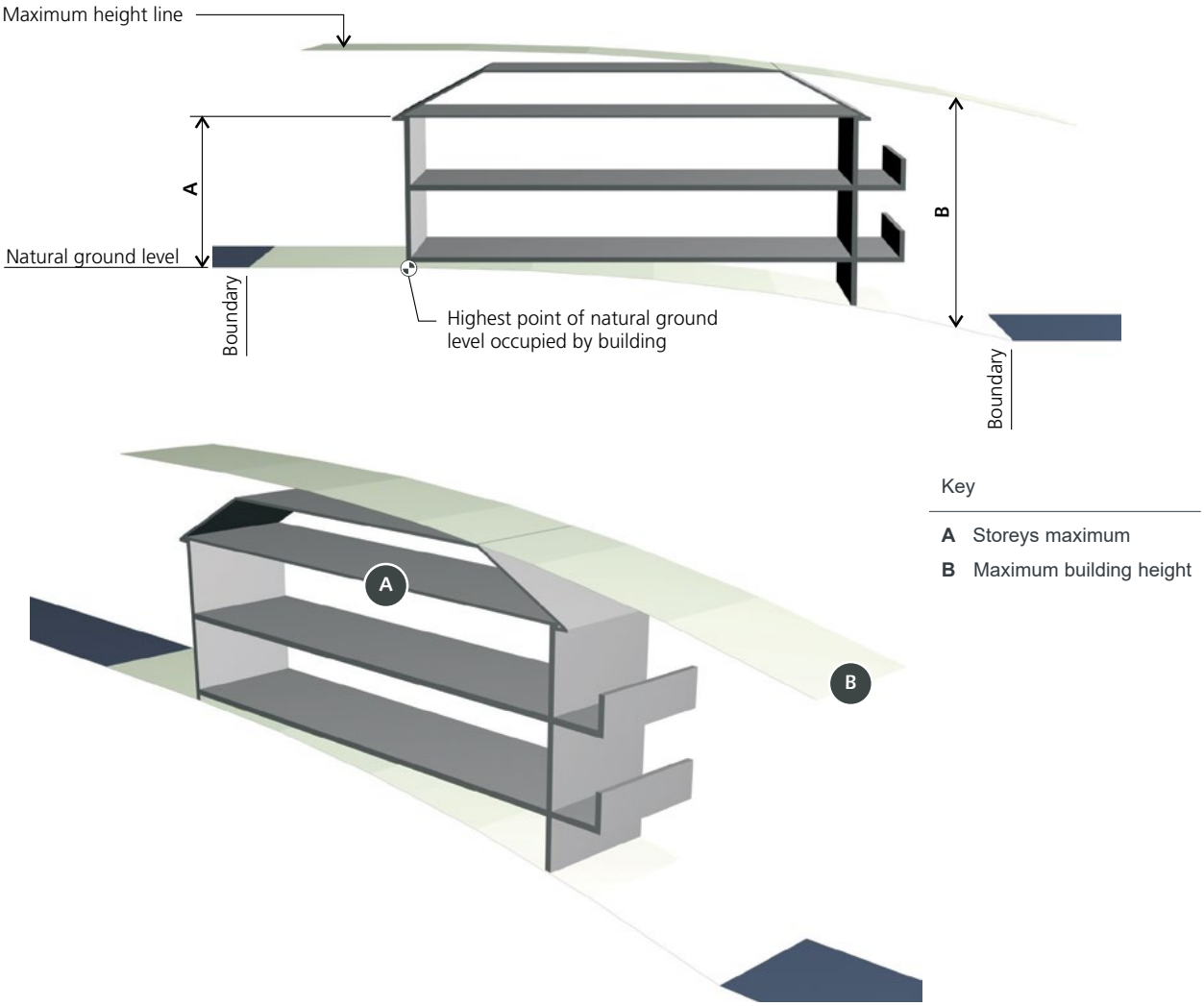


Figure F4.10 Maximum building height and maximum number of storeys on a sloping site

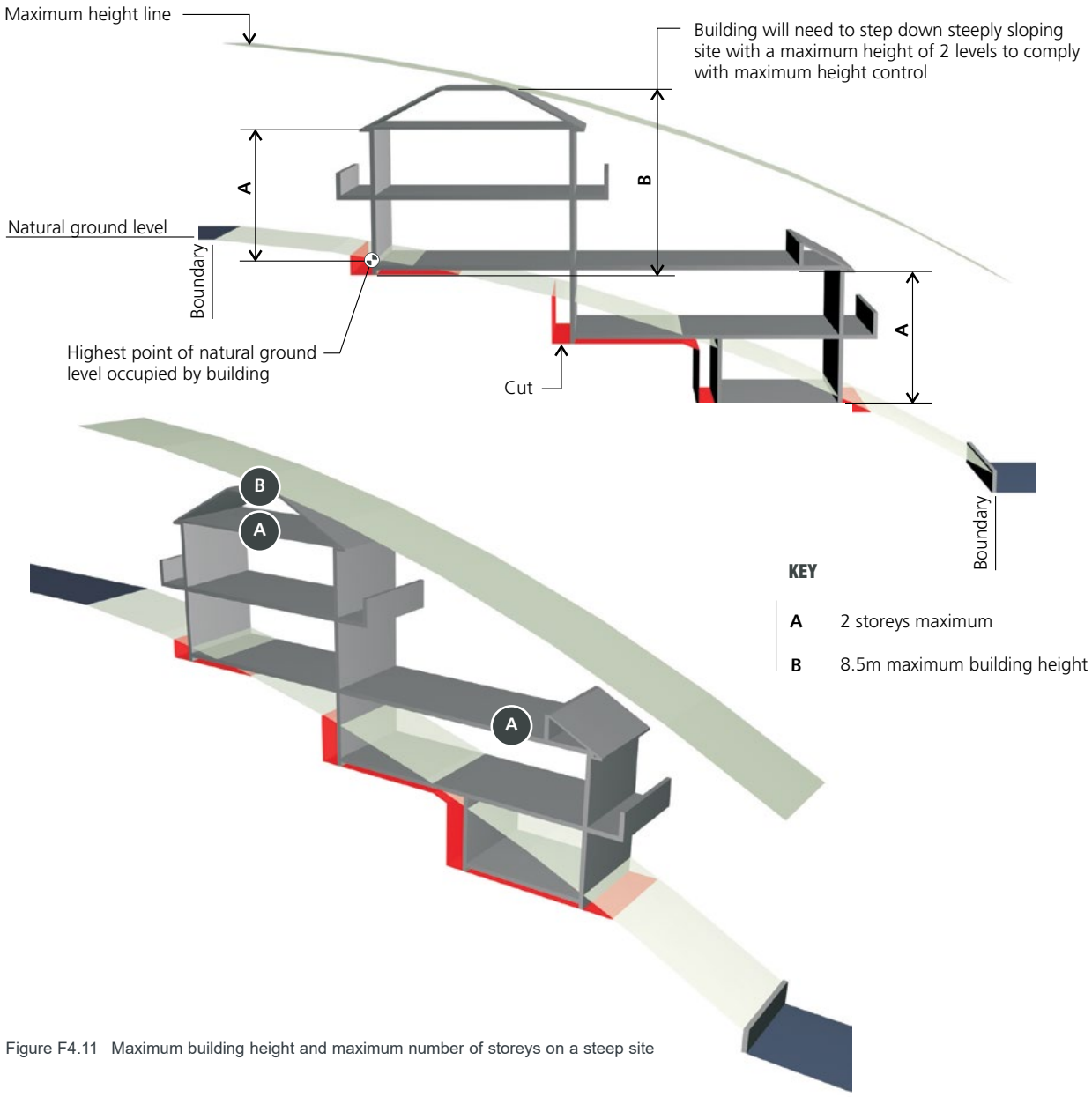


Figure F4.11 Maximum building height and maximum number of storeys on a steep site

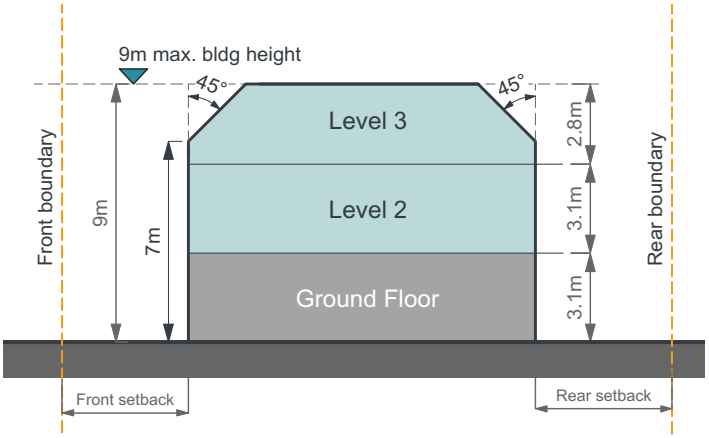


Figure F4.12 Maximum building height and maximum number of storeys for multi dwelling housing (terraces) in accordance with Clause 4.3 of Canada Bay Local Environmental Plan

F4.5 Bulk and Scale

Objectives

O1. To ensure that buildings are compatible with the bulk and scale of the desired future character of the locality.

O2. To minimise the effects of voids in the bulk and scale of buildings.

Controls	
C1.	Large void areas are considered to contribute to the overall mass of a building. Any void areas proposed must demonstrate its necessity for the specific functional outcomes of the building.
C2.	Notwithstanding compliance with any relevant standards, applicants must demonstrate that the bulk and relative mass of development is acceptable in terms of the following impacts upon the street and adjoining dwellings: a) Overshadowing and privacy considerations; b) Streetscape considerations (bulk and scale); c) Building setbacks; d) Parking and landscape requirements; e) Visual impact and impact upon existing views; f) The existence of significant trees on site; g) The size and shape of the allotment; and h) Site topography.

Note: Compliance with the maximum FSR and height standards does not guarantee approval if bulk and scale is considered to be excessive.

F4.6 Landscaped area

Objectives

O1. To enhance the existing streetscape.

O2. To enhance the quality & amenity of the built form.

O3. To provide privacy and shade.

O4. To minimise the extent of hard paved areas and facilitate rainwater infiltration.

O5. To preserve and enhance native wildlife populations and habitat through appropriate planting of indigenous vegetation.

O6. To provide large consolidated areas of landscaping that are usable and sustainable and that can be maintained long term.

Controls	
C1.	Landscape areas need to be consistent with the definition in Part K of the DCP. Note: Synthetic turf, permeable paving and gravel do not form part of landscaped area calculation.
C2.	Landscaping that has an area of less than 1.5m x 1.5m must not be included in landscaped area calculations.
C3.	Landscaped open space may comprise both communal and private open space and is to be provided in accordance with the following table, Table F-A:

Table F-A

Dwelling Type	Minimum landscape area as percentage of parent lot site area	Minimum percentage of front setback to be landscaped	Minimum percentage of the lot area behind the building line to be landscaped
Manor houses	50% lot area minus 100sqm	35%	50%
Multi dwelling housing	50% lot area minus 100sqm	35%	50%
Multi dwelling housing (terraces)	50% lot area minus 100sqm	35%	50%
Residential flat buildings	50% lot area minus 100sqm	35%	50%

Note: Landscaped area percentage is to be calculated on the total site area of the parent lot and is to be distributed evenly between dwellings of a similar size with a greater proportionate distribution to larger dwellings.

Controls	
C4.	Existing trees are to be retained and integrated into a new landscaping scheme, wherever possible. Suitable replacement trees should be provided.
C5.	Minimum soil depth for balcony gardens is 800mm.
C6.	The majority of the front building setback and private courtyard areas of all development should comprise landscaping, where possible, in accordance with the definition in this DCP.
C7.	If more than one dwelling is proposed then the minimum percentage of front setback to be landscaped will apply to each dwelling.
C8.	If more than one dwelling is proposed and the dwellings are oriented to different frontages then the minimum percentage of front setback to be landscaped is 50% (to be applied to each frontage).
C9.	A significant landscaped setting is to be established for pathways and paved areas.
C10.	Pathways and driveways are to be located a minimum of 1.0 metres from common boundaries.
C11.	Any development on the foreshore should: a) Enhance the existing flora of the allotment; b) Plant native trees with a mature height greater than 12.0 metres; c) Avoid introduced species known to seed freely or spread easily by rhizomes or vegetative means.

Deep soil zones

Controls	
C12.	A deep soil zone must not contain any buildings, structures, services or impervious surfaces.
C13.	A minimum of 7% of the site area must be provided as a deep soil zone.
C14.	Deep soil zones must be provided within front and rear setbacks and may be provided within side setbacks if appropriate.
C15.	At least 10% of the deep soil zone must be communal landscaped open space.
C16.	In developments with more than one group of attached dwellings, the deep soil communal open space is to be provided between the buildings.
C17.	A deep soil zone must have a minimum dimension of 2m (L) x 2m (W).

F4.7 Parking and access

Refer to Part B - General Controls

F4.8 Private open space

Objectives

O1. To ensure private open space provides each dwelling with a space for outdoor activities and functions as an extension of the living area.

O2. To enhance the built environment by providing open space for landscaping.

Controls	
C1.	The provision of private open space for residential development is to be in accordance with Table F-B.
C2.	A development should locate the private open space behind the front building line.
C3.	At least one portion of the private open space with a minimum area as specified in Table F-B should be adjacent to and visible from the main living and/or dining rooms and be accessible from those areas.
C4.	Development should take advantage of opportunities to provide north facing private open space to achieve comfortable year round use.

Table F-B

Type of Development	Minimum private open space area (per dwelling)	Minimum private open space dimensions (per dwelling)
All (Manor houses, Multi dwelling housing, Multi dwelling housing (terraces, Residential flat buildings)	Ground floor dwellings and dwellings with living room on ground floor: • 15m² for 1 bedroom dwellings • 25m² for 2 bedroom dwellings • 30m² for 3+ bedroom dwellings Upper floor dwellings: • 10m² for 1 bedroom dwellings • 14m² for 2 bedroom dwellings • 16m² for 3+ bedroom dwellings	Ground floor dwellings and dwellings with living room on ground floor: • 3m x 3m Upper floor dwellings: • 2m x 2m

F4.9 Common open space

Objectives

O1. To provide low maintenance common open space areas for residents that facilitate opportunities for recreational and social activities, passive amenity, landscaping and deep soil planting.

O2. Encourage publicly accessible or common courtyards in suitable locations to supplement the public open space network.

O3. Design common courtyards as focal spaces that are visually connected to the public domain.

O4. Encourage publicly accessible through-site pedestrian links.

O5. To maximise safety.

Controls	
C1.	A minimum area equal to 25% of the site, or 10m^2 per dwelling (whichever is greater) is to be provided.
C2.	Common open space should have a minimum dimension of 3m, and larger developments should consider greater dimensions.
C3.	Common open space is to be: • located where it is highly visible and directly accessible to the maximum number of dwellings. • designed with an integral role in the site and include uses such as circulation, BBQ or play areas or passive amenity. • landscaped to provide privacy screening between buildings within and around the site and between private and common areas on site. • integrated with the deep soil zone to provide a landscaped setting with opportunities for large and medium size tree planting. • located adjacent to surrounding public open spaces such as reserves and public through site links where appropriate.
C4.	Some common open space may be provided on the roof top where it will not adversely impact on visual and acoustic privacy.
C5.	50% of the common open space must achieve direct sunlight for a minimum of 3 hours between 9 am and 3 pm on 21 June.
C6.	Facilities are provided within common open spaces and common spaces for a range of age groups, incorporating some of the following elements: • seating for individuals or groups • barbecue areas • play equipment or play areas • swimming pools, gyms, tennis courts or common rooms.
C7.	Common open space and the public domain should be readily visible from habitable rooms and private open space areas while maintaining visual privacy.
C8.	Common open space should be well lit.
C9.	Common open space should be well connected with public streets along at least one edge.
C10.	Common open space should be connected with nearby parks and other landscape elements.
C11.	Common open space should be linked through view lines, pedestrian desire paths, termination points and the wider street grid.

F4.10 Alterations and additions

Objectives

O1. To provide a set of controls for the external alteration or modification of existing multiple dwelling residential developments.

O2. The controls aim to ensure that development is aesthetically, environmentally and harmoniously compatible with the original Development Consent.

O3. To maintain the internal and external streetscape or other design and appearance qualities which contribute to the character, identity and acceptability of the approved development.

Building height

Controls	
C1.	A proposal which externally creates the impression of an additional storey; such as a pergola or awning over a roof top deck or patio, above that which was originally approved, will not be permitted.

Roofs

Controls	
C2.	The pitch (slope) of any roof facing or visible from a street or public place is to match the approved development. Where the roof cannot be seen from any street or public place, Council may allow some change to the form and/or pitch.

Attic conversions

Controls	
C3.	In approved developments where a close unity and harmonious design prevails, the uniformity and coherence of the streetscape/ appearance (either internal or external) should be maintained. Attic windows may be permitted if it is in character with the general architectural design of the development, is appropriately proportioned and has no doors or balconies.

Balconies

Controls	
C4.	The enclosure or addition of balconies or the addition of awnings after a building has been completed will not be acceptable unless the overall design is in keeping with the approved architectural theme.

Privacy and overlooking

Controls	
C5.	Care is to be taken to avoid any changes creating opportunities of further overlooking of other dwellings including private open space and pedestrian access ways. Care must also be taken not to inhibit the use of any areas provided for public open space or foreshore access through overlooking. Council shall consider whether reasonable privacy is maintained when making its determination.

Views

Controls	
C6.	Care should be taken to protect views from existing buildings and public areas. Development proposals should be designed to minimise impact on the views enjoyed by adjoining buildings or sites by maintaining view corridors in relation to other dwellings, buildings or place. Council shall consider whether any views are affected.

Materials and finishes

Controls	
C7.	The proposed alterations and additions should match as far as possible the existing building in its use of materials and finishes.

Landscaping

Controls	
C8.	Existing landscaping is to remain in accordance with plans approved by Council and not be varied except with Council's consent. A reduction in landscaping from the approved scheme is generally not favoured. Where permitted, Council may require some additional landscaping to be placed elsewhere. An increase in areas of hard paving will generally not be acceptable.

Vergolas/ pergolas

Controls	
C9.	A vergola/ pergola must be attached to the building but not enclosed in any way. Pergolas/ vergolas are not permitted in any building setbacks, or where they will adversely affect sunlight or privacy of adjoining properties. They will generally only be considered on existing hard paved areas. Approval will not generally be granted to a vergola/ pergola that is built to the site boundary.

Garden/ tool sheds and glass houses

Controls	
C10.	Where the erection of a garden/tool shed or glass house is proposed it will be considered to be gross floor area. Structures of this type will not be permitted within building setbacks. If the garden/tool shed or glass house is visible from a public vantage point then the proposed structure should be sympathetic to the approved architectural theme and integrity of the development.

Car parking spaces

Controls	
C11.	The reallocation or alteration of parking spaces may be permitted provided that it complies with Council's car parking requirements. The erection of carports over external parking spaces may be permitted where the architectural design is maintained. The purchasing, leasing or allocation for exclusive use of car parking spaces which are not allocated to any particular dwelling or purpose in the approved scheme may be permitted subject to: a) The parking space must be in the same strata plan as the dwelling it is proposed to be allocated to or a different strata plan in the same community title. b) If external to the building the parking space is not to be enclosed or altered in any way. c) The use of such additional spaces is limited to parking or storage of private vehicles only (including boats on trailers).

Front façade articulation

Controls	
C12.	The development may have the following articulation zones: a) a primary road articulation zone that extends up to 1.5m forward of the minimum required setback from the primary road, b) a secondary road articulation zone that extends up to 1m forward of the minimum required setback from the secondary road.
C13.	The following building elements can be located in the primary road articulation zone or secondary road articulation zone: a) an entry feature or portico, b) a balcony, deck, patio or verandah, c) a window box treatment, d) a bay window or similar feature, e) an awning or other feature over a window, f) a sun shading feature, g) an eave, h) an access ramp.
C14.	The maximum total area of all building elements in the articulation zone, other than a building element specified in subclause C13 (e), (f), (g) or (h), must not comprise more than 25% of the area of the articulation zone.

F5 Ancillary structures

F5.1 Fencing

Fencing is an important streetscape element and can indicate the architectural period of an area. Consistent and uniform front fencing contributes significantly to the streetscape and character of an area.

For the purpose of this DCP, front fencing is any fence between the front alignment of a building and the street boundary.

Whilst privacy and security of individual households is an important consideration, high blank fencing along the street has a negative impact on the streetscape, personal safety and security by reducing the opportunities for overlooking of private areas. The construction of high blank front fencing is therefore not desirable and should be avoided.

Objectives

O1. To maintain and enhance the character of streetscapes within the Canada Bay LGA.

O2. To ensure that views from streets are maintained and not negated by excessively high fences.

O3. To reduce the impact of front fencing on the streetscape and encourage fencing consistent with the existing streetscape pattern and in sympathy with the general topography and the architectural style of the existing dwelling or new development.

O4. To ensure that materials used in front fencing are of high quality and are in keeping with the existing streetscape character.

O5. To retain and re-use original fences and gates.

O6. To reinstate traditional period fences and gates on street frontages (including side streets) that is of an appropriate architectural style to complement existing buildings.

Height of front fencing

Controls	
C1.	Front fencing and side fencing forward of the building line constructed of a solid material such as brick/masonry, lapped and capped, timber, brushwood and the like should not exceed 900mm (including piers) in height above the footpath level.

Refer to Figure F5.1

C2.	Front fencing and side fencing forward of the building line, constructed of visually transparent material such as timber picket/ metal grill, should not exceed 1.2m in height above the footpath level. Visually transparent components should be no less than 40% of the fence structure and should be distributed evenly along the entire length of the fence.

Refer to Figure F5.2

C3.	From the building line, side fences are to taper down to the height of the front fence line.
C4.	In the case of sloping streets, the height limitations may be averaged, with regular steps.
C5.	Solid fences greater than 1.2 m will only be considered in a streetscape which is shown in the Streetscape Character Analysis to exhibit in excess of 70% high solid fence forms. In such circumstance the appearance of the fence should be softened by: a) Providing a continuous landscaped area of not less than 600mm wide on the street side of the fence, planted with tree and shrub species selected on the basis of low maintenance attributes; and b) The use of openings and variations in colour, texture or materials to create visual interest.

Design of fences

Controls	
C6.	Avoid painting or rendering original masonry and sandstone fencing.
C7.	New fencing should complement any original fencing found on adjoining properties and in the street in terms of style, height, materials, colour, texture, rhythm of bays and openings. Note: Blank walls disrupt established fencing patterns and should be avoided.
C8.	Fencing and associated walls must be positioned so as not to interfere with any existing trees.

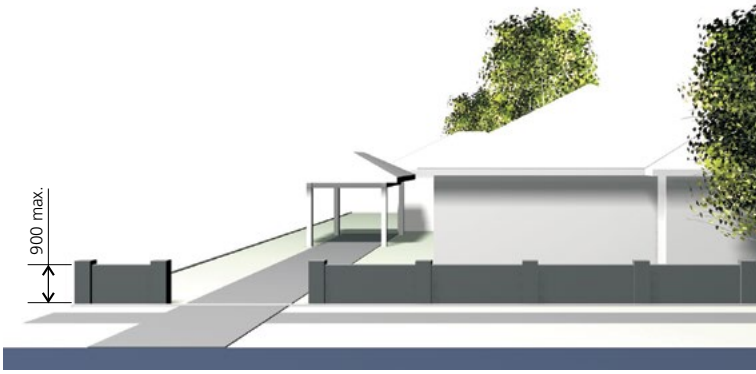


Figure F5.1 Example of solid front fencing with a height of 900mm

Materials

Controls	
C9.	Materials of construction will be considered on their merit, with regard being given to materials of construction of other contributory fences in the vicinity and/or that of the building on the allotment where such materials enhance the streetscape – with a general prohibition on the following materials: a) Cement block; b) Metal sheeting, profiled, treated or pre-coated. c) Fibro, flat or profile; d) Brushwood; and e) Barbed wire.

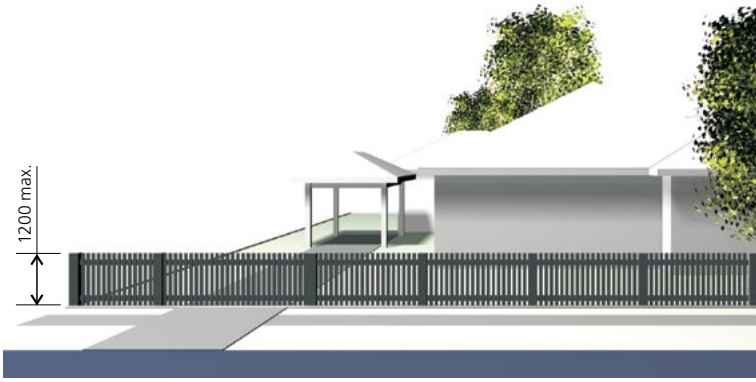


Figure F5.2 Example of open front fencing with a height of 1200mm

General

Controls	
C10.	Gates and doors are to be of a type which do not encroach over the street alignment during operation.
C11.	Fencing is to be designed and constructed in accordance with the requirements of a front fence wherever dwellings have a front façade to a street; irrespective of whether there are dwellings within the same development fronting a primary street.

Advisory Notes

All controls are subject to the provision of adequate sight lines for emerging vehicles to enable surveillance of pedestrian and vehicle traffic.

F5.2 Site facilities

Site facilities include:

- Air conditioners;
- outbuildings;
- TV aerials and satellite reception dishes;
- mail boxes;
- garbage storage and collection areas;
- external storage areas;
- clothes drying areas;
- external laundry facilities and
- swimming pools and spas.

Proposals need to ensure adequate and appropriate provision of site facilities. These need to be accessible and not create amenity problems such as smell and unsightliness. The impact of site facilities on the overall appearance of the site and on the local streetscape needs to be considered.

The design of site facilities for multi-unit dwellings needs particular consideration as these facilities are shared. They need to be designed and located so that they are accessible by all residents and do not detract from the amenity of any residence.

Objectives

O1. To ensure that adequate provision is made for site facilities.

O2. To ensure that site facilities are functional and accessible to all residents.

O3. To ensure that site facilities are easy to maintain.

O4. To ensure that site facilities are thoughtfully and sensitively integrated into development, are unobtrusive and not unsightly.

Air Conditioners

Controls	
C1.	Air conditioning units must be sited so that they are not visible from the street.
C2.	Air conditioning units must not be installed on the front façade of a building, within window frames or otherwise obscure a window.
C3.	Air conditioning units must not obscure architectural details visible from the street.
C4.	The noise level from air conditioning systems is not to exceed the L aeq 15 minute by 5dBA measured at the property boundary.
C5.	Air conditioning units must not be installed where they will likely have a negative visual or acoustic impact upon neighbours.

Outbuildings and outdoor structures

Controls	
C6.	Outbuildings and outdoor structures should be located behind the front building line. This clause does not apply to any required waste storage area for multi dwelling housing and residential flat buildings, front fences or carports permissible under the provisions of this DCP.
C7.	Windows and doors of outbuildings should face into the rear yard, or be frosted, if facing into a neighbour's property.

Clothes drying facilities

Controls	
C8.	Adequate open air clothes drying facilities should be provided that are easily accessible to all residents and are visually screened from the street and adjoining premises.

Numbering of buildings

Controls	
C9.	Street numbers are to be placed on the building in accordance with Council's street numbering system and be visible from the primary street frontage.

Public utilities

Controls	
C10.	For new development and substantial alterations to existing premises provision must be made for connection to future underground distribution mains. In such developments the following must be installed: • an underground service line to a suitable existing street pole; or • sheathed underground consumers mains to a customer pole erected near the front property boundary (within 1 metre). Council may require the bundling of cables in the area surrounding the development to reduce the visual impact of the overhead cables. For further details see Energy Australia requirements.

Mail boxes and parcel delivery

Controls	
C11.	All mail boxes should be designed in a manner that enhances the visual presentation of the building(s) they serve.
C12.	Mail box structures should not dominate the street elevation.
C13.	Individual mail boxes should be located close to each ground floor dwelling entry where individual street entries are provided.
C14.	All multi-dwelling housing, shop top housing and residential flat buildings should incorporate parcel delivery facilities such as a parcel locker.
C15.	Mail boxes and parcel delivery facilities for all multi-dwelling housing, shop top housing and residential flat buildings should be located close to the building entry, perpendicular to the street alignment, in a well- lit and weather protected area, with the potential for passive surveillance.
C16.	All mail boxes must comply with the requirements of Australia Post.

Swimming pools and spas

Controls	
C17.	Swimming pools and spas should be located behind the front building line.
C18.	For corner allotments or where the property has two street frontages, the location of swimming pools/spas is not to be in the primary frontage.
C19.	Swimming pools/spas should be positioned so that the coping is a minimum of 800mm from the property boundary.
C20.	In-ground swimming pools should be built so that the top of the swimming pool is as close to the existing ground level as possible. On sloping sites this will often mean excavation of the site on the high side to obtain the minimum out of ground exposure of the swimming pool at the low side.
C21.	Provided one point on the swimming pool or one side of the swimming pool is at or below existing ground level, then one other point or one other side may be up to 500mm above existing ground level.

Tennis Courts

Controls	
C22.	Tennis courts are to be sited at the rear of properties.
C23.	For corner allotments or where the property has two street frontages, the location of tennis courts is not to be in the primary frontage.
C24.	A minimum of five (5) metres should be maintained between the tennis court fencing and habitable rooms of any dwelling.
C25.	Tennis courts should be positioned having regard to the location of habitable rooms both on site and on adjoining properties and to the maintenance of appropriate private open space.
C26.	Screen planting should be provided between court fencing and the nearest property boundary or any dwelling on an adjoining property.
C27.	The court playing surface should be of a material that minimises light reflection.
C28.	Flood lighting is generally not permitted unless it can be demonstrated the lighting and use of the court at night will not interfere with neighbour amenity.
C29.	Fencing material is to be a recessive colour.
C30.	Fences are to be set back a minimum of 1.5 metres from boundaries.
C31.	Cut and fill associated with the construction of a tennis court should not unreasonably intrude into the natural topography of the land.

TV antennae and satellite dishes

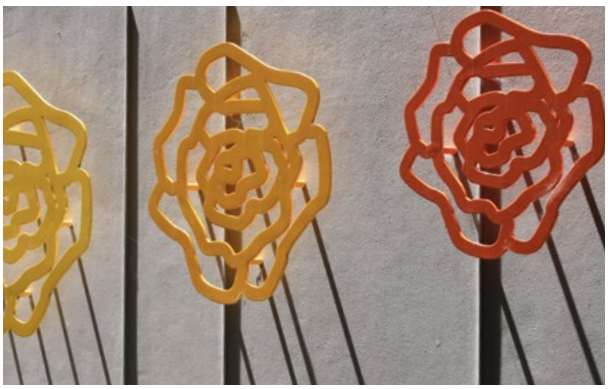
Controls	
C32.	Satellite dishes, telecommunication antennae and ancillary facilities are to be: a) Located away from the front and side boundaries; b) Installed so that they do not encroach upon any easements, rights of ways, vehicular access or parking spaces required for the property, and c) Painted in colours selected to match the colour scheme of the building.
C33.	Satellite dishes where they are situated in rear yards are to be less than 1.8m above ground.
C34.	Only one (1) telecommunications/TV antennae will be permitted for each residential flat building.

F6 Public Art

Public art contributes to place identity and increasingly it is a significant part of the visitor experience. Cities around the world have recognised the value of cultural statements and public art has a key role in giving character and cultural definition to areas. This has been particularly successful in Australia with substantial public art initiatives reactivating waterfronts and urban development. The City of Canada Bay has increasingly used art as part of place making across the City.







Objectives

O1. To include public art in communal and public spaces.

O2. To focus public art on the history and heritage, stories, people, landscape, streetscape, and culture of the place.

Controls	
C1.	Consider the City of Canada Bay Public Art Plan and City of Canada Bay Cultural Plan and provide details of public art to be included in communal and public spaces.
C2.	Identify locations for mural, integrated artworks, sculptural and lighting projects including hoardings for new developments.
C3.	Coordinate cultural input and community participation into interpretive artworks and public art.
C4.	Use public art, interpretive work, oral histories and industrial artefacts to celebrate the working heritage of Canada Bay's foreshores.
C5.	Reflect industrial, social and cultural history in the built and natural environment.

G







PART G - LOCAL CENTRES

G1 Land to which Part G applies G-2

G2 General Requirements G-3

G2.1 General objectives G-3

G2.2 Building design and appearance G-3

G2.3 Ground floor interfaces G-7

G2.4 Building performance G-9

G2.5 Safety and security G-10

G2.6 Neighbourhood amenity G-11

G2.7 Landscape Design G-12

G2.8 Heritage G-12

G2.9 Signage and advertising G-13

G2.10 Public Art G-14

G2.11 Access and parking G-15

G2.12 Residential Uses not covered by the Apartment Design Guide G-16

G3 Site specific building envelope and design controls G-17

G3.1 Victoria Road Drummoyne G-17

G3.2 Five Dock Town Centre G-55

G3.3 Majors Bay Road Shopping Centre, Concord G-75

G3.4 Victoria Avenue Shopping Centre, Concord West G-77

G3.5 355-359 Lyons Road, Five Dock G-79

G1 Land to which Part G applies

Part G generally applies to the land in the following areas:

- B1 Neighbourhood Centre zone
- B4 Mixed Use zone

Note: The land located within the Five Dock Town Centre that is zoned R3 and that has a boundary to Barnstaple Road, Waterview Street or Second Avenue is included in Part G.

There are other scattered retail and commercial areas that provide local neighbourhood goods and services outside the main retail nodes of Great North Road, Majors Bay Road, Victoria Avenue and Victoria Road.

The general planning, design and environmental management controls outlined in Section G2.1, G2.2, G2.3, G2.4, G2.5, G2.6, G2.7 apply in these areas to ensure the form and scale of development is appropriate.

Note: A reference to zone B1 and B4 should be taken to be a reference to zone E1 and MU1 should applicable land be rezoned in accordance with Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021.

G2 General Requirements

G2.1 General objectives

The controls in this section of the DCP apply to permissible development in mixed use areas and neighbourhood centres. It contains general controls that apply to all commercial development and specific controls that apply to selected commercial precincts.

There are scattered retail and commercial areas that provide local neighbourhood goods and services outside the main retail nodes of Great North Road, Majors Bay Road, Victoria Avenue and Victoria Road. The general planning, design and environmental management controls outlined in Section G2 apply in these areas to ensure the form and scale of development is appropriate.

Note: Developments that incorporate a residential component, such as shop top housing, also need to take into consideration the controls contained within the residential part of the DCP.



Fig G2.1 Example of an building that is vertically articulated into two components and differentiates between base, middle and top

O1. To facilitate the development of ALL commercial areas in a way that is economically sustainable and environmentally sensitive.

O2. To encourage the revitalisation of commercial areas by enabling mixed use development.

O3. To ensure development contributes to the improvement and amenity of public spaces.

O4. To maintain the heritage values through appropriate alterations and additions.

O5. To maximise opportunities for local employment and business

O6. Ensure that B4 Mixed Use Zones and B1 Neighbourhood Centres maintain a substantial retail, office and commercial focus.

G2.2 Building design and appearance

The City of Canada Bay's business centres are characterised by retail shopping strips, formed by a unique interaction between local topography, street layout, subdivision pattern and building form. The design of buildings significantly contributes to the streetscape character and adds visual richness, complexity and interest.

Facade treatment, the line of continuous awnings and the general vertical building proportions assist in tying buildings together into a cohesive group. The selection of materials, finishes and colours should have regard to compatibility to the surrounds and consider robustness, durability and ease of maintenance.

Built form massing and articulation

Objectives

O1. To define and reinforce the identity and desired character of a place, and create variety in the streetscape while contributing to a sense of continuity and overall visual quality.

O2. To add visual quality and interest to new buildings with a focus on breaking up massing of higher density forms when viewed from public places and neighbouring properties.

O3. To facilitate daylight access and ventilation to streets, public places and neighbouring properties.

Controls	
C1.	Building mass should maintain the prevailing vertical character found in Canada Bay's business centres.
C2.	New development displays careful composition of building mass, height and (facade) treatment, including horizontal and vertical articulation, projections, recesses, eave overhangs and deep window reveals.
C3.	Buildings that are 3 storeys or more are to be designed so that they clearly articulate a base, middle and top. Refer to **Fig G2.1.**
C4.	Where frontages are more than 20 metres wide, building massing must be vertically articulated.
C5.	The maximum length of straight wall without articulation such as a balcony or return is 12m.
C6.	Compatibility with adjoining buildings is considered in terms of setbacks, awnings, parapets, cornice lines and facade proportions.

Facades and exteriors

Objective

O4. To ensure new development is well articulated, makes a positive contribution to the streetscape and responds to local urban character through detailed design of facades and exteriors.

Controls	
C7.	Where development has two (2) street frontages the streetscape should be addressed by both facades. Development should provide a definitive street address to both facades when fronting a main road and a smaller road or car park.
C8.	The composition of the facade balances solid and void elements and does not display large areas of a single material, including reflective glass.
C9.	External walls are constructed of high quality durable materials and finishes with low maintenance attributes ('self-cleaning') such as face brickwork, rendered brickwork, stone, concrete and glass.
C10.	Highly reflective finishes and curtain wall glazing are prohibited.
C11.	Any blank sidewalls that are visible from the public domain are designed as an architecturally finished surface that complements the main facade.
C12.	Materials, finishes and colours need to be carefully selected for their robustness, durability, energy performance and compatibility with the surrounds.
C13.	Colours should be selected from a designated palette, with an emphasis on light/ neutral colours that harmonise with the context.
C14.	Roof plant, lift overruns, vents, carpark entries and other service related elements are integrated into the built form and complement the architecture of the building.
C15.	In commercial areas where parapet skylines predominate, infill development should also include parapet skylines.



Successful buildings balance solid and void components within the building envelope



New development should reinforce the local character and identity of the area

G2 General Requirements

Awnings

Objective

O5. To provide weather protection and comfort along pedestrian routes to promote walking and increase activity levels.

O6. To encourage awnings which are lighter and more elegant in appearance to allow more light through to shop fronts.

Controls	
C16.	Refurbishment or redevelopment of a building should include the provision of an awning of a similar height, width and general appearance to that of adjoining contributory awnings.
C17.	Awnings should be reinstated where there is evidence that they were originally fitted or where there is a break in a continuous run of awnings.
C18.	New awnings on corner buildings should wrap around into side streets.
C19.	New awnings should be no more than 600mm higher or lower than neighbouring awnings, for continuity. As a guide, awnings should have a minimum height of 3.0m and a maximum height of 4.5m. Entry awnings may increase up to 5m in height to provide legibility.
C20.	Awnings are to be flat or near flat in shape. Raised or curved awning structures are not permitted. Eaves and fascias are to be flat or near flat in shape.
C21.	Awning fascias are to be a maximum 300mm high including any added on signage and in keeping with the scale and character of the building.
C22.	Steps for design articulation or to accommodate sloping streets are to be integrated with the building design and should not exceed 700mm per step.
C23.	Awnings are designed to respond to the rhythm of shopfronts/ vertical articulation of the development and provide continuous weather protection.



Awnings provide weather protection for pedestrians and are particularly important in neighbourhood centres



Translucent awnings allow for more daylight access to the footpath and shopfronts





Original awnings, balustrades and verandahs should be reinstated where evidence of original structure exists

Verandahs and balconies

Objective

O7. To increase passive surveillance of the public domain, provide architectural interest and where applicable reinstate historic verandahs.

Controls	
C24.	The reinstatement of verandahs is encouraged where evidence of the original structure exists.
C25.	Balcony balustrades should be of a light open material. Where possible, balustrades are to match predominant examples within the streetscape.
C26.	Existing verandahs and balconies should be retained and not infilled.
C27.	Balconies should be located so as to face the front or rear of the building.

Isolated sites

Objective

O8. To consider future development opportunities on adjoining sites and avoid isolating sites potentially unable to redevelop in the future.

Controls	
C28.	New development is to consider future development on adjoining sites by providing sufficient separation and setbacks, and avoid creating isolated sites. Where development is likely to create an isolated site, the applicant is required to provide one of the following: • supply evidence that negotiations with property owners commenced early, well prior to the lodgement of the development application, and reasonable offers were made; or • provide a design and feasibility study proving the adjoining site is viable to develop in the future.

Public utilities/ services

Objective

O9. To reduce the negative visual impact of utilities and building services.

Controls	
C29.	For new development and substantial alterations to existing premises provision must be made for connection to future underground distribution mains. In such developments the following must be installed: • an underground service line to a suitable existing street pole; or • sheathed underground consumers mains to a customer pole erected near the front property boundary (within 1 metre). Council may require the bundling of cables in the area surrounding the development to reduce the visual impact of overhead street cables.
C30.	Roof plant, lift overruns, utilities, vents, fire hydrants, electrical substations and other service related elements are to be integrated into the built form design and complementary to the architecture of the building, with minimal impact on the streetscape and ground floor facades.



Utilities and building services/ equipment should be located so that the visual impact on the streetscape is minimised

G2 General Requirements

G2.3 Ground floor interfaces

The way in which buildings address streets, links and open space is crucial to the local character of an area. The ground floor in particular requires careful design of its interface with the public domain due to its significant impact on the liveliness, interest, comfort and safety of the public domain.

Objectives

O1. To maximise opportunities for passive surveillance of the public domain.

O2. To be adaptable to changes in use in the future.

Controls	
C1.	New development is to place particular focus on creating a 'human scale' at the lower levels, in particular the ground floor, through the use of detailed design, insets and projections that create interest and, where relevant, the appearance of finer grain buildings.
C2.	New development addresses and defines the public domain through entrances, lobbies, windows and balconies that overlook public spaces, maximising opportunities for passive surveillance.
C3.	All building entries are clearly visible from the public domain. Level access is provided where possible.
C4.	Facades that address the street have no more than 5 metres of ground floor wall length without a door or window.

Active frontages

Objectives

O3. To enhance the commercial viability of the area and compliment existing retail, commercial, entertainment and community uses.

O4. To encourage ground floor activities to spill out into the public domain and contribute to a vibrant streetscape and activity levels.

Controls	
C5.	Along active frontages: • the finished ground floor level is to match the footpath level; where this is not possible due to topography, the ground floor level is a maximum of 0.4m above or below the footpath; • continuous awnings must be provided to shelter pedestrians from weather conditions; • consistent paving, street furniture, signage, planting and lighting is desireable; and • design guidance in **Fig G2.2** is applied where possible with long expanses of floor to ceiling glass prohibited.

Shopfronts

Objectives

O5. To preserve the surviving examples of original whole shop frontages and elements.

O6. To encourage new or replacement shop fronts to be compatible with the architectural style or period of the building to which they belong and the overall character of the business centre.

Controls	
C6.	New shopfronts should be designed to make maximum use of vertical elements, i.e. windows should emphasise a vertical proportion (height greater than width).
C7.	Original early shop fronts in existing buildings should be retained and conserved.
C8.	If security shutters are required, they should be visually permeable (at least 75% permeability) to allow viewing of windows and allow light to spill out onto the footpath. Block-out roller shutters are not permitted.

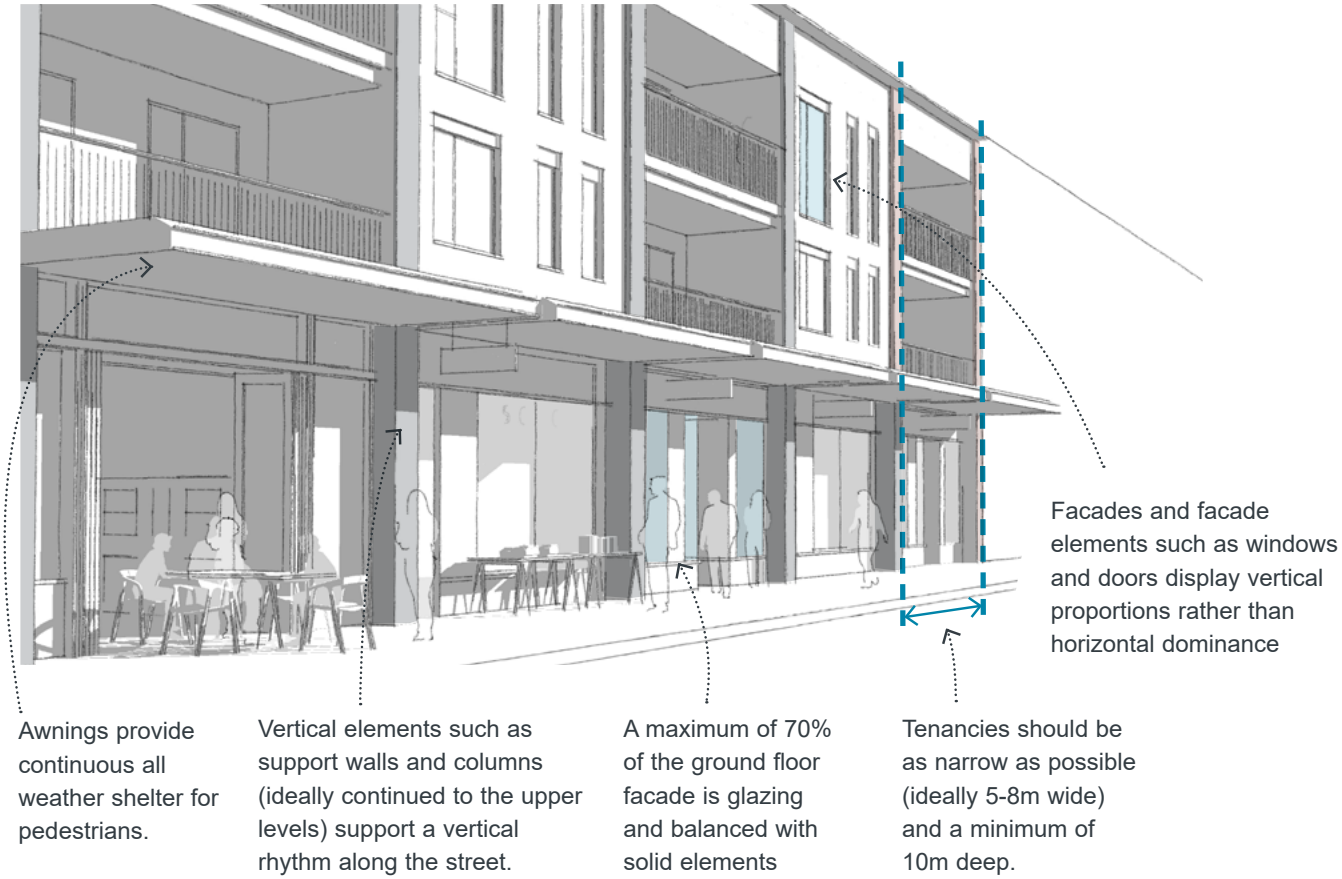


Fig G2.2 Design guidance for active frontages



Narrow retail tenancies with a balance of glazed and solid elements



Retail/ shopfront design along the ground floor linking the inside with the outside and contributing to life on the street



G2 General Requirements

G2.4 Building performance

Overshadowing

Objectives

O1. To minimise overshadowing of streets, links and public open spaces.

O2. To minimise the amount of overshadowing of neighbouring developments and outdoor spaces.

Controls	
C1.	Siting and built form configuration optimises solar access within the development and minimises overshadowing of adjoining properties.
C2.	Direct solar access (sunshine) to windows of principal living areas and to the principal area of open space of dwellings adjacent to commercial zones should not be reduced to less than 3 hours between 9.00am and 3.00pm on 21 June (mid winter).

Visual and acoustic privacy

Objectives

O3. To minimise the impact of new development on the outlook and privacy of adjoining properties.

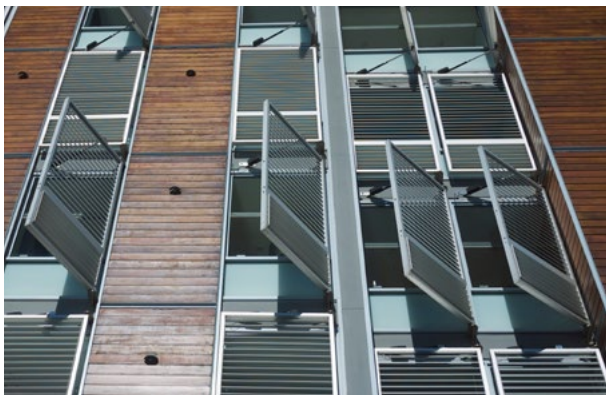
Controls	
C3.	Where buildings are constructed adjacent to residential properties, particular regard should be had to any possible loss of privacy which may be caused to residents.
C4.	Openable first floor windows and doors as well as balconies should be located so as to face the front or rear of the building.
C5.	Where it is impractical to locate windows other than facing an adjoining building, the windows should be offset to avoid a direct view into windows in adjacent buildings.
C6.	New development containing dwellings along a major road or along a railway corridor should incorporate noise attenuation measures.
C7.	Where the visual privacy of adjacent properties is likely to be significantly affected from windows, doors and balconies, or where external driveways and/or parking spaces are located close to bedrooms of adjoining buildings, one or more of the following alternatives are to be applied: • Fixed screens of a reasonable density (minimum 75% block out) should be provided in a position suitable to alleviate loss of privacy; • Where there is an alternative source of natural ventilation, windows are to be provided with translucent glazing and fixed permanently closed; • Suitable screen planting or planter boxes are to be provided in an appropriate position to reduce the loss of privacy of adjoining premises. Note: This option will only be acceptable where it can be demonstrated that the longevity of the screen planting will be assured. • Windows are off-set or splayed to reduce privacy effects; and/or • Windows to have a sill height of 1.8 metres or more above floor level or fixed translucent glazing to any part of a window less than 1.8 metres above floor level.

Environmentally sustainable design

Objectives

O4. To incorporate environmentally sustainable design (ESD) principles wherever possible.

Controls	
C8.	*Passive solar design:* • Building location and design allows for passive solar heat gain during winter; • Insulation is to be used in external walls and roofs; • All window and door openings are adequately sealed; and • Overhangs and shading devices such as awnings, blinds and screens protect from sunlight during summer months.
C9.	*Energy conservation/ efficiency:* • Materials are selected considering their thermal performance; and • Solar hot water systems are encouraged.
C10.	*Natural ventilation:* • Natural cross ventilation is optimised; and • At least 30% of all windows in a building are operable from the inside
C11.	Louvres, shading devices and windows are able to be operated by buildings users where possible, to allow building occupants to regulate climatic conditions.



Building users should be able to open windows and operate privacy screens and sun shading devices.

G2.5 Safety and security

Objectives

O1. To provide an environment where people feel safe and secure during the day and after hours.

O2. To ensure new development supports the wider neighbourhood and community safety and maximises opportunities for passive surveillance.

Controls	
C1.	Pedestrian ways and car parking, particularly those used at night, are to be direct, clearly defined, visible and provided with adequate lighting.
C2.	Landscaping and site features that might block sight lines are to be minimised.
C3.	Shadows and concealment spaces are to be minimised.
C4.	All entrances and exits are to be made clearly visible.
C5.	Windows and doors should be arranged to overlook public areas and streets to maximise surveillance.
C6.	If obscure glazing and/or window signage is proposed it must not occupy a combined total of more than 6m^2 or 20% of the surface area of the window, whichever is the lesser. The remainder of the shopfront glazing must remain clear to allow views into and out of the shop.
C7.	New development is to consider and comply with Crime Prevention Through Environmental Design (CPTED)'s Safer by Design Guidelines.
C8.	Good light levels are provided from a variety of sources, such as under awnings within shopfronts, and facade lighting.



This example of a shopfront and under awning lights illuminates the adjacent public space after dark

G2 General Requirements

G2.6 Neighbourhood amenity

Shopping Trolleys

Shops provide trolleys for the convenience of customers. However shopping trolleys are often abandoned in public spaces, impacting on the amenity of an area and creating a safety hazard. This provision seeks to improve the management of shopping trolleys.

Objectives

O1. To minimise the number of shopping trolleys abandoned or unattended in public places.

O2. To maintain responsible use and return of trolleys.

Controls	
C1.	Where shopping trolleys are provided, a Trolley Management Plan is to be in place. The Trolley Management Plan is to provide the following: a) Deposit/refund scheme whereby a deposit is paid by trolley users for the release of a trolley from a trolley bay situated within the retailer's premises or shopping centre where the retailer's premises are located, including its car park. b) Public education program to inform customers, including signage, pamphlets and other means, that trolleys are to remain on the premises or shopping centre and penalties apply for abandoning trolleys in public places. c) Provide sufficient and suitably located trolley bays within or adjacent to the premises and throughout the shopping centre including its car park. d) Provide adequate trolley collection services to ensure that abandoned or unattended trolleys are collected frequently. e) Ensure that all trolleys are marked or labelled in such a manner that Council can easily ascertain the owner of the trolley, including the store responsible for its provision, and notify Council of such markings. f) Authorise the store manager or delegate to be responsible for liaison with Council regarding trolley management and provide Council with contact details for each store manager or delegate, as well as additional company contacts at senior management level.

G2.7 Landscape Design

Objectives

O1. To promote high quality landscape design as an integral component of the overall design of new development, softening the appearance of buildings.

O2. To improve the local micro-climate, native fauna and flora habitats and to control climatic impacts on buildings and outdoor spaces.

O3. To allow adequate provision on site for infiltration of stormwater, deep soil tree planting, landscaping and areas of communal outdoor recreation.

Controls	
C1.	Existing street trees and landscape features are retained wherever possible.
C2.	Landscape design complements the proposed built form and minimises the impacts of scale, mass and bulk of the development in its context.
C3.	Landscape design highlights architectural features, defines entry points, indicates direction, and frames and filters views from and into the site.
C4.	Trees and vegetation provide a high degree of amenity and environmental benefit. Their selection and location should: • Provide shade in summer and sun access in winter to building facades and public and private open spaces; • Reduce glare from hard surfaces; • Channel air currents into built form; and • Provide windbreaks, screen noise and enhance visual privacy where desirable.

G2.8 Heritage

O1. To encourage sensitive redevelopment of heritage buildings, also referred to as ‘adaptive reuse’.

O2. To ensure development in the vicinity of heritage items or within a heritage conservation area respects and complements the heritage item.

O3. To avoid new development physically dominating and overwhelming heritage items.

O4. Alterations and additions respect the identified heritage and conservation values of the place.

Controls	
C1.	All development of, or in the vicinity of heritage items and/ or conservation zones, is to address the requirements of *Part C Heritage of this DCP.*
C2.	All development of, or in the vicinity of heritage items, must submit a heritage impact assessment as part of the DA. It should be noted that the assessment may lead to setbacks, building heights, built form modulation etc. that differ (usually less than) the minimum provisions outlined in this DCP. The appropriate building setback and height will be determined on a case-by-case basis having regard to the views, vistas and context of the heritage item.
C3.	Alterations and additions respond appropriately to the heritage fabric but do not mimic or overwhelm the original building. Designs are contemporary and identifiable from the existing building. Ways to separate the new work from the existing include providing generous setbacks between new and old, using a glazed section to link the new addition to the existing building and/or using shadow lines and gaps between old and new.
C4.	Building and facade design responds to the scale, materials and massing of heritage items through aligning elements such as eaves lines, cornices and parapets, facade articulation, proportion and/or rhythm of existing elements and complementary colours, materials and finishes.

G2 General Requirements

G2.9 Signage and advertising

Objectives

O1. To sensitively integrate signage into the context of the area and avoid adverse individual and cumulative visual impact of many signs of varying sizes, shapes and colours.

Controls	
C1.	Signage is to comply with the requirements of State Environmental Planning Policy No 64-Advertising and Signage. Also refer to requirements in the City of Canada Bay DCP Part I Signage and Advertising.
C2.	All signage should have regard to the 'appropriate' range (see **Fig G2.3**) and avoid 'inappropriate' signs (see **Fig G2.4**).
C3.	Advertising signs should complement the design of buildings and the overall character of the precinct. Signage must relate to an approved use on the site. Advertising which is not related to the business being conducted from the premises is not permitted.
C4.	The main facades of buildings from the first floor to the rooftop or parapet are to be uncluttered and generally free of signage.
C5.	Freestanding signs are not to be located on the top of buildings and should not impact on the skyline when viewed from the street. Signs painted on or applied to the roof of a building are not permitted.
C6.	A coordinated presentation of signs is required where there are more than four occupancies or uses within a single development.
C7.	The source of light to illuminated signage should be concealed or integral with the sign. The ability to adjust the light intensity is required. A curfew on illumination may be imposed to protect the amenity of nearby residential development.
C8.	Suspended signage under awnings should be a minimum of 2.7m clear above finished footpath level.



Fig G2.3 Appropriate signage options

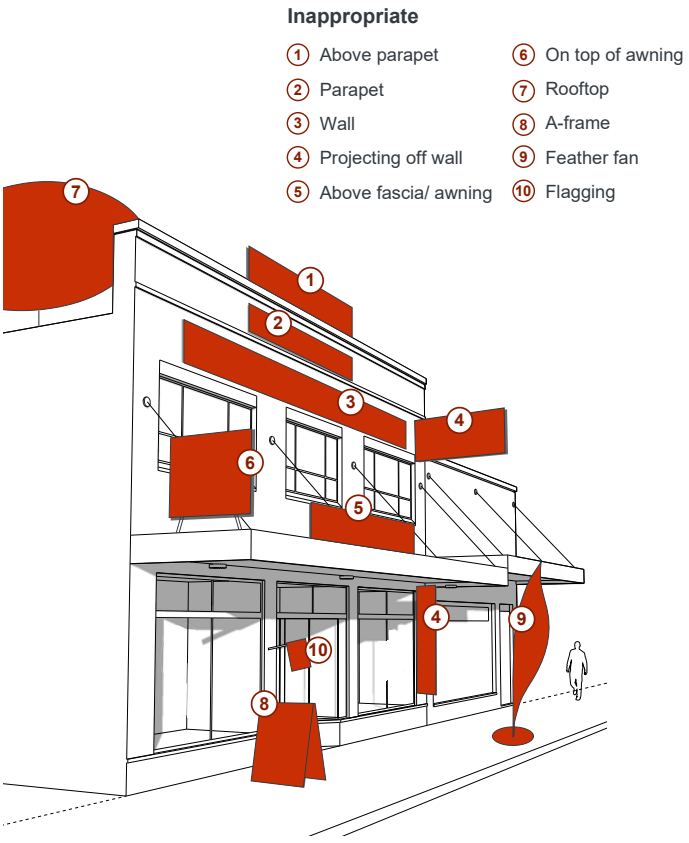


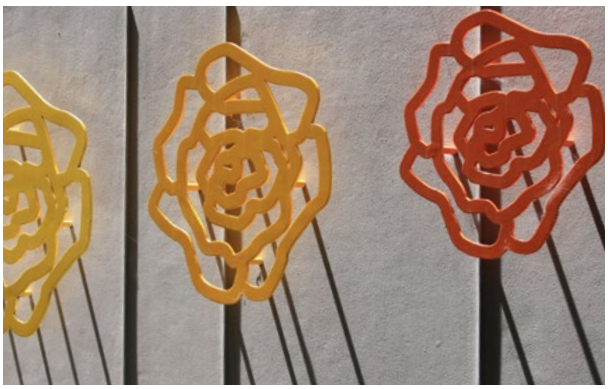
Fig G2.4 Inappropriate signage detrimental to the desired streetscape character

G2.10 Public Art

Public art contributes to place identity and increasingly it is a significant part of the visitor experience. Cities around the world have recognised the value of cultural statements and public art has a key role in giving character and cultural definition to areas. This has been particularly successful in Australia with substantial public art initiatives reactivating waterfronts and urban development. The City of Canada Bay has increasingly used art as part of place making across the City.







Objectives

O1. To include public art in communal and public spaces.

O2. To focus public art on the history and heritage, stories, people, landscape, streetscape, and culture of the place.

Controls	
C1.	Consider the City of Canada Bay Public Art Plan and City of Canada Bay Cultural Plan and provide details of public art to be included in communal and public spaces.
C2.	Identify locations for mural, integrated artworks, sculptural and lighting projects including hoardings for new developments.
C3.	Coordinate cultural input and community participation into interpretive artworks and public art.
C4.	Use public art, interpretive work, oral histories and industrial artefacts to celebrate the working heritage of Canada Bay's foreshores.
C5.	Reflect industrial, social and cultural history in the built and natural environment.

G2 General Requirements

G2.11 Access and parking

The location of car parking has a significant impact on pedestrian safety and the quality of the public domain. Vehicle access points need to be integrated carefully to avoid potential conflicts with pedestrian movement and the desired streetscape character.

Objectives

O1. To transition to lower car ownership and support the uptake of walking, cycling and public transport use.

O2. To minimise the visual impact of car parking areas and vehicle access points.

O3. To minimise conflicts between pedestrians and vehicles on footpaths, particularly along pedestrian desire lines.

Controls	
C1.	Vehicular access points minimise visual intrusion and disruption of the streetscape, emphasise the pedestrian experience and maximise pedestrian safety.
C2.	The width and height of vehicular entries is kept to a minimum. Roller doors or gates should be integrated with the architectural design of the development. Vehicular entry/ exit points are recessed by at least 0.5m behind the building line.
C3.	The public footpath is continued across driveways to create a threshold, signal pedestrian priority and slow vehicle speeds.
C4.	Vehicle access points are not permitted along primary active street frontages. Where rear or side access is not possible, development without parking will be considered.
C5.	On-site car parking should be located below ground level where possible or located within the building and well screened, or to the rear off a laneway.
C6.	At grade and above ground parking, if unavoidable, is screened from public view and should have a minimum floor to floor height of 3.1m to be able to be converted to another use in the future.
C7.	Basement parking fronting the public domain can protrude up to 1.0m maximum above natural ground level.
C8.	Parking that is unbundled (separated from dwelling and building ownership) should be encouraged in all developments.





Where vehicular entries are unavoidable, access points should be integrated into the ground floor and clearly signal pedestrian priority

G2.12 Residential Uses not covered by the Apartment Design Guide

The NSW Apartment Design Guide (ADG) applies to buildings that are three or more storeys high and that comprise at least four dwellings.

For other residential development types or components of proposed development, such as 2-storey shop top housing, 2-3 storey terraces, low rise apartments, multiplexes, courtyard houses and the like, the following controls apply.

Objective

O1. To ensure design quality, performance of and amenity created by new residential development is of a high standard and consistent across the Canada Bay LGA.

Controls	
C1.	The maximum building depth is 18m unless it can be demonstrated that all habitable rooms receive adequate ventilation and solar access, e.g. through the use of a courtyard design.
C2.	Single aspect dwellings, if unavoidable, are only permitted if they have a northerly or easterly aspect.
C3.	Living rooms and private open spaces of at least 70% of apartments receive a minimum of 3 hours direct sunlight between 9 am and 3 pm in mid winter (21 June).
C4.	Master bedrooms have a minimum area of $10m^2$ and other bedrooms $9m^2$.
C5.	Building separation is as per the *Apartment Design Guide, Section 3F Visual Privacy.*
C6.	Private open space (POS) is designed to maximise useability, privacy, outlook and solar access. The minimum private open space of a ground floor dwelling is calculated by the number of bedrooms x $4m^2$. For dwellings on the ground floor including townhouses and terraces, the minimum private open space is as follows: Dwelling type / Min. POS Studio/ 1 bedroom / $20m^2$ 2 bedroom / $28m^2$ 3+ bedroom / $35m^2$ The minimum dimension is 4.0m x 4.0m. For dwellings on upper levels, the minimum private open space (such as decks and balconies) is as follows: Dwelling type / Min. POS Studio/ 1 bedroom / $10m^2$ 2 bedroom / $14m^2$ 3+ bedroom / $18m^2$ The minimum dimension is 2.0m x 3.0m.

G3 Site specific building envelope and design controls

G3.1 Victoria Road Drummoyne

Victoria Road footpath improvements

Objectives

O1. To create a buffer to the fast moving traffic along Victoria Road and support increased pedestrian activity levels, safety and comfort.

O2. To increase the amount of visible greenery at eye level when walking along Victoria Road.

Controls	
C1.	Footpaths along Victoria Road are identified as 'Priority area for pedestrian environment upgrade' in **Fig G3.7** and **Fig G3.8.**
C2.	Improvements are to incorporate the following design treatments: • Upgrade of paving and consistency in surface finishes along Victoria Road; • Upgrade and consistency of street furniture such as benches, bins, bicycle parking racks, bus shelters and the like; • Low planting/ planter boxes along all non-stopping zones where pedestrians are immediately adjacent to moving traffic (to be maintained by Council); • Green walls or shallow planters along facades of private development. A minimum of 10% 'greening' of ground floor facades along Victoria Road is required for all new development (to be maintained by the building owner).

New publicly accessible open spaces

Objectives

O3. To increase the amount of open space in the precinct and to provide more areas for people to meet, gather and relax.

Controls	
C3.	Investigate the opportunity to create a new public gathering space on Church Street between Victoria Road and Formosa Street as identified in **Fig G3.7** which would incorporate: • Partial or complete closure of Church Street to vehicles (see **Fig G3.1** and **Fig G3.2**); and • Sufficient space for tree planting, seating, public art, children's play area and outdoor seating areas for cafes/ restaurants.
C4.	Maximise opportunities for privately owned public spaces (POPs) throughout the precinct. The following locations are proposed in **Fig G3.7**: • A small square/ plaza at the northern end of Formosa Street on the corner of Lyons Road to the front of the former Commonwealth Bank site; and • Expansion of the publicly accessible existing courtyard behind the heritage listed Sutton Building on the corner of Victoria Road and Lyons Road.
C5.	New developments are encouraged to consider the creation of POPs i.e. on podiums, roof tops or internal courtyards connected by arcades/ pedestrian links.
C6.	New development with a frontage to new public spaces and POPs should: • pay particular attention to the 'human-scale' of lower levels and display a high degree of detailed design and articulation along the active frontages supporting the pedestrian slow-pace experience; • maximise the number of doors and windows on upper levels overlooking the space; • seek to ensure that 50% of the open space receives a minimum of 3 hours direct solar access in mid-winter (21 June) between 9am and 3pm; and • encourage active uses on the ground floor with a preference for community facilities and cafes/ restaurants with outdoor seating.



The existing condition of the footpath along Victoria Road is in need of replacement





POPs (privately owned public spaces) can include plazas, arcades, small parks, courtyards or rooftop gardens





Quality footpaths and paving materials should be applied to both sides of Victoria Road and be of a consistent palette



Sutton Place courtyard is an example of a POP and has the potential to be integrated into future redevelopment



Sketch showing the proposed footpath improvements along Victoria Road (Source: Victoria Road Urban Design Review, 2018)

01 Landscape treatments along 'No Stopping' zones and threshold treatments improve the 'look & feel' of the street

02 Improved surface finishes with standard colour and texture encourage pedestrian movement

03 Wall planting provides visual relief in the otherwise concrete dominated Victoria Road streetscape

Increased street tree planting

Objectives

O4. To improve the walkability of streets adjacent to Victoria Road to make it more appealing for pedestrians to access shops and services.

O5. To enhance the appearance and amenity of the area, improve the local micro-climate, provide native fauna and flora habitats and control climatic impacts on buildings and outdoor spaces.

Controls	
C7.	New street tree planting should concentrate along identified 'Street tree priority areas' i.e. Formosa Street, Renwick Street and the southern part of Wrights Road as identified in **Fig G3.7** and **Fig G3.8**.
C8.	In the identified priority areas, undergrounding of power lines should occur wherever possible to enable street trees to grow to mature levels. If undergrounding is not possible, and where appropriate, the bundling of power lines would reduce impact.

Landscape quality

Objectives

O6. New development is to promote high quality landscape design as an integral component of the overall design.

O7. Provide native flora and fauna habitats and control climatic impacts on buildings and outdoor spaces.

O8. Allow adequate provision on site for infiltration of stormwater, deep soil tree planting, landscaping and areas of communal outdoor recreation.

Controls	
C9.	A 1m setback along Formosa Street and a 0.5m setback along Victoria Road is to be provided at appropriate locations to allow for landscaping.
C10.	New developments on street corners are to provide high quality landscaping and public seating.
C11.	Landscaping is to be used to separate pedestrians from traffic, especially in 'no stopping' zones.

Formosa Street pedestrianisation

Objectives

O9. To provide additional landscaping and pedestrian space along Formosa Street improving pedestrian amenity and active transport (walking, cycling).

O10. To provide a high quality pedestrian environment in the 'heart' of Drummoyne within close proximity to existing retail and community facilities.

Controls	
C12.	Investigate the opportunity to convert the northern end of Formosa Street north of Bowman Street into a pedestrianised zone identified in **Fig G3.7** as 'Priority area for streetscape pedestrianisation'. The proposed design options include: • Closure to all through traffic to and from Lyons Road (see **Fig G3.3**); or • Limited through traffic via a one-way system. Pedestrianisation of this space would need to retain vehicular access to adjacent properties via a shared, slow speed zone and provide the opportunity for seating, landscaping and public art.
C13.	New development that fronts onto the Formosa Street priority area for streetscape pedestrianisation must: • minimise the number and width of vehicular driveways across the footpath; • ensure building entries are clearly visible and pedestrian access to entries and lobbies is direct; • maximise the number of doors and windows overlooking the street; and • provide a landscaped front setback with substantial vegetation (except along active frontages).
C14.	Investigate opportunities for the widening of footpaths and installation of landscaped street blisters at intersections along the entire length of Formosa Street.



Fig G3.1 Potential design option for a public space on Church Street between Victoria Road and Formosa Street

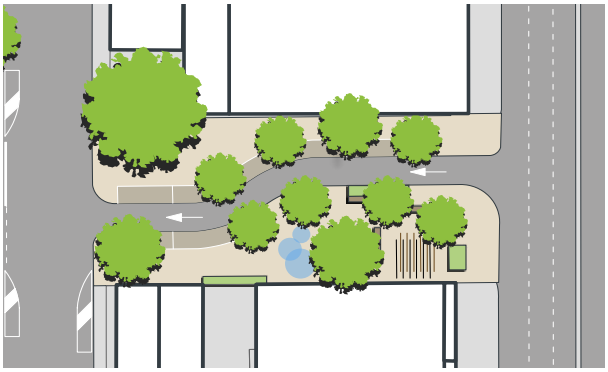


Fig G3.2 Proposed alternative option for Church Street with public space and one-way traffic from Victoria Road



A public space in the centre of Five Dock, with mature trees providing shade and a cooler micro-climate



Example of a public square with good solar access, seating facilities and active frontages

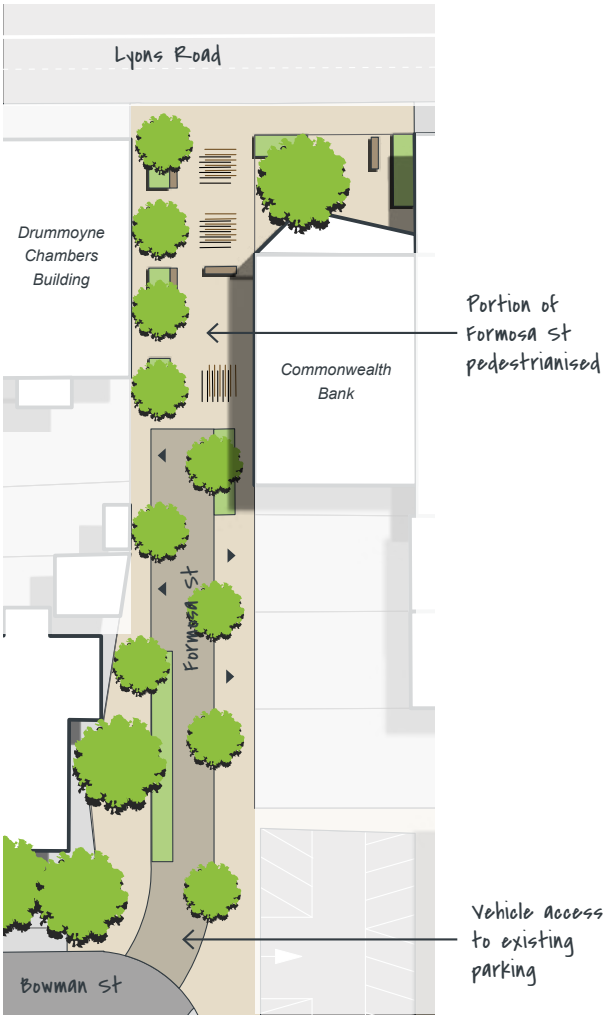


Fig G3.3 Potential design of the pedestrianised Formosa Street and the opportunity for a public space towards Victoria Road

Church Street

Objectives

O11. To provide additional landscaping and pedestrian space along Church Street.

O12. To impove pedestrian amenity and active transport (walking, cycling) within the linear Victoria Road business/ retail core.

Controls	
C15.	Investigate the opportunity to create a public space, via the partial or complete closure of Church Street, between Victoria Road and Formosa Street as shown in **Fig G3.8**. Possible design options are shown in **Fig G3.1** and **Fig G3.2**. Additional traffic studies would be required to determine what the ideal option would be. It may be possible to consider a hybrid option that would involve a timed directional flow.

Pedestrian links

Objectives

O13. To improve pedestrian permeability and increase activity levels of the centre as a whole.

Controls	
C16.	Existing mid-block links as identified in **Fig G3.7** are to be retained.
C17.	Upgrade and where possible widen existing mid-block links. Design treatments should include: • Good lighting levels; • Clear sight lines; • Permanent and temporary art and installations; • Landscaping; • Active uses trading to the link, where possible; • High quality paving/ surface treatments.
C18.	Wherever possible, long blocks are broken up with new high quality pedestrian prioritised links, particularly where new connections would facilitate access to public transport, open spaces and community facilities. All new development is to consider the provision of new through site links, particularly where opportunities exist to connect retail and commercial uses along Victoria Road to parking and access along quieter streets such as Formosa Street. Locations for two 'Desired future pedestrian links' are identified in **Fig G3.7**. Both connect Formosa Street with Victoria Road, one as an extension of Bowman Street and the other south of Edwin Street.
C19.	New pedestrian links should be at least 5m wide, naturally lit and ventilated where possible, appropriately lit after hours, publicly accessible 24/7, and have clear sightlines from end to end.

Visually prominent locations

O14. To significantly improve the visual quality of the precinct by focussing on the design quality of prominent locations i.e. corner sites and localities at the end of terminating views.

Controls	
C20.	Development on sites identified as a prominent corner and/or at the end of a terminating view in **Fig G3.7** and **Fig G3.8** must pay particular attention to overall design quality due to the location's high visibility and impact on the local character, i.e. well proportioned facades, architectural detail, and quality materials and finishes.

Public art

Objectives

O15. To provide a connection to the area's history and local stories, and enhance the pedestrian experience of the public domain.

Controls	
C21.	Large expanses of blank walls of new development should be utilised as a 'canvas' for art that has meaning and connection with the local community.
C22.	Smaller pieces of public art should be incorporated into the public domain wherever possible. Key locations are identified in **Fig G3.7** and **Fig G3.8** and include the proposed POPs, the new public place on Church Street and the pedestrianised section of Formosa Street.
C23.	Preference should be given to items that are at pedestrian level and scale, and multi-functional and/or interactive, e.g. pieces children can play on or with.

Smart poles

Objectives

O16. To improve the visual quality of the centre in particular along Victoria Road.

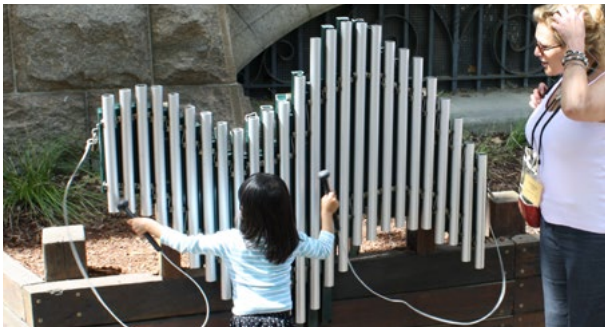
Controls	
C24.	When required and in coordination with RMS, existing older-style timber light poles should be replaced with 'smart poles' able to carry banners.



Built form on visually prominent locations and corners require the highest architectural design quality



For the Victoria Road Centre, quality pedestrian links to Formosa Street are crucial for its future success



Public art as an interactive play piece

Lighting

Objectives

O17. To enhance safety across the centre and discourage anti-social behaviour.

O18. To increase the amenity of footpaths and public places after hours increasing activity levels.

O19. To promote the civic image of the centre.

Controls	
C25.	New development is to incorporate a variety of lighting sources. As a minimum the following is to be provided: • Pedestrian level lighting under awnings or mounted on ground level facades that sufficiently illuminates footpaths and any pedestrian links; • Indirect lighting within shopfronts and tenancies that softly 'spills' onto the footpath after hours; and • Indirect soft lighting of upper level facades or architectural details (note: care should be taken so that there is no light spill into apartments through windows).
C26.	Public domain lighting is to be maximised and should include a wide variety of sources such as bollards and other street furniture, street lighting at pedestrian scale and uplighting of trees.

Night-time economy

Objectives

O20. To provide a stimulus for a night-time economy within the centre and encourage clusters of businesses that also utilise suitable outdoor spaces.

Controls	
C27.	Establish a late night trading area (to midnight or 2 am) for shops, businesses and low-impact food and drink venues that trade off Victoria Road and/or the new public place on Church Street. (Note: the new hours would only apply if patrons enter and exit the venue from Victoria Road and not via a laneway or residential area).
C28.	Establish a new category of trading hours for unlicensed shops, such as bookstores and clothing shops, service businesses e.g. gyms, dry cleaners and hairdressers, and public facilities e.g. libraries and community centres.
C29.	Encourage weekend markets, events and small festivals, and support venues for live music such as hotels and restaurants,

Maximum building height

Objectives

O21. To ensure new development reinforces the desired streetscape character and where appropriate retains the character of established residential areas.

O22. To provide a sense of enclosure to the street and contribute to a consistent built form scale across the precinct over time.

O23. To create a more consistent height modulation along Victoria Road that follows the topography rather than emphasising the ridges.

Controls	
C30.	New development is to conform with the maximum heights as shown in **Fig G3.9** and **Fig G3.10 (**Building Envelopes Control Plans) and **Fig G3.11** to **Fig G3.15 (**Building Envelopes Control Sections)**.**

Number of storeys

Objectives

O24. To avoid 'sunken' ground floors below footpath level resulting in a poor quality streetscape and pedestrian activation.

Controls	
C31.	New development is to conform to the maximum number of storeys as shown in **Fig G3.9** and **Fig G3.10 (**Building Envelopes Control Plans) and **Fig G3.11** to **Fig G3.15 (**Building Envelopes Control Sections)**.**

Street wall height

Objectives

O25. To help facilitate a gradual manifestation of consistent building scales and coherence along streetscapes and spatially enclose the street.

O26. To minimise bulk and scale impact and help mitigate the pedestrian's perception of building height.

O27. To allow adequate sunlight and minimise shadow impacts on the public domain.

O28. To avoid a 'canyon' effect along Victoria Road in particular, where the sloping topography accentuates perceived building scale.

Controls

C32.	The maximum street wall height across the centre varies between 2 and 4 storeys as illustrated in **Fig G3.9** and **Fig G3.10 (**Building Envelopes Control Plans) and **Fig G3.11** to **Fig G3.15 (**Building Envelopes Control Sections)**.**
C33.	Building elements above the street wall height, such as balustrades, partition walls or roof overhangs must be set back at least 2.5m from the street wall height as illustrated in **Fig G3.4** (Typical built form interface section).
C34.	Where frontages are more than 20 metres wide, building massing must be vertically articulated.
C35.	Where built-to alignments apply, buildings should have a minimum of 75% of their frontage built to the nil setback. The remaining 25% may be set back up to 2 metres to provide areas for entrances, landscaping, bike parking, outdoor seating etc.

Floor to floor heights

Objectives

O29. To address the need to revitalise the retail functions along Victoria Road, promote higher quality ground floor retail spaces and avoid sunken frontages below footpath level.

O30. To ensure buildings are adaptable to a variety of uses over time.

Controls

C36.	Minimum floor to floor heights for Victoria Road Drummoyne are as follows:

Use	Minimum floor to floor height	Minimum floor to ceiling height
Retail	4.4m	4m
Adaptable	3.7m	3.3m
Commercial	3.7m	3.3m
Community	3.7m	3.3m
Residential	3.1m	2.7m

Note: The ground floor is retail, commercial or community use. Residential use on the ground floor is not permitted in the centre.

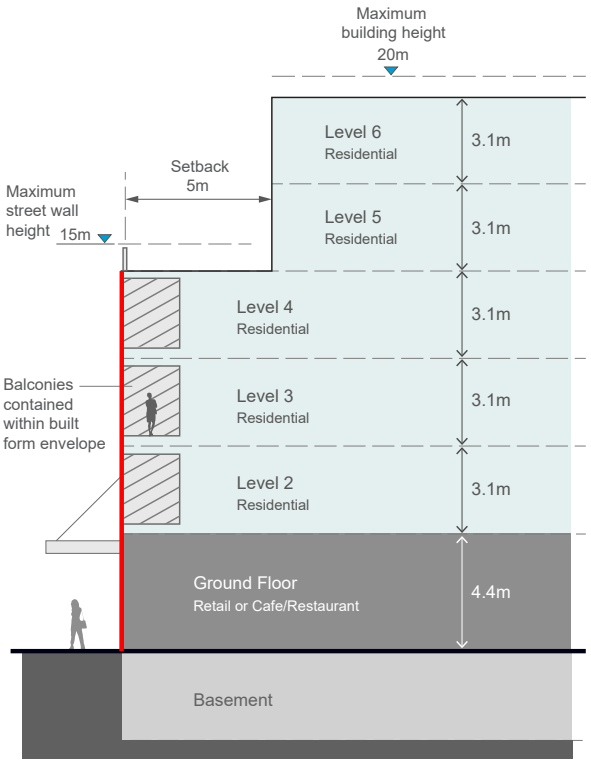


Fig G3.4 Typical built form interface section

Upper level setbacks

Objectives

O31. To define the proportion, scale and visual enclosure of the public domain and provide a level of consistency across the precinct.

O32. To lessen the visual impact of taller development and help create a more unified, human-scale streetscape environment.

Controls

C37.	Upper level setbacks are required towards most public domain interfaces as identified in **Fig G3.9** and **Fig G3.10 (**Building Envelopes Control Plans) and **Fig G3.11** to **Fig G3.15 (**Building Envelopes Control Sections)**.**
C38.	The upper-most level(s) above the street wall height must be designed so that they are visually unobtrusive. Ways to achieve this include the use of lightweight construction techniques, dark colours and/or roof elements that create deep shadows.
C39.	If a development is more than 50 metres in length and higher than 4 storeys it should provide a vertical break in the built form for the upper two storeys.

Transition to lower scale residential

Objectives

O33. To limit impacts of new development on surrounding lower density residential, i.e. loss of outlook, privacy and sun access.

Controls

C40.	New development on the eastern side of Victoria Road with a rear boundary to properties addressing Renwick Street must: • set back 3m as identified in **Fig G3.9** and **Fig G3.10** (Building Envelopes Control Plans) and **Fig G3.11** to **Fig G3.15** (Building Envelopes Control Sections). The setback area is to be a deep soil zone. Basements are not permitted to encroach into this zone. • step back and strictly adhere to a 30 degree height plane measured from 3.6m above natural ground level at the boundary as identified in **Fig G3.9** and **Fig G3.10** (Building Envelopes Control Plans) and **Fig G3.11** to **Fig G3.15** (Building Envelopes Control Sections). • have deep planters and partially solid balustrades (minimum 80% solid) designed to prevent views from apartments into the rear gardens/ rear habitable rooms of properties on Renwick Street as identified in **Fig G3.5**.
C41.	New development between Victoria Road, Day Street, Thornley Street and Formosa Street must have deep planters and partially solid balustrades (minimum 80% solid) on south facing balconies designed to prevent downward views from apartments into adjacent properties similar to Fig G3.5.

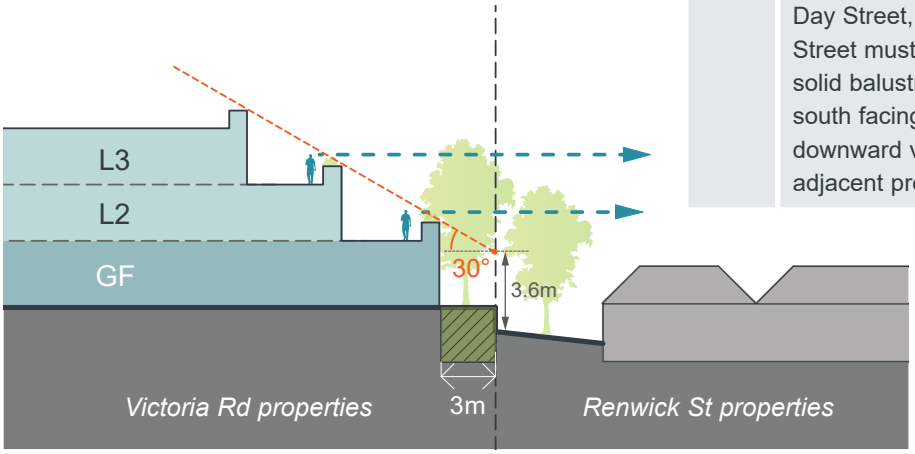


Fig G3.5 A 3m deep soil zone and solid balustrades of new development will reduce overlooking of neighbouring rear gardens

Primary active frontages

Objectives

O34. To increase pedestrian activity and support the economic success of the area, particularly along Victoria Road.

O35. To create diversity, avoid vehicle access points and shelter pedestrians from the weather along key pedestrian routes.

Controls	
C42.	Ground level active uses and a continuous cantilevered awning must be provided along 'Primary active frontages' as identified in **Fig G3.9** and **Fig G3.10.**
C43.	All primary active frontages must apply the design guidance outlined in Section G2 General Requirements, **Fig G2.2.**
C44.	Ground level active uses/ tenancies must be minimum of 10m deep and be accessible without steps. Entries have a finished floor level that is at the same level as the footpath. Where this is not possible, entries are no greater than 0.4m above or below the footpath. Entries below footpath level are not permissible.
C45.	Residential entries and foyers are permitted along active frontages, however, they are not to compromise the commercial activity along the street by keeping their frontage width to a minimum. The maximum width for residential entries/ foyers is 6m.
C46.	Vehicle access points are generally not permitted along active frontages. Where no alternative access point can be provided, their width must be kept to an absolute minimum.

Secondary active frontages

Objectives

O36. To enhance the appearance, attractiveness and safety of streets close to the main commercial activity.

Controls	
C47.	The interface of ground floors along 'Secondary active frontages' as identified in **Fig G3.9** and **Fig G3.10** must: • consider the design requirements for primary active frontages; • display a high degree of architectural detail and interest; • use high quality materials and finishes; • maximise pedestrian safety at driveway cross overs and vehicular access points; • maximise the number of doors/ entries and windows; and • incorporate lighting that illuminates the footpath after hours.

Balconies

Objectives

O37. To not add to the built form visual bulk and scale.

O38. To provide passive surveillance of the public domain.

Controls	
C48.	All balconies must be wholly contained within the building envelope. Forward protrusion beyond the envelope is not permissible.
C49.	Balconies should be designed so that they strike a balance between visual privacy for the resident and opportunities to overlook the public domain. Design treatment may include a combination of solid and transparent balustrade materials.

Heritage and conservation

Objectives

O39. To provide a link to the history of the Victoria Road centre and showcase the area's historic charm.

O40. To recognise and support the significant contribution of heritage items to the character, cultural value and identity of the area.

O41. To protect heritage buildings/ items and their visual setting or 'curtilage'.

Controls	
C50.	New development in the proximity of the intersection of Victoria Road and Lyons Road, which has a pocket of heritage listed and contributory items, is to consider appropriate external paint schemes and sympathetic building signage.
C51.	Additional information signage about the area's history, located either in the public domain or on building facades, is to be provided wherever possible.
C52.	External facade lighting should be installed to highlight the architectural features of contributory buildings after dark.
C53.	Development in the vicinity of a heritage item, within a heritage conservation zone or a contributory zone, protects and enhances the cultural significance of nearby heritage items and streetscape character.
C54.	Where development is adjacent to a heritage item, contributory building or within a conservation area, a variation to the street wall height of the new development may be required.
C55.	Alterations and additions respond appropriately to the heritage fabric but do not mimic or overwhelm the original building. Designs are contemporary and identifiable from the existing building. Ways to separate the new work from the existing include providing generous setbacks between new and old, using a glazed section to link the new addition to the existing building and/or using shadow lines and gaps between old and new.
C56.	Building and facade design responds to the scale, materials and massing of heritage items through aligning elements such as eaves lines, cornices and parapets, facade articulation, proportion and/or rhythm of existing elements and complementary colours, materials and finishes.
C57.	Signs on heritage buildings, including painted lettering, should be carefully located and should be sympathetic to the historic nature of the building. Adjacent signs should be designed and applied sympathetically.
C58.	Where new development directly adjoins a listed heritage building, the appropriate building setback and height will be determined on a case-by-case basis having regard to the views, vistas and context of the heritage item.
C59.	Highlight the assets of heritage buildings at the intersection of Lyons Road and Victoria Road by lighting the facades after dark and providing an adjacent high-quality public domain.



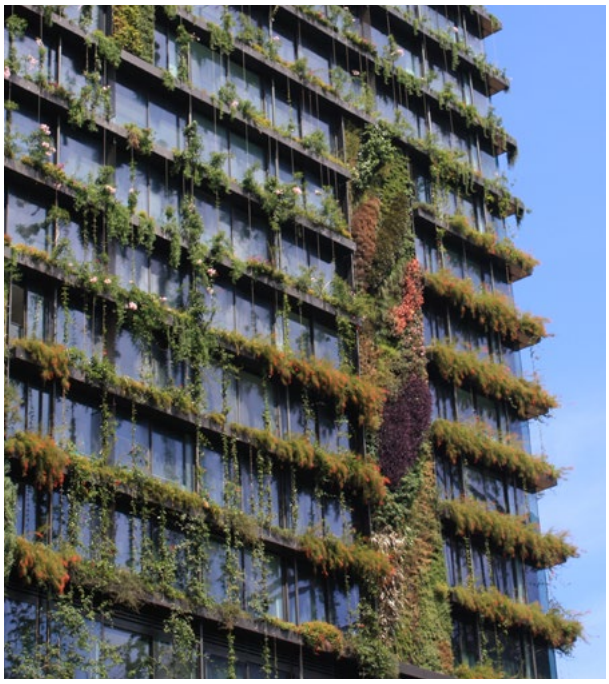
Examples of information integrated into the public domain, highlighting the history of the area and its buildings

Green walls and roofs

Objectives

O42. To enhance the appearance and amenity of the area, create biodiversity and improve micro-climate conditions.

Controls	
C60.	New development should consider the incorporation of landscape elements and greenery such as: • Vertical planting/ green walls; • Facade indentations for landscaping; and • Green roofs.



Example of a vertical green wall, Central Park Sydney

Awnings and street trees

Objectives

O43. To provide for a balance of weather protection for pedestrians and the ability for mature street trees.

Controls	
C61.	Particularly along Victoria Road, new development should consider the provision of 'breaks' in awnings to allow for street tree planting.



Example of an awning design with 'breaks' and street tree planting at 81-110 Victoria Road

Residential uses along Victoria Road

Objectives

O44. To provide a high level of amenity for future building users and protect from negative impacts (noise, air quality, vibration).

Controls	
C62.	Development along Victoria Road is to consider the guidance in *Busy Roads Interim Guidelines* and the design approaches illustrated in **Fig G3.6** *Noise mitigating facade treatments, source: Development Near Rail Corridors And Busy Roads Interim Guideline, NSW.*
C63.	Noise sensitive areas (living rooms, bedrooms) are located away from Victoria Road where possible.
C64.	Windows located towards Victoria Road are double-glazed (or laminated glazing) and have acoustic seals.
C65.	Habitable rooms of dwellings are to be designed to achieve internal noise levels of no greater than 50dBA.

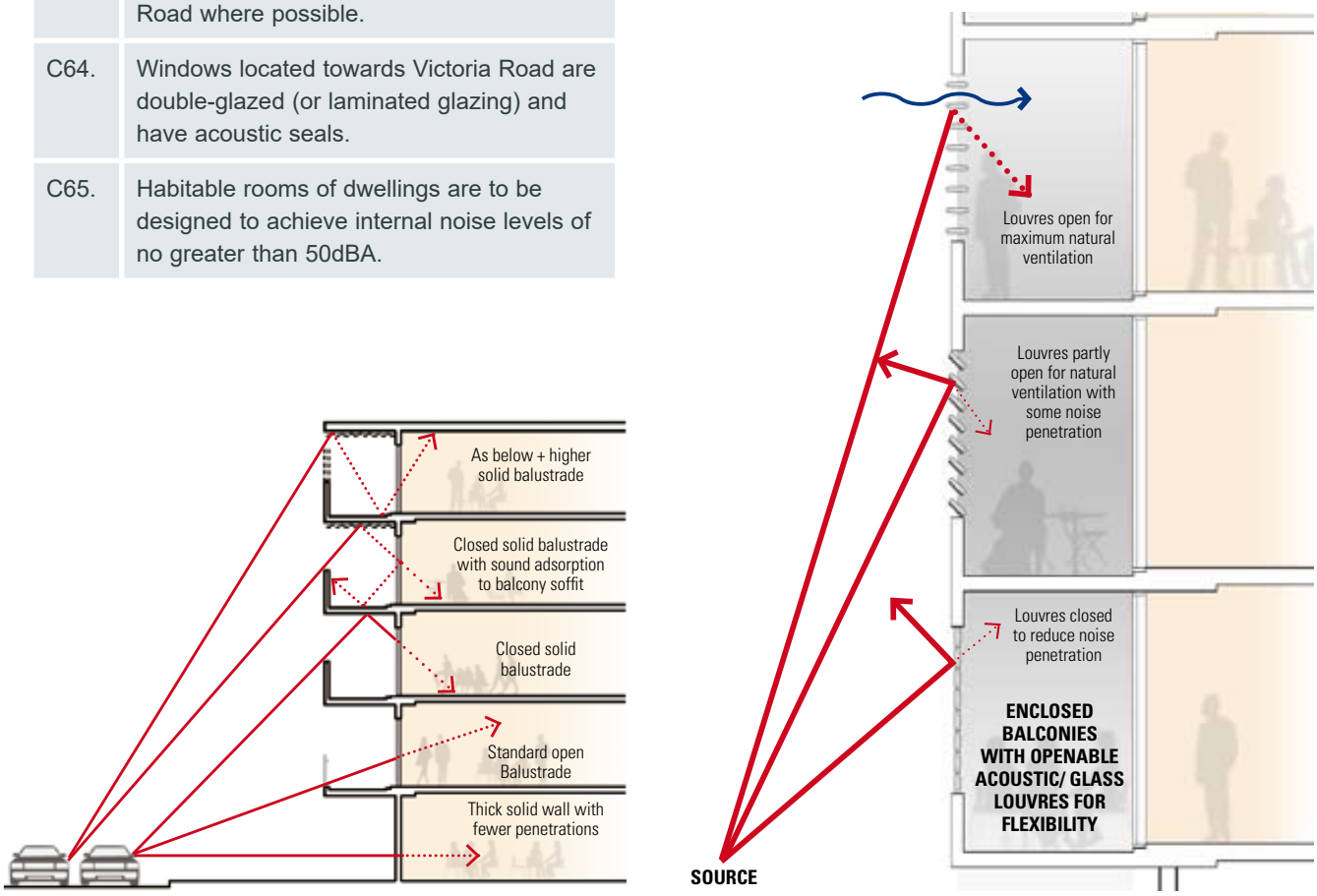


Fig G3.6 Noise mitigating facade treatments

(Source: Development Near Rail Corridors And Busy Roads Interim Guideline, NSW)

Visual privacy

Objectives

O45. To protect the visual privacy of lower scale residential properties addressing Renwick Street.

Controls	
C66.	The interface of new development that shares a rear boundary with properties addressing Renwick Street must provide solid balustrades and screening vegetation as shown in **Fig G3.5**. Solid balustrades and screening also required for south and south-west facing balconies or terraces for buildings between Victoria Road, Day Street, Thornley Street and Formosa Street.

On-street parking and loading

Controls	
C67.	New developments must not rely on Victoria Road on-street parking to meet parking and/or loading/delivery requirements or to facilitate access to the development and/or any associated commercial uses.

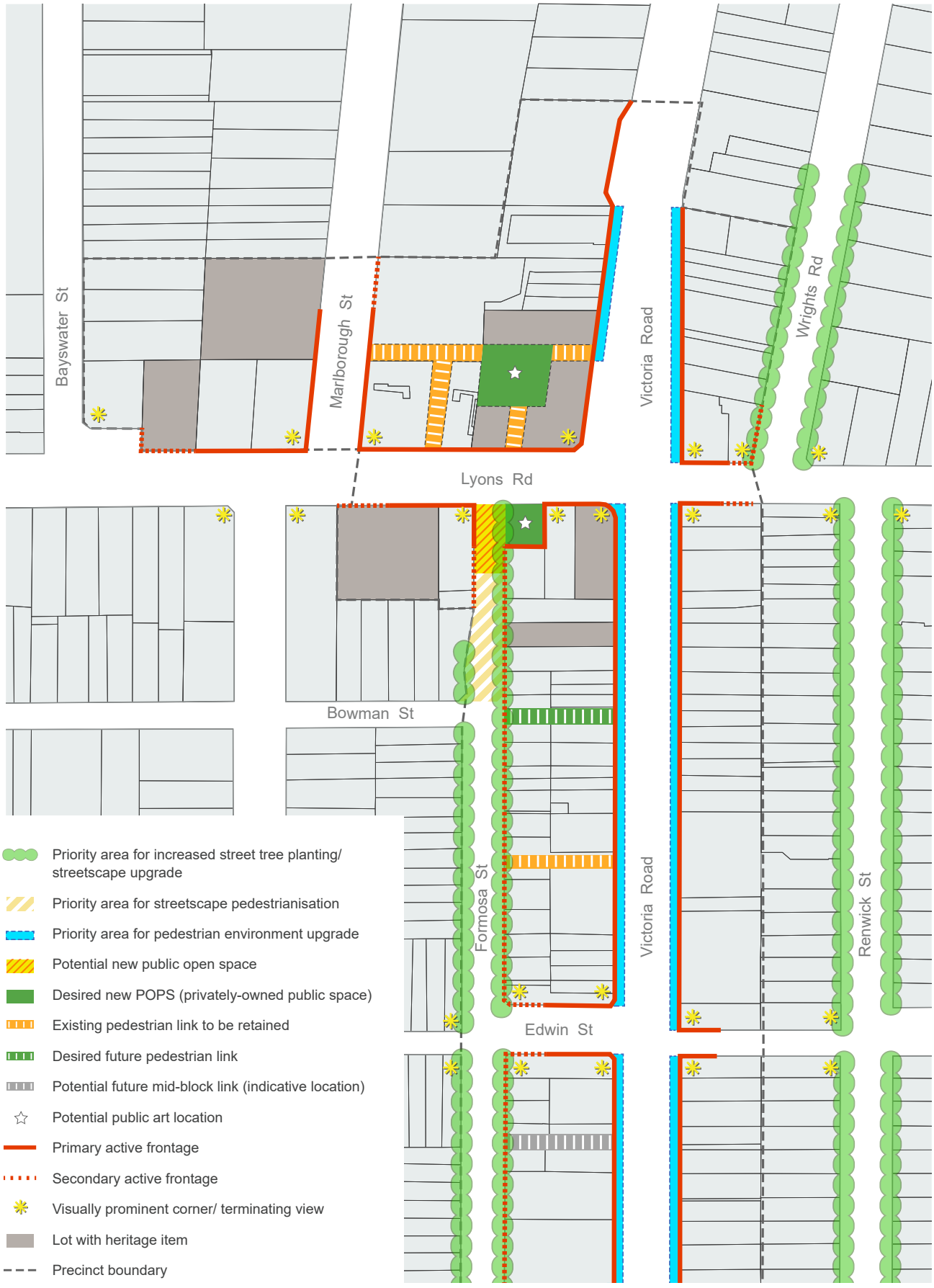


Fig G3.7 Public Domain Plan (north-west)

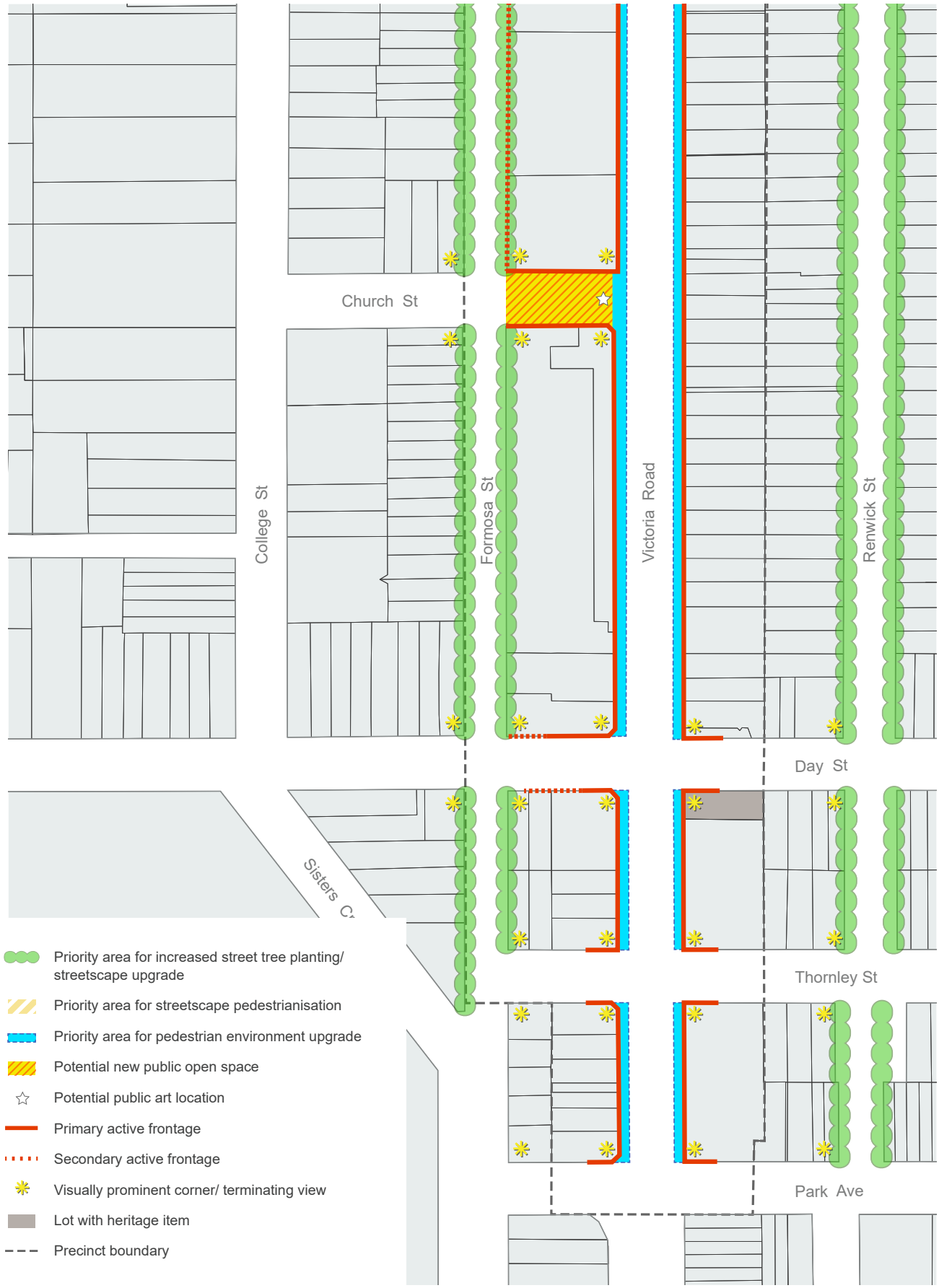


Fig G3.8 Public Domain Plan (south-east)



Fig G3.9 Built Form Envelope Controls Plan (north-west)



Fig G3.10 Built Form Envelope Controls Plan (south-east)

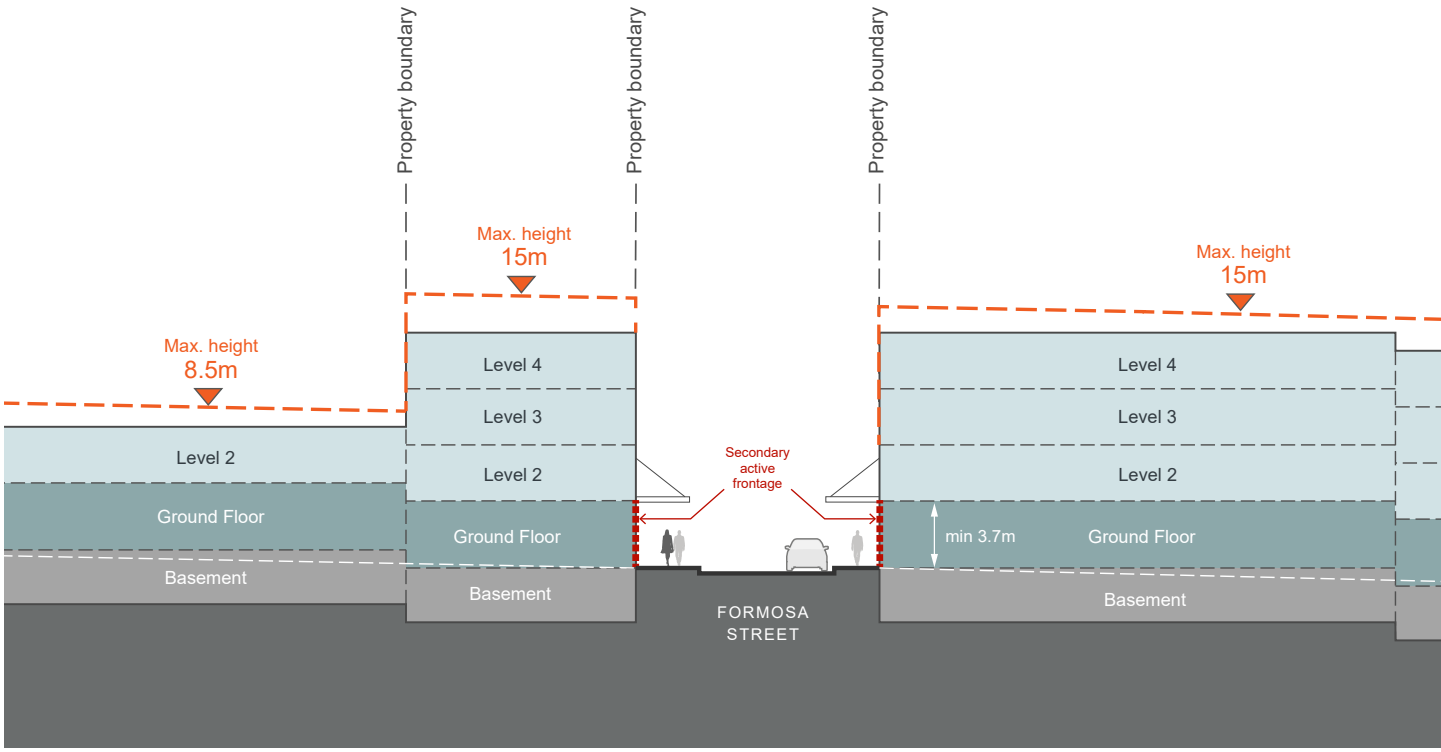
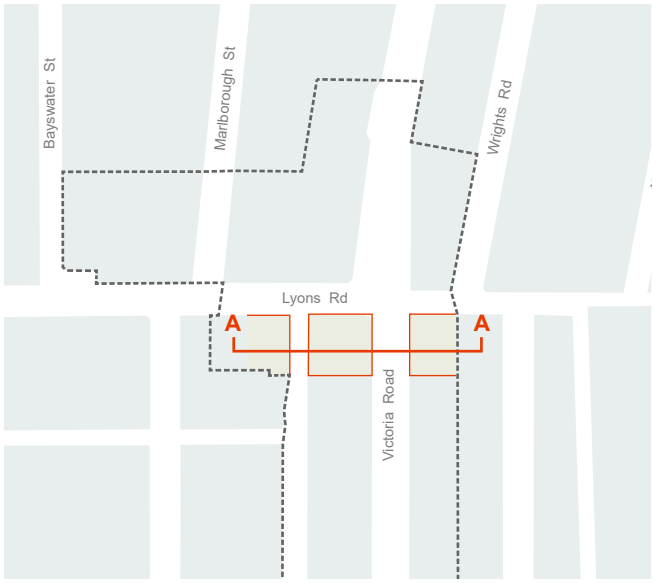
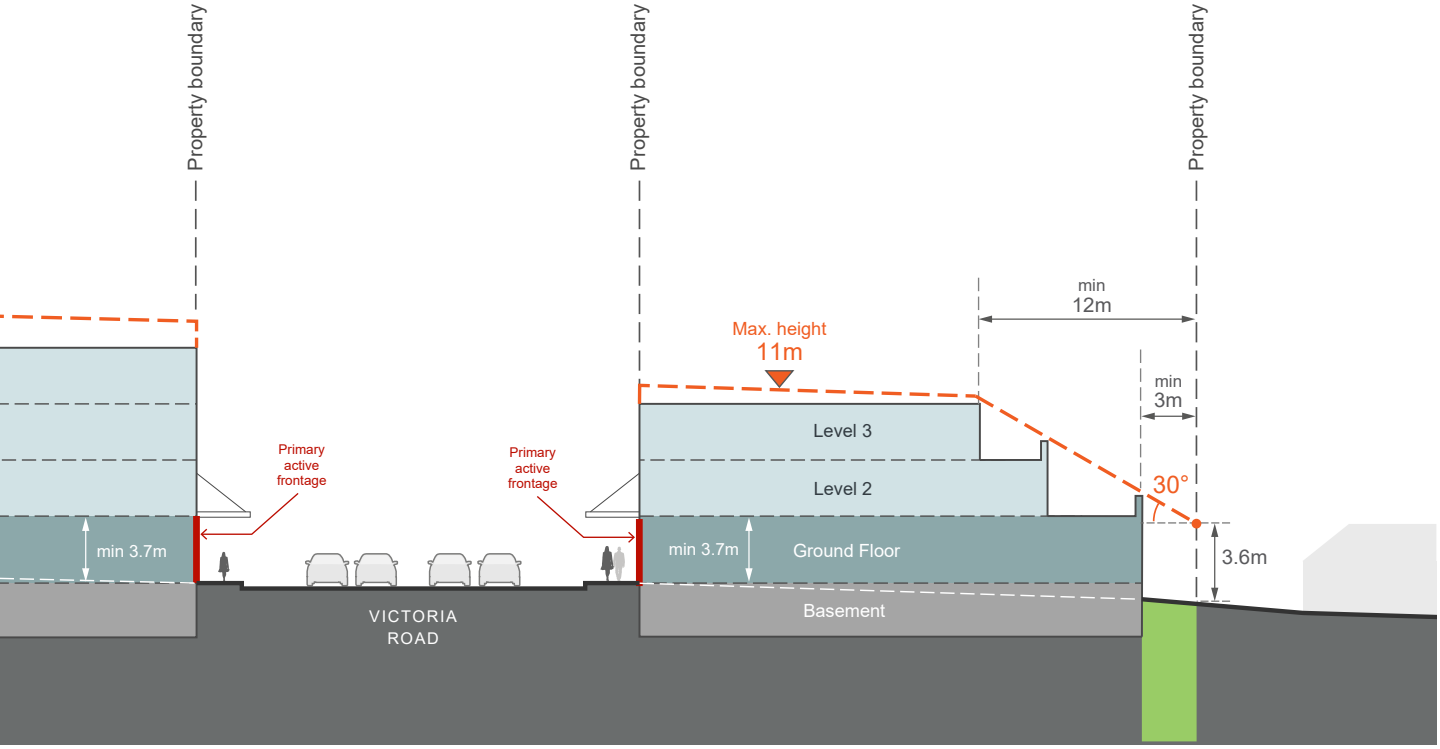


Fig G3.11 Built Form Envelope Section A



Key Plan Section A


Property boundary
Property boundary
Property boundary
min
12m
Max. height
11m
min
3m
Level 3
Level 2
30°
Primary
active
frontage
Primary
active
frontage
min 3.7m
min 3.7m
Ground Floor
3.6m
Basement
VICTORIA
ROAD

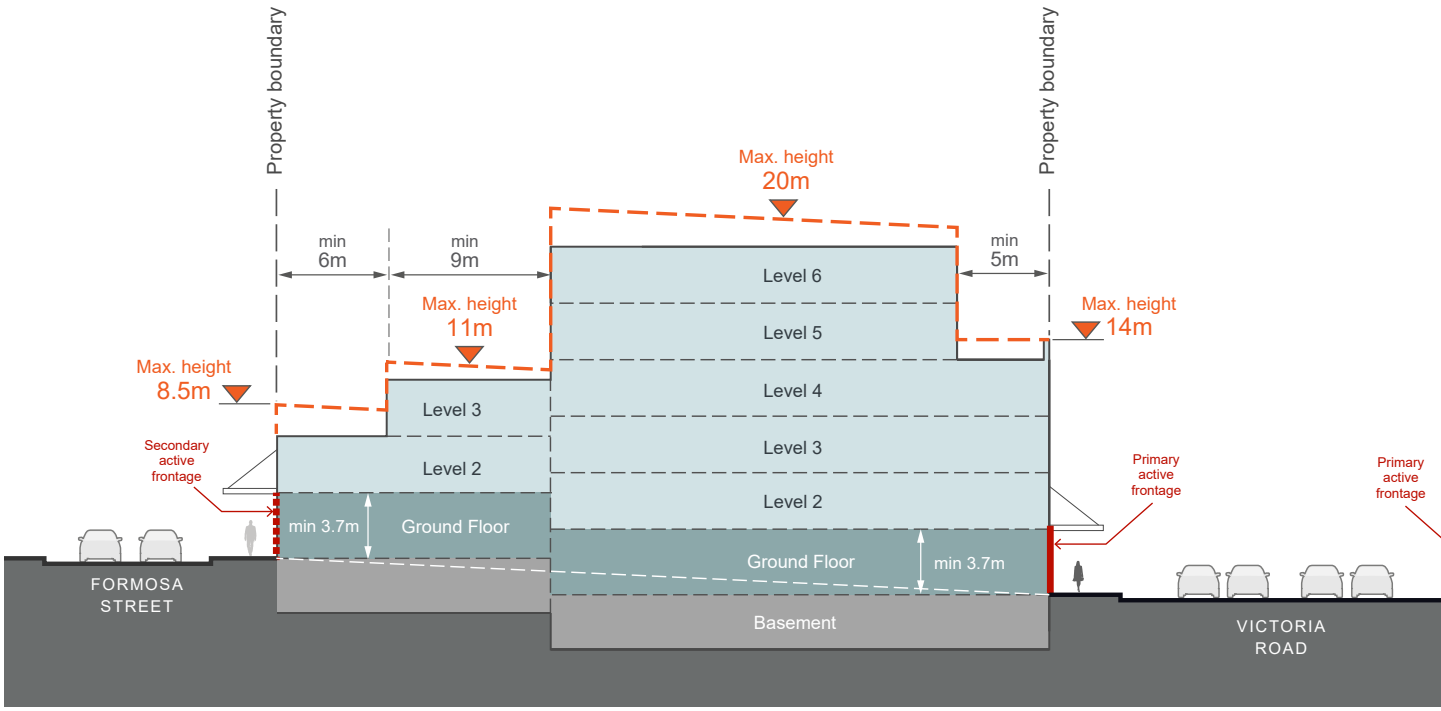


Fig G3.12 Built Form Envelope Section B

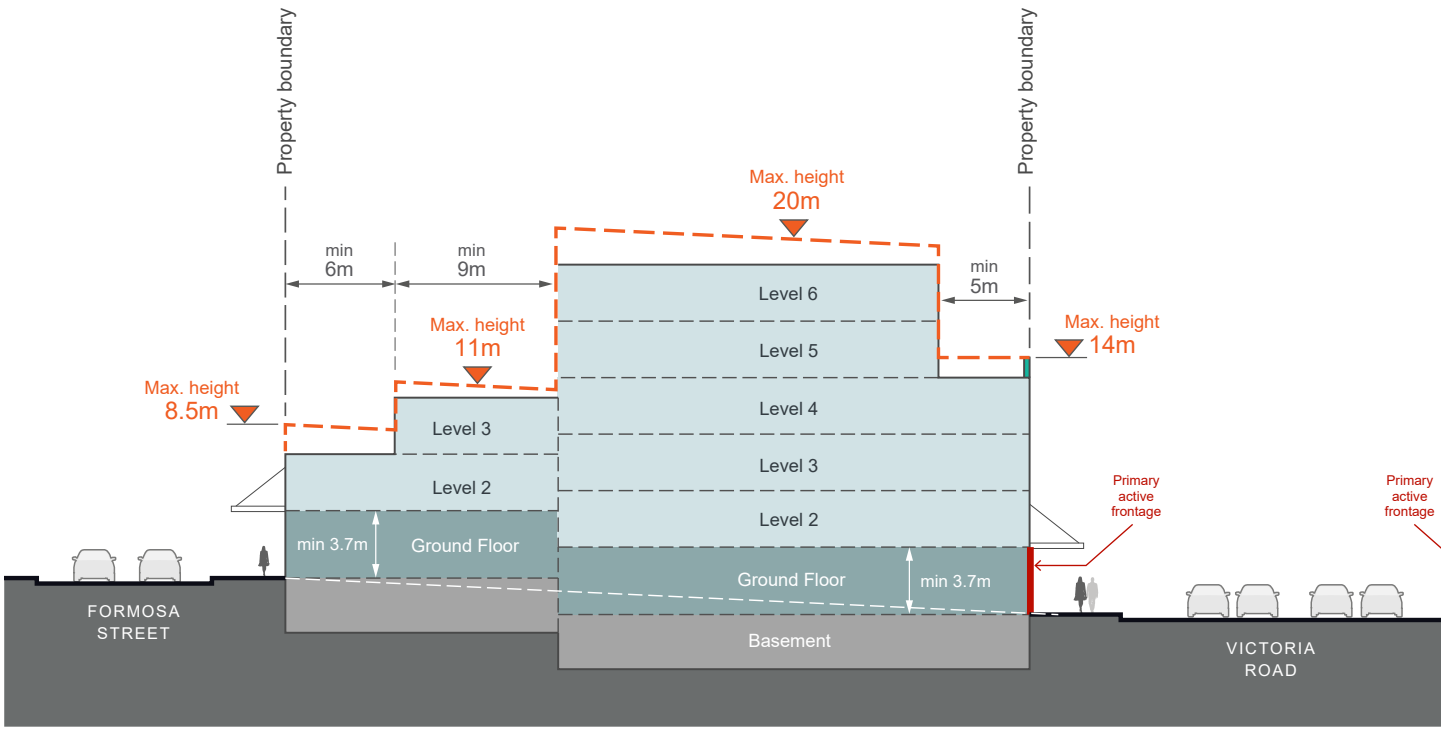
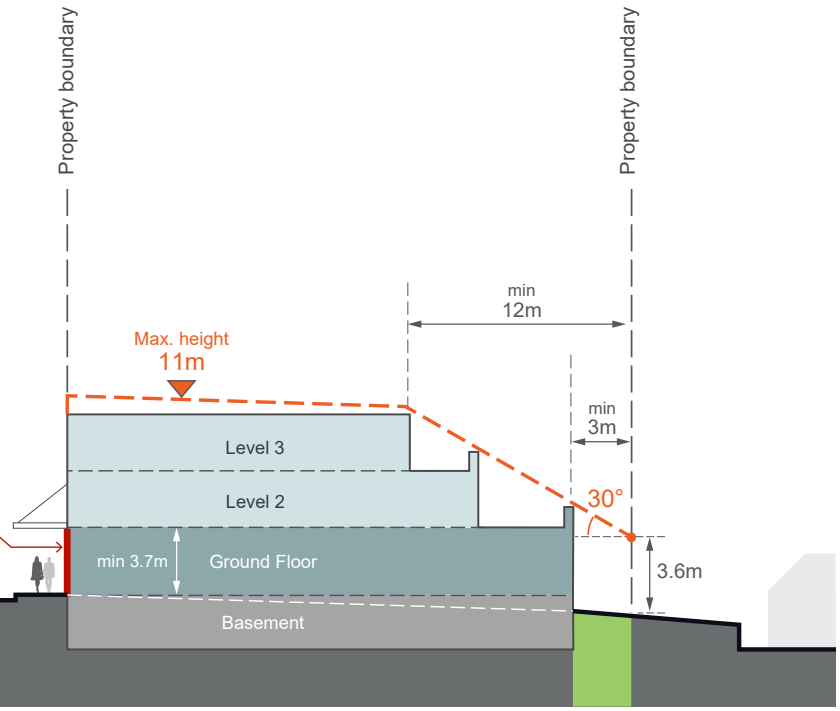
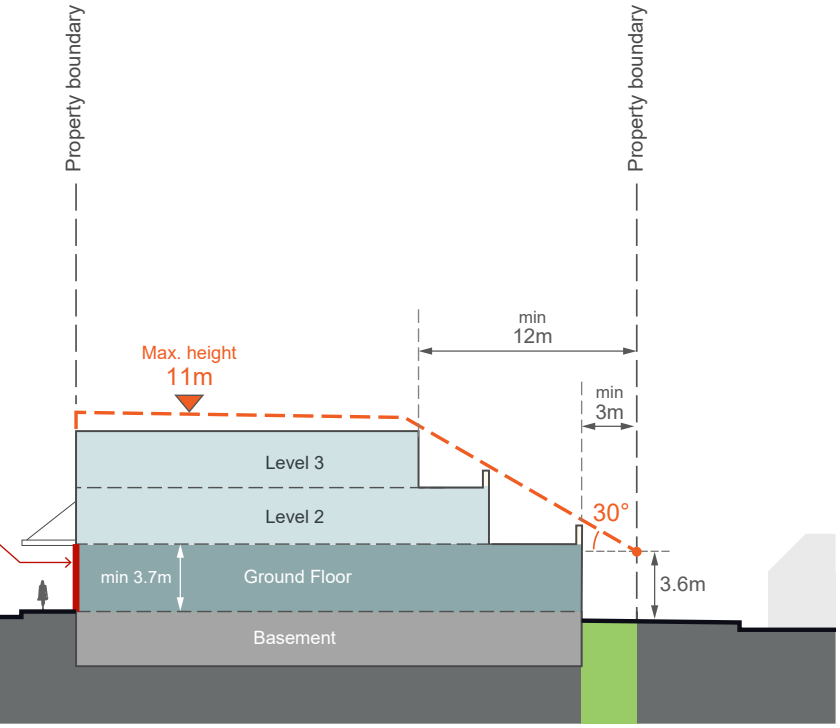
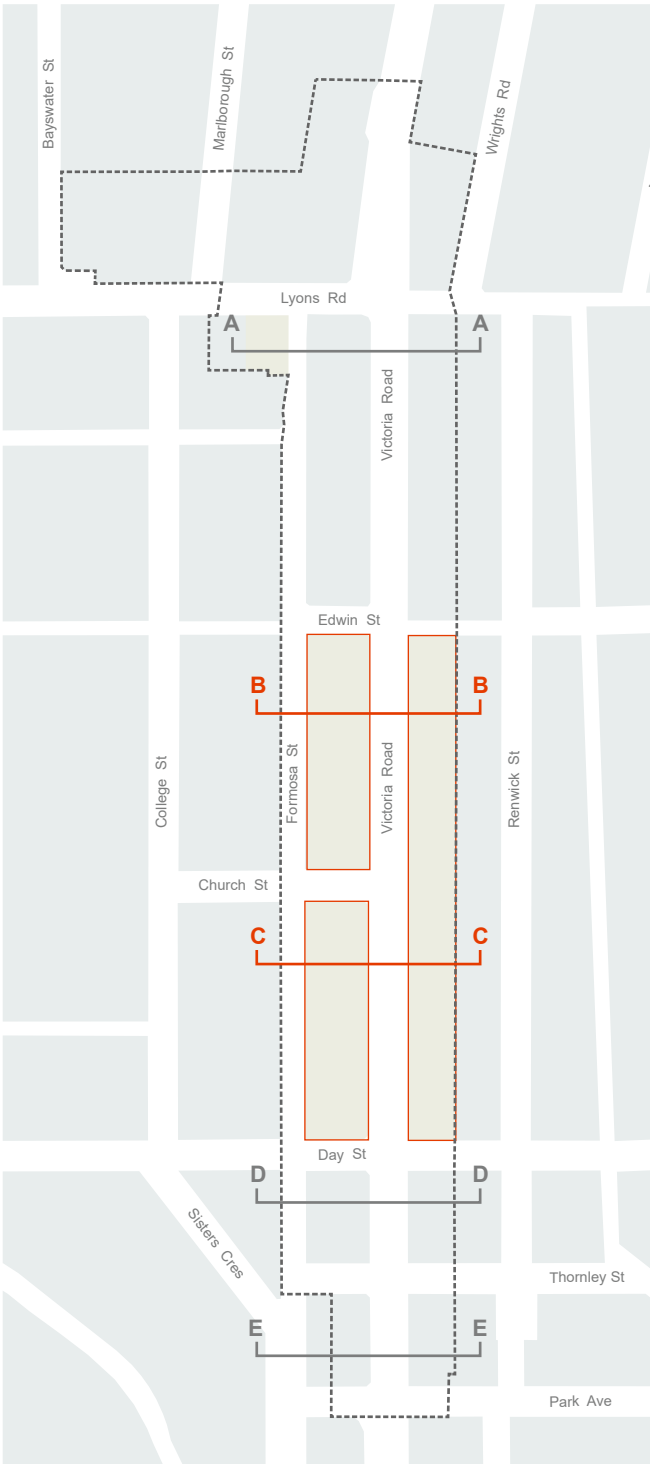


Fig G3.13 Built Form Envelope Section C







Key Plan Section B and C

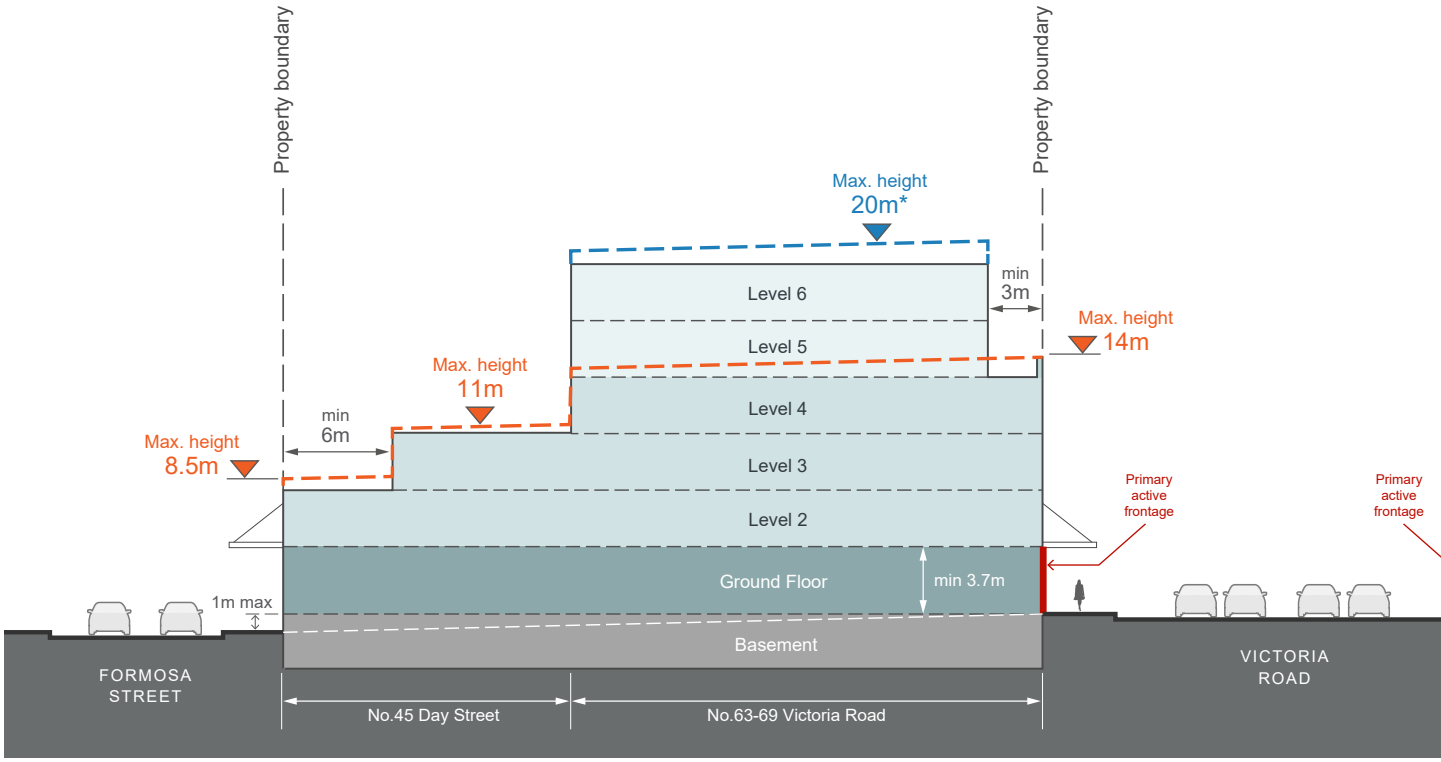


Fig G3.14 Built Form Envelope Section D

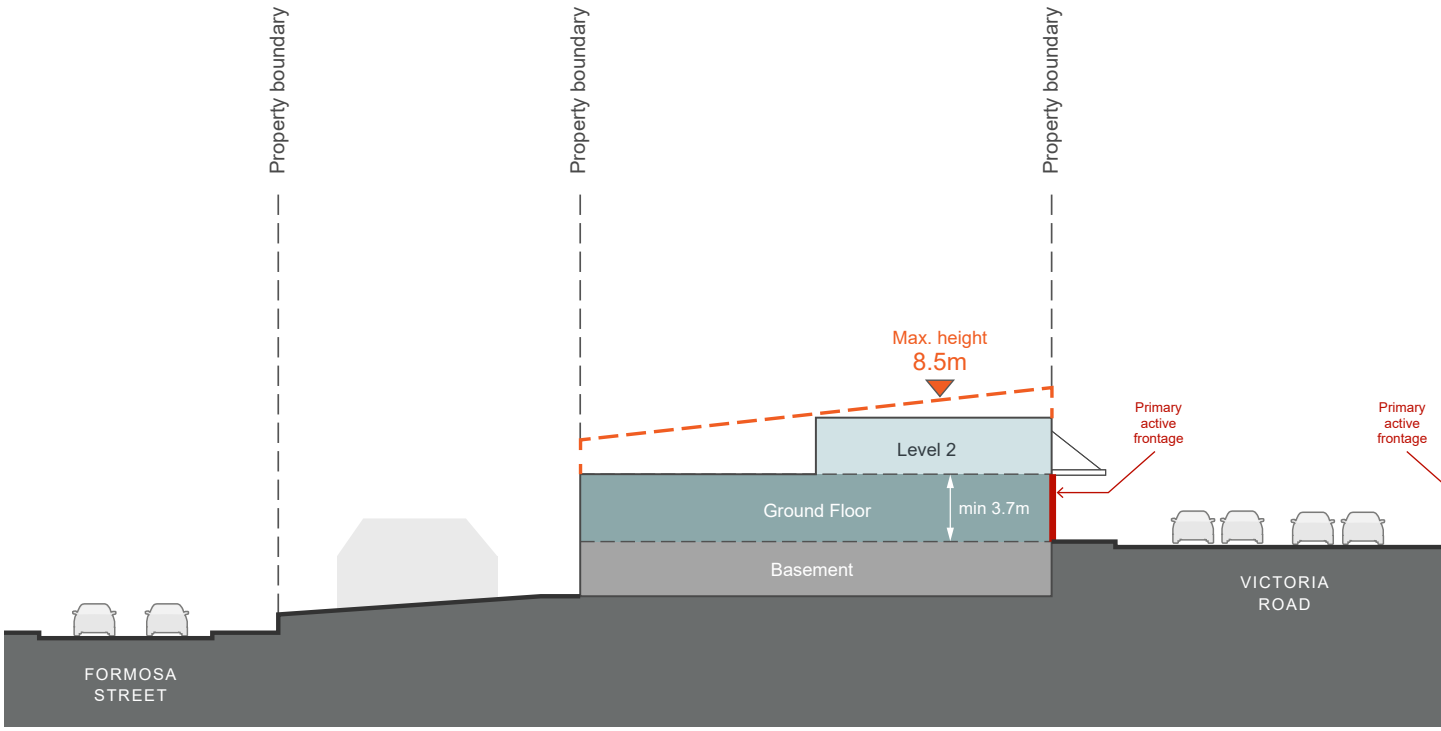
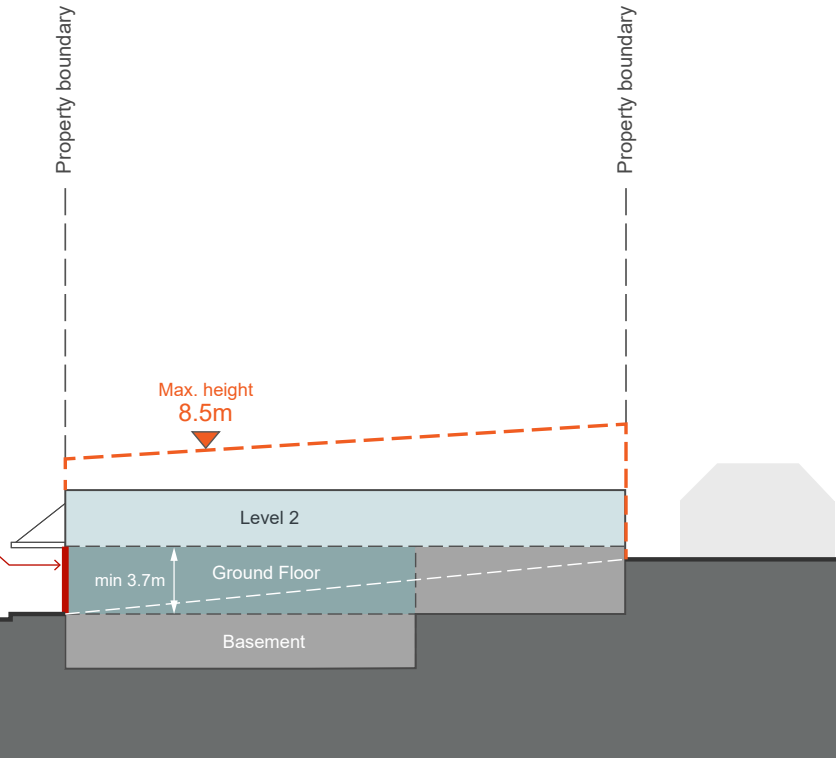
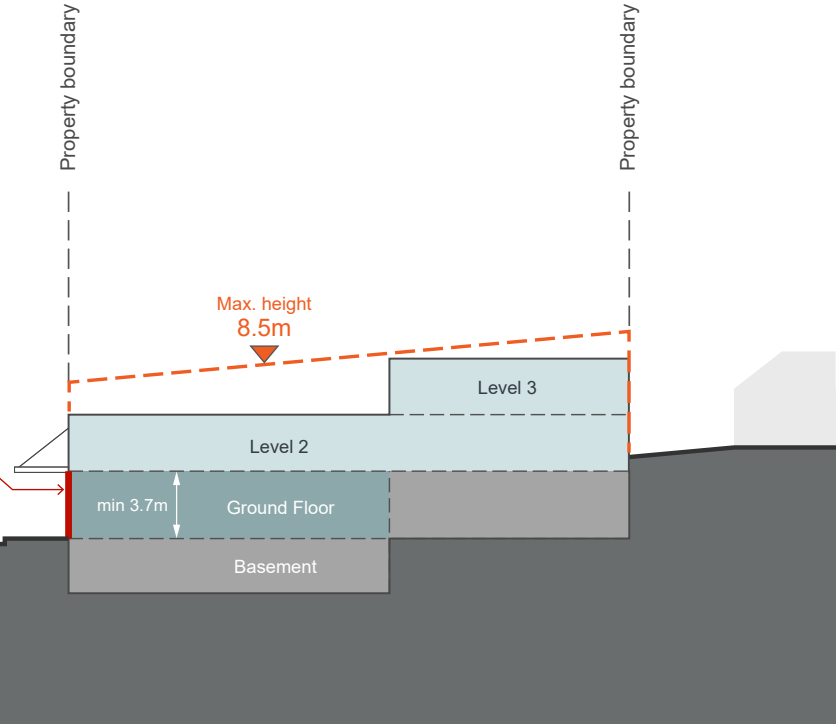
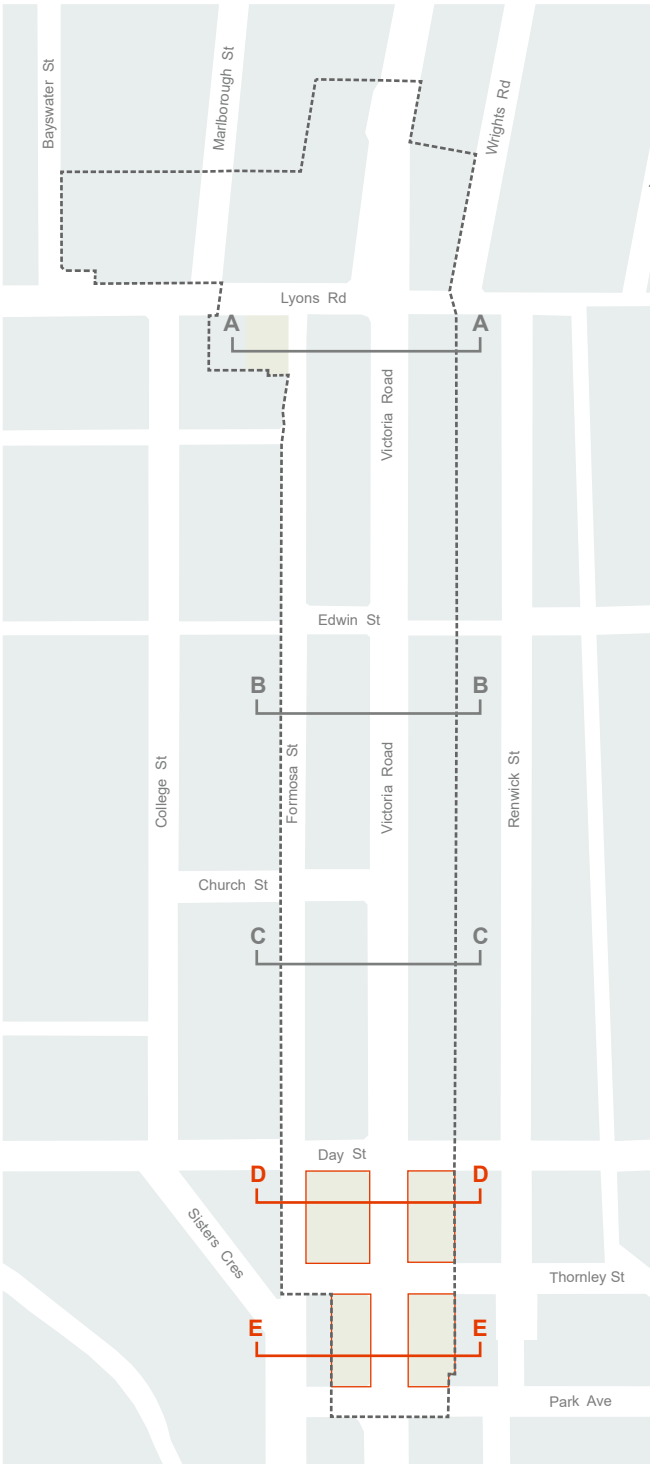


Fig G3.15 Built Form Envelope Section E







Key Plan Section D and E

Special area: Sutton Place / Drummoyne Village



Fig G3.16 Sutton Place - Location Plan

Objectives

O1. Develop a compact, functional, and permeable urban structure, which is easily accessed from surrounding streets by vehicle and by foot.

O2. To ensure efficent vehicular and pedestrian access links within and between Victoria Road, Lyons Road and Marlborough Street.

O3. To achieve an appropriate built form for the role of the Drummoyne Village which also respects the surrounding heritage items and conservation areas.

O4. To provide a mix of private open space and publicly accessible private open spaces.

Access

Controls	
C1.	Retain existing pedestrian throughsite link between Marlborough Street and Victoria Road. Explore potential opportunity to widen this access way if future development occurs.
C2.	Retain pedestrian access from Lyons Road into the courtyards through walkways and retail arcades.
C3.	Retain existing vehicular access to the Drummoyne Village site from Marlborough Street as far north as possible, away from major pedestrian movement paths.
C4.	Vehicular access to the site from Victoria Road is discouraged.
C5.	Investigate changing Marlborough Street into a two-way street in order to improve access, slow traffic and promote a pedestrian friendly environment.
C6.	Entrance to the commercial and residential uses will be provided wherever possible from the courtyards and walkways.

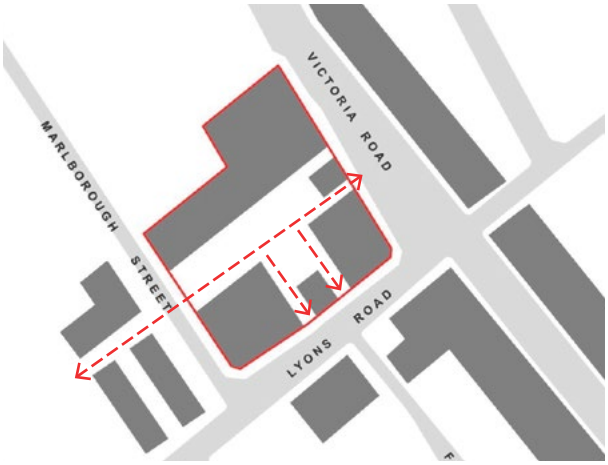


Fig G3.17 Permeable Village Strategy

Uses

Controls	
C7.	The village site will provide a mix of uses through: • retail uses at ground level fronting onto Victoria Road, Lyons Road and existing and proposed courtyards; • generally commercial uses are to be provided on the second and third levels and; • residential uses are proposed on and above the third level.

Built Form

Controls	
C8.	The proposed built form is to be oriented to the street with a zero lot line to the street boundary; and enclose an open space within the interior of the block.
C9.	A height limit of 22m is required on the whole site to retain the scale of the Drummoyne skyline.
C10.	Development along Lyons Road and Victoria Road will maintain the parapet height of the Sutton Buildings as the height for their podium. The height of the podium is at 10.2m being two storeys in the Sutton Buildings and three storeys in all other buildings.
C11.	Development fronting Marlborough Street will have a podium of 4 storeys setback 4.5 metres above a plinth at ground level which will form a street edge.
C12.	The setback to upper levels (5 and 6) from the Marlborough Street frontage is to be no less than 9.0m
C13.	Six storey heights will be provided at least 13.5m away from Lyons Road and other street boundaries to retain the scale and character of the street and the heritage buildings.
C14.	Built form is to be in accordance with Fig G3.23 to Fig G3.34.

Outdoor Spaces

Controls	
C15.	Sutton Buildings will maintain its existing courtyard. The courtyard should be increased in size by juxtaposing a similar shaped courtyard;
C16.	Above ground communal open space should be provided for residential uses.
C17.	A gap should be provided in the development to the north of the space to allow the penetration of winter sun.
C18.	Outdoor eating is encouraged in areas fronting the courtyards and along the Marlborough Street walkway, generating activity in these courtyards.
C19.	Restaurants and a possible outdoor eating terrace are encouraged at the northern end of the site to take advantage of the views to the west and the north western aspect.

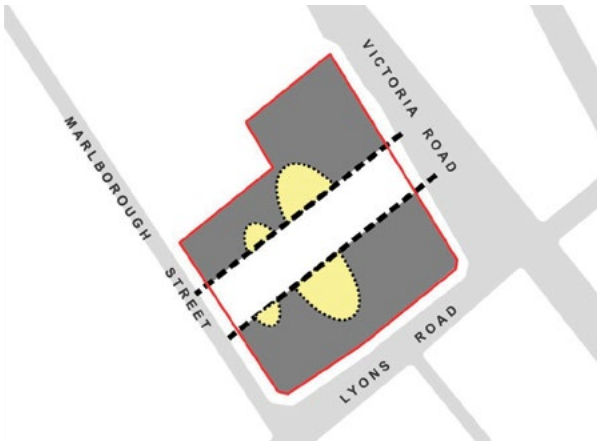


Fig G3.18 Interconnected Open Space Strategy

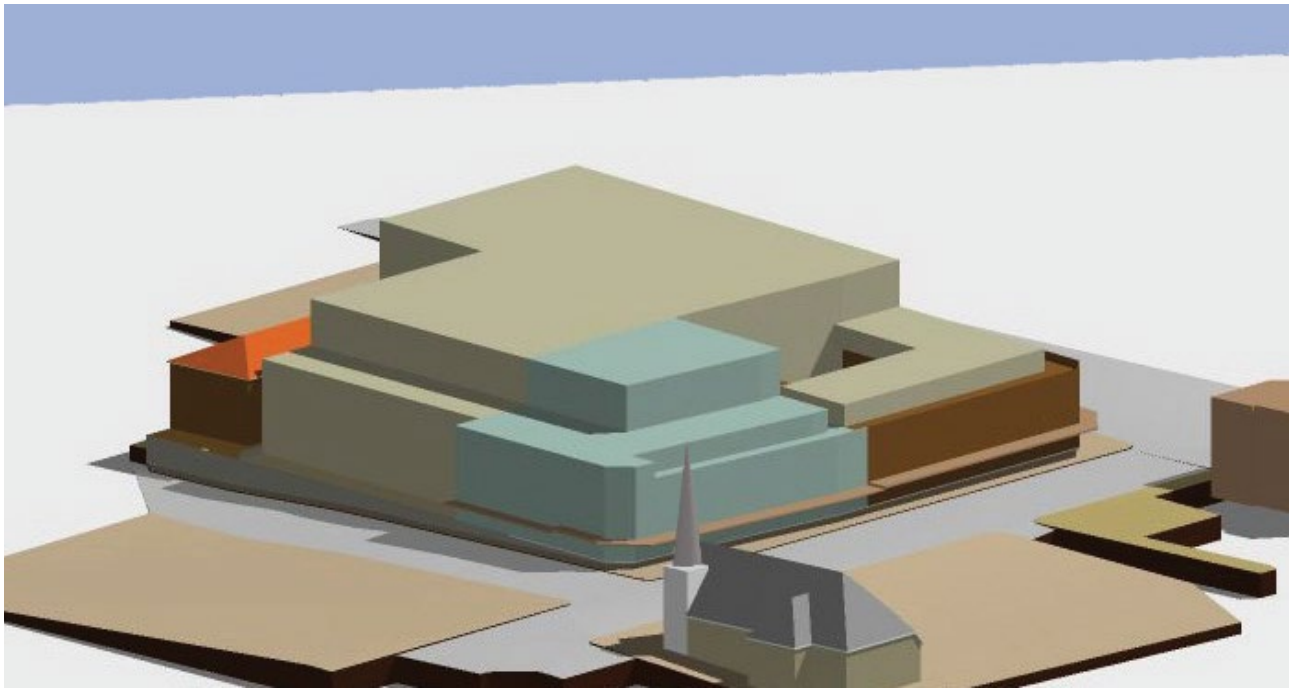


Fig G3.19 Heritage generated setback viewed from the south.

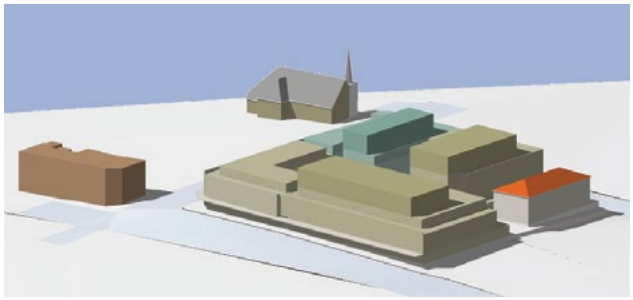


Fig G3.20 Potential building envelope view from north, incorporating heritage and amenity generated setbacks.

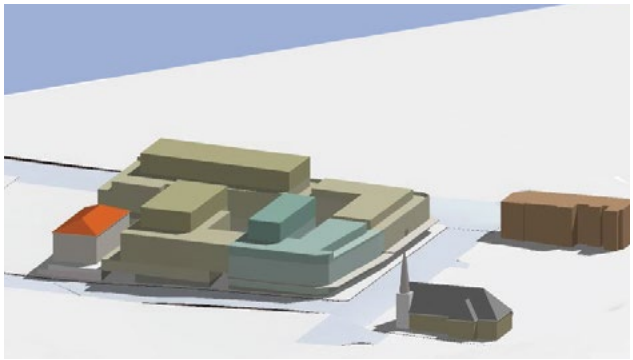


Fig G3.21 Potential building envelope view from south.

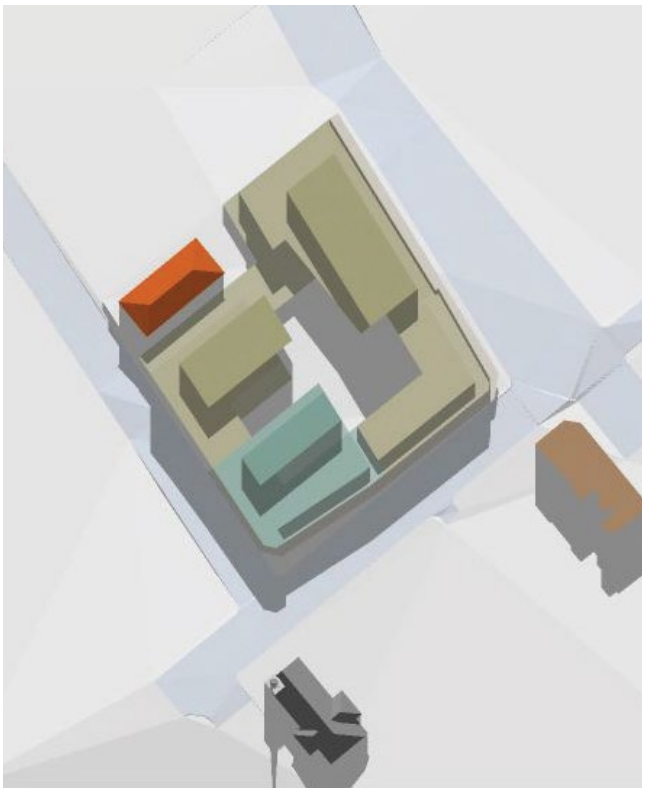


Fig G3.22 Potential building envelope top view of setbacks.

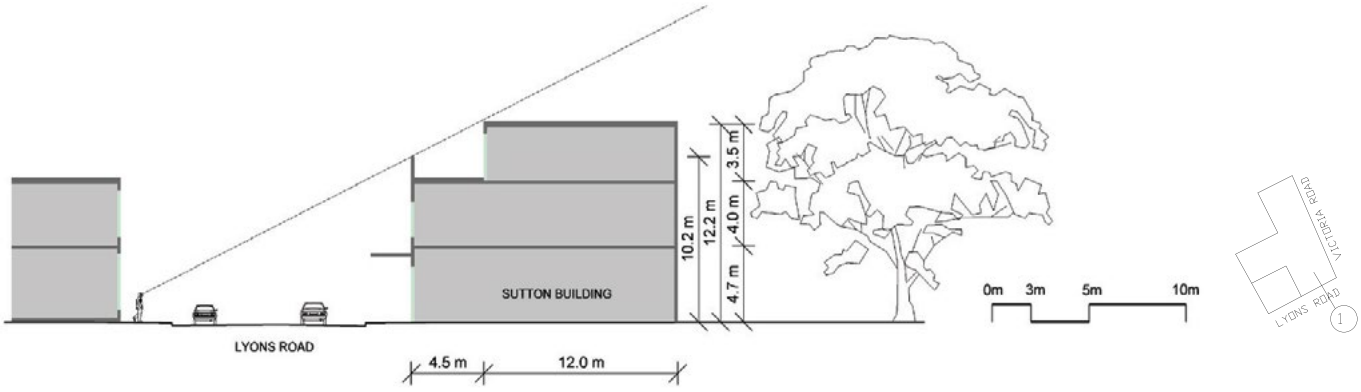


Fig G3.23 Heritage generated setback 1 through Sutton building.
Reducing the impact of development on the street character of Lyons Road and separating new built form from the existing.

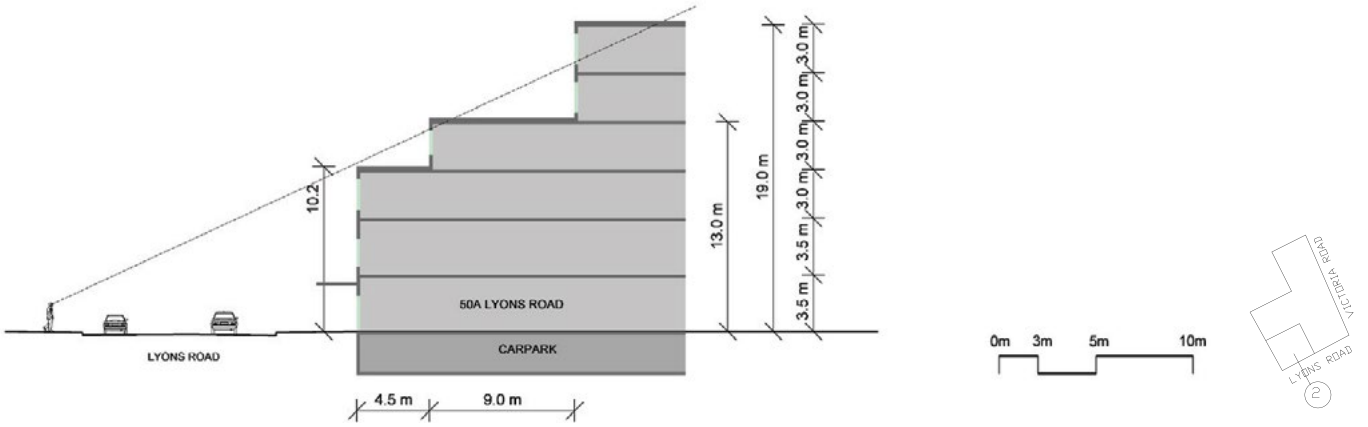


Fig G3.24 Heritage generated setback 2 through 50A Lyons Road.
Reducing the impact of development on the heritage items on this opposite side of the street. The parapet is compatible with the adjoining heritage item.

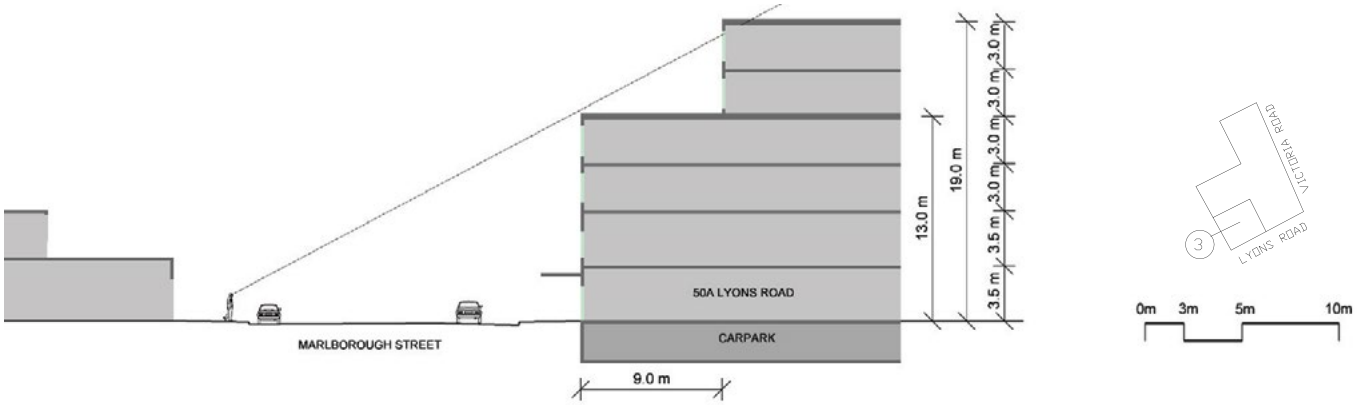


Fig G3.25 Heritage generated setback 3 through 50A Lyons Road on Marlborough Street.
Reducing the impact of building bulk on heritage items to the east of Lyons Road.

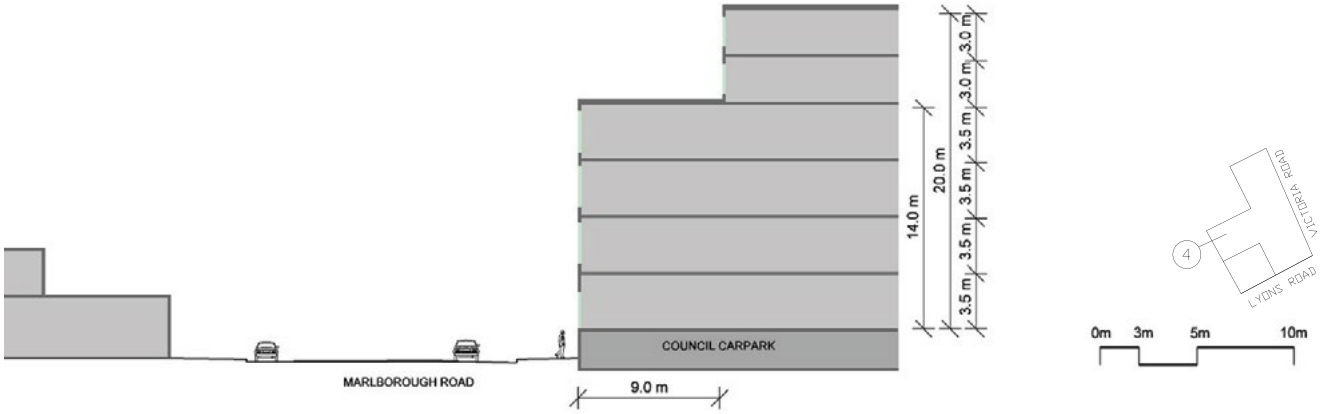


Fig G3.26 Heritage generated setback 4.
Building form compatible with heritage item to the east of Lyons Road.

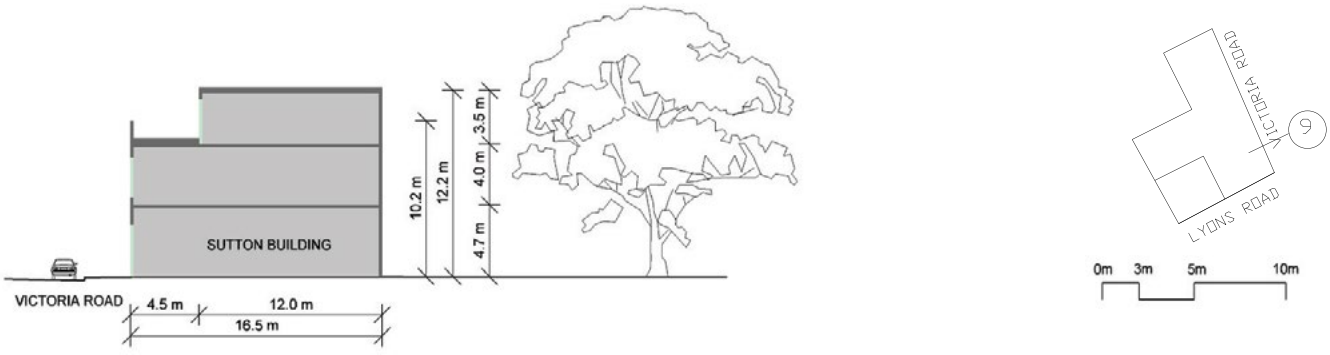
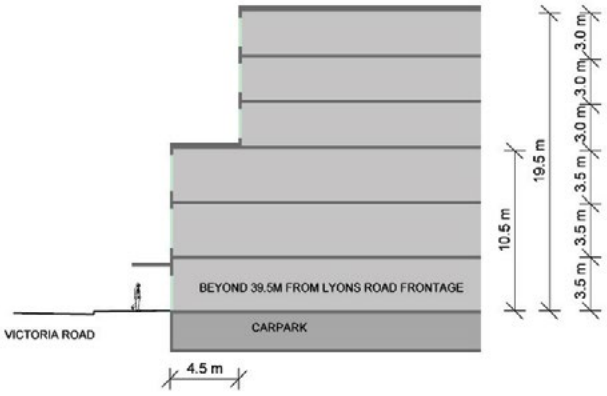


Fig G3.27 Heritage generated setback 9 through Sutton Building.
Setback to separate new building from existing facade.



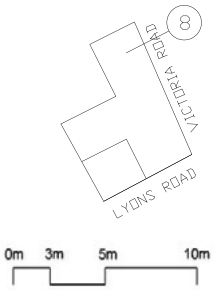
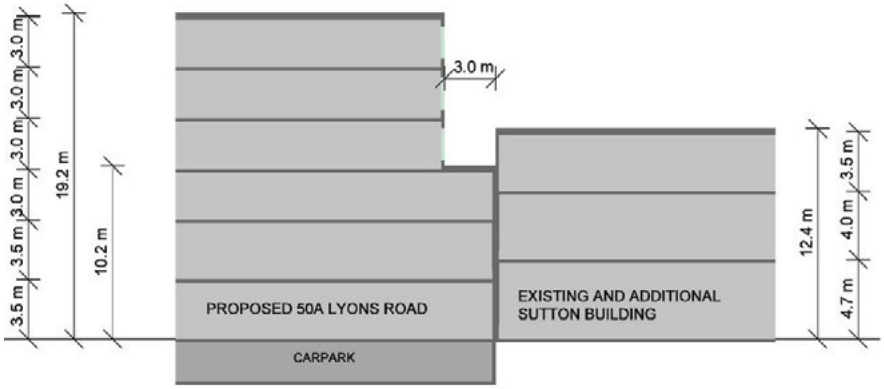


Fig G3.28 Heritage generated setback 8 through Victoria Road.
Setback determined by height of Sutton Buildings' parapet.



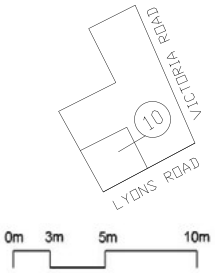
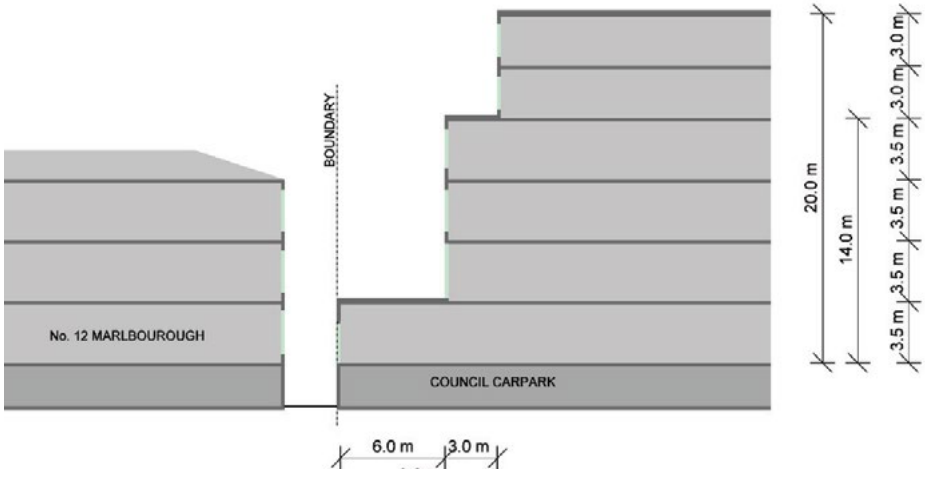


Fig G3.29 Heritage generated setback 10 through Sutton Building and 50A Lyons Road.



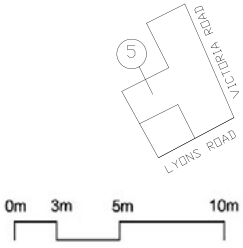
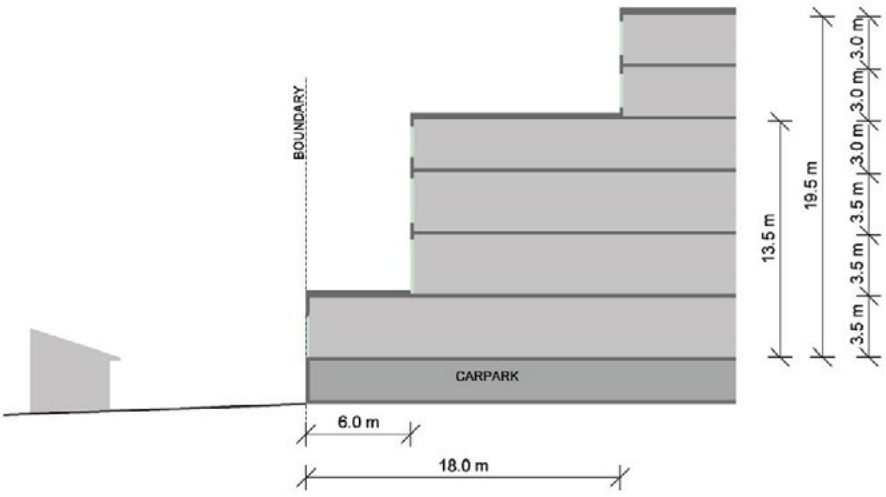


Fig G3.30 Amenity generated setback 5.
The setbacks from the boundary are generated by amenity relating to the adjoining residential building.



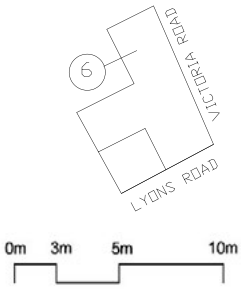
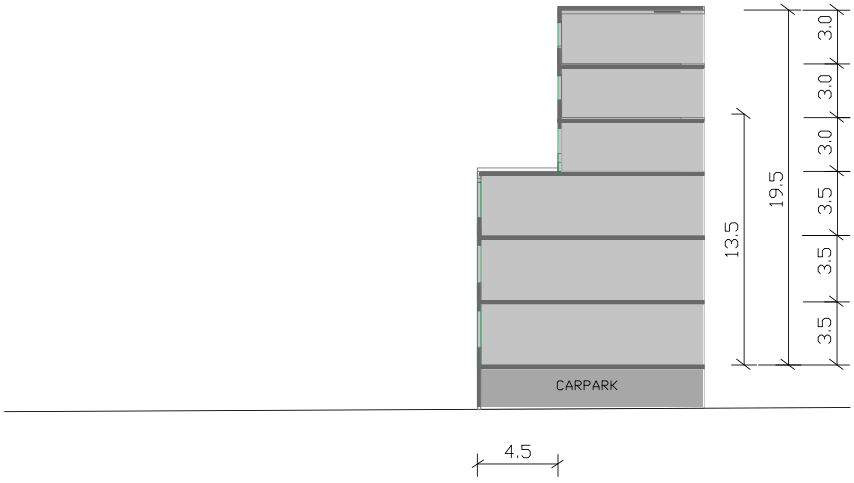


Fig G3.31 Amenity generated setback 6.
The setbacks from this boundary are generated by amenity relating to the adjoining residential building.



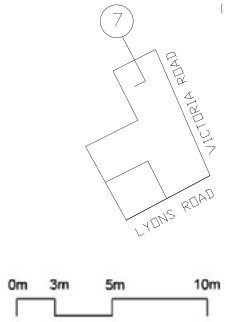
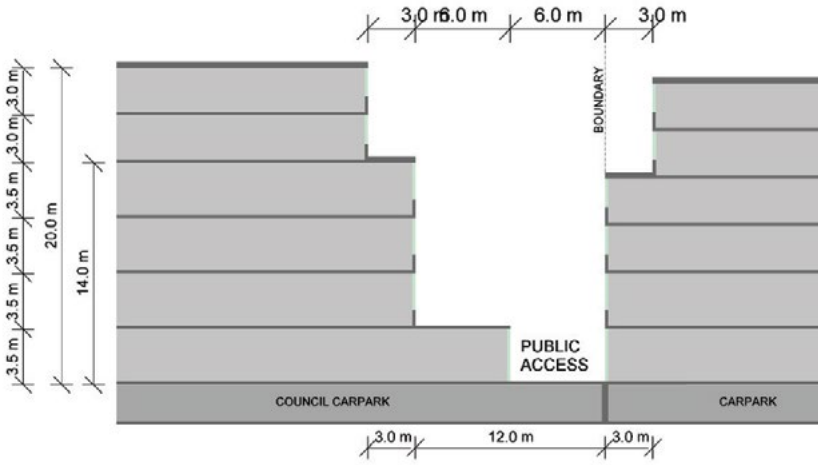


Fig G3.32 Amenity generated setback 7.
The setbacks from this boundary are generated by amenity relating to the adjoining residential building.



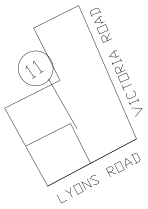
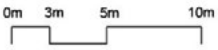
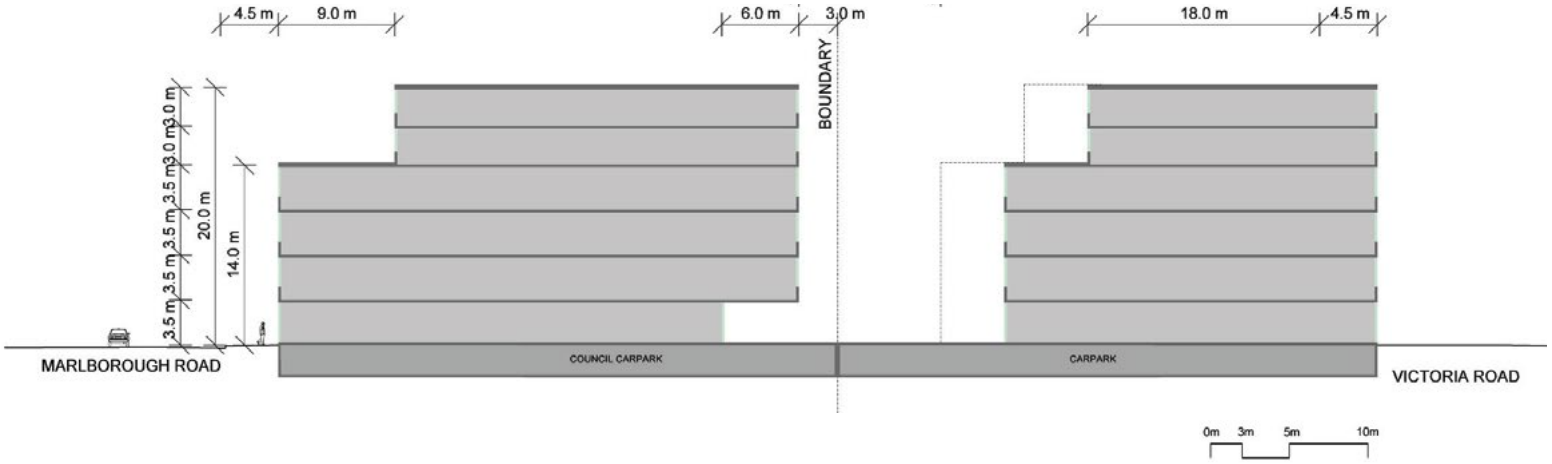


Fig G3.33 Amenity generated setback 10.
Setbacks relating to SEPP 65 requirements for light and privacy and fire separation.





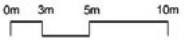
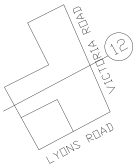


Fig G3.34 Heritage and Amenity generated setback 12.
Envelope generated by desire for public space within development.



Special area: 53 – 69 Victoria Road, 45 Day Street and 46 Thornley Street, Drummoyne Planning Proposal

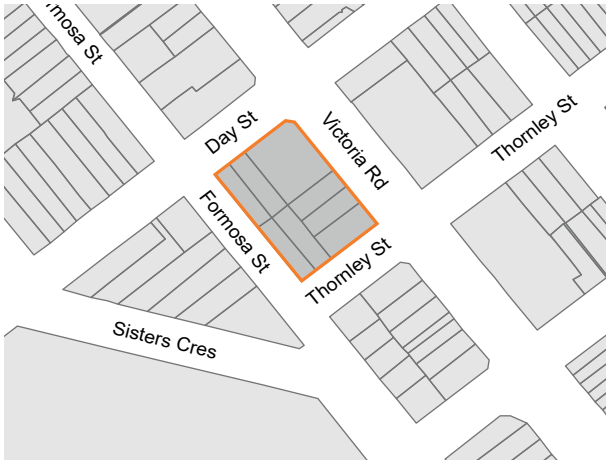


Fig G3.35 53 – 69 Victoria Road, 45 Day Street and 46 Thornley Street, Drummoyne Planning Proposal Location Plan

General objectives

O1. To allow redevelopment with higher densities along Victoria Road while at the same time minimising the solar, visual and privacy impacts on surrounding properties.

O2. To allow development that effectively transitions from taller heights at the northern corner of the site (corner of Day Street and Victoria Road) down to lower scale development to the south, east and west of the site (along Formosa Street and Thornley Street).

Height of Building

New buildings are to have a scale that is visually compatible with surrounding development. The height of new development is to reduce towards the south and west and to achieve a successful transition it may need to be lower than the maximum height permitted in the LEP along Formosa Street and Thornley Street.

O3. To concentrate higher development in the northern corner of the block, at Victoria Road and Day Street.

O4. To provide an effective transition to the surrounding two storey development to the west and south by locating two to three storey built form along the street wall of the block.

O5. To maximise the solar access and minimise the visual and privacy impacts on surrounding properties.

O6. To create attractive streets along all boundaries of the block.

Controls	
C1.	Maximum building height along the Victoria Road alignment is 4 storeys with a minimum 3 metre set back from Victoria Road and Day Street to any 5 or 6 storey component of the development.
C2.	Maximum building height at the Formosa Street and Thornley Street alignment is 2 storeys with a minimum 6 metre set back to any 3 storey component of the development.
C3.	2 and 3 storey development within the 11m height limit is to be in accordance with the building envelope in **Fig G3.36** to **Fig G3.42**.
C4.	The roof form at both Victoria Road and Formosa Street is to be a parapet edge.
C5.	Basement garaging is to be designed to minimise the bulk and scale of the development, minimising blank walls to the street. Garage structures are not to extend more than 1m above the natural ground line at any point.
C6.	All plant must be contained within the building envelope.

Bulk and Scale

The bulk and scale of a development plays an important role in helping the development fit into its surrounding context and minimise the impacts of development.

O7. To accommodate a two to three storey built form along the southern and eastern boundaries of the block.

O8. To provide height controls that accommodate the steep topography in the southern corner of the block.

Controls	
C7.	Basement parking is not to extrude more than 1m above the natural ground line.
C8.	Development along Formosa Street and Thornley Street is to have a two storey appearance.
C9.	It may be possible to provide some four storey development within the site at 53 Victoria Road where this can occur entirely within the maximum building envelope, is set back a minimum of 3 metres from the 3 storey street wall along Victoria Road and where it does not increase overshadowing or reduce privacy of adjoining properties.
C10.	The design of balconies and roof terraces is to minimise the visual bulk of the building. This is particularly important along Formosa Street and Thornley Street.

Active frontages

Active frontages contribute to visual and physical activity along the street particularly along Victoria Road and may include community and civic facilities, recreation and leisure facilities and shops, restaurants and cafes.

O9. To promote activity and interest along Victoria Road and at the highly visible corners.

O10. To enhance the commercial viability and compliment existing retail, commercial, entertainment and community uses.

O11. To enhance safety and security in the area.

Controls	
C11.	Provide ground level active uses and a continuous cantilevered awning where indicated in **Fig G3.36**.
C12.	Ground level active uses are to be a minimum of 10m deep and have a finished floor level no greater than 0.4m above or below the footpath level.
C13.	Residential entries and foyers are permitted along ground level active street frontages but are not to compromise the commercial activity along the street.
C14.	Vehicle access points are not permitted in areas indicated as active street frontage.

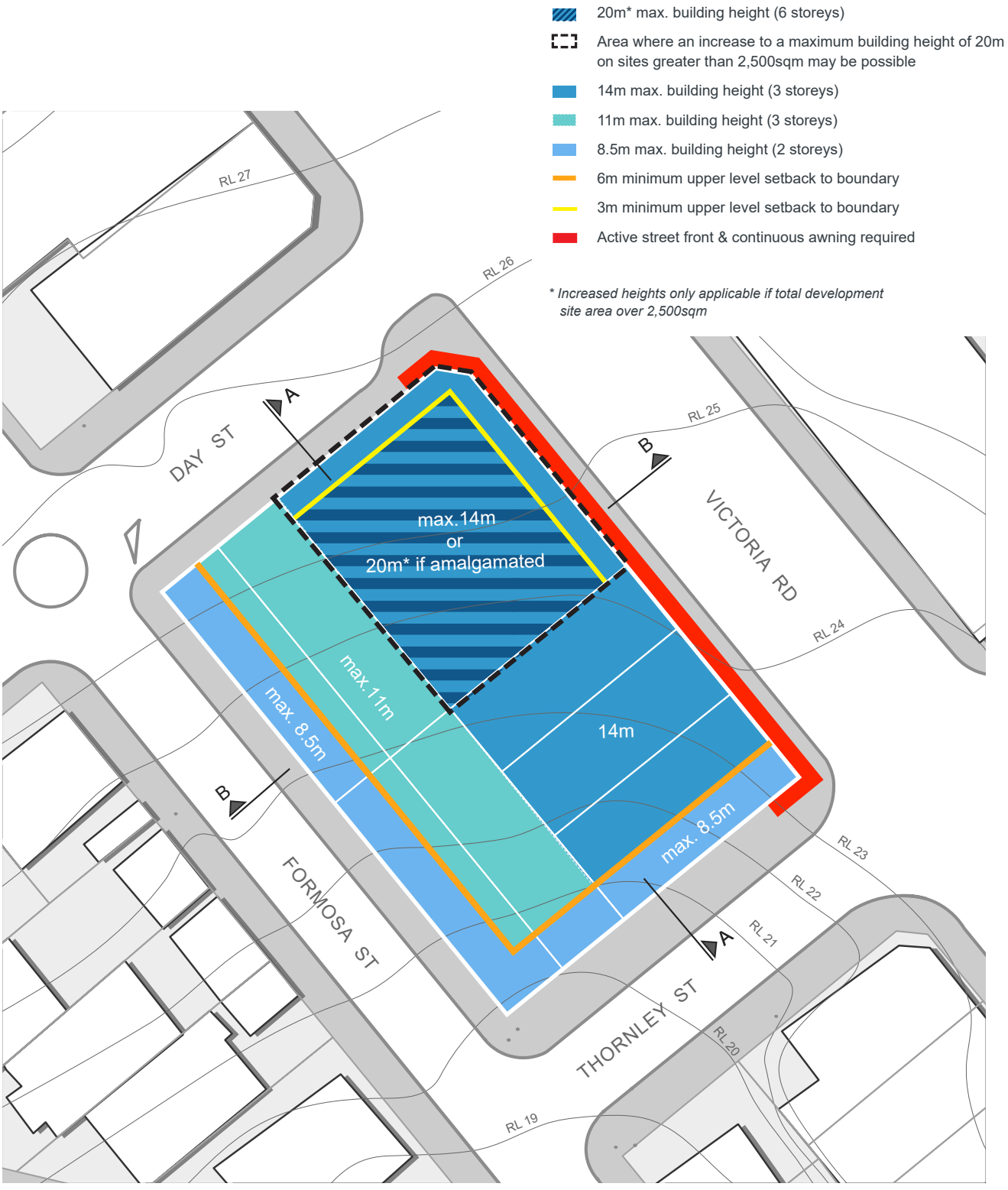


Fig G3.36 Area 'H' development controls plan

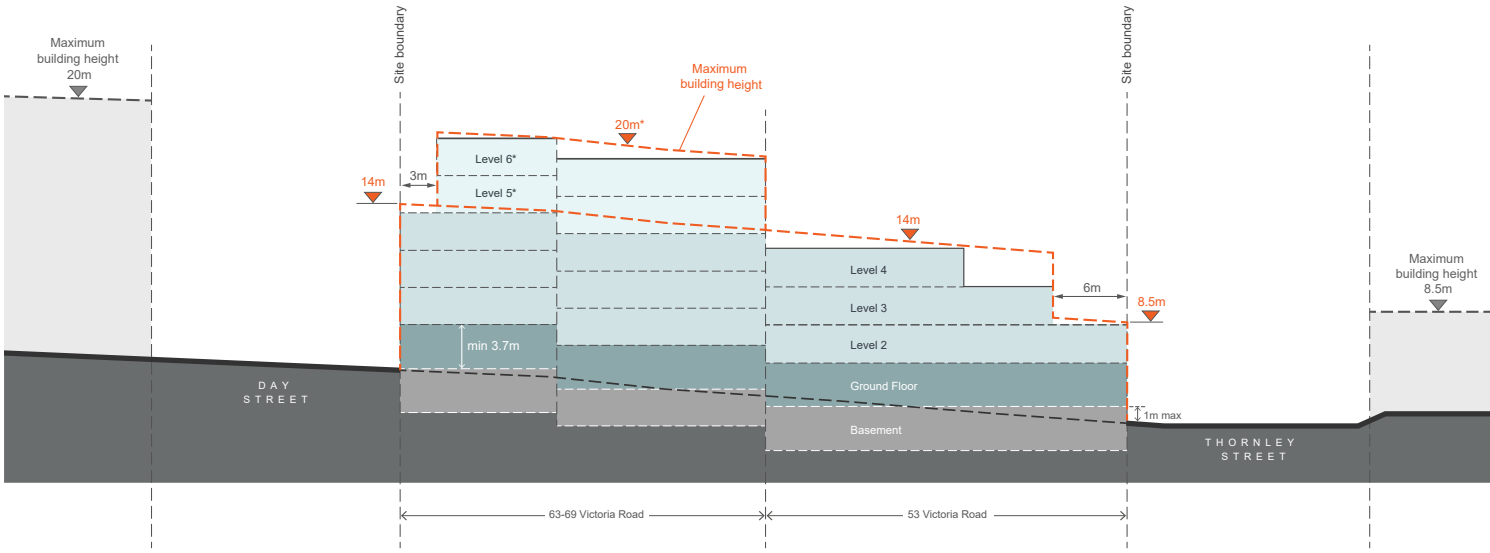


Fig G3.37 Area 'H' Section A

** Increased heights only applicable if total development site area over 2,500sqm*

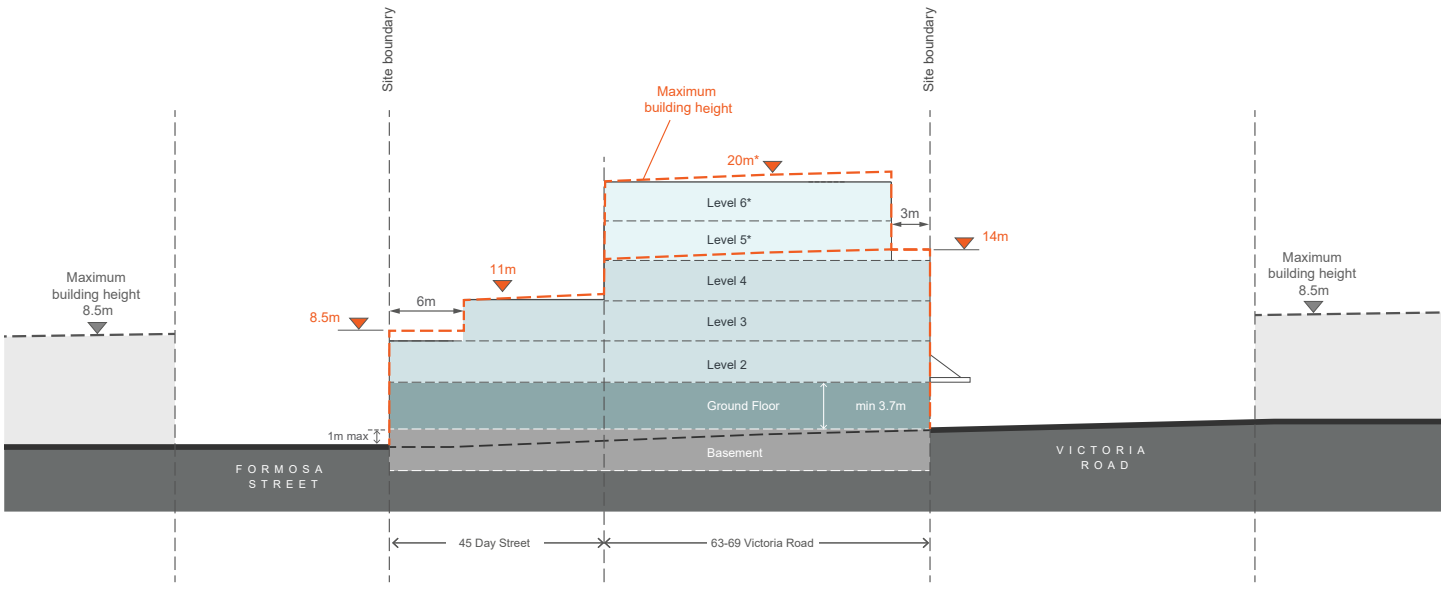


Fig G3.38 Area 'H' Section B

** Increased heights only applicable if total development site area over 2,500sqm*

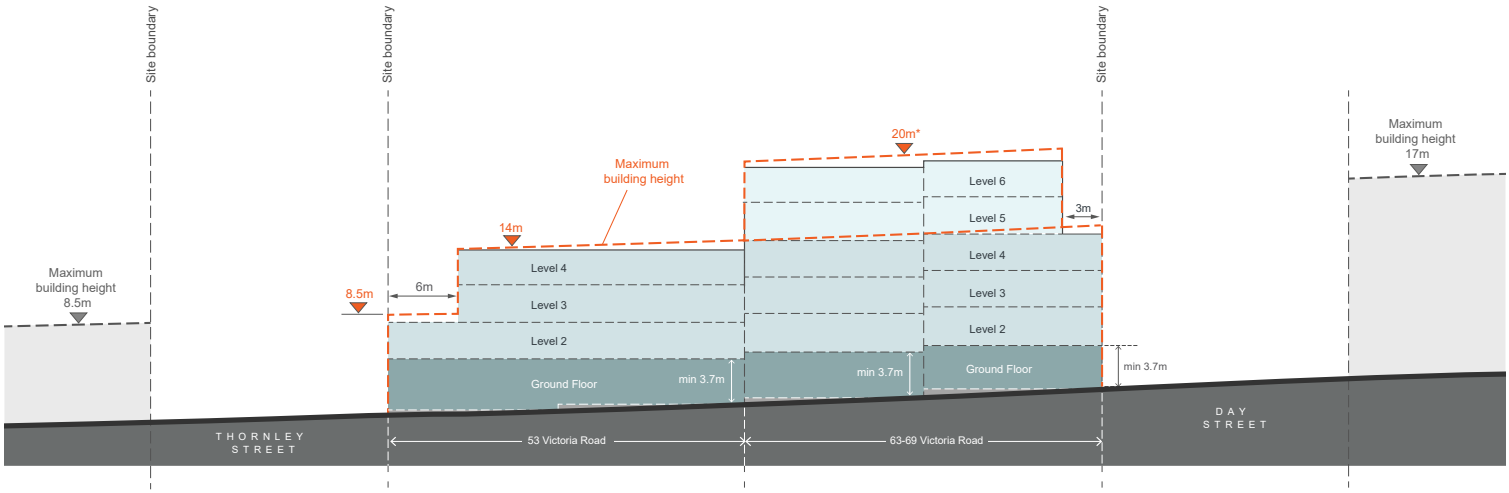


Fig G3.39 Area 'H' Elevation 1 Victoria Road

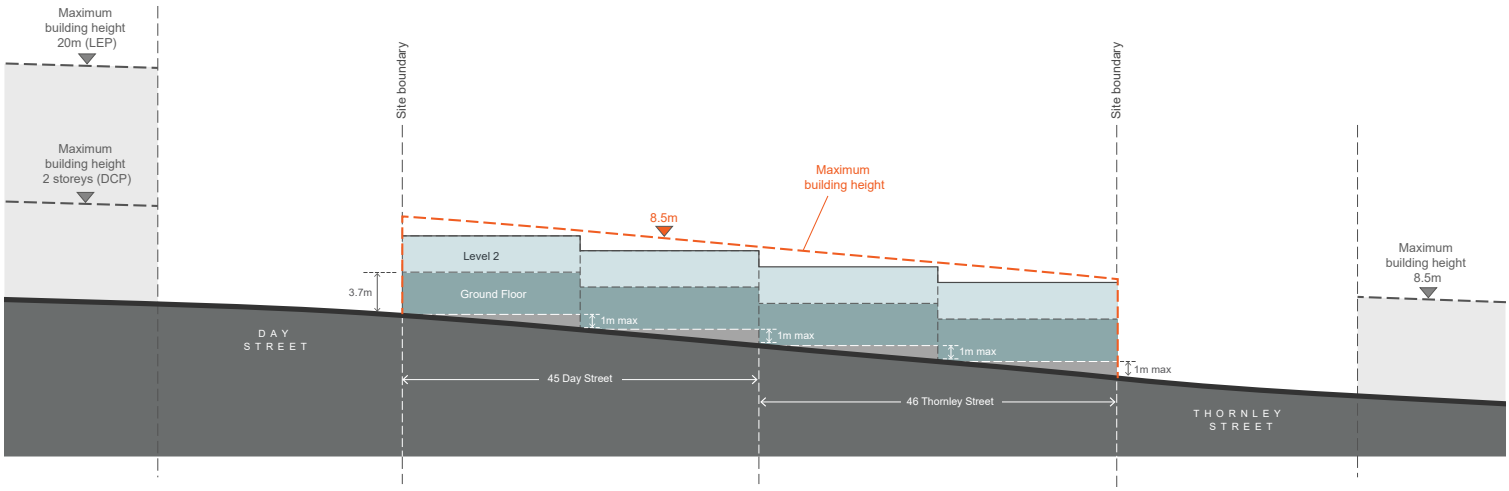


Fig G3.40 Area 'H' Elevation 2 Formosa Street

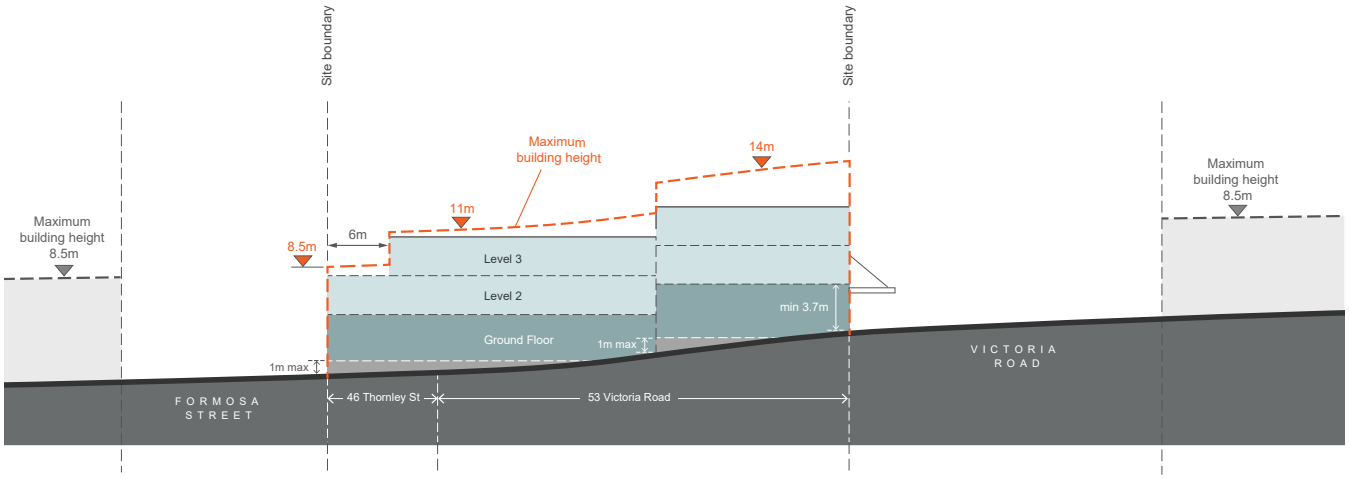


Fig G3.41 Area 'H' Elevation 3 Thornley Street

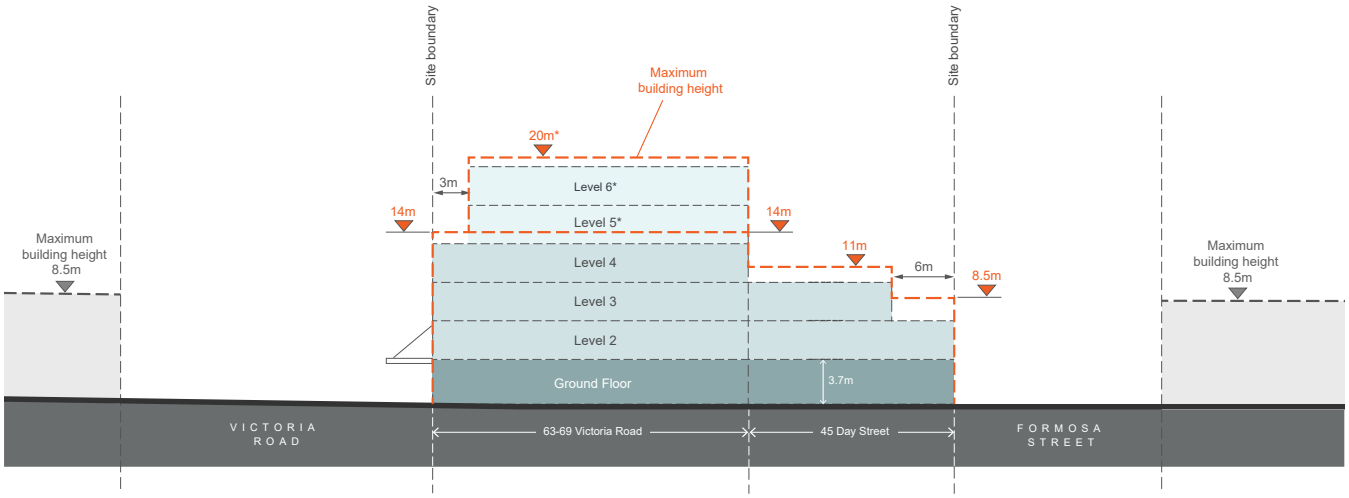
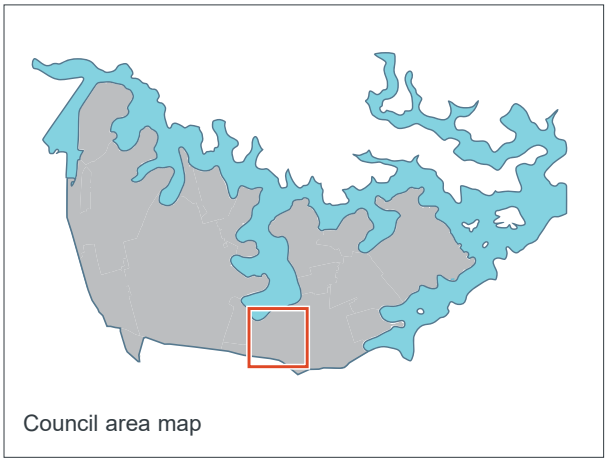


Fig G3.42 Area 'H' Elevation 4 Day Street

** Increased heights only applicable if total development site area over 2,500sqm*

G3.2 Five Dock Town Centre



Council area map

Context

The Five Dock Town Centre is focused along each side of Great North Road between Queens Road and Fairlight Street to the south and Lyons Road to the north. The centre is a commercial, civic, community and residential precinct, with a local neighbourhood emphasis and consists primarily of 2-3 storey buildings.

Variety is created along the streetscape through different building styles which range from Edwardian and inter-war buildings to more recent development including a mixed use building on Garfield Street, which incorporates the Five Dock public library.

The centre starts in the south at the ridge line intersection at Fairlight/Queens Road with Great North Road and extends along Great North Road past First Avenue and Garfield Street with the northern end defined by intersection with the Lyons Road/Lyons Road West. The highest part of the centre occurs to the south of the centre between Kings Road and Second Avenue.

Taller buildings have views to the Sydney CBD and the Sydney Harbour Bridge to the north-east, Hen and Chicken Bay to the north-west and the Blue Mountains to the west. Land use zoning allows mixed use activities, including apartments with retail uses located on the ground floor, along Great North Road.

Land to which this DCP applies

This Part applies to all land shown within the area identified in 'Fig G3.43 Location Plan'.

Desired future character

The Five Dock Town Centre will be a place where new buildings, alterations and additions contribute to the local 'village character' and heritage values through appropriate building forms, setbacks and heights.

Development proposals in the centre are required to provide a written statement that outlines how the following future character performance criteria have been achieved:

- ***Mixed use:*** New developments and alterations add to the centre's function as a vibrant destination for the local community and visitors, by providing a diverse mix of uses including retail, hospitality, residential and recreational facilities.
- ***Well-proportioned streetscapes:*** The bulk and scale of new development and alterations ensures good access to sunlight and natural ventilation is retained along the centre's streets and to areas of public open space. Built form will also create consistent street wall heights, especially along Great North Road, and ensure the bulk and scale steps down towards adjoining residential areas.
- ***Quality built form:*** New buildings and alterations display a high level of architectural design quality with construction methods and materials that are proven to be durable over time, colours that integrate with the context and building articulation that is sympathetic with adjoining built form and the local 'village character'.
- ***Safety and surveillance:*** New buildings and alterations support street level activity by paying particular attention to the design of ground floors, facades, signage and awnings and by providing opportunities for passive surveillance of the public domain from upper levels.
- ***Access and mobility:*** New development supports accessibility of the centre by reinforcing, and where possible adding to, a permeable and attractive network of streets, lanes, footpaths and pedestrian links.

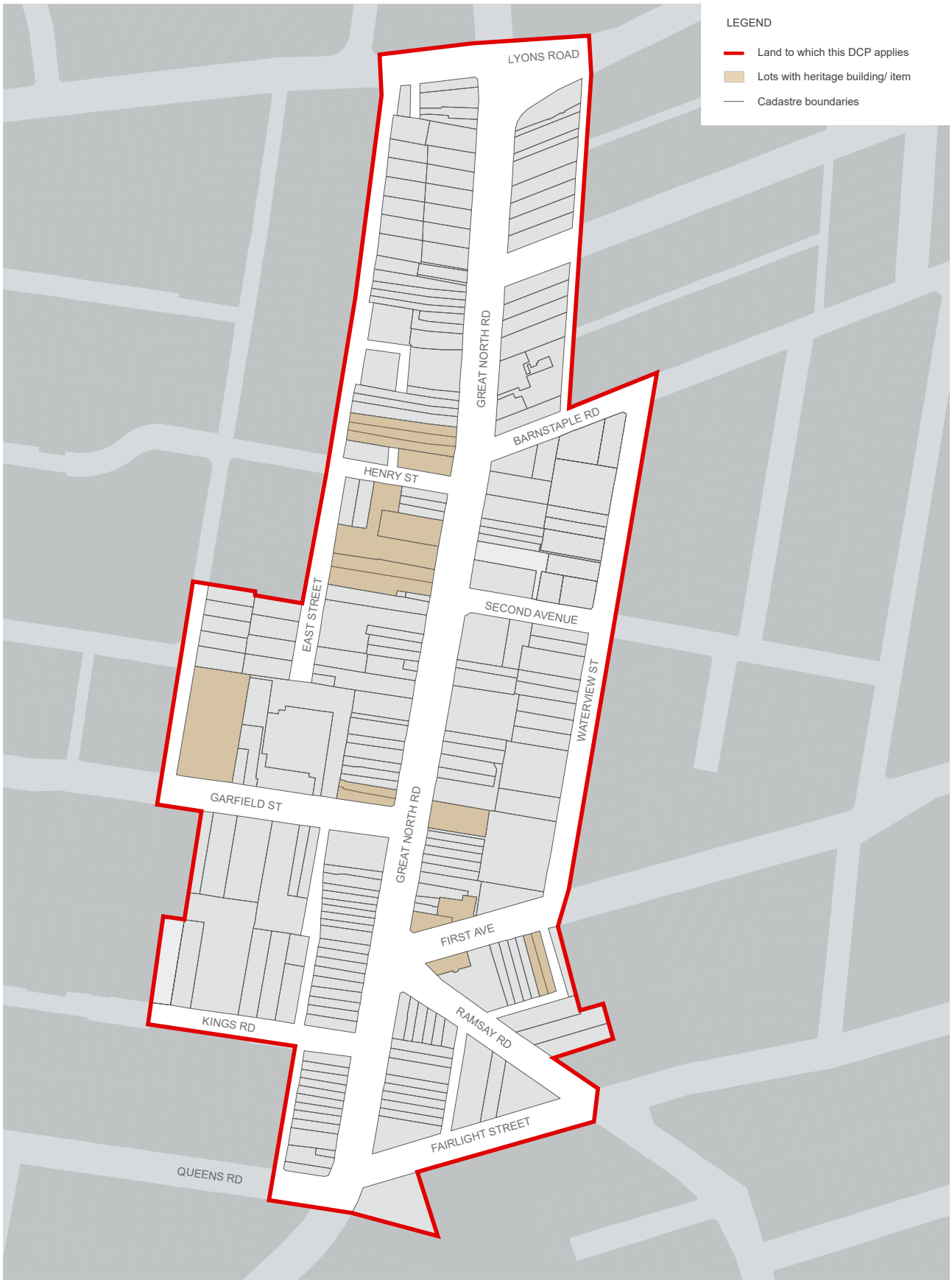


Fig G3.43 Location Plan

Public open space

Objectives

O1. To increase the amount of open space in the centre and to provide more areas for the community to meet, gather and relax.

O2. To ensure areas of open space have access to adequate sunlight especially in mid-winter between 12-2pm.

O3. To ensure new areas of open space are of a sufficient size to accommodate a wide variety of activities.

Controls	
C1.	Provide a Northern Gateway Plaza on the corner of Lyons Road and Great North Road (identified as Public Open Space A in 'Fig G3.45 Public Domain').
C2.	Widen Fred Kelly Place to the north (identified as Public Open Space B in 'Fig G3.45 Public Domain').
C3.	Provide a new town square on the eastern side of Great North Road opposite Fred Kelly Place (identified as Public Open Space C in 'Fig G3.45 Public Domain').

New laneways

Objectives

O4. To improve east west access and connectivity, making it easier and more attractive to cycle and walk through the centre.

O5. To attract people to the new town square and create a pleasant safe environment around the square.

O6. To facilitate car parking exits and entries for buildings fronting Great North Road.

O7. To provide the opportunity to service businesses on Great North Road and limit service vehicle movements along residential streets, e.g. along Waterview Street.

O8. To improve existing and create new connections between the Five Dock Public School (West Street) and Great North Road.

Controls	
C4.	Provide a network of new laneways in the block bounded by First Avenue, Second Avenue, Waterview Street and Great North Road.
C5.	Provide a new laneway between East Street and West Street along the alignment of Lancelot Street.
C6.	Provide a new laneway between Barnstaple Road and Second Avenue.
C7.	All laneways are to be a minimum of six (6) to nine (9) metres wide. Where a laneway is less than nine (9) metres, the design of the laneway must demonstrate how vehicular and pedestrian traffic can be managed to avoid conflicts and safety issues.
C8.	New development between Barnstaple Road and Second Avenue is not permitted to provide vehicular access and servicing off Great North Road, Waterview Street, Barnstaple Road or Second Avenue. All vehicular access and servicing must be provided off the proposed laneway.

Pedestrian connections

Objectives

O9. To improve east-west access, making it easier to cycle and walk through the centre.

O10. To create new access routes that support pedestrian activity along Great North Road.

Controls	
C9.	Provide a new mid-block link between Great North Road and East Street within the hatched area identified in 'Fig G3.44 Access Network and Hierarchy'.
C10.	Provide a new mid-block link between Garfield Street and Kings Road within the hatched area identified in'Fig G3.44 Access Network and Hierarchy'.
C11.	Widen the existing pedestrian link to the east of Great North Road opposite Garfield Street.
C12.	All pedestrian links are to be a minimum of four (4) metres wide.
C13.	All links are to be activated by retail, civic and/or commercial uses.
C14.	All links are to be naturally lit and ventilated, and well-lit after hours.
C15.	All links are to be publicly accessible between at least 6am and 8pm daily, however 24-hour public access is preferred.
C16.	All links are to follow Safer-by-Design (or CPTED) principles (i.e. clear lines of sight).

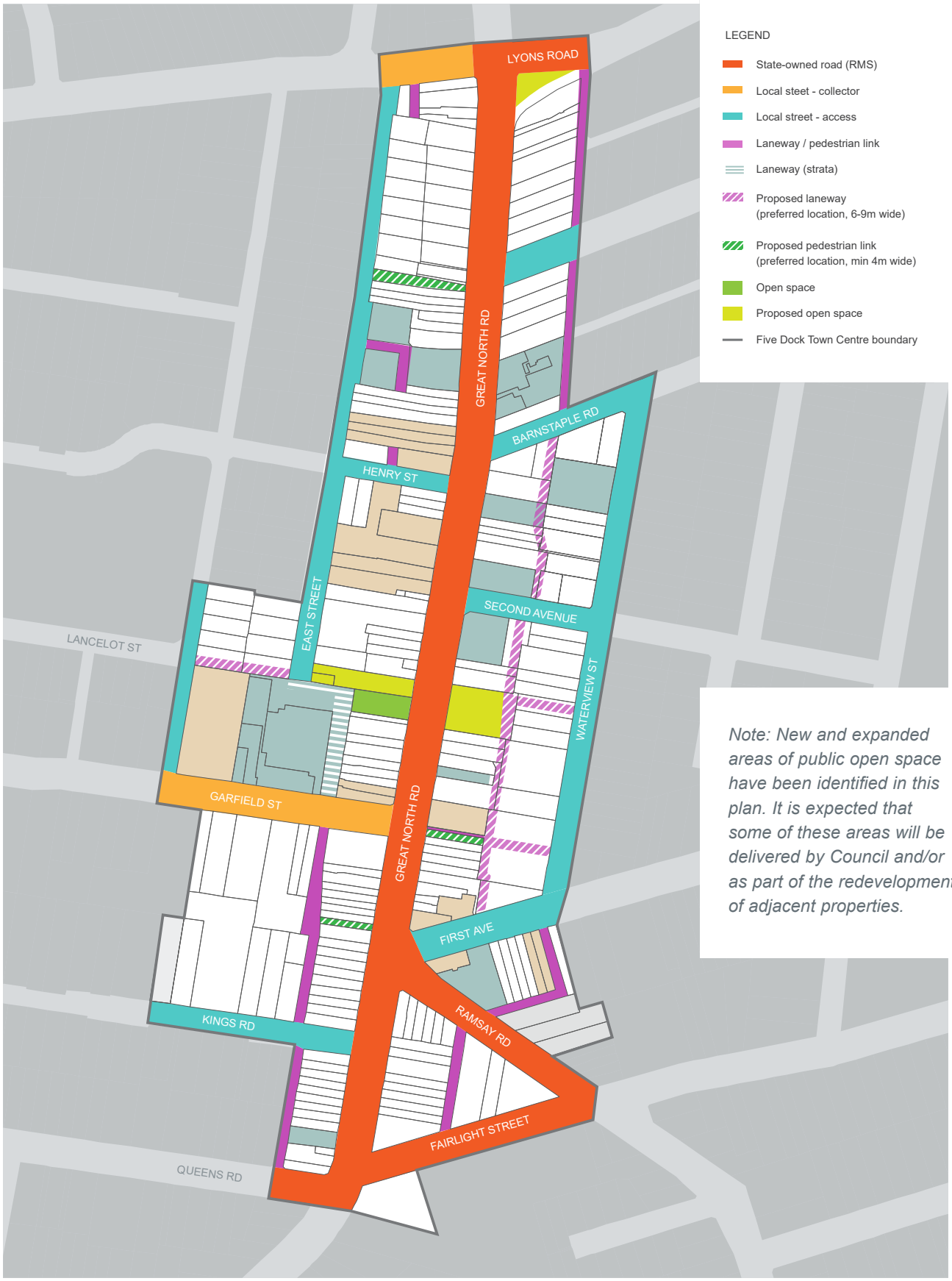


Fig G3.44 Access Network and Hierarchy

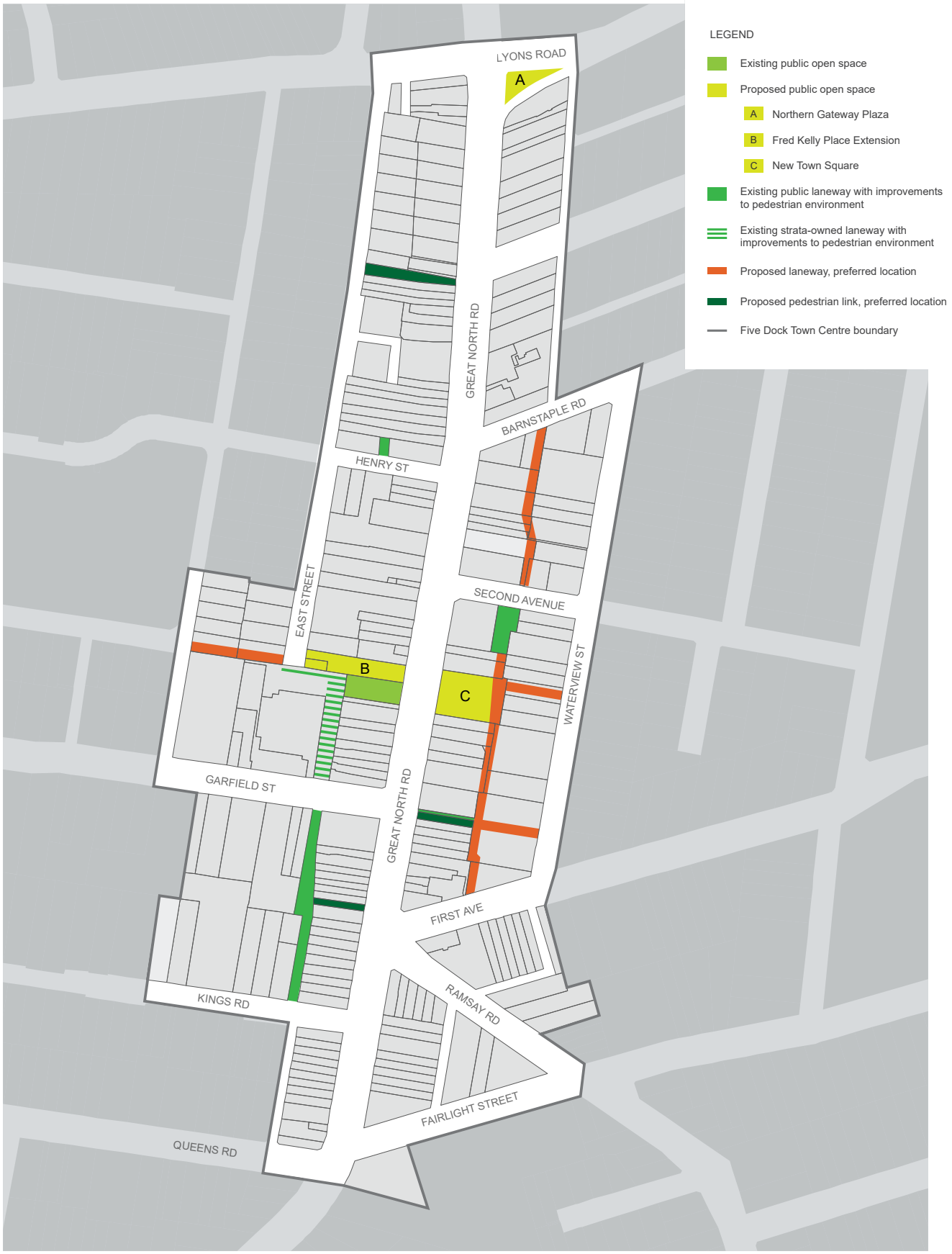


Fig G3.45 Public Domain

Built Form

The built form controls shape the form of new development in the centre, establishing the location, height and shape of new buildings. The controls also consider visual privacy, sunlight access to adjoining properties, usability of private open spaces and pedestrian scale and amenity along the street.

Objectives

O11. To encourage investment in the town centre and create attractive places to live, shop and recreate.

O12. To ensure adequate sunlight is available for all buildings, streets and public open spaces.

O13. To promote opportunities for catalyst and landmark developments in appropriate locations.

O14. To ensure the ground floor levels along key streets are appropriate for retail uses and that ground level uses in the remaining streets are adaptable over time to a wide range of uses.

O15. To ensure the urban grain, built form and palette of materials used in the design of new buildings respond to the “fine grain” character of the surrounding area.

O16. To minimise the visual impact of above ground car parking and encourage car parking that is adaptable to other uses in the future.

O17. To enhance the existing streetscape and ensure appropriate development scale and interface near heritage buildings and residential areas.

High-quality residential development

Objectives

O18. To position the Five Dock Town Centre as an attractive place to live.

Controls	
C17.	Recommendations within the SEPP 65 (State Environmental Planning Policy No 65 - Design Quality of Residential Apartment Development) and the accompanying Apartment Design Guide are adopted by this DCP for apartment developments.

Landscaping and setbacks

Objectives

O19. To ensure that the amenity of residents, workers and visitors to the centre is enhanced by high quality landscaping.

O20. To create appropriate landscaping for private and common open space areas.

O21. To soften and screen the interface between buildings in the centre and adjoining residential areas.

O22. To increase building separation along East Street between Henry Street and Lyons Road West.

O23. To encourage the landscape character of West Street to continue past new development and up to Garfield Street.

Controls	
C18.	Landscape setbacks are to be in accordance with 'Fig G3.46 Primary Setbacks'
C19.	A landscape plan prepared by a qualified Landscape Architect is to be submitted with the development application that shows levels adjacent to the public domain; planting schedules; and type and detail of paving, fencing and other details of external areas.
C20.	The area within the minimum landscape setback is to be a deep soil zone, i.e. where there are no structures below.
C21.	For residential apartment development common open space is to be provided that occupies a minimum of 25% of the site area and has a minimum dimension of 3.0m. The common open space may be located on an elevated garden (i.e. above car parking) or on roof tops provided the area provides for the recreational and amenity needs of residents.
C22.	Landscaping is to give preference to species with low water needs, including native plant species and select and position trees and shrubs to control sun and winds and provide privacy.

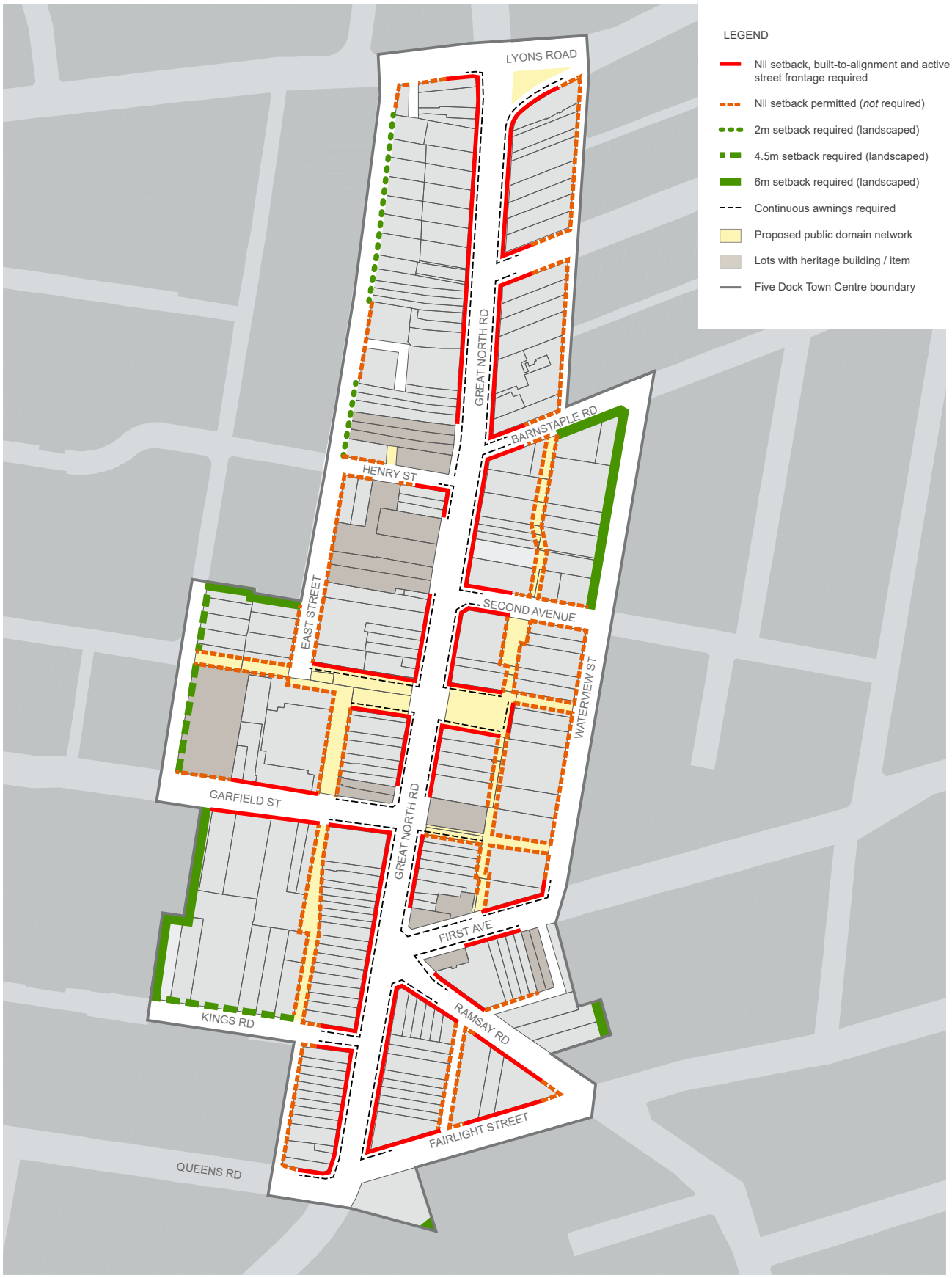


Fig G3.46 Primary Setbacks

Building setbacks

For the purpose of this section of the DCP, the primary building setback is the setback between the public domain/street boundary and the building alignment, and the secondary building setback is the additional setback above the street wall height.

Objectives

O24. To allow redevelopment and gradual transition to higher densities while at the same time respecting heritage buildings and the 'village character' of the centre.

O25. To locate balconies and terraces along streets and laneways where they can provide passive surveillance (and increased safety) of streets and public open spaces.

O26. To reduce potential negative impacts of development such as overshadowing of streets and public open spaces.

O27. To minimise negative impacts of development on existing development in the town centre and surrounding the town centre.

Controls	
C23.	Building setbacks are to be in accordance with 'Fig G3.46 Primary Setbacks', 'Fig G3.47 Secondary (Upper Level) Setbacks', 'Fig G3.49 Maximum Street Wall Heights', 'Fig G3.51 Example street frontage section showing maximum potential building height' and 'Fig G3.52 Maximum Building Height Zones' and any additional controls set out below.
C24.	Any additional floors above four storeys have a minimum setback of 6.0m unless otherwise shown in 'Fig G3.47 Secondary (Upper Level) Setbacks'.
C25.	Where possible along 6.0m wide laneways, increase setbacks above two (2) storeys and/or increase ground level setbacks to improve pedestrian amenity.

Active frontages

Active frontages and uses contribute to visual and physical activity in the centre and include community and civic facilities, recreation and leisure facilities and shops, restaurants and cafes.

Objectives

O28. To promote activity and interest along key streets in the centre, in particular along Great North Road

O29. To enhance the commercial viability and function of the centre and compliment current retail, commercial, entertainment and community uses.

O30. To enhance safety and security in the centre.

Controls	
C26.	Provide ground level active uses where indicated on 'Fig G3.46 Primary Setbacks'.
C27.	Residential entries and foyers are permitted along active street frontages but are not to dominate or compromise the commercial viability of the street.
C28.	Where required, active uses must be at least 10.0m deep.
C29.	A continuous awning is to be provided where indicated on 'Fig G3.46 Primary Setbacks', and meet the requirements of Section 'G2.2 Building design and appearance'.
C30.	Vehicle access points are not permitted along active street frontages. Where rear or side access is not possible, development without parking will be considered.

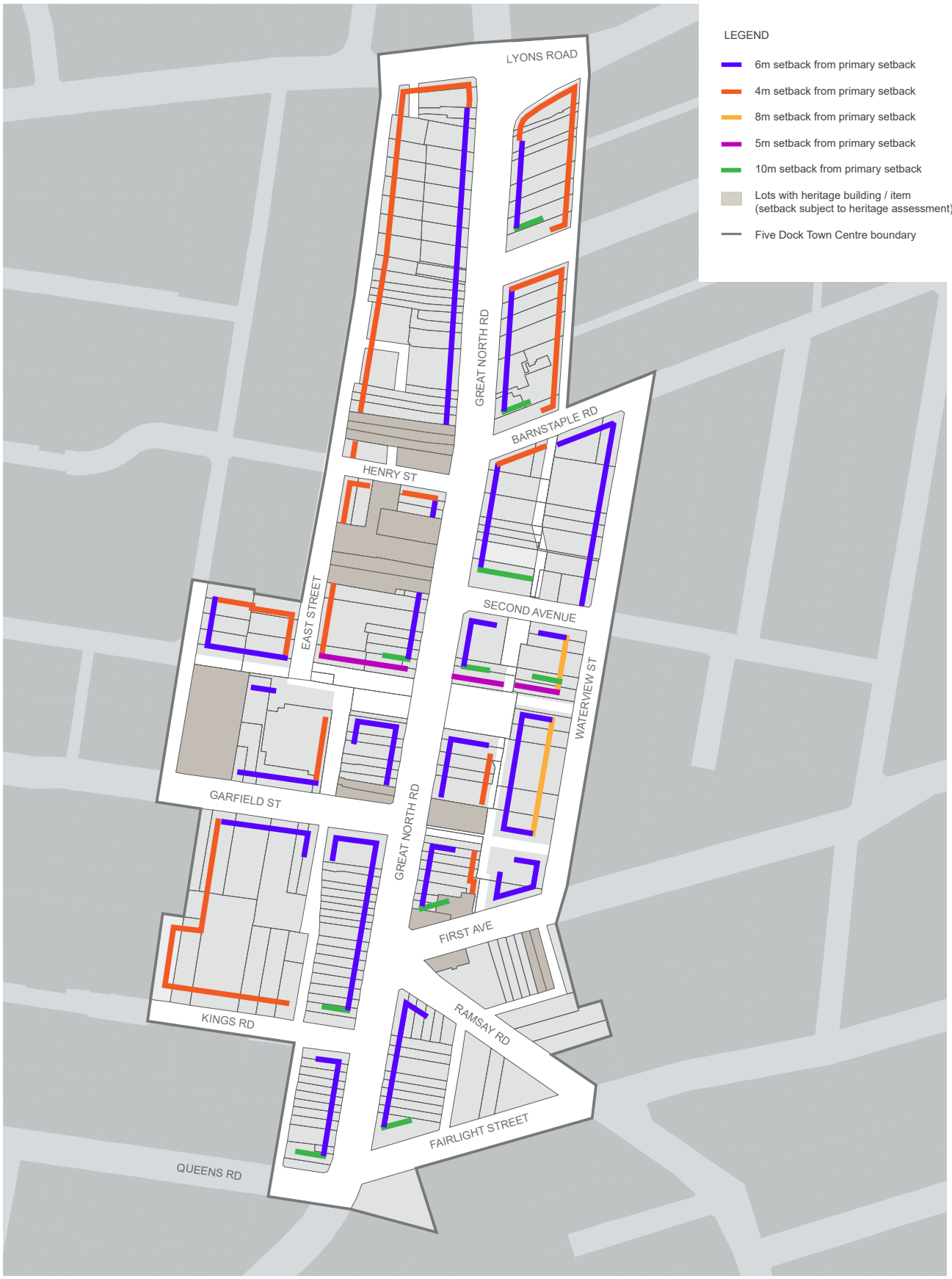


Fig G3.47 Secondary (Upper Level) Setbacks

Ground floor residential

Objectives

O31. To ensure residential dwellings on the ground level have a high level of amenity and create a positive interface with the street.

Controls	
C31.	Residential uses will only be permitted on the ground floor within the R3 Medium Density Residential zone.
C32.	The floor to ceiling height of ground level residential is to meet the requirements of the “Adaptable” category of 'Table G-A Minimum Floor Heights'.
C33.	Ground floor private open space on the street frontage is to be designed as a private terrace a minimum of 0.4m and a maximum of 1.0m above the adjacent public domain level.
C34.	Dwellings on the ground floor facing the street are to have individual entries from the street.

Site amalgamation and isolated sites

Site amalgamations will result in a more efficient built form. This is particularly true of corner sites which could be integrated with adjoining land to both maximise development potential and also provide enhanced amenity for building occupants and for users of public, communal and private open space.

Objectives

O32. To encourage site consolidation of allotments for development in order to promote the efficient use of land.

O33. To avoid development that may create isolated sites.

O34. To support more efficient car parking and servicing and reduced number of driveways.

O35. To support the provision of new and/or improved public spaces as identified in 'Fig G3.45 Public Domain'.

O36. To avoid the creation of isolated sites that may be incapable of being developed in a manner that responds to the site’s context and characteristics and that maintains a satisfactory level of amenity.

Controls	
C35.	Provide new or improved connections as identified in 'Fig G3.45 Public Domain'.
C36.	Where development may create an isolated site, the applicant is required to demonstrate negotiations with property owners to include the site commenced early, well prior to the lodgement of the development application. Written evidence of negotiations is to be provided, including reasonable offers based on independent valuation and that take into account expenses likely to be incurred.
C37.	Where development may create an isolated site, the applicant must demonstrate with a schematic design that the isolated site can be redeveloped under the current planning controls. This must demonstrate the likely impacts between the development and the isolated site such as solar access, separation distances and privacy.
C38.	Site amalgamation should seek to minimise the number of driveway crossings provided to the street.

Fine grain frontages

Objectives

O37. To ensure development of existing small and/or narrow lots prevalent in the centre can still occur.

O38. To ensure a diversity of retail shop size.

O39. To encourage narrow frontage, fine grain retail in the centre.

Controls	
C39.	On narrow sites less than 12.0m wide alternative methods to address car parking, including car share, off site provision and/or exemptions are encouraged.
C40.	Developments are to create retail frontages of less than 8.0m in width or be designed so that larger frontages can be divided into smaller units in the future.
C41.	Reinforce the fine grain of the centre by creating smaller shop fronts or by providing articulation so that the flexibility exists to create narrower shops (5-7m) in the future.

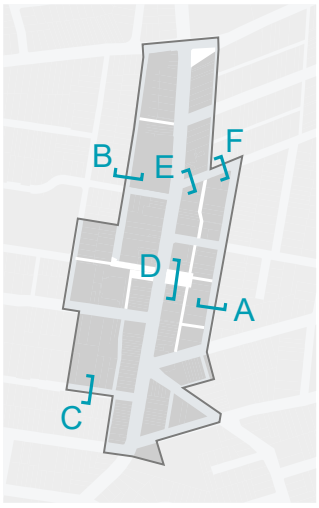
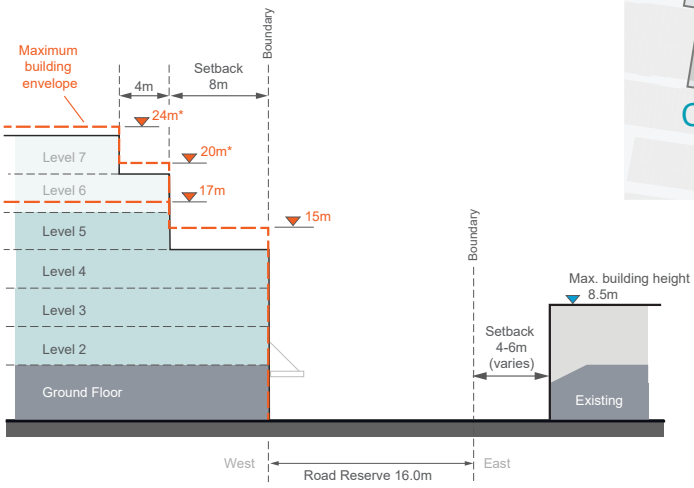


Fig G3.48 Built form sections

Section A

Interface Waterview Street

Along Waterview Street the street wall height is four (4) storeys. Active street frontages, providing both residential and non-residential uses at street level are encouraged.



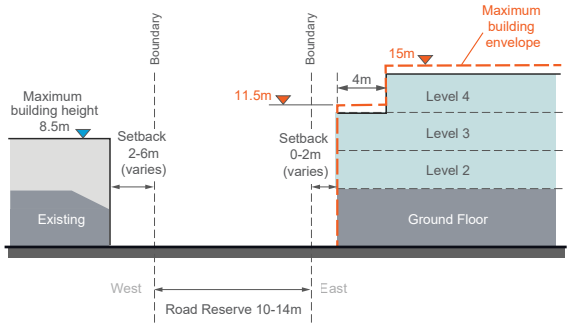
Waterview Street

*Level 6 and 7 only where permitted

Section B

Interface East Street

East Street has a landscape setback of 0-2.0m. The street wall is three (3) storeys with an additional setback of 4.0m to the fourth (4) storey. Residential uses at street level are encouraged along this street.

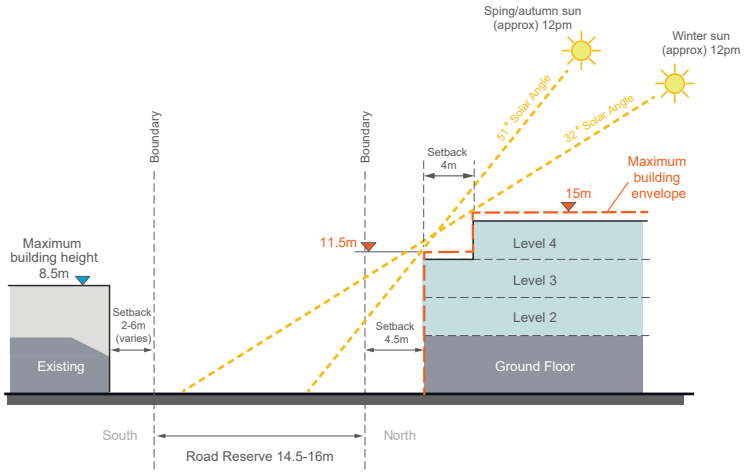


East Street

Section C

Interface Kings Road

Kings Road has a landscaped setback of 4.5m. The street wall height is three (3) storeys with a maximum building height of 15.0m.

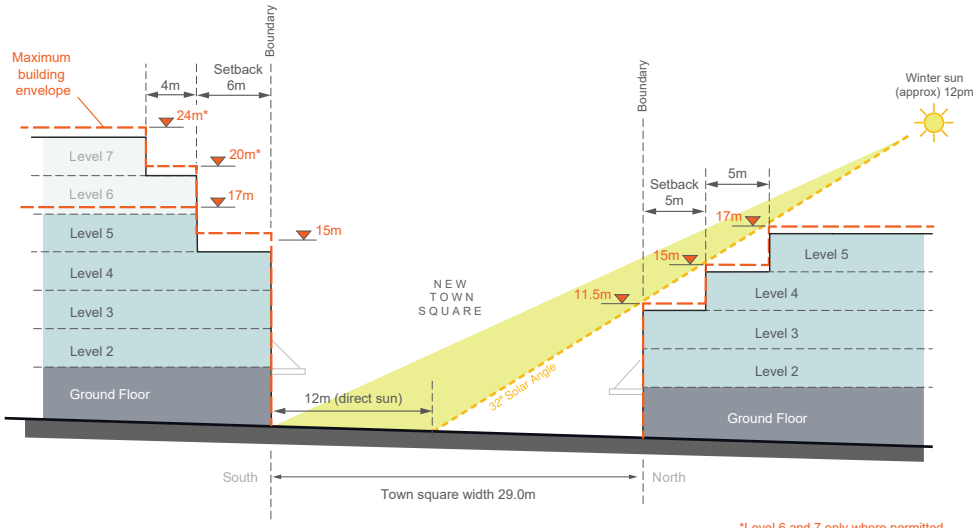


Kings Road

Section D

Interface New Town Square

In order to allow for direct sunlight in the new town square, buildings on the north side of the square are required to have a three (3) storey street wall and a 5m setback for each level above.



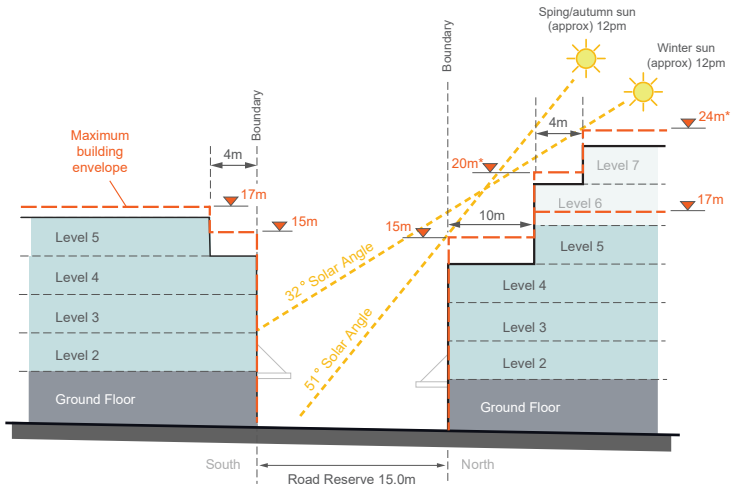
New town square

*Level 6 and 7 only where permitted

Section E

Interface Barnstaple Road (West)

Along Barnstaple Road to the west of the proposed laneway, the street wall height on both sides of the street is four (4) storeys. The upper level setbacks of built form to the north facilitates solar access to Barnstaple Road.



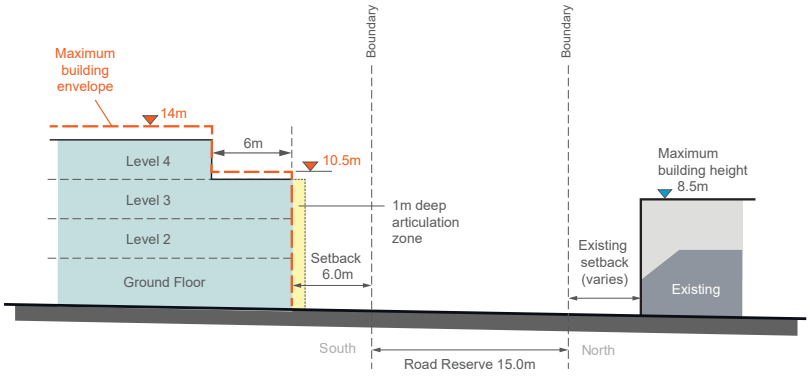
Barnstaple Road

*Level 6 and 7 only where permitted

Section F

Interface Barnstaple Road (East)

Along Barnstaple Road to the east of the proposed laneway, the maximum street wall height on the southern side of the street is three (3) storeys.



Barnstaple Road

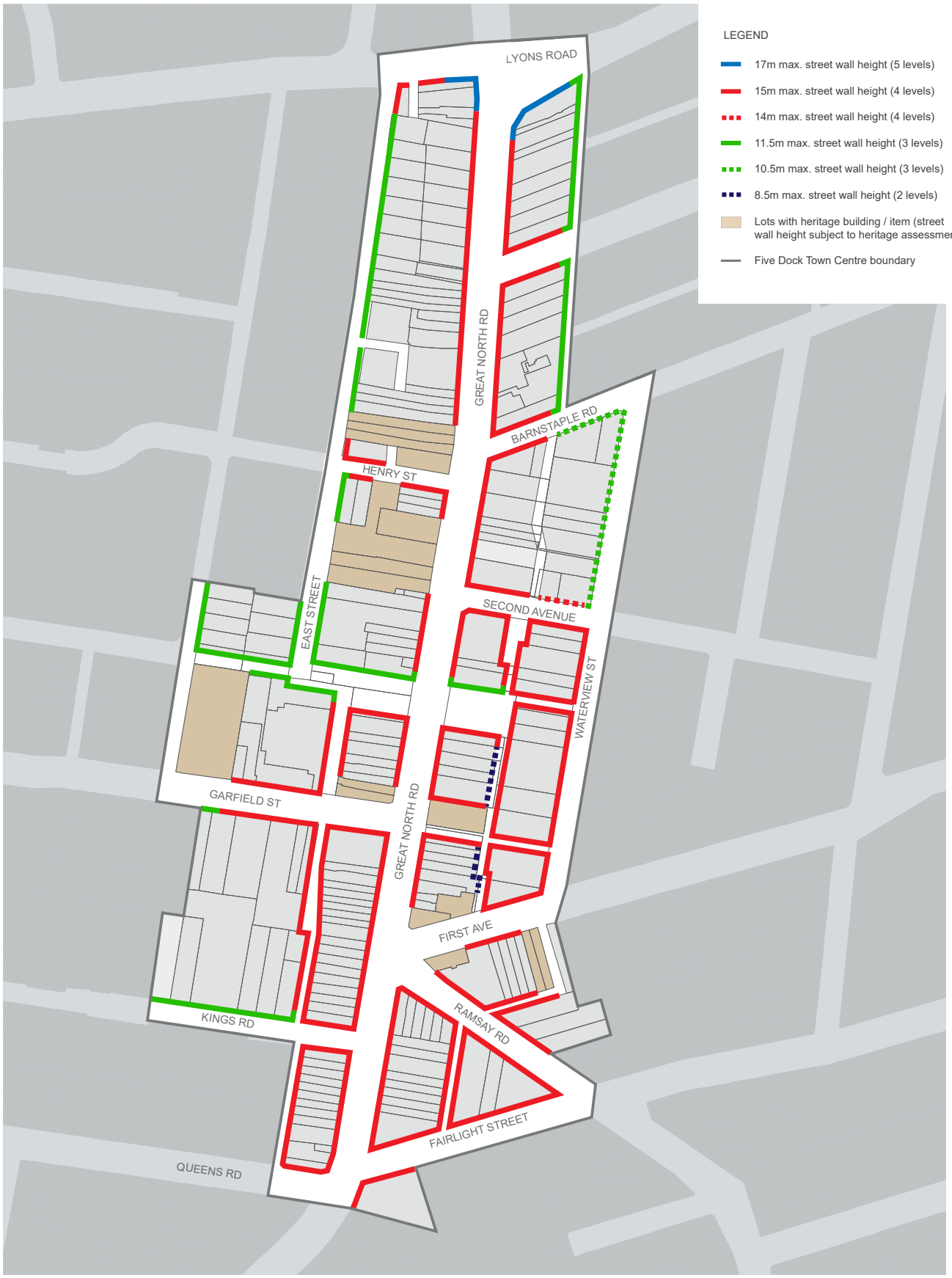


Fig G3.49 Maximum Street Wall Heights

Build to alignment

Objectives

O40. To encourage a consistent street alignment and street wall height along key streets in the centre.

O41. To ensure corner buildings, located where two streets meet, provide a continuous street edge and front both streets.

O42. To ensure new buildings provide a well-defined, active edge to areas of public open space.

Controls	
C42.	Building setbacks are to be in accordance with 'Fig G3.46 Primary Setbacks', 'Fig G3.47 Secondary (Upper Level) Setbacks', 'Fig G3.49 Maximum Street Wall Heights' and 'Fig G3.51 Example street frontage section showing maximum potential building height'; and any additional controls set out below.
C43.	The nil setback applies only to the first four (4) storeys of development, unless otherwise indicated in 'Fig G3.47 Secondary (Upper Level) Setbacks'.

Building heights

Objective

O43. To ensure adequate sunlight is available for all buildings, streets and public open spaces.

O44. To ensure the ground floor levels along key streets in the centre are appropriate for retail uses and that ground levels in the remaining streets are adaptable over time to a wide range of uses.

O45. To encourage redevelopment while at the same time respecting heritage buildings and the “village character” of the centre.

Controls	
C44.	Building heights are to be in accordance with 'Fig G3.46 Primary Setbacks', 'Fig G3.47 Secondary (Upper Level) Setbacks', 'Fig G3.48 Built form sections', 'Fig G3.49 Maximum Street Wall Heights', 'Fig G3.51 Example street frontage section showing maximum potential building height' and 'Fig G3.52 Maximum Building Height Zones'; and any additional controls set out below.
C45.	Development is to be consistent with the minimum floor to ceiling heights for the specified uses within the centre shown in 'Table G-A Minimum Floor Heights'.
C46.	For development sites to the north of Fred Kelly Place and the new town square the maximum building height is to be in accordance with 'Fig G3.47 Secondary (Upper Level) Setbacks' and 'Fig G3.52 Maximum Building Height Zones'; and no incursions (including plant, balcony rails etc.) are to be permitted.
C47.	The finished floor level of the ground floor above the footpath level is to be no greater than 1.0 metre for residential uses and 0.4 metre for retail and commercial uses.
C48.	Where active uses are specified on the ground floor as identified in 'Fig G3.46 Primary Setbacks', the minimum floor to ceiling height is to comply with the category of “Retail - restaurant/cafe” in 'Table G-A Minimum Floor Heights'.
C49.	Where active uses are not specified on the ground floor, the minimum floor to ceiling height is to comply with the category of “Retail - general" in 'Table G-A Minimum Floor Heights'.
C50.	Building heights are to conform with 'Table G-B Building Heights', which shows the relationship between the height of building in storeys and the height of the building in metres.
C51.	New buildings are to have a scale that is visually compatible with adjacent buildings and heritage items. This may require the height of new development to be lower than the maximum height permitted.
C52.	The upper-most level is to be designed to reduce the visual bulk and scale of the building. Options to achieve this include increased setbacks and/or the use of dark colours and roof elements that create deep shadows.

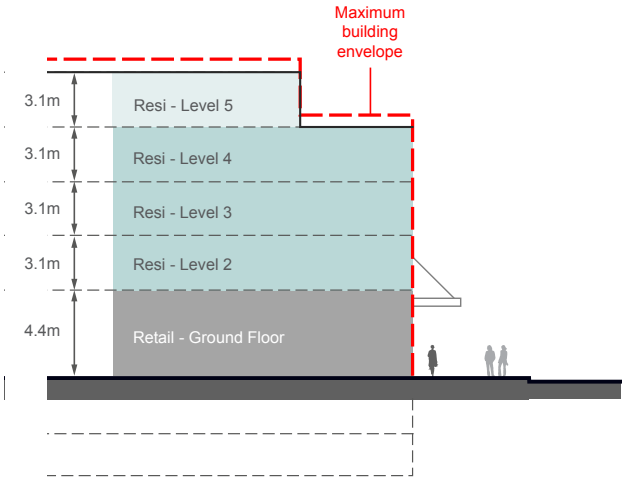
Table G-A Minimum Floor Heights

Use	Floor to ceiling height in metres (min)	Approx. floor to floor height in metres (min)
Retail - general	3.3m	3.7m
Retail - restaurant /cafe	4.0m	4.4m
Commercial	3.0m	3.6m
Adaptable	3.3m	3.7m
Residential	2.7m	3.1m
Community	3.0m	3.6m

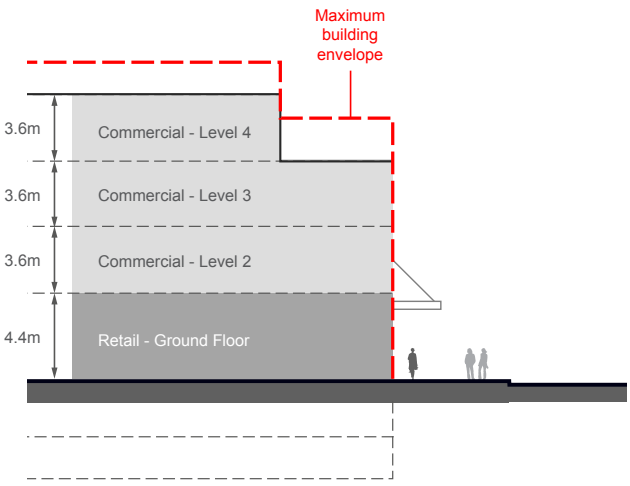
Table G-B Building Heights

Building height (in metres)	Building height*
24.0m	7 storeys
20.0m	6 storeys
17.0m	5 storeys
15.0m	4 storeys
11.5m	3 storeys
8.5m	2 storeys

** The number of storeys possible within any maximum building height is dependent on the use (refer to Fig G3.50)*

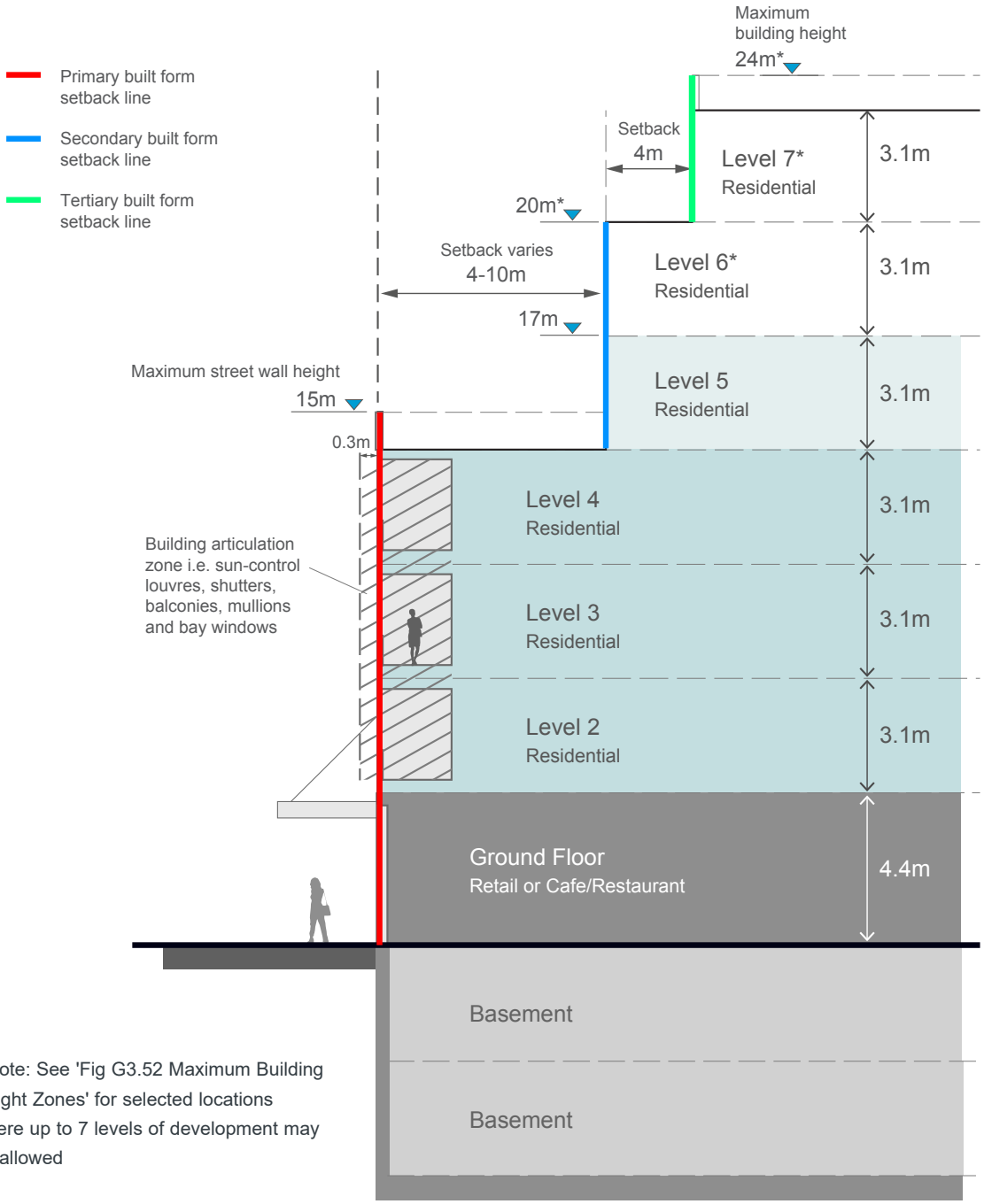


Option: Ground floor retail, upper levels residential



Option: Ground floor retail, upper levels commercial

Fig G3.50 Alternate uses within the building envelope



* Note: See 'Fig G3.52 Maximum Building Height Zones' for selected locations where up to 7 levels of development may be allowed

Fig G3.51 Example street frontage section showing maximum potential building height

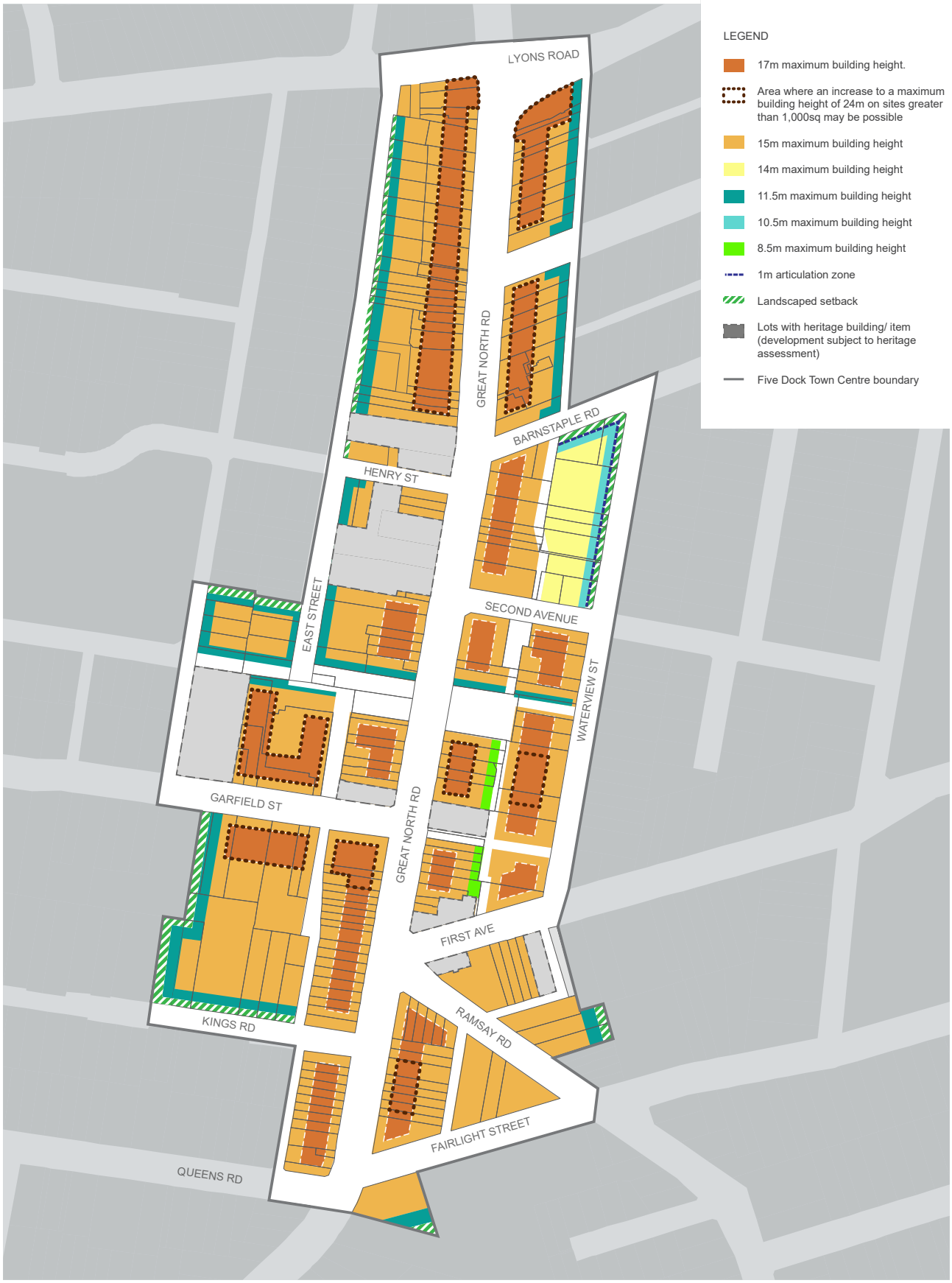
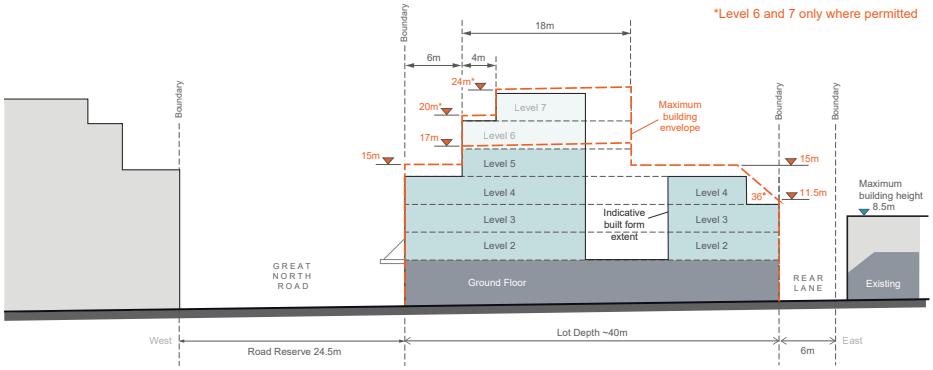


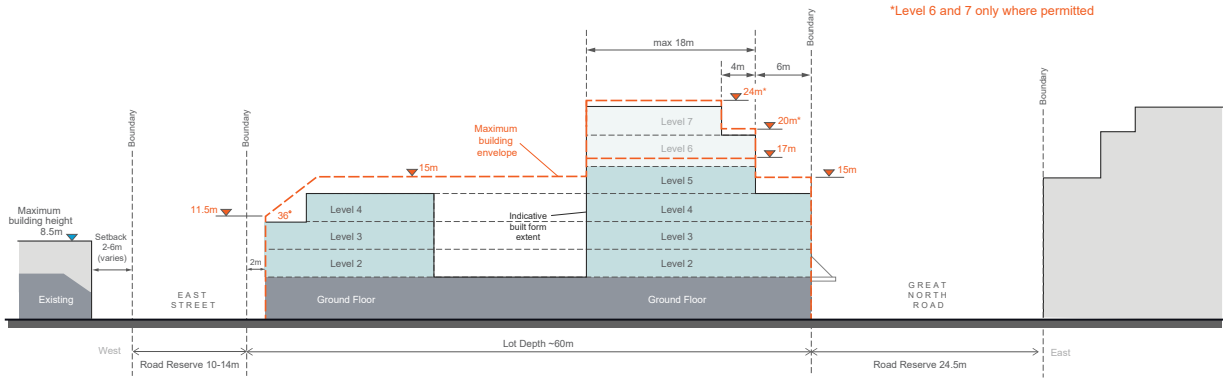
Fig G3.52 Maximum Building Height Zones

Fig G3.53 Building envelope sections

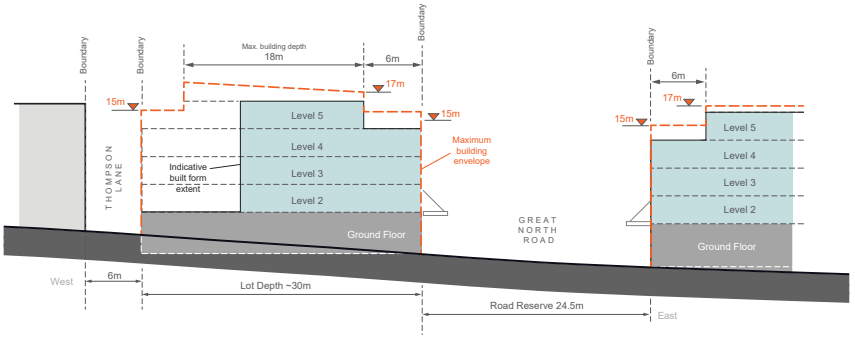




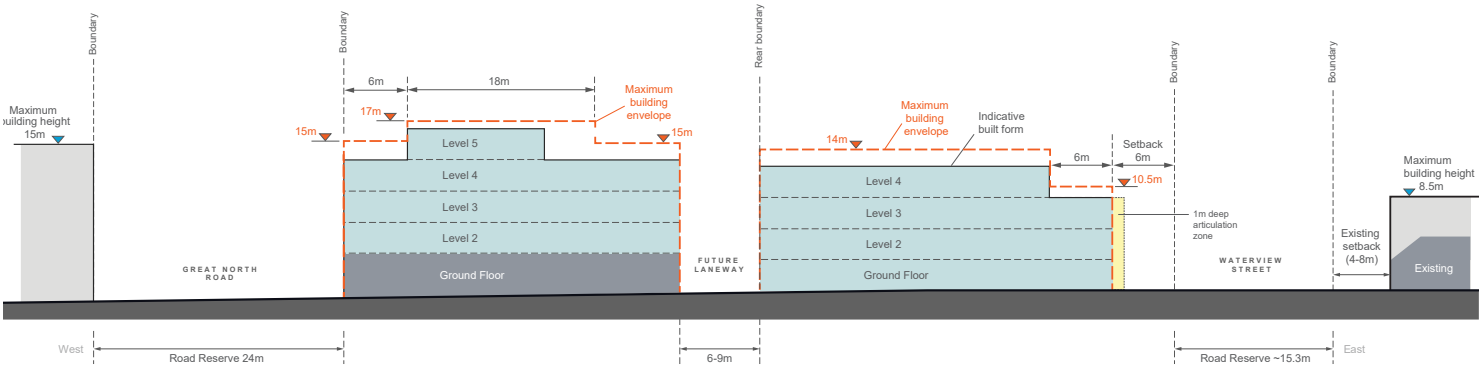
Section G



Section H



Section J



Section K

Facades

Objectives

O46. Buildings are to provide facade articulation and variation to reduce visual bulk and create shadows and texture along the facade. This can include variations in window and/or balcony size and treatment, a design with a well-defined base, middle and top, the use of horizontal and/or vertical elements and variations in setback.

Controls	
C53.	Balconies are to support a balance of solid and void treatment in the composition of the facade. A facade which is dominated by a repetitive balcony design is to be avoided.
C54.	External walls are to include variations in colour and the types of materials used in order to articulate different parts of a building facade and reduce the overall bulk and scale.
C55.	External walls are to be constructed of high quality and durable materials and finishes with 'self-cleaning' attributes such as face brickwork, rendered brickwork, stone, concrete and glass. Materials and finishes with high maintenance costs, and those susceptible to degradation or corrosion are to be avoided.
C56.	A 1m deep facade 'articulation zone' for architectural expression and elements (e.g. balconies) is permitted within the primary setback zone along Waterview Street and Barnstaple Road as identified in 'Fig G3.52 Maximum Building Height Zones'. The maximum length of straight wall, without articulation such as a balcony or return, is 8m.



Example of balconies with a balance of solid and void in the facade composition and treatment

Heritage

Objective

O47. To protect buildings and spaces of heritage significance.

O48. To ensure that new development on the same site as or adjacent to a heritage item responds sensitively to its heritage significance.

Controls	
C57.	New buildings on the same site as or adjoining a heritage item will need to consider the impact on heritage when determining: • the appropriate alignment and street frontage heights; • setbacks above street frontage heights; • appropriate materials and finishes selection; • the design and articulation of the facade; and • appropriate side and rear setbacks.
C58.	Prior to the demolition of the former heritage item at 39 Waterview Street, Five Dock (Lot 11 DP 869673), an archival record is to be prepared and submitted to Council. Once demolition has been completed, a Baseline Archaeological Assessment on the entire site is to be submitted.



The composition of the facade of the new building on the right considers the adjoining a heritage item on the left.

G3.3 Majors Bay Road Shopping Centre, Concord

Majors Bay Road Shopping Centre is a linear shopping centre with a strong boulevard quality. The street is well orientated for vistas and was laid out with the subdivisions of the surrounding estates for residential purposes between 1900-1915. The buildings within the centre, whilst not being particularly historic or architecturally impressive in themselves, impart a unified streetscape by virtue of their two storey scale and architectural styles. These elements convey a sense of history and continuity, form part of Canada Bay's cultural heritage, and provide a sense of identity to the shopping centre. The scale of the buildings also relates well to the surrounding low rise character of Concord.

The height of buildings is an important visual element in the streetscape and represents one of the more important facets of development control in the shopping centre. Most buildings in the Majors Bay Road shopping centre are two (2) storeys high and constructed with a flat, pitched or parapet-type roof. Roof forms on new buildings should be sympathetic to adjoining buildings and materials should be selected so as to blend with the surrounding environment. The design of the developments should attempt to ensure that where adjoining buildings, particularly residential dwellings, are located in close proximity to new commercial buildings, the design of such projects should attempt to minimise any potential loss of sunlight or daylight to residences.

Refer to Fig G3.54.

Controls	
Height	
C1.	All new work (including extensions to buildings) should not exceed a maximum height of 11.0 metres.
C2.	Where buildings display a uniform height at the front street alignment, new development should maintain a complementary height relationship with adjoining development. In this regard, any upper floor additions should be confined to the rear, either out of sight or setback far enough from the front building alignment so as to reduce its visibility and prominence from the shopping street.
C3.	Buildings are to step down at the rear, to a maximum external wall height of 7.5 metres, to be compatible with the scale and character of adjacent residential areas and in keeping with the built form pattern of retail streets. Refer to Fig G3.55.
Siting	
C4.	Where new buildings are erected within established frontages, such buildings should, at least along the main street frontage, be similarly orientated to existing adjoining buildings.
Front setbacks	
C5.	New development should be built to the predominant setback, generally the front alignment.
Roof forms	
C6.	The style and pitch of new roofs should relate sympathetically to neighbouring buildings where possible.
C7.	Materials used in the construction of roofs should be selected so as to blend in and harmonise with both the subject building, adjoining properties, and the streetscape generally.
C8.	Structures such as ventilation shafts, lift towers etc. should not project above the roof line or disturb the symmetry of the roofscape of buildings.
Vehicular access/crossings	
C9.	New vehicular access ways across public footpaths within the shopping centre will not generally be permitted.
C10.	Where rear lane access and/or parking facilities are provided to properties, Council will request owners (either by co-operation or via conditions attached to development applications) to close existing front vehicular access ways.

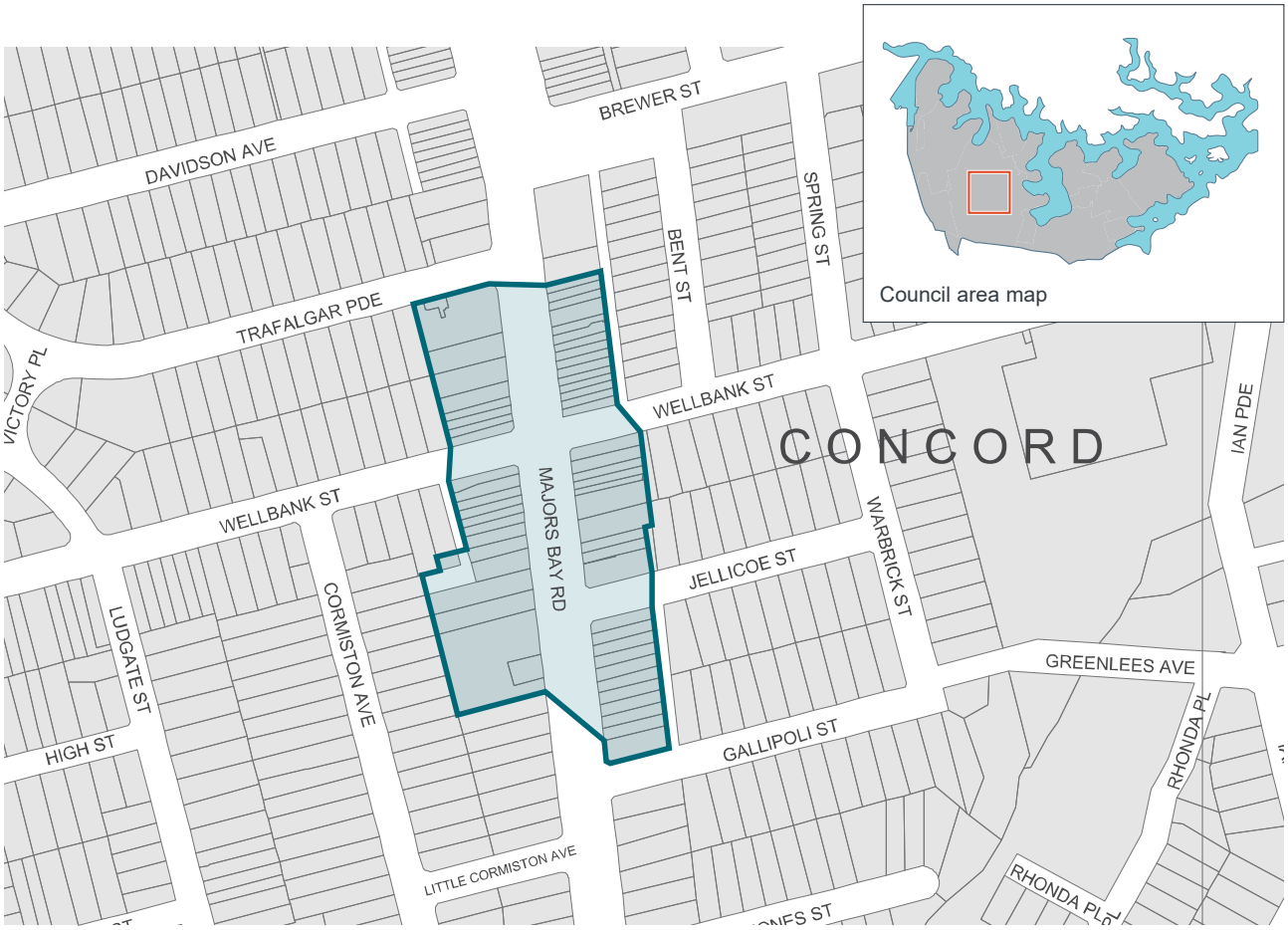


Fig G3.54 Majors Bay Shopping Centre - Location Plan

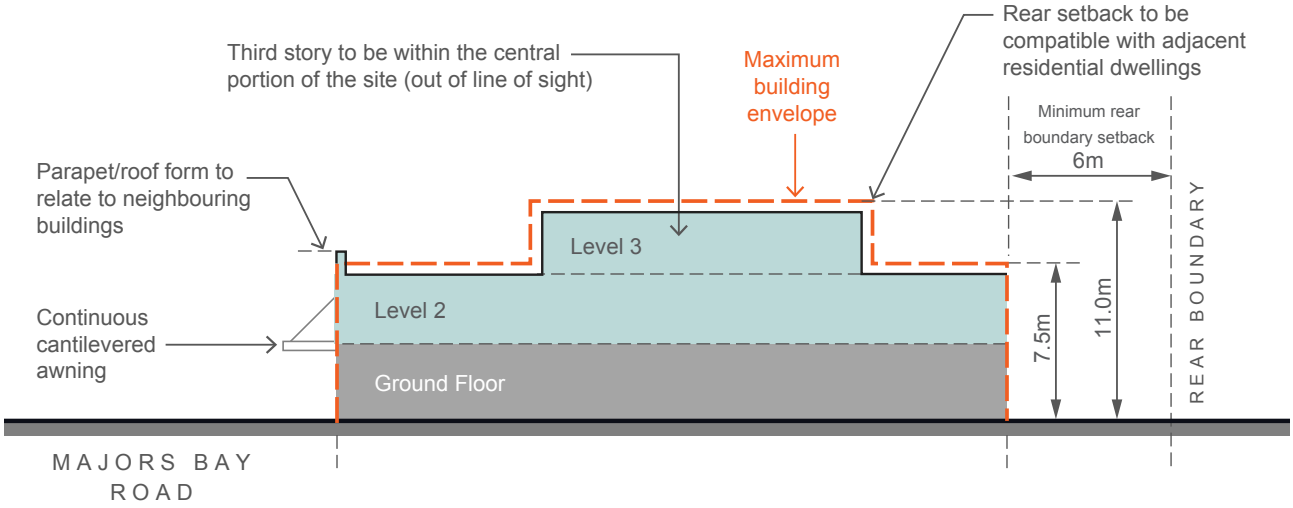


Fig G3.55 Majors Bay Shopping Centre - Maximum Building Envelope Section

G3.4 Victoria Avenue Shopping Centre, Concord West

Most buildings in the shopping centre are one (1) to two (2) storeys in height and are constructed with flat, pitched or parapet type roofs.

There is a shortage of car parking in the centre which was designed and constructed before the advent of mass car ownership. The rear building line is intended to reserve parts of lots for future parking and loading areas accessed from rear service roads and to prevent such areas being "built out". This building line applies to both new and existing buildings.

Refer to Fig G3.56.

Controls	
Floor space ratio	
C1.	The residential component of buildings is not to exceed 50% of the total gross floor area.
Front setbacks	
C2.	New development or extensions to existing buildings should be built to the predominant setback, generally the front alignment.
Rear setbacks	
C3.	New development or extensions to existing buildings should be built a minimum of six (6) metres from the rear boundary.
Building height	
C4.	Where buildings display a uniform height at the front street alignment, new development should maintain a complementary height relationship with adjoining development. In this regard, any upper floor additions should be confined to the rear, either out of sight or setback far enough from the front building alignment so as to reduce its visibility and prominence from the shopping street.
C5.	Buildings are to step down at the rear, to a maximum external wall height of 7.5 metres, to be compatible with the scale and character of adjacent residential areas and in keeping with the built form pattern of retail streets. Refer to Fig G3.57.
Building design	
C6.	The design of new buildings should respect the existing built form of the shopping centre. New buildings, particularly those which "infill" between existing properties, should respect the scale, roof forms and proportions of adjoining buildings. This means that new buildings should attempt to "fit in".
Vehicular access/crossing	
C7.	New vehicular access ways across public footpaths within the shopping centre will not generally be permitted.
C8.	Where rear lane access and/or parking facilities are provided to properties, Council will request owners (either by co-operation or via conditions attached to development applications) to close existing vehicular access ways.



Fig G3.56 Victoria Avenue Shopping Centre - Location Plan

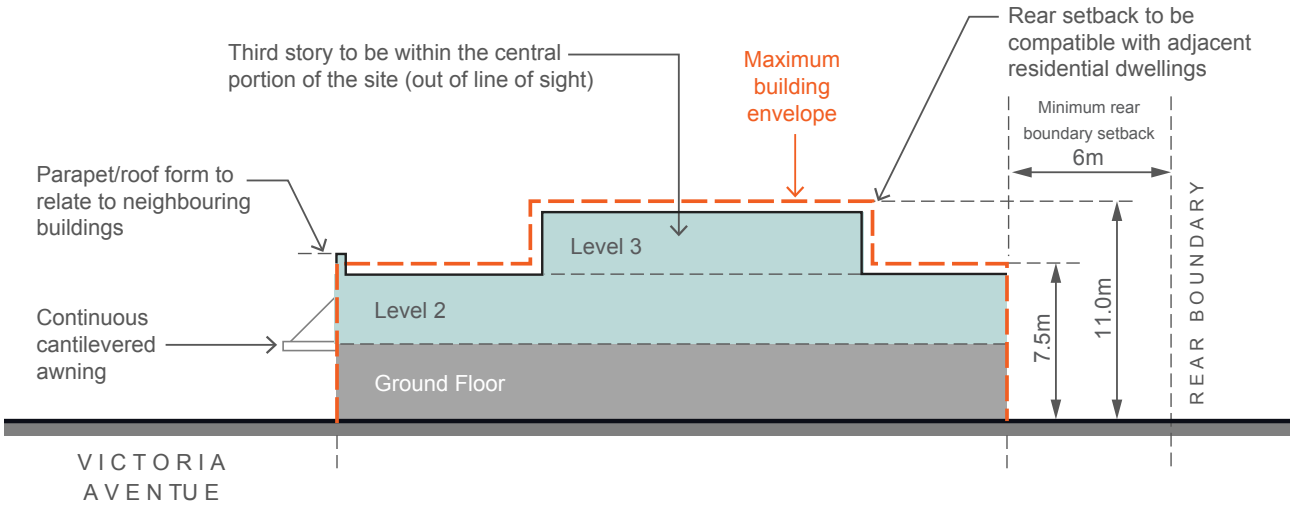


Fig G3.57 Victoria Avenue Shopping Centre - Maximum Building Envelope Section

G3.5 355-359 Lyons Road, Five Dock

The land at 355 – 359 Lyons Road is part of a small cluster of shops that are surrounded by a predominantly residential area. The general planning controls outlined below apply in these areas to ensure the form and scale of development responds to the surrounding context and achieves an integrated urban design outcome for all properties between 355 and 359 Lyons Road.

Objectives

O1. To achieve a coordinated urban design outcome.

O2. To enhance the existing streetscape and ensure appropriate development scale and interface near residential areas.

O3. To minimise solar access and privacy impacts upon surrounding properties.

O4. To ensure future buildings provide a continuous street edge to Lyons Road.

Controls	
C1.	Buildings are to be constructed to the front boundary (street edge) on Lyons Road.
C2.	A continuous awning is to be provided on the Lyons Road frontage of the site and wrap around into Ingham Avenue.
C3.	Buildings are to adhere to the minimum separation requirements of the Apartment Design Guide.
C4.	The maximum building height is 3 storeys.
C5.	A two (2) storey street edge is to be provided to Lyons Road and Ingham Avenue and the third floor is to have an upper level setback of 3.0 metres from both of these streets and a solid 'parapet style' balustrade for the upper floor.
C6.	The building envelope is the three dimensional volume that defines the outermost part of the site that buildings may occupy. Proposed buildings will also need to demonstrate that solar access is maintained to the north facing window and private open spaces of surrounding properties.
C7.	The third storey element of the building is to have a roof design and material selection that assists in minimising the overall bulk and scale of the building.



Example of an increased setback to the upper floor and a solid parapet balustrade that helps the building to 'read' as a two storey building from the street.

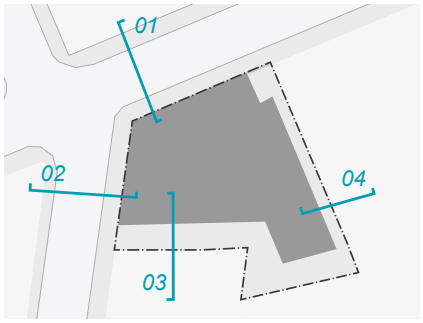


Fig G3.58 Consolidated development controls plan

N

LEGEND

- 1 level max. building height
- 2 level max. building height
- 3 level max. building height
- Nil setback to boundary
- 3m min. setback to boundary
- 6m min. setback to boundary
- Awning required
- Cadastre
- Site boundary



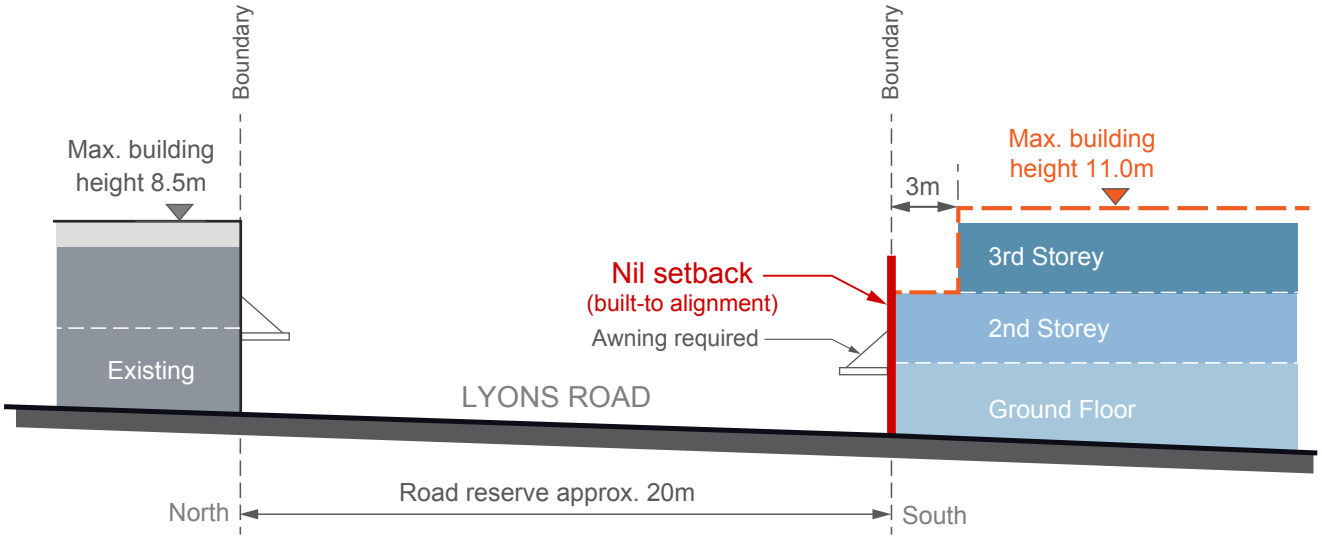


Fig G3.59 Interface section - Lyons Road

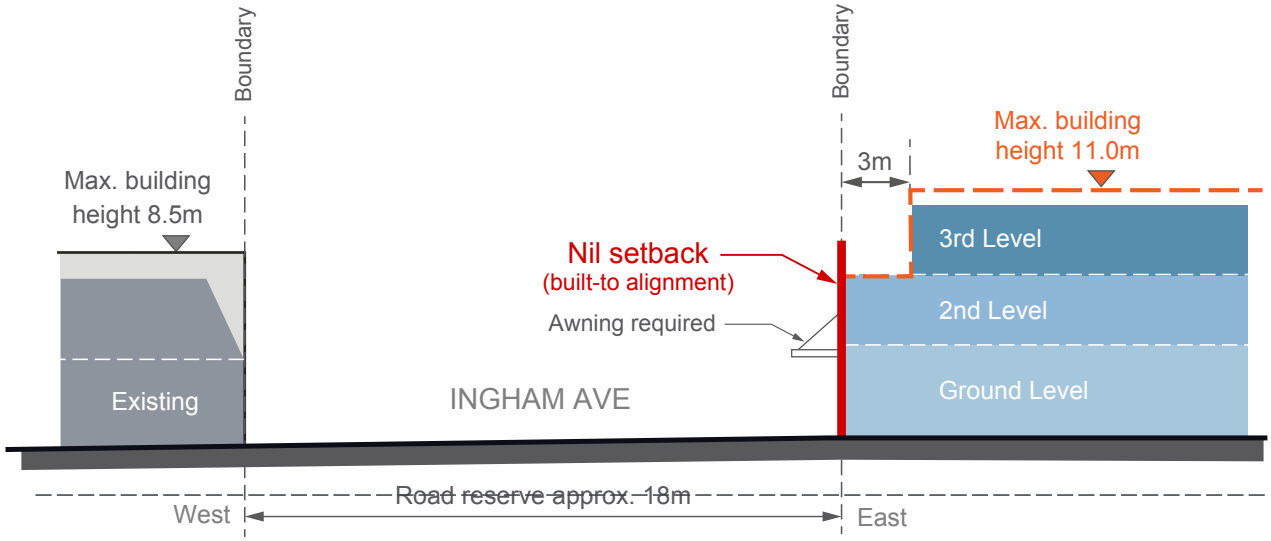


Fig G3.60 Interface section - Ingham Avenue

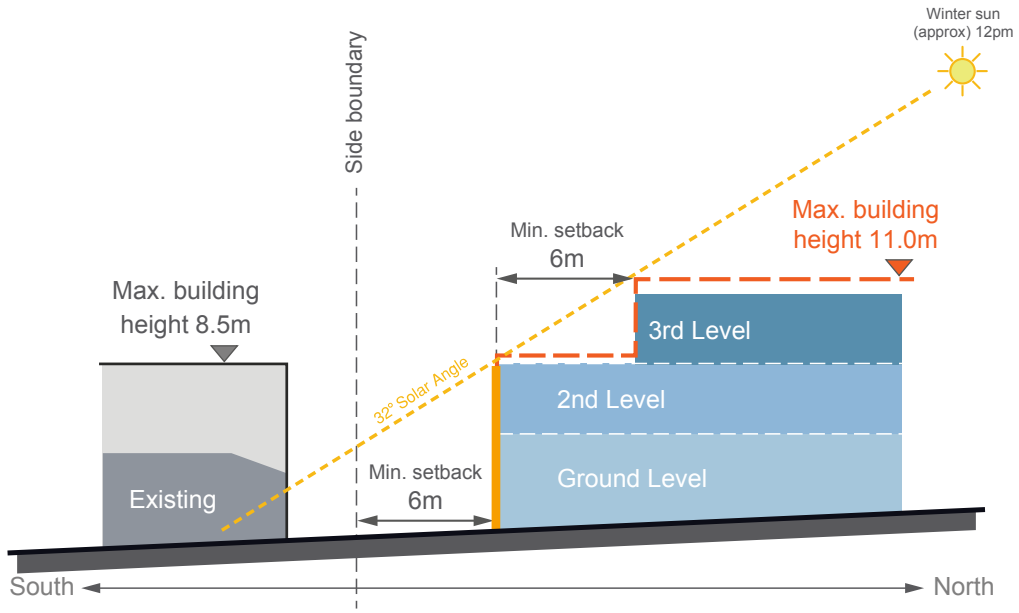


Fig G3.61 Interface section - southern boundary

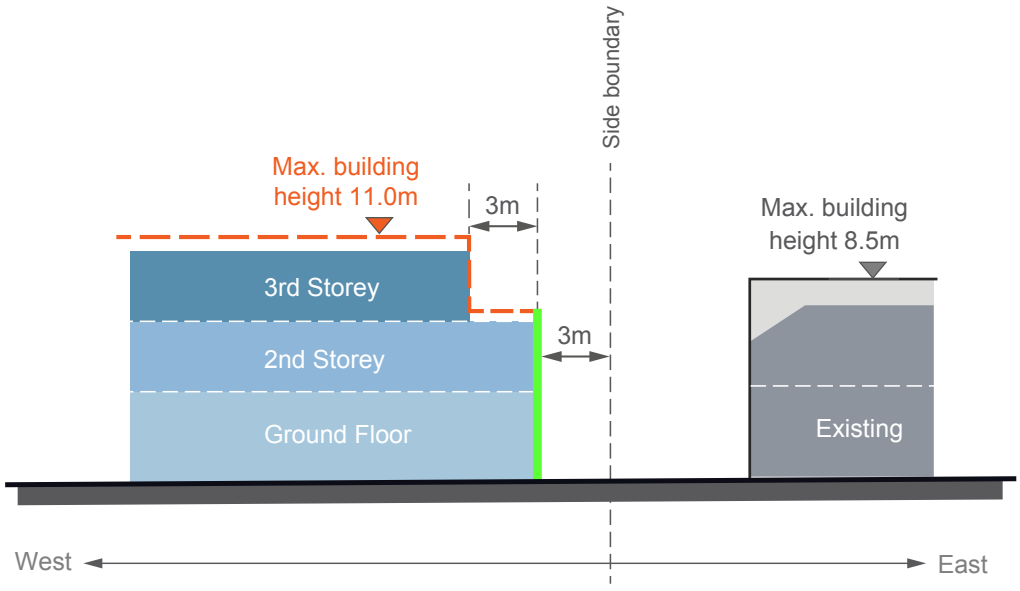


Fig G3.62 Interface section - eastern boundary

H







PART H - INDUSTRIAL DEVELOPMENT

H1 General Objectives H-2

H2 Setbacks H-2

H3 Landscaping H-3

H4 Building form and appearance H-3

H5 Light and noise H-4

H6 Public Art H-5

H1 General Objectives

Objectives

O1. To implement the Objectives of the Canada Bay LEP.

O2. To improve the quality of industrial development within the City of Canada Bay.

O3. To ensure that industrial development does not unreasonably adversely impact on residential amenity.

O4. To encourage employee amenity within Industrial areas.

O5. To facilitate employment generation and maximise the potential of employment generating industries.

O6. To encourage design that is sustainable and environmentally responsible, and takes into account its social impact on environmental amenity.

O7. To encourage design that is of a type, scale, height, bulk and character that is compatible with and will enhance the streetscape characteristics of the surrounding area.

H2 Setbacks

Setbacks play a number of important roles in areas developed for industrial uses. Front, side and rear setbacks ensure space for landscaping, contribute to streetscape consistency and modulate building bulk and scale. Setbacks also provide a transitional area or buffer to adjoining land uses and ensure building entrances are clearly visible

Objectives

O1. To encourage design that is in keeping with the streetscape characteristics of the surrounding area.

O2. To ensure sufficient space for landscaping, on site parking, access, and circulation.

O3. To modulate the bulk and scale of development.

O4. To provide a buffer to adjoining land uses, reducing adverse impacts on surrounding land uses and residential amenity.

O5. To integrate development with the existing street and footpath network.

O6. To ensure development provides adequate disabled access, wherever possible.

Controls	
C1.	The front or road setback of buildings should be consistent with the setback of adjoining buildings. Where the setback of adjoining buildings is inconsistent, the building should be consistent with the dominant setback found along the street. In some instances, Council may require a minimum setback of 6.0m, depending on the circumstances of the case.
C2.	Front setbacks are to comprise soft landscaping in accordance with the requirements of section F3.
C3.	A minimum side and rear setback of 6.0m is required - 50% of the side setback can be used for off street parking providing the remaining area comprises soft landscaping in accordance with the requirements of section F3.
C4.	Greater setbacks may be required for bulky, hazardous and noise or odour generating activities.

H3 Landscaping

Landscaping provides a setting for development and can contribute positively to the creation of a strong corporate identity. It contributes to the creation of a pleasant working environment for employees and increases the amenity of on-site car parking and storage areas. Landscaping can also play an important buffer role for industrial development that adjoins residential development.

Objectives

O1. To ensure that there is accessible and useable open space for the use of employees.

O2. To integrate building design, car parking and service facilities with landscaping to achieve a pleasant working environment.

O3. To protect and enhance the existing landscape character of the City of Canada Bay.

O4. To improve the visual amenity of industrial development sites and areas.

O5. To provide robust landscaping within new industrial development that contributes to biodiversity, sustainability, water efficiency and reduction of airborne pollutants.

O6. To enhance stormwater management by minimising hard non-porous surfaces.

Controls	
C1.	Open space dedicated to the recreational use of employees is to be provided on site within a landscaped setting.
C2.	Front and side setbacks are to be landscaped to soften and screen buildings, storage, service and parking areas.
C3.	Landscaping and fencing should not obscure the main building entry.
C4.	A minimum of 10% of the subject site should be landscaped.
C5.	All security fencing should be located behind the landscaped setback. Council may vary this requirement if it is considered desirable in the circumstances.
C6.	All landscaped areas should be supplied with a fully automatic irrigation system.
C7.	All new proposals for industrial development should be accompanied by a landscaping plan prepared by a qualified professional.

H4 Building form and appearance

Building form and appearance encompasses a number of aspects of building design including amenity, relationship to the streetscape, materials, energy use, and noise mitigation.

Objectives

O1. To ensure the form and scale of development enhances the streetscape and visual quality of the area.

O2. To encourage innovative, contemporary and sustainable building design.

O3. To ensure that materials used contribute positively to ecological sustainability.

O4. To minimise energy use in all parts of buildings.

O5. To ensure building materials mitigate noise impacts to adjoining development, particularly residential areas.

Controls	
C1.	Building height, mass, and scale should compliment and be in keeping with the character of surrounding and adjacent development.
C2.	Colours should be consistent with the themes of adjoining development and enhance the visual amenity of the industrial area.
C3.	Building entrances should be clearly defined and well articulated through form, materials and colour and provide level or ramped access.
C4.	Buildings should not contain long, blank, and unarticulated walls, particularly on street frontages.
C5.	Buildings should be of a contemporary and innovative design. All public frontages should be specially articulated with the use of brick, stone, concrete, glass (non-reflective), and like materials.

Public utilities

Controls	
C6.	For new development and substantial alterations to existing premises provision must be made for connection to future underground distribution mains. In such developments the following must be installed: • an underground service line to a suitable existing street pole; or • sheathed underground consumers mains to a customer pole erected near the front property boundary (within 1 metre). Council may require the bundling of cables in the area surrounding the development to reduce the visual impact of overhead street cables. For further details see Energy Australia requirements.

H5 Light and noise

It is important to maintain the amenity of adjoining land. Light spillage and noise emissions are two key design considerations.

Objectives

O1. To ensure industrial development maintains the amenity of surrounding development.

O2. To ensure appropriate noise attenuation measures are incorporated into building design and site layout.

O3. To ensure lighting does not distract or annoy vehicle drivers or the occupants of adjoining properties.

Controls	
C1.	Sources of noise, where practicable, should be sited away from adjoining properties and where necessary, be screened by acoustical treatments.
C2.	High-intensity noise generating industries will not normally be permitted in close proximity to residential uses.
C3.	Light sources should be directed away from adjoining residential properties.

H6 Public Art

Public art contributes to place identity and increasingly it is a significant part of the visitor experience. Cities around the world have recognised the value of cultural statements and public art has a key role in giving character and cultural definition to areas. This has been particularly successful in Australia with substantial public art initiatives reactivating waterfronts and urban development. The City of Canada Bay has increasingly used art as part of place making across the City.

Objectives

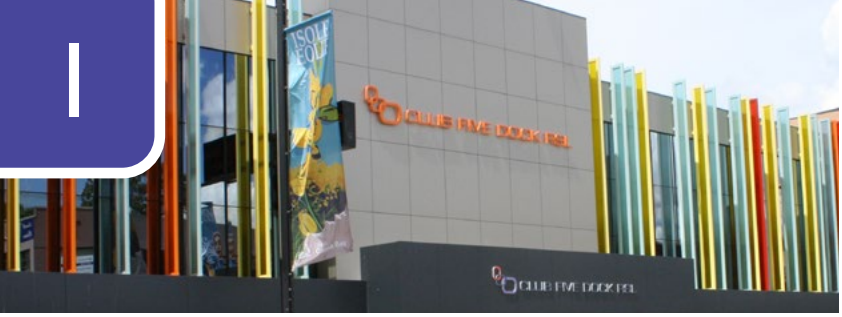
O1. To include public art in communal and public spaces.

O2. To focus public art on the history and heritage, stories, people, landscape, streetscape, and culture of the place.

Controls	
C1.	Consider the City of Canada Bay Public Art Plan and City of Canada Bay Cultural Plan and provide details of public art to be included in communal and public spaces.
C2.	Identify locations for mural, integrated artworks, sculptural and lighting projects including hoardings for new developments.
C3.	Coordinate cultural input and community participation into interpretive artworks and public art.
C4.	Use public art, interpretive work, oral histories and industrial artefacts to celebrate the working heritage of Canada Bay's foreshores.
C5.	Reflect industrial, social and cultural history in the built and natural environment.

This page was intentionally left blank

I







PART I - SIGNAGE AND ADVERTISING

I1 Signage and Advertising I-2
I2 General Objectives and standards applicable to all development I-3
I3 Sign proliferation and dominance I-7
I4 Sign dimensions I-8
I5 Integration I-8
I6 Conservation areas I-9
I7 Concord Oval and Drummoyne Oval Signage I-10
I8 Architectural amenity and residential character I-12

I1 Signage and Advertising

The purpose of this section is to ensure signs and advertising structures can be designed and located so they fit into the environment and do not detract from the character of an area.

The role of signs and advertising structures

Signs and advertising structures:

- are important for business advertising and the creation of a company's corporate image;
- provide information and identification; and
- are used for community purposes such as advertising local events, informing of community services and identifying features of historic interest.

The controls aim to minimise excesses, such as advertisements which are so large they overwhelm buildings and landscaping, or the clutter which results from too many advertisements of different shapes and sizes on one site.

Fewer, simpler and "clean-lined" signs which are well located have greater visual impact, are of greater value to businesses and better for the visual environment.

Making an application

Council should consider the following matters when dealing with an application to erect an advertising sign:

a) class of advertising structure, eg. awning sign, fascia sign, roof sign, pole or pylon sign, etc.;
b) design of the structure;
c) the siting, location and colour of the structure;
d) the area of the advertising structure;
e) the nature of any advertisement intended to be associated with the structure;
f) the number of advertising structures proposed;
g) the multiplicity of existing signs;
h) the architectural qualities, appearance and balance of the building;
i) the erection of signs without relationship to the function of the premises upon which the sign is to be erected;
j) the erection of signs without relationship to other signs erected on the premises or other premises within the vicinity;
k) the visual impact on the local environment; and
l) the benefit to the community of the proposed advertising signs.

I2 General Objectives and standards applicable to all development

Objectives

The siting, location, size, height, scale, design, colour, shape and materials of construction of advertisements should:

O1. Complement and enhance the predominant character of the locality;

O2. Complement and enhance any building, structure or site of heritage significance on which it is to be erected or located;

O3. Not obscure the view of attractive landscapes, streetscapes, or significant buildings; and

O4. Not adversely affect the safety of traffic or pedestrians.

Controls	
C1.	The minimum controls for all signs are included in Table I-A.

Inappropriate development

Controls	
C2.	The following signs and advertising structures are not considered to be appropriate: a) Signs erected or attached to the sides of buildings where such side is adjacent to residences or residential flat buildings, or where the side of the building faces a residential street unless special circumstances as determined by Council are considered to exist; b) Signs or advertisements other than those relating to the occupier(s) of the building; c) Flashing, moving, or video signs; d) More than one (1) projecting wall sign, flush wall sign or painted wall sign per elevation; e) More than one (1) outward facing sign (eg top hamper, painted or etched window sign) per ground floor shop; f) Signs located on an awning or signs attached above the awning; g) Any sign or signboard exhibited on Council's footpath; h) Signs attached above the roof; i) Permanent inflatable signs; j) Flag pole signs; k) Signs of more than 20m^2 in area or 8.0 metres in height; and l) Private identification signs within the public right of way.

Table I-A Requirements for signage

Type of sign	Maximum size/area and number	Location/ other requirements
Under Awning Sign (Illuminated or non-illuminated)	• 2.5m x 0.3m (maximum) • One per shop; or • One every 5.0m provided that distance of not less than 3.0m between the centres of signs on adjoining properties is maintained	• Erected at right angles to the building • Minimum clearance of 2.6m to footpath • Not to project beyond the awning
Top Hamper Sign	• Restricted to that portion of the shop front above the level of the head of the doorway or window to which it is attached. • Restricted to the underside of the awning • Not illuminated • Where shop front facade comprises full glass, hamper signs will only be permitted behind the glass • One per shop • 2.5m x 0.3m (maximum)	• Not to project more than 20mm beyond the face of the building.
Pole or Pylon Sign	• Max advertising area 4.65m^2 • Max height 8.0m • One per site	• At least 2.6m above ground level and not to project more than 1.2m beyond the street alignment • Only where buildings are remote from the street alignment • A single retail centre and major tenant pylon is permitted along Homebush Bay Drive.
Flush or painted wall sign	• 5m^2 or 5% of the wall area* up to 100m^2 • Maximum of one flush wall sign per elevation • Should not extend beyond wall edges	• For wall areas* over 100m^2 proposed signs will be considered on a merit basis but should not exceed 7.5% of wall area or a maximum of 30m^2 whichever is the lesser
Projecting Wall Sign (Vertical) where: lowest part of sign is between 2.6m and 3.7m lowest part of sign is 3.7m-4.5m lowest part of sign exceeds 4.6m	• 0.6m maximum projection from wall face & maximum 1.8m height • 0.7m maximum projection from wall face & maximum 2.4m in height • 0.9m maximum projection from wall face & maximum 3.0m in height	• Only permitted where no awnings exist on a building • Height of sign should not be less than width • Should be erected at right angles to the face of the building • Should provide 2.6m clearance to footpath from underside of sign • Should not extend within 0.6m of the kerb alignment • One per building • Maximum width 0.4m

Type of sign	Maximum size/area and number	Location/ other requirements
Projecting Wall Sign (Horizontal)	• Maximum dimensions as follows: • 1.3m (length) x 0.8m (height) x 0.4m (width) for rectangular signs • 1.2m x 1.2m for square signs • 1.2m diameter for round signs • One per building	• Only permitted where no awnings exist on a building • Height of the sign is less than its width • Should be erected at right angles to the face of the building • Should provide 2.6m clearance to footpath from underside of sign but not more than 4.0m above footpath • Should not extend within 0.6m of the kerb alignment
Multi-Occupancy Buildings	• One sign per building for identification	• Under awning signs should meet above requirements for such signs
Awning fascia sign	• Sign to be painted on or attached to fascia • Must not project above or below the awning or the return end of the fascia	• Attached sign must be flat, with minimal projection from the fascia (similar to painting the fascia) • Not illuminated
Window sign	• May be painted or etched onto internal or external surface of window or attached to internal surface of window • Maximum $6m^2$ or 20% of the surface area of the window, whichever is the lesser	• Must continue to allow passive visual surveillance • Not illuminated
Obscure glazing	• Maximum $6m^2$ or 20% of the surface area of the window, whichever is the lesser	• Must continue to allow passive visual surveillance • The remainder of the shopfront glazing must remain clear to allow views into and out of the shop
Home business/ industry/ occupation sign	• Painted or attached to external wall (ground floor) or fence with minimal projection from surface to which it is attached • Not more than one per site • $1m^2$ in area (maximum)	• Not illuminated
Signs attached above awning	• Not permitted	
Building identification signage	• Building identification signage is the only signage permitted above first floor level.	
Roof Sign	• Not permitted	
Floodlit Sign	• Not permitted except where special circumstances exist	

* Measurement of the wall area does not include the area below awning area or any area obscured by the adjoining property.



Figure I2.1 Types of advertising signs

I3 Sign proliferation and dominance

The number of signs displayed on any site should be minimised in order to avoid visual clutter, duplication of message and adverse impacts on the amenity of adjacent areas from which the signs are visible.

Refer to Figure I3.1

Objectives

O1. To minimise the proliferation of signs and visual clutter.

O2. To ensure signs are clearly visible without dominating buildings or streets.

Controls	
C1.	Signs, other than those relating to the occupier of the building are not permitted.
C2.	Maximum size/area and number are included in Table I-A.
C3.	The number of advertisements displayed on any site should be minimised in order to avoid visual clutter and duplication of message.
C4.	Signs should be designed to provide clear property and business identification without dominating the site or the streetscape.
C5.	Signage should be visually sub-ordinate to the building as a whole and its façades.
C6.	In multi-tenanted buildings, a single coordinated free-standing advertisement or directory board should be used.
C7.	Signage must be designed to avoid confusion with directional and traffic signs.
C8.	Signage should be designed to add character to the street and complement the architecture.
C9.	To minimise visual clutter, signage should be integrated with awnings.



Undesirable sign dimensions



Preferred sign dimensions

Figure I3.1 Undesireable and preferred sign dimensions

I4 Sign dimensions

Signs should be designed to provide clearly identifiable business identification without dominating the appearance of the site or streetscape.

Objectives

O1. To ensure signs do not dominate buildings or streetscape and are in keeping with the character of the surrounding area.

Controls	
C1.	Maximum size/area and number are included in Table I-A.
C2.	The supporting structure of free-standing advertisements should be of dimensions which provide good visual balance to the structure in addition to the necessary structural supports.
C3.	Supporting structures should not dominate the sign, building or streetscape.
C4.	Free standing signs and advertisements on multi-tenanted buildings should be limited to one per building.

I5 Integration

Signs and advertising structures are valuable in providing information, identification and warning. Signs need to be clearly visible. Signs and advertising structures should be sensitively sited and designed so they are well integrated with building and landscape design to minimise adverse impacts on streetscape and urban character.

Objectives

O1. To ensure signs are well located and integrated with building and landscape design where possible.

Controls	
C1.	Signs attached to buildings should be of appropriate colour, scale and proportion, and of an integrated design that is coordinated with the architectural form and design of the building upon which the advertisement or advertising display is located.
C2.	Free-standing advertisements should not rely upon the removal of trees or lopping of branches in order to be visible.
C3.	To achieve durability, signage and advertising should be constructed of non-combustible materials and be resistant to vandalism.
C4.	To minimise visual clutter, the source of light to illuminated signage should be concealed or integral with the sign. Electrical conduits to illuminated signs including neon signs should be concealed. The ability to adjust the light intensity is required. A curfew on illumination may be imposed to protect the residential amenity of nearby residential development.

I6 Conservation areas

Outdoor advertising should be designed and located in a manner which conserves the character and heritage significance of the building, street or area which have been identified as significant. Generally, signs on individual buildings or within conservation areas should be sensitively designed and located and should complement the building or area.

Objectives

O1. To ensure signs associated with heritage buildings are sensitively designed and located.

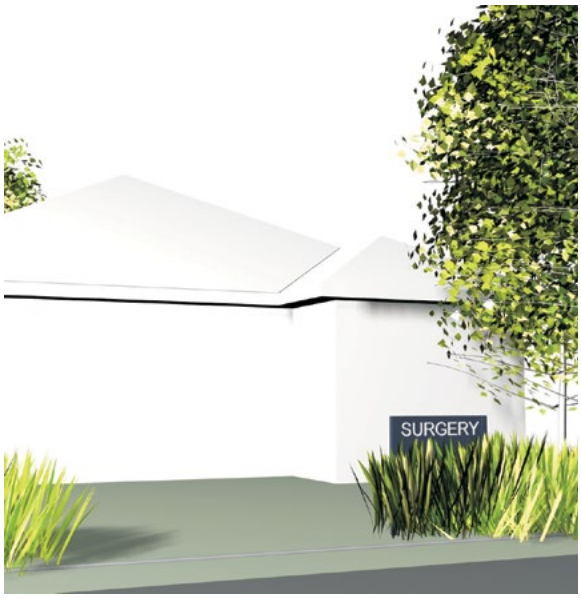
O2. To ensure signs do not detract from the appearance and character of Conservation Areas.

Controls	
C1.	Signs and advertising structures should be designed and located in a manner which conserves or enhances heritage places and buildings, and the appearance and character of conservation areas.
C2.	New signs should not be placed on the side of buildings.
C3.	Signs should observe traditional sign locations, and wherever possible original signs should be retained and conserved at the site.
C4.	Signs should not break the historic parapet or roofline.
C5.	Signs should temper modern advertising styles with sympathetic design details (eg. sympathetic colours, margins, type, style) without trying necessarily to recreate a “historic” theme.
C6.	Proponents should demonstrate through research that the advertising proposal is in keeping with the historic building or place.
C7.	Illuminated signs should not be placed on heritage items or in conservation areas.
C8.	Signs should be constructed with a high standard of materials and graphics.
C9.	Signs should be minimalist in their scale and design.

Refer to Figure I6.1



Undesirable sign dimensions



Preferred sign dimensions

Figure I6.1 Undesireable and preferred signs for conservation areas

I7 Concord Oval and Drummoyne Oval Signage

Council recognises the need for corporate and community sponsorship of sporting groups in the local area. At the same time, it acknowledges the need to ensure that the appearance and amenity of the natural built environment of the reserves and surrounding areas is protected.

Signage approval is valid for the term stated in the consent. After this time, applicants must reapply to Council for approval to erect sponsorship signage.

Objectives

O1. To allow sponsorship signage for community based sporting clubs in locations and a manner that complements the role of the reserves.

O2. To control the display of advertising material in such a manner as will reasonably protect the amenity of the local area.

O3. To ensure that sponsorship signage is directly related to the reserve/sporting facility in which it is displayed.

O4. To coordinate the placement of signage on reserves and associated facilities to minimise clutter, avoid unnecessary duplication and improve the reserves attractiveness and function.

Location of sponsorship signs

Controls	
C1.	Signage is to be located so as to be visible only to persons attending the organised sports activities on the reserve and should not face outward (Figure I7.1). The protection of views into and within public areas is to be maintained and enhanced. Signage is only permitted on fencing around the sporting field. Applications for signage on grandstands and scoreboards at Concord and Drummoyne ovals will be considered based on merit assessment. Signage on perimeter fences shall face inwards towards the sporting facility and shall be restricted to the height of the fence surrounding the sporting field. Where the rear side of the sign is visible from any road, street or waterway, the rear side shall be treated in a manner so as to blend with the existing fence structure. The visibility of the signage from the surrounding roads, streets, waterways or residential areas is to be minimised.

Design and content of sponsorship signs

Controls	
C2.	Illuminated, animated, flashing or moving signs are not permissible. No signage is to be painted directly onto a fence or other structure. All signage must include the sporting clubs name on at least 25% of the overall area of the sign. Signage content is restricted to information about the sponsors of the teams or organisations using the sporting facility or about the products of those sponsors. Where permissible, signage on scoreboards, grandstands etc, shall not exceed the width of the structure by more than 1 metre. No signs are to extend above the existing height of the structure. Signage is not to contain any advertisements for cigarettes.

General

Controls	
C3.	The applicant is to be responsible for maintaining signage in a good state of repair. All sporting bodies and advertisers are to be made aware that signs may be removed or covered up during special “one off” events.

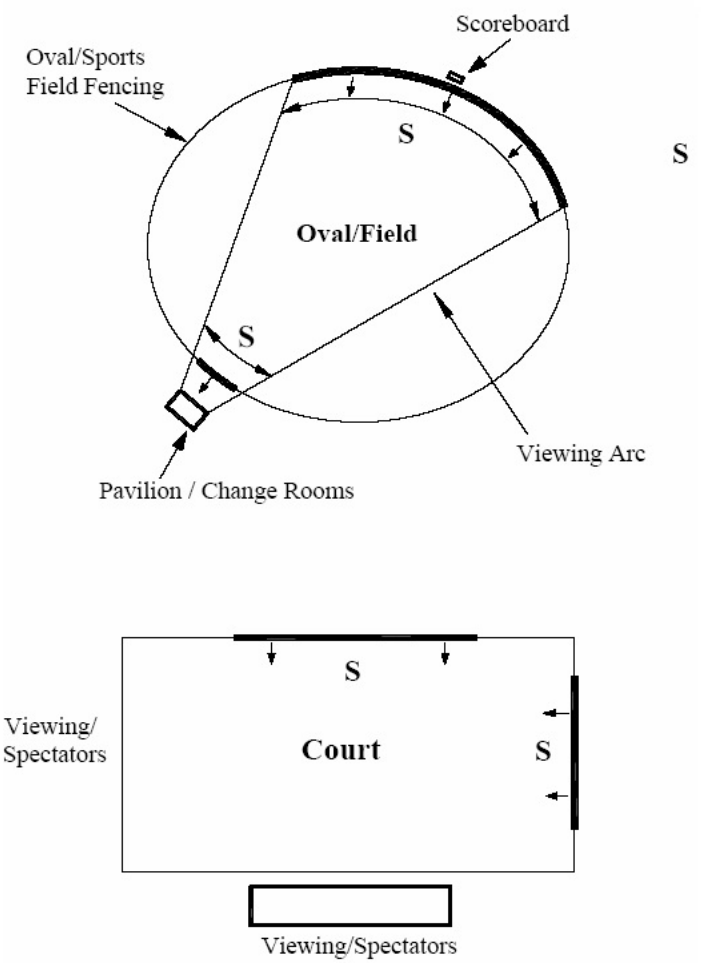


Figure I7.1 Location criteria for signage

Key: Section of fence suitable for permanent signage. Signs to face Pavilion or viewing area. Signage must not be visible from outside the reserve.

Note: The locational criteria apply to tennis courts, lawn bowls and other relevant recreation facilities within the Council Reserve system.

I8 Architectural amenity and residential character

The scale of advertising signs should be compatible with the buildings they are on as well as with nearby buildings and other existing signs. Many traditional building designs can be easily broken into a grid based on the alignments of the parapet (skyline), cornice, verandah, window and door.

Appropriate dimensions are often achieved by restricting signs to grid locations or panels. This ensures that the original architectural character (set by the lines of awnings, window and door openings, parapet lines and setbacks) remains dominant.

Objectives

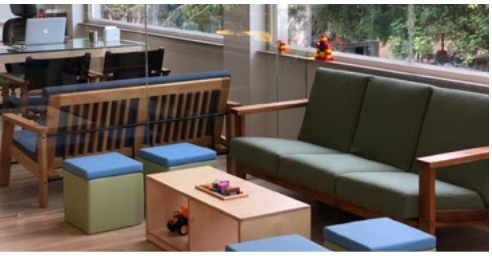
O1. To ensure signs and advertising structures respect the architectural character of the building and the locality.

O2. To ensure the location of signs maintains and protects the amenity of residential areas.

Controls	
C1.	The scale of advertising signs should be compatible with the buildings they are on, nearby buildings, street widths and other existing signs.
C2.	On buildings with decorative facades, signs should not be placed on the decorative forms or mouldings. Instead they should appear on the undecorated wall surfaces, unless architecturally designed sign panels are provided.
C3.	To protect residential amenity, advertising signage is not permitted facing private residential streets, or on side walls abutting residential properties.

J







PART J - CHILD CARE CENTRES

J1 Child Care Centres J-2

J2 Building setbacks.....J-2

J3 Provision of parking.....J-2

J4 Signage.....J-2

J1 Child Care Centres

The aim of this section of the DCP is to support the planning controls provided within the State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 and achieve appropriate development of Child Care Centre within each land use zone.

Objectives

To ensure that Child Care Centres:

O1. Are compatible with neighbouring land uses;

O2. Integrate into existing residential environments and are unobtrusive in terms of size, bulk and height;

O3. Are appropriate for the surrounding built form and natural landscape;

O4. Will have minimum impact on surrounding land uses; and

O5. To ensure the health, safety and wellbeing of children and staff in Child Care Centres.

J2 Building setbacks

Objectives

O1. To ensure the height and scale of a child care centre relates to site conditions, complements the prevailing character of the streetscape and minimises any adverse amenity impacts upon the surrounding properties.

O2. To ensure the appearance of the development enhances the streetscape.

Controls	
C1.	The Child Care Centre should comply with the relevant setback controls as stipulated in the Canada Bay Development Control Plan as follows: • Within a residential zone, setbacks for dwelling houses; and • Within a commercial / industrial zone – setbacks will be considered on a merit basis.

J3 Provision of parking

Objectives

O1. To ensure the adequate provision of car parking.

Controls	
C1.	One (1) car parking space is to be provided for every four (4) licensed places at the Child Care Centre.
C2.	A designated space is to be provided for disabled parking/service vehicles close to the main entrance of the child care centre.

J4 Signage

Objectives

O1. Complement and enhance the predominant character of the locality;

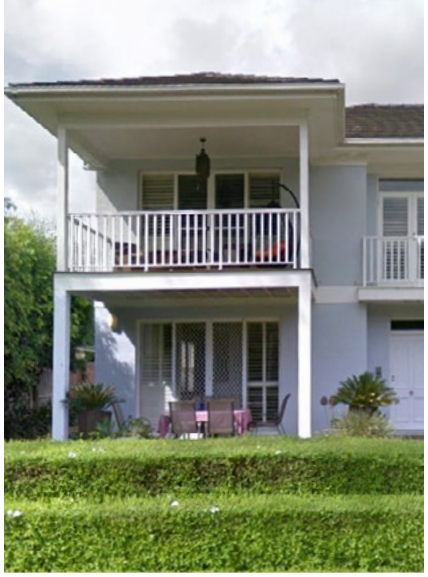
O2. Not obscure the view of attractive landscapes, streetscapes, or significant buildings; and

O3. Not adversely affect the safety of traffic or pedestrians.

Controls	
C1.	For Child Care Centres in residential zones, advertising should be limited to not more than one sign per Child Care Centre which a) Has a maximum area of 0.5m^2; and b) Serves only to identify the name and phone number of the Child Care Centre and the hours of operation.
C2.	For Child Care Centres in all other zones, compliance should be achieved with Council's signage requirements.

K







PART K - SPECIAL PRECINCTS

K1 Land to which Part K applies K-2

K2 Abbotsford Cove K-3

K3 Bibby Street K-7

K4 Breakfast Point K-9

K5 Cape Cabarita K-49

K6 Concord West K-57

K7 Edgewood and Kendall Inlet (former Dulux site) K-73

K8 27 George Street North Strathfield K-78

K9 186 Great North Road, Five Dock K-82

K10 2A Hythe Street, Drummoyne K-88

K11 Kings Bay (former Hycraft site), Five Dock K-92

K12 Liberty Grove K-96

K13 Mortlake Point K-99

K14 Pelican Point, Pelican Quays and Philips Landing, Concord K-103

K15 Rhodes Corporate Park K-106

K16 Rhodes East K-111

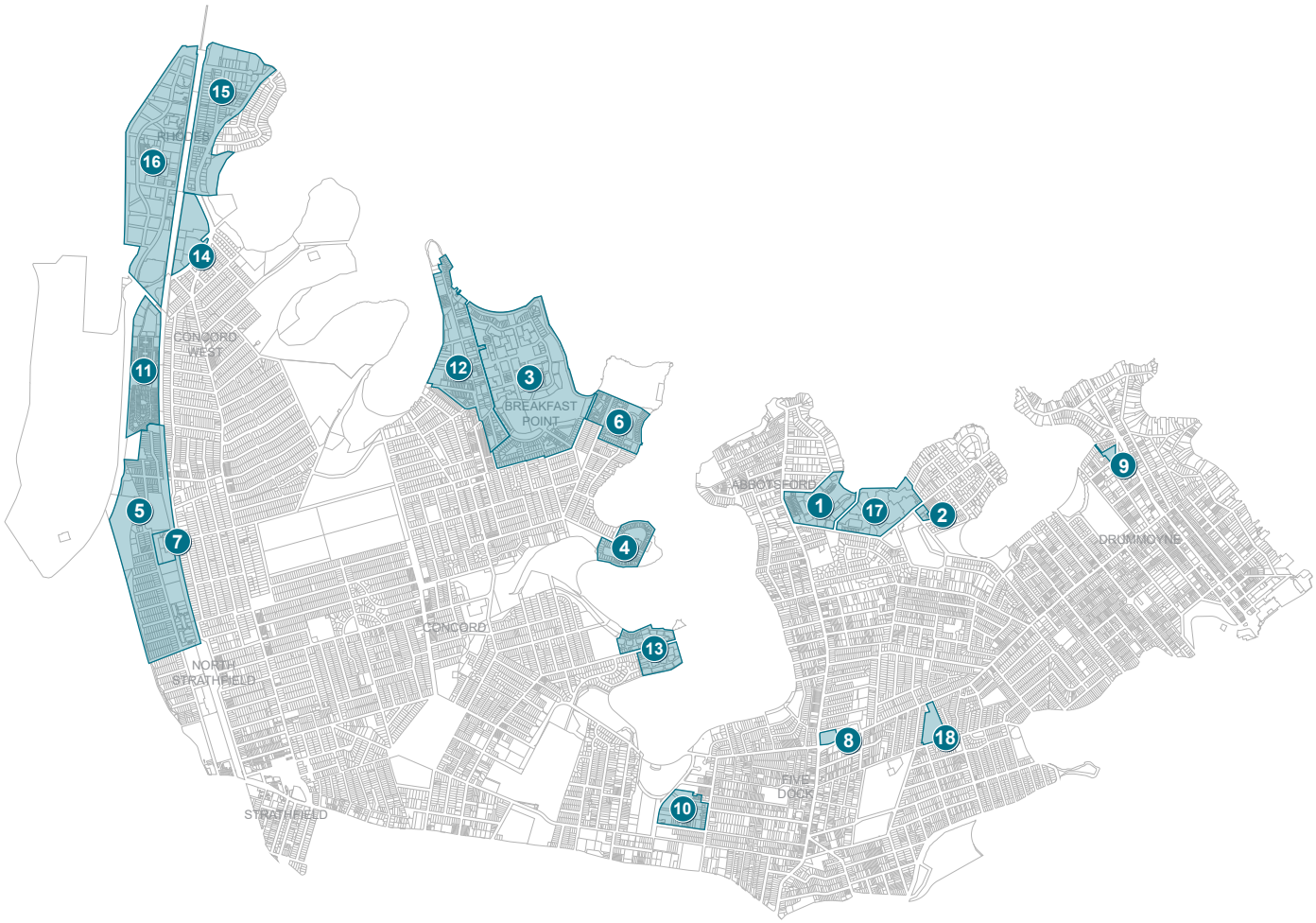
K17 Rhodes West K-201

K18 Sydney Wire Mill site, Chiswick K-291

K19 Tuscany Court K-296

K1 Land to which Part K applies

Part K applies to the land identified in Figure K1-1



1. Abbotsford Cove
2. Bibby Street
3. Breakfast Point
4. Cape Cabarita
5. Concord West
6. Edgewood and Kendall Inlet (former Dulux site)
7. 27 George Street North Strathfield
8. 186 Great North Road, Five Dock
9. 2A Hythe Street, Drummoyne
10. Kings Bay (former Hycraft site), Five Dock
11. Liberty Grove
12. Mortlake Point
13. Pelican Point, Pelican Quays and Philips Landing, Concord
14. Rhodes Corporate Park
15. Rhodes East
16. Rhodes West
17. Sydney Wire Mill site, Chiswick
18. Tuscany Court

Figure K1-1 Special Precincts overview map

K2 Abbotsford Cove



Figure K2-1 Aerial photo (source: nearmap.com)

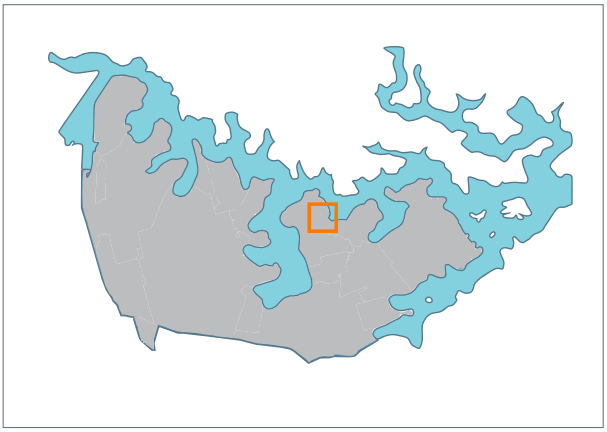


Figure K2-2 Council area map



Figure K2-3 Abbotsford Cove - Location Plan

K2.1 General objectives

O1. To encourage and facilitate development on the site which, in terms of scale, bulk, form and character: reflects the physical context of the site; is sympathetic to surrounding residential development; and does not dominate the landscape;

O2. To retain and incorporate existing significant buildings and trees and other site features, creating a sense of place and respecting the heritage values of the site;

O3. To minimise the impact of the development in terms of overlooking, loss of view and loss of sunlight from adjoining and neighbouring properties;

O4. To provide unrestricted public access to the foreshore and to the central area of public open space located between Abbotsford House and the Bay;

O5. To provide for the active and passive recreation needs of the residents of the development which should include the rehabilitation of the Clubhouse pavilion and incorporate recreation facilities such as a swimming pool and tennis courts; and

O6. To provide a publicly accessible street network as an extension of the existing street network.

K2.2 Specific provisions

Design, Scale and bulk

Controls	
C1.	To achieve a development outcome which, in terms of its design, scale and bulk, responds in a sympathetic and harmonious manner to the site, the bay and surrounding residential development.
C2.	To control the externalities of any future development and ensure that future residents of the site enjoy a high standard of amenity and environmental quality.

The height of buildings, including any car parking levels should comply with the height limits for the five residential precincts specified in Figure K2-5 Precinct, Setbacks and Height Control Plansand detailed below:

Great North Road Precinct

Controls	
C3.	The 7.5m height limit is compatible with the existing residential development on Great North Road.

Blackwall Point Road Precinct

Controls	
C4.	The 11m height limit allows 4 levels of residential development above existing ground level. This height has been determined by considering the height and location of existing vegetation, the slope of the land and proximity to Abbotsford House.
C5.	On the Blackwall Point Road frontage a 9m setback to accommodate the root systems of existing vegetation will be necessary. The buildings will also be effectively screened from neighbouring development by the existing stand of weepy fig trees.

Melrose Crescent Precinct

Controls	
C6.	The 16.5m height limit takes into consideration: the substantial fall of the site along the eastern boundary, the height of existing buildings on the site, the location next to the Lysaght site and portion of unmade road (Melrose Crescent) creating an opportunity for a buffer area.
C7.	A 45º envelope control for development, where the Melrose Crescent Precinct adjoins the Open Space Precinct (see Figure K2-4 Indicative 45° Building Envelope) will ensure minimal impact when viewed from the water.

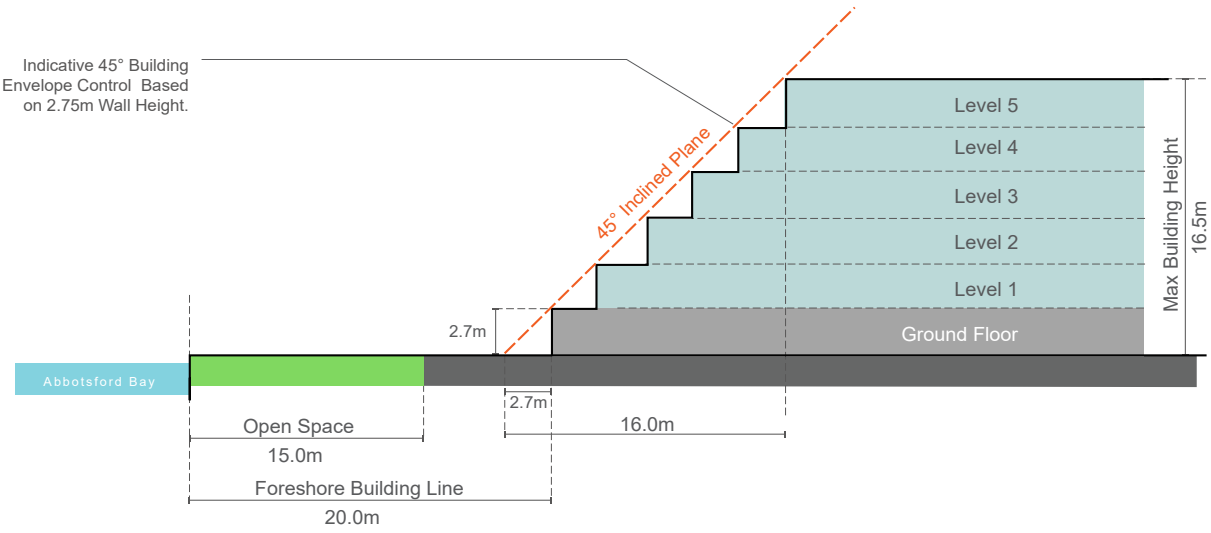


Figure K2-4 Indicative 45° Building Envelope

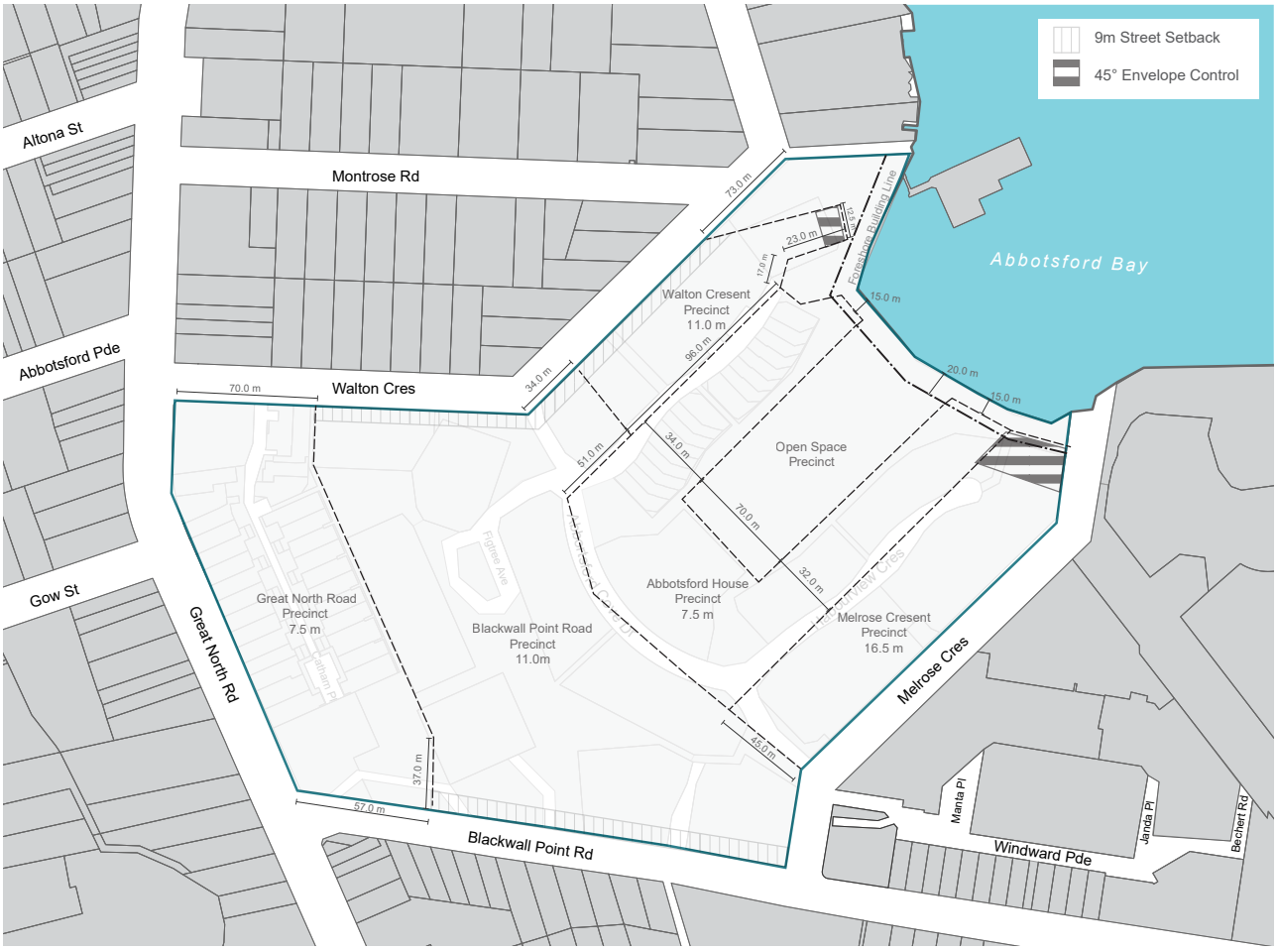


Figure K2-5 Precinct, Setbacks and Height Control Plans

Walton Crescent Precinct

Controls	
C8.	The 11m height limit together with the 9m setback will provide for development which will read as 1/2 storeys from Walton Crescent.
C9.	A 45º envelope control for development where the Walton Crescent Precinct adjoins the Open Space Precinct (see Figure K2-4 Indicative 45° Building Envelope) will ensure minimal impact when viewed from the water and from Walton Crescent.

Abbotsford House Precinct

Controls	
C10.	The 7.5m height limit complements Abbotsford House and provides an appropriately scaled edge to the open space.

Open Space Precinct

Controls	
C11.	Any structure located in the Open Space Precinct should not exceed 3.6m in height.

Site coverage

Controls	
C12.	Buildings must occupy less than 30% of the site area.

Setbacks

Controls	
C13.	A 20m Foreshore Building Line applies to the site (see Figure K2-4 Indicative 45° Building Envelope).
C14.	A 9m building setback applies to parts of the Blackwall Point Road and the Walton Crescent Precincts (see Figure K2-5 Precinct, Setbacks and Height Control Plans).
C15.	Any building to be located near to an existing tree must take account of the drip lines and root systems of that tree.

Design and Form

Controls	
C16.	A 45º building envelope control will control building form on the Abbotsford Bay edge of Melrose Crescent Precinct and Walton Crescent Precinct to minimise impact of the development when viewed from the water (see Figure K2-4 Indicative 45° Building Envelope).

Landscaped and Open Spaces

Objectives

O7. To provide for public and private open space that meets user requirements for recreational and social activities and for landscaping;

O8. To ensure that significant trees are retained or where possible relocated on the site; and

O9. To assist on-site drainage by the provision of at ground landscaped open space.

Controls	
C17.	To ensure adequate provision of open space maximum permissible site coverage of buildings over the entire site is 30%.
C18.	Landscaped areas should generally be dominated by vegetation and not masonry elements. Hard paved areas should, where possible, be kept to a minimum in order to reduce stormwater runoff, although wheelchair access must be considered.

K3 Bibby Street



Figure K3-1 Aerial photo (source: nearmap.com)

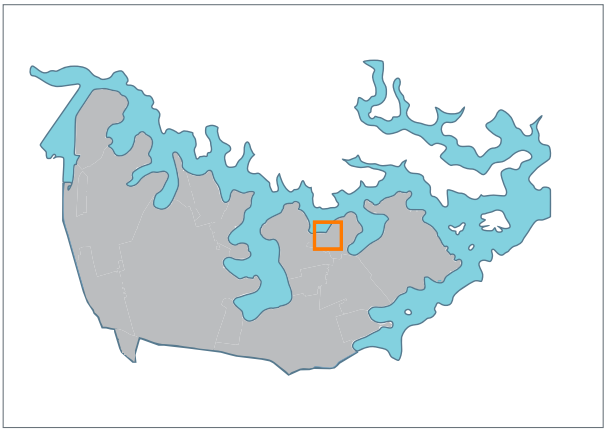


Figure K3-2 Council area map



Figure K3-3 Bibby Street Precinct - Location Plan

The following objectives and controls have been created to ensure an appropriate form and scale of development is provided for the former industrial precinct bound by Bibby Street, Blackwall Point Road and Burns Crescent, Chiswick.

K3.1 Objectives and provisions

Built form and scale

Objectives

O1. Orientate new buildings to the north so as to maximise solar access for new dwellings;

O2. Build to the building envelope line at the Bibby Street/Blackwall Point Road and Bibby Street/ Burns Crescent corners of the site to create a higher density residential "node" complementing existing development on the adjacent corners of the Bibby Street/Blackwall Point Road intersection;

O3. Establish a continuous building line along Bibby Street;

O4. Protect the solar access and privacy of existing neighbouring properties and respond to the topography and slope of the study area by establishing building height limits which "step down" the slope of the site; and

O5. Relate to the existing low density residential properties by "stepping down" the height and scale of new buildings towards the north east of the site.

Controls	
C1.	The maximum number of storeys permitted on the site is shown in Figure K3-4 Maximum Heights.
C2.	The minimum boundary setbacks are shown in Figure K3-5 Access and setbacks.
C3.	Vehicle Access points are to be provided in accordance with Figure K3-5 Access and setbacks.
C4.	Fencing on the site is to be designed so that sight lines for both pedestrians and vehicles are not obscured.
C5.	Roof forms, plant and lift overruns are to be designed to be simple compact forms that are visually unobtrusive.

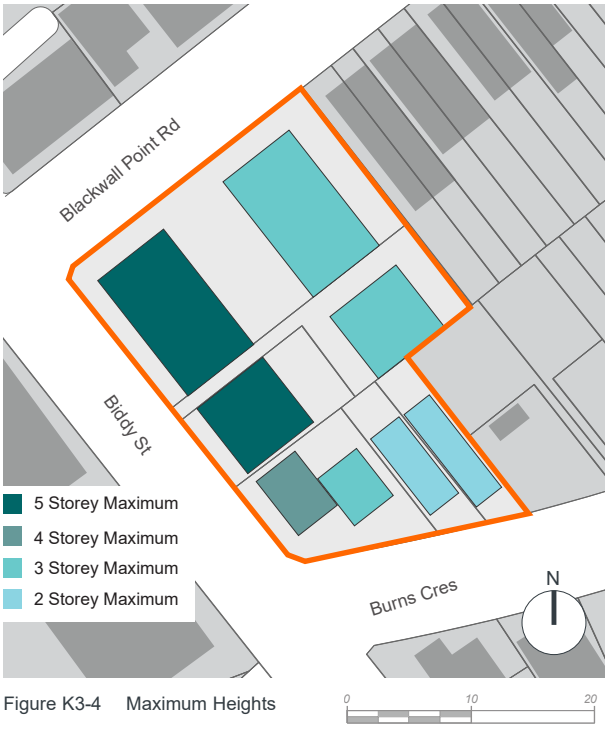


Figure K3-4 Maximum Heights

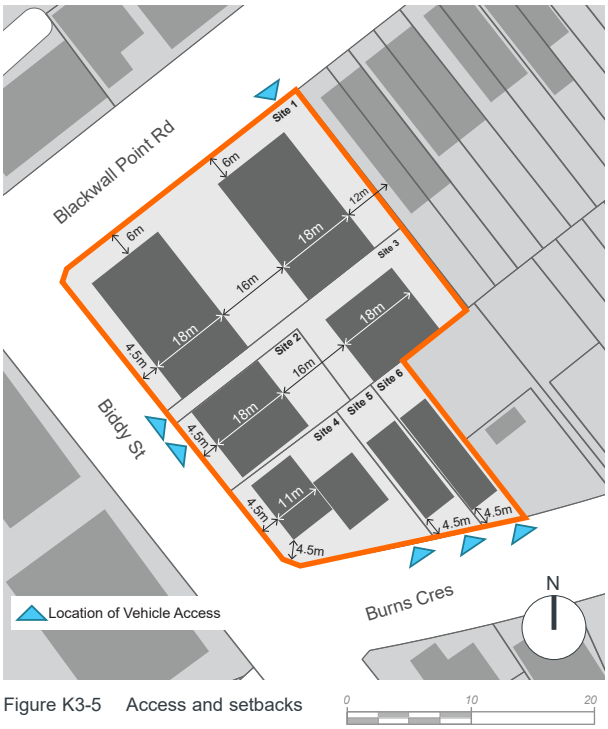


Figure K3-5 Access and setbacks

K4 Breakfast Point



Figure K4-1 Oblique aerial photo (source: nearmap.com)

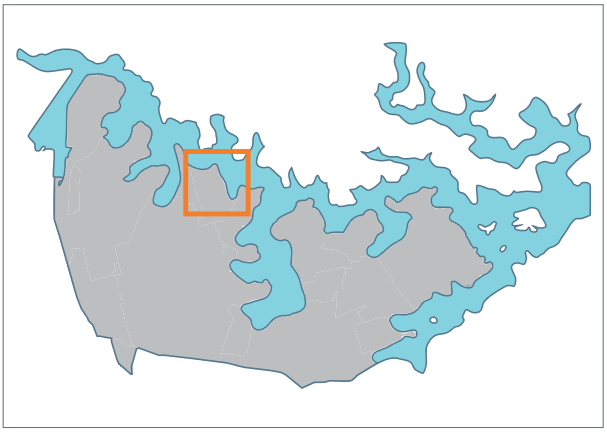


Figure K4-2 Location within LGA



Figure K4-3 Location Plan

K4.1 Introduction

Breakfast Point is a 51.82 hectare master-planned residential development on a waterfront remediated industrial site 9km west of Sydney CBD, in the City of Canada Bay. Breakfast Point is predominantly a Community Scheme development. Only houses fronting ‘perimeter’ streets beyond the AGL site are not within a Community Scheme.

The AGL site, Breakfast Point, is a Schedule 2 site of Strategic Significance under State Environmental Planning Policy No 56 (SEPP 56). Under the provisions of SEPP56 Canada Bay City Council (CBCC), in conjunction with the developer, prepared the Breakfast Point Master Plan 2002. Council adopted this plan 3 September 2002 after receipt of the Director Generals concurrence.

The objectives and controls contained within this Part are a result of a consolidation of the following plans:

- Breakfast Point Master Plan 2002
- Breakfast Point Concept Plan 2005 (amended 2013), Issue 8, 22 November 2013
- Single Dwellings on Lots at Breakfast Point DCP

History and characteristics

The Breakfast Point site was previously the AGL gas works. It was the primary coal gas producing site providing the energy needs of Sydney for over 100 years. With the introduction of natural gas, coal gas production ceased and the site ended its industrial life.

The subsequent remediation action plan (RAP) clean-up resulted in all the vegetation, and all the soil and significant portions of the underlying bedrock, being removed from the site. The site was subject to extensive re-shaping with the remediation program. All replacement soil and re-vegetation was subject to certified consistency with the Landscape Masterplan.

The site has extensive water-frontage to the north and east and higher land to the south and west. It is well protected from cold winter winds and benefits from cooling summer sea breezes. The land has a highly desirable residential orientation with good opportunities for incorporating passive ESD principles.

K4.2 Desired future character

Breakfast Point establishes a new community within an 'urban village' which embodies the principles of traditional neighbourhoods. The precinct positively relates new development to its urban context and achieves a transition to existing residential areas.

Access and open space linkages connect to the surrounds and the network of pathways for pedestrians and cyclists throughout the site encourages active transport. The precincts' waterfront location is celebrated through the creation, retention and enhancement of vistas and physical connections to the Parramatta River.

A continuous foreshore shared path along the waterfront maximises public access to the waterfront. Large areas of open space such as the Village Green, the area surrounding the Country Cub facility and Silkstone Park further add to the amenity of the precinct. The Village Centre to the west of the site offers convenience retail services, and various facilities and focal points are available for community use.

The range of dwelling types from lower scale detached houses to medium and higher rise apartment buildings offers a diverse choice of housing. Built form addresses and defines streets and open spaces, and the adaptive reuse of heritage items provides a connection to the site's past as the AGL gasworks.



Medium rise building typology in a landscaped setting

K4.3 General objectives

The following principles are a summarised version of the site planning principles contained in the Breakfast Point Masterplan (2002):

O1 To establish a new community within an urban village which embodies the principles of traditional neighbourhoods.

O2 To positively relate new development to its urban context and achieve a transition to existing residential areas.

O3 To provide a high level of continuity to the surrounds through access links, built form, landscape and open space linkages.

O4 To provide safe and convenient access to and through the site for all users and to establish a hierarchy of streets which respond to different types of circulation.

O5 To create a network of pathways for pedestrians and cyclists throughout the site.

O6 To ensure the creation, retention and enhancement of significant vistas to and from the site, and to and from the Parramatta River.

O7 To maximise views, access and connection to the waterfront.

O8 To ensure that the views of the site from the street and the harbour form a harmonious vista which includes vegetation in harmony with the buildings and view corridors.

O9 To achieve quality urban design with high levels of amenity at the street level and create a sense of community.

O10 To provide a variety of community focal points with different characters and functions.

O11 To provide significant areas of parkland providing easy access for the community to the waterfront.

O12 To provide a choice of residential dwellings in a variety of forms.

O13 To give definition to the public domain by ensuring buildings address the streets and give form to open spaces.

O14 To conserve heritage items with compatible uses and ensure adjacent development is of sympathetic scale and character.

O15 To provide a village centre which includes a convenience shopping centre, shops and services for the community and surrounds.

K4.4 Access, parking and circulation

Objectives

O16 To provide a co-ordinated access and circulation network designed to conveniently and safely serve the Breakfast Point community in terms of pedestrian movement, bicycles, public transport, service and emergency vehicles, private motor vehicles and car parking.

O17 To connect and integrate the network with the existing external network.

O18 To minimise and equably share any impacts on the residential amenity of the surrounding community.

O19 To provide a level of public access and permeability comparable to that existing in the adjacent residential neighbourhood.

O20 To facilitate increased public access to the foreshore.

O21 To minimise hardstand area and potential surface run-off and maximise potential stormwater absorption and area available for soft landscape treatment.

Figure K4-4 Access & Circulation Principles shows the primary access and circulation network established at Breakfast Point.

Site Access

Controls	
C1.	Public vehicle access points to Breakfast Point are to be from: *Tennyson Road:* • at the main gates of the AGL works; • approx. 150 metres north of the Emily Street intersection; • opposite Whittaker Street; and • at the existing gateway in vicinity of Northcote Street. *Kendall Street:* • at the intersection of Bishop and Medora Streets *Emily Street:* • via Adams Street from Brays Road *Medora Street:* • opposite Medora Lane

Internal Road Hierarchy

Controls	
C2.	The road hierarchy is planned around development blocks or precincts described by a network of 'open access way' roads connecting to the external public road system. Each development site will have access to the public road system via open access ways.
C3.	All roads are community owned and maintained.

Public Access

Controls	
C4.	All Breakfast Point internal streets are 'open access' ways under the Community Land and Management Act. 'Open access' ways are effectively 'public space' under the Local Government Act 1993.
C5.	Open access ways can be considered as 'public roads' with the exception that the Community Association, not the Council, is responsible for maintenance.
C6.	Private Access Ways are provided where the function is for purely resident or service access to a distinct development or building. Private access roads may have restricted public access.

Traffic Calming

Controls	
C7.	Contained carriageway widths, surfaces, street geometry and landscaping are to be the primary traffic calming devices in the design of access streets.
C8.	Speed humps, chicanes and similar devices are not to be used.
C9.	Roundabouts, where required, are to be designed to accommodate buses and large rigid trucks, and should incorporate landscape beautification.

Road Standards

Controls	
C10.	AMCORD, Australian Standards and Council requirements are the guiding principles in the detail design of roads. The achievement of urban design objectives, on-street parking, heritage preservation and other considerations may determine standards varying from AMCORD guidelines.

Public Transport

Controls	
C11.	A bus route is to pass within 400m (approx 5 minutes walk) of any dwelling. The collector link and foreshore connector roads are designed to accommodate bus services.
C12.	A ferry terminal is to be integrated into the existing pier and accommodate convenient access to people with disabilities.
C13.	A bus stop is to be provided on the foreshore connector road approximately 75m from the pier.
C14.	Commuter parking is to be provided with convenient access to the pier precinct. Parking provision is to be sufficient to cater for other water and land based activities in the pier precinct.

Pedestrian Movement

Foreshore Access

Controls	
C15.	A combined public pedestrian/ cycleway is to be provided linking the northern end of Tennyson Road and Cabarita Park on a foreshore strip of land in public ownership.
C16.	Open access connections to the foreshore public open space are generally no greater than 200m apart.
C17.	The design of foreshore access system is to consider maintenance and emergency vehicle use.
C18.	Open access way streets are to include pedestrian footpaths to provide for public pedestrian movement within the site and connections to the external network, and to the foreshore.
C19.	Provision for through-block links are to be made where necessary for reasonable convenience.

Cycleways

Controls	
C20.	Combined pedestrian/ cycleway paths are to be provided to open space areas in accordance with Council's policy.
C21.	Combined pedestrian-cycle paths are to be provided to the collector link and foreshore connector link.
C22.	Residential access streets are to be cycle shareways.

Emergency and Service Vehicle Access

Controls	
C23.	The road network is to be designed to facilitate emergency and service vehicle access.
C24.	Large sized trucks must be able to safely negotiate to within 20m of every building.
C25.	Roads and turning areas are to be designed to discourage reversing movements.
C26.	Wherever possible loop access roads are to be used. Cul-de-sacs are to incorporate the minimum turning circle of large rigid trucks.

Sustainable Development

Controls	
C27.	All roads and movement systems are to be designed to minimise hardstand area and surface run-off, and to maximise the area available for soft landscape treatment and its potential stormwater absorption.

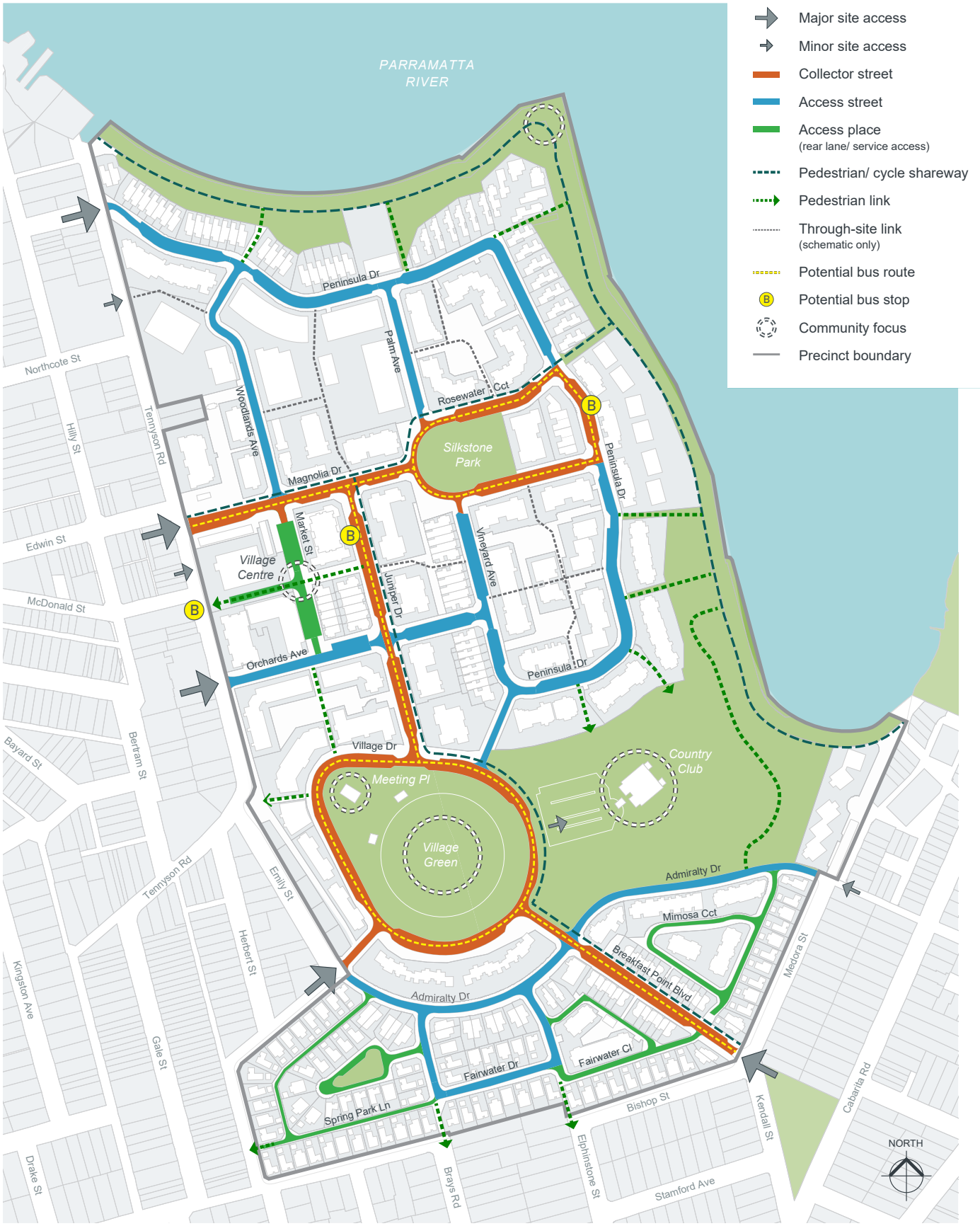


Figure K4-4 Access & Circulation Principles

K4.5 Land use principles

Uses in Breakfast Point are residential and a range of potential adaptive uses for heritage items possible under the Remediation Certification. Permitted land use at Breakfast Point is in accordance with LEP 2013, which zones the land R2 Low Density Residential, R3 Medium Density Residential, B1 Neighbourhood Centre, RE1 Public Recreation and RE2 Private Recreation.

All of the land within the Breakfast Point precinct is zoned either R2 Low Density Residential or R3 Medium Density Residential with the exception of the area occupied by the Meter Readers' Office which lies within the B1 zone. Figure K4-5 and details below describe the land use principles:

Residential

Breakfast Point is planned as primarily a residential neighbourhood. The LEP permits and other compatible uses to the extent that they contribute residential amenity, convenient services and employment.

Residential (Transitional)

The initial development planned at Breakfast Point was single family dwelling sub-division to the south and south west of the site to provide an early environmental buffer between long-term development and neighbouring residential areas.

Open Space (Public)

A 15m wide open space extending the full length of the water frontage of the site is to be dedicated for public foreshore access. This area is immediately behind the sea wall which is owned and maintained under the Community Scheme.

Open Space (Community)

Open Space planned and provided under the Community Scheme includes the Village Green, Silkstone Park and all landscaped areas within the Community Scheme.

Community buildings, eg the Meeting Hall, the Recreation Club and active recreation facilities are planned and built within this open space. This area also includes some restricted private open space 'rights' under easements.

Recreation & Social Uses

The Meeting Hall, Recreation Club and related recreation facilities are located on Open Space within Lot 1 of the Community Scheme.

Village Centre

Adjacent to the remnant Mortlake Village precinct, a neighbourhood community convenience shopping and service centre has been built, comprising a convenience store, café, several small shops, a child care centre and market square, together with Community Scheme management and security offices. Work/ live terraces and shop-top apartments have been also built in this village precinct to enhance 24 hour activity and security.

Heritage/ Adaptive Re-use

The uses for LEP 2013 scheduled heritage items are to be appropriate to the heritage conservation guidelines for the individual items, and comply with the relevant remediation certifi cation. The economically sustainable preservation of the item will be a primary issue in the consideration of applications.

Commercial/ Heritage Curtilage

The curtilage of heritage items certified for 'non-residential' uses. Uses compatible with heritage constraints and/ or remediation certification.



Figure K4-5 Land Use Principles

K4.6 Landscape & open space

At least 12 hectares of open space has been provided at Breakfast Point. This includes the Village Green and oval, the Foreshore Park, Silkstone Park, the pocket park at Spring Park Circuit and the sidewalks. This open space, being part of Lot 1 in the Community Scheme, is community owned.

Objectives

O22 To ensure that landscape and open space will be a major defining characteristic of Breakfast Point.

O23 To increase filtration and reduce stormwater run-off.

Public Access to Open Space

Controls	
C28.	The public access network is to be legible, direct, safe, attractive and convenient.
C29.	Access to open space is to be well defined and provides a safe and active high quality public domain. Accessible open space for the recreation needs of residents is to be provided.
C30.	Foreshore access is to be clearly identifiable for public use.
C31.	Located no further than 3 minutes walk from any part, the continuous Village Green/Foreshore public open space complex, together with the Central Park will provide for the active and passive open space needs of all Breakfast Point residents, and to the wider community.
C32.	Playgrounds and similar specific small facilities, together with a community recreation club and multi-purpose community meeting hall are to be integrated into this landscaped complex.
C33.	A 15m wide foreshore strip extending the full length of the harbour frontage behind the seawall is dedicated public land.
C34.	Public Open Space (open access under the Community Land Management Act) provision is to include: *Village Green* • A formal fenced playing field, constructed over an area which includes the entombed stratum, extending to include a multi-purpose community meeting hall. *Foreshore Area* • Incorporating a continuous 15 metre wide minimum width along the whole of the foreshore in Council's ownership, and additional community open space averaging a total of 30 metres width. *Waterfront Park* • An informal east sloping area linking the Village Green to the Foreshore area, incorporating a community recreation club and associated facilities, constructed over a designated restricted area. *Silkstone Park* • A formal, elevated, passive recreation park, providing a sense of arrival from the Tennyson Road approach and providing vistas to the harbour and beyond. *Spring Park* • A pocket park has been provided in Spring Park Close. *Market Square* • A open space is to be incorporated in the design of the Village Centre precinct. Its function is to provide for community activities, markets, performances, and any promotional activities which enhance the community spirit and vitality of the centre.

Community & Private Open Space

Controls	
C35.	Community and private open spaces are to be provided and integrated into the design of each development precinct or project to adequately meet the needs of its residents.

C36.	Issues to be considered in design include: • Streetscape enhancement • Privacy landscaping and screening • Climate and sun control • Swimming pools etc • BBQ areas • Private outdoor living and dining • Service areas • Shade • View & outlook enhancement • Boundary delineation • Solar Access • Environmentally Sustainable Design Standards
C37.	The quantity and quality of communal and private open space and landscape treatment will be on a merits based assessment of each Development Application.
C38.	Indicative private open space provisions are as follows: *Upper level dwellings: balcony, terrace* 1-2 bedroom: min area 8m^2, min dimension of 2m 3+ bedroom: min area 12m^2, min dimension of 2m *Ground level dwellings: patio, terrace* 1-2 bedroom: min area 16m^2, min dimension 4m 3+ bedroom: min area 35m^2, min dimension of 4m

Community Facilities

Controls	
C39.	Community facilities included in the urban village, while owned and managed under the Community Plan, are publicly accessible.
C40.	The Village Green is maintained as a full sized sports oval, with associated amenities and picnic facilities.
C41.	The Village Centre is to maintain its local convenience retail and community function, i.e. by ensuring that adequate space is provided for the following: • a local convenience supermarket • flexible shop space for approximately 10 specialty shops grouped around the open market square • flexible live/ work terrace dwellings
C42.	The following other community facilities are to be provided/ maintained: • a child care centre • a multi-purpose meeting hall to the north-west of the Village Green with strong connections to the Village Centre precinct • recreational facilities including a gymnasium, aerobics room, swimming pools, tennis courts, putting green, dining, library and function rooms.

Planting Principles

Controls	
C43.	An informal indigenous planting palette should be adopted for informal, passive open space areas, foreshore reserve and to the major recreation centre open space.
C44.	A formal planting palette should be adopted for streets, squares and areas of strong urban character. Deciduous species should be used extensively for solar access and shade control and to provide seasonal variety and colour.
C45.	Paving, fences, garden walls and all other built or service elements in the landscape are to be designed for minimum impact, to blend with soft landscape and be visually inconspicuous.
C46.	Vertical walls and horizontal paving are to be separated by a planting strip of ground cover or shrubs.

















01.Mimosa Apartments, 02.Kendall Bay Waterfront, 03.Hunters Wharf Walkway, 04.Breakfast Point Boulevard, 05.Community Hall, 06.Silkstone Park, 07.The Village Green, 08.Pavillion at Silkstone Park



Figure K4-6 Landscape & Open Space Principles

K4.7 Ownership & subdivision pattern

Land Ownership

The ownership structure is in principle:

- Public (Council) Ownership - A 15m wide portion of Foreshore Public Open Space extending over the whole of the length of the water frontage , behind the sea wall. The maintenance and upkeep is the responsibility of the community association under Community Scheme DP 270347.
- Freehold Torrens Title - All single family dwelling lots having frontage to existing public streets (Medora, Bishop, Adams Street and Brays Road) are individually owned Torrens Title fee simple lots.
- Lower Stratum (Entombed Cell) - The AGL retains ownership and responsibility for the containment cell stratum located a minimum of 1m below the finished surface in the vicinity of the Village Green.
- Community Schemes - The remainder of the site will be within Community Schemes.







01.Pedestrian link to Community Hall, 02.Silkstone Park, 03.Community event

Master Community Scheme

Comprises land indicated in Figure K4-7 including all ‘open access’ ways (streets and public pedestrian paths) on the land. This community scheme will be responsible for the management and maintenance of all roads, facilities, landscape and service infrastructure on the site, including Council's waterfront land.

Other Community Schemes

A separate community scheme includes internal Torrens Title single dwellings and duplex dwellings. A separate community scheme also exists for the strata titled apartments.

Public Access and Permeability

Under the Community Scheme all streets, and the vast majority of community open space areas are ‘open access ways’. Easements provide for public access rights, obligations and law enforcement as if in public ownership. Some community open space areas are subject to restrictive easements for services or private use. Refer to registered community plan DP 270347.

The objective is to free the Council of liability for the ongoing service and maintenance costs on the site whilst ensuring access and permeability to all normally 'public' facilities.

Subdivision Pattern

The subdivision pattern is designed and staged to reflect the rehabilitation and sequential ownership transfer program for the site. Each stage is to be certified prior to transfer of ownership and its availability for development. Seven 'super lots' have been created to facilitate this. The subdivision yields:

- A land-subdivision creating individual single family lots fronting existing streets (Brays Road, Bishop, Adams and Medora Streets)
- Community subdivisions for land north of the perimeter, single family lots and another community subdivision for the remainder of the land
- A separate lot will be created over the 15m wide waterfront, vested in Council
- A stratum subdivision encompassing the containment cell underground to remain with AGL

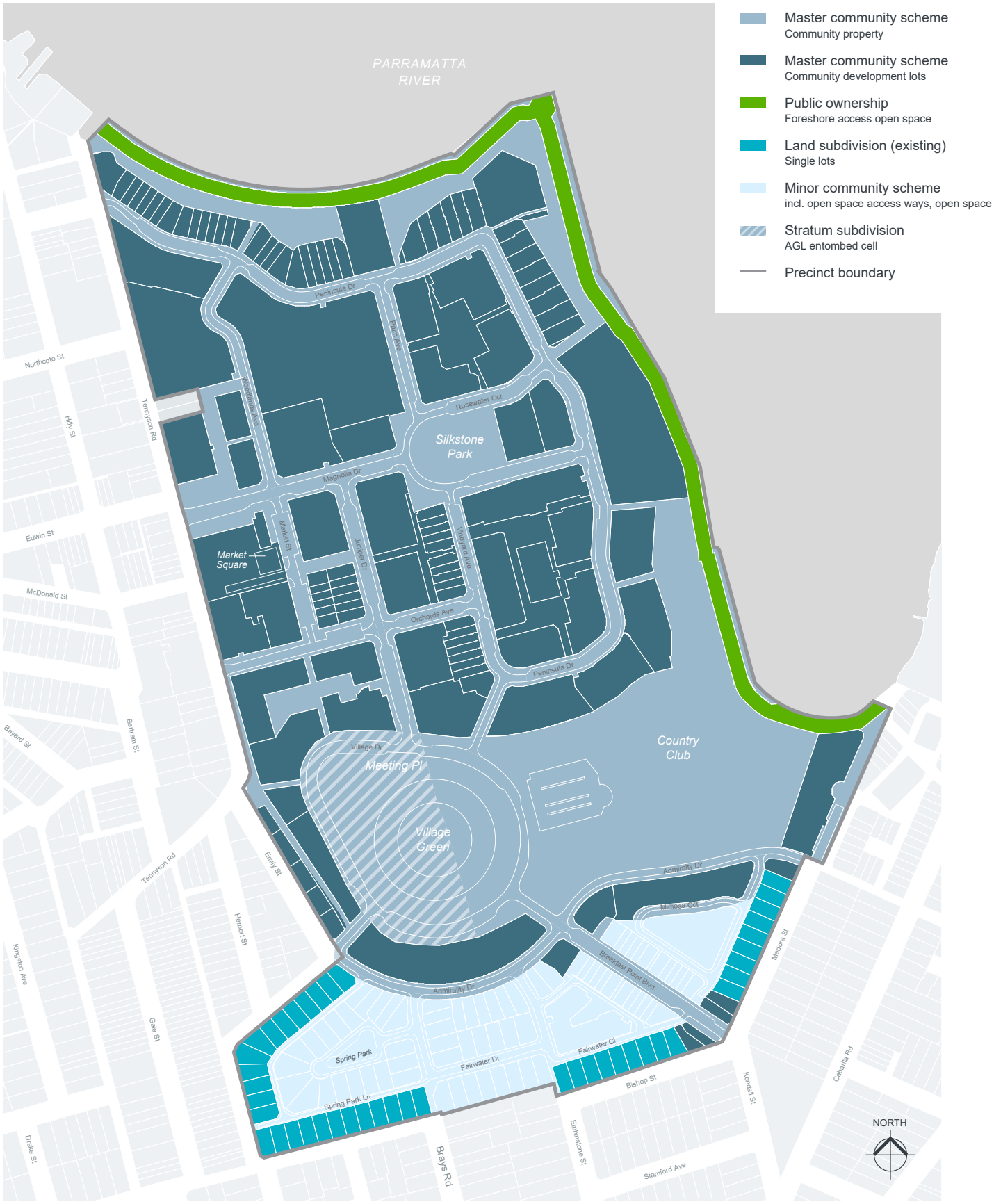


Figure K4-7 Ownership Principles

Precincts

The majority of Community development lots (Master community scheme) have been arranged into Precincts as indicated by Figure K4-8 Precincts

K4.8 Floor space ratio

Objectives

O24 To ensure that buildings are compatible with the bulk and scale of the desired future character of the locality,

O25 To provide a suitable balance between landscaping and built form

O26 To minimise the effects of bulk and scale of buildings.

Controls	
C47.	The maximum floor space ratio for the land identified in Figure K4-3 must not exceed 0.67:1.
C48.	Development applications are to be accompanied by a cumulative compliance schedule demonstrating that the total floor space ratio of all development within the Breakfast Point precinct does not exceed 0.67:1.



Figure K4-8 Precincts

K4.9 Building envelopes & built form

Objectives

The building envelope and built form objectives are to provide reference points for Council's merits-based assessment of Development Applications at Breakfast Point. They are:

O27 To acknowledge and enhance the prominent visual relationship Breakfast Point has to Parramatta River and its environs.

O28 To provide a complementary interface with the surrounding urban fabric, and transition between existing and new, higher density, living areas.

O29 To provide a vision for the future built character of Breakfast Point.

O30 To establish principles of building arrangements and envelopes and their relationships to site features, adjacent development, and the public domain.

O31 To provide a high standard of amenity and quality of living environment for residents.

Parramatta River Visual Catchment

The visual character of Breakfast Point viewed from the River, its foreshores and viewpoints beyond is to comprise:

Foreshore Open Space Edge

Controls	
C49.	A foreground dominated by informal vegetation and tree planting above the sea wall.
C50.	Building foreshore setbacks generally are to be varied and no less than 30m.
C51.	To provide visual connection to inner areas, individual building facades fronting the foreshore should be articulated and no more than 60m long.
C52.	Compatible public or community structures and facilities may occur in the foreshore open space.

Pier Precinct (Active Waterfront Area)

Controls	
C53.	A formally landscaped area, focusing on the pier and associated water-based uses. Buildings in this precinct may include commercial uses at low level, and to provide interest, variety and counter-balance the scale of the pier.

Skyline

Controls	
C54.	The skyline is to comprise of articulated low-to-mid rise roof forms interspersed with vegetation.
C55.	Roof forms are to be simply designed, modulated to a scale, and in materials and colours recognising the significant views to the site.
C56.	Roof plant and fixtures are to be fully integrated into the roof design.
C57.	Taller buildings are to be located towards the centre of the site, on higher land, with building height reducing towards the waterfront and adjacent development boundaries, two to five storey buildings predominate.

Interface with Existing Residential Areas

Controls	
C58.	Development fronting the adjacent residential streets (Medora, Bishop, Adams Street and Brays Road) is to comprise dwellings or attached dwellings.

Streetscape & Public Domain Character

The vision for Breakfast Point is:

- A built environment which optimises available light and sun to private and public domains within an orchestrated landscaped setting.
- A vigorous and interesting public domain reinforced by landscape and its defining, proportioned, and articulated architectural edges.



Figure K4-9 Building Envelope Principles & Heights

Building Height

Controls	
C59.	Building heights are to be designed to minimise the amenity impact of new development on adjoining areas and to ensure that buildings are appropriately scaled in relation to street widths and open spaces.
C60.	The maximum permissible height for any building at Breakfast Point is 9 storeys.
C61.	Refer to Figure K4-9 Building Envelope Principles & Heights which shows building heights in storeys.

Figure K4-13 on page K-35 demonstrates how the roof level of a building with a flat roof is lower than the ridge level of a similar building with a pitched roof. This results in improved view access.

Solar Access, Light & Privacy

Residential development at Breakfast Point is to be in accordance with State Environmental Policy No65 – Design Quality Residential Flats standards. Where SEPP 65 does not strictly apply, (e.g. single, attached and two storey apartments) the relevant amenity principles are adopted as the guideline for minimal acceptable residential amenity standards.

Controls	
C62.	The location, planning and orientation of buildings and open space is to maximise opportunities for solar access, natural light and privacy to dwellings.
C63.	Buildings are to be sited and designed to maximise available sunlight to north-facing windows of living areas and principal areas of open space, having regard to slope, views and overshadowing.
C64.	Solar access to each dwelling is to be maximised. Sunshine is to be available to a main living area and private open space of each dwelling for a minimum of three hours duration between the hours of 9am and 5pm at 21 June (mid winter).
C65.	Privacy design performance criteria should be in accord with the NSW Model Code: A Model for Performance-Based Multi-Unit Housing Codes: NSW Dept Urban Affairs and Planning 1997

Mass & Proportion

Objectives

O32 To provide for streetscape relief, pedestrian, landscape, breeze and view corridors.

O33 To maintain an appropriate residential scale to the Breakfast Point streetscape.

Controls	
C66.	Building facade lengths should not exceed 60 metres without a pronounced break or relieving treatment.

Roof Form & Colour

Objectives

O34 To minimise the visual prominence of roofs being overlooked by residents of higher dwellings.

O35 To provide an articulated skyline to Breakfast Point from distant viewpoints.

O36 To provide visual relief to the streetscape.

O37 To encourage subtle contrast and variety within a consistent design theme.

O38 To encourage the use of dormer style windows.

Controls	
C67.	Hipped and gable type roofs with wide eaves are to be the predominant roof form.
C68.	All roof top services, vents, lights, are to be integrated into the roof design.
C69.	Roof materials may vary. Roof colours are to be inconspicuous grey tones.
C70.	Flat roofs with carefully selected finishes and considered detailing may be used to facilitate view sharing.

Facade Treatment

Objective

O39 To enrich the streetscape in detail.

Controls	
C71.	Facades, particularly those defining streets are to provide modulation of light and shade through finessed secondary architectural detail, contrasting with heavier wall and roof elements.
C72.	Contributing elements could include eaves, sun control, hoods, louvres, shutters, pergolas, verandahs, balconies, balustrades, porticoes, loggias, dormers, roof lanterns and ventilators.

Setbacks & Addressing the Street

Objective

O40 To reinforce the streetscape character.

Controls	
C73.	Subject to adequately meeting amenity performance requirements, all buildings are to define (be parallel to) the streets and have their primary pedestrian access and address from their primary street frontage.
C74.	Setbacks from the street are to reflect the precedent/s established for the street.

Colour & Light

Objective

O41 To enhance the amount of light and reflected light available to public and private domains in a comparatively dense built environment.

Controls	
C75.	The predominant primary walls are to be light soft colours.
C76.	The predominant colour for secondary architectural detail is to be white.

Ancillary Built Elements

Controls	
C77.	All built elements (fences, garden and retaining walls etc.) not part of a building are to be designed to blend into the landscape to minimise their visual intrusiveness.

Building Types

The following residential building types are anticipated at Breakfast Point responding to different locations, market sectors and lifestyles.

- Single houses - located opposite existing single dwellings and also within Community Scheme No.1, opportunity for rear access
- Semi-detached houses - rear and street car access
- Terraces - 2-3 storey, rear and semi-basement carparking
- Apartment building 2-3 storeys - semi basement carparking
- Apartment building 5 storeys - lift access, semi-basement and basement carparking
- Apartment building 9 storeys - expression of top, middle and base, basement carparking
- Waterfront houses - large single dwellings, terraces and duplexes with courtyard gardens, attached double garages

Retail, commercial and community buildings are anticipated as 1 and 2 storey, with residential development over (upper levels) where appropriate.

Adaptable Housing

Controls	
C78.	A minimum of 5% of the total dwellings are to be designed as readily adaptable to the requirements of the Essential Features of AS4299-1995 'Adaptable Housing'.
C79.	Adaptable housing is to be located within 300m of the Village Centre.







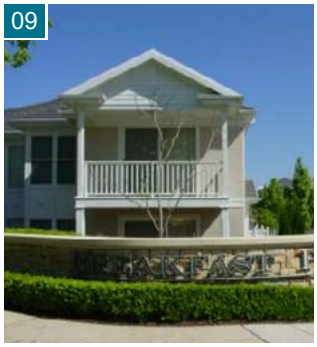




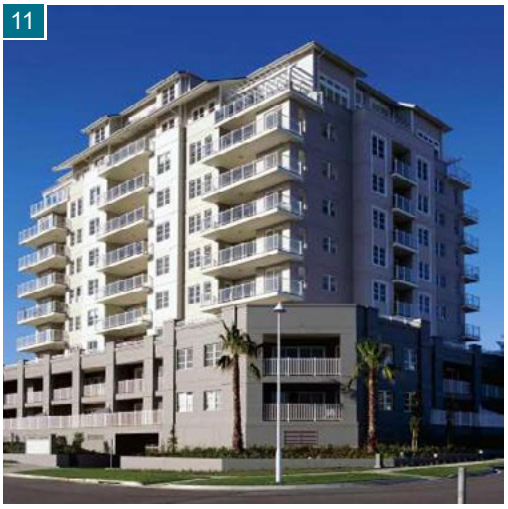












01.Five storey apartment building, 02.Vertical articulation of facade, 03.Two storey corner built form, 04.Detached two storey family dwelling, 05.Articuated building entry, 06.Buildings addressing open space, 07.Semi detached housing typology, 08.Corner treatment, 09.Detached dwelling, 10.Heritage-listed Meter Reader's Office, 11.High density apartments



Figure K4-10 Urban Design Principles

K4.10 Heritage conservation

The buildings and structures scheduled as heritage items in Canada Bay Local Environmental Plan are to be conserved and adaptively reused.

No heritage item is to be demolished, altered, removed or modified without Council consent. Listed heritage items are:

Gate House and Gates

Brick building with slate roof, flanked by weighbridges.

Possible uses: Security, Commercial

Office No.1

Early 20th Century brick office building with tile roof, bullnosed iron awnings, arches over windows.

Possible uses: Information and estate management, Commercial







01.The Gatehouse, 02.Tennyson Rd Wall, 03.Blacksmiths Workshop

Brick Wall to Tennyson Road

Brick wall with engaged piers and spandrels. Additional openings will be made in the wall to provide vehicular access for cars and service trucks and to increase visual and pedestrian connections to adjacent urban precinct.

A Conservation Management Plan has been prepared in relation to this structure.

Meter Readers Office

Brick and slate building with pilasters and large overhanging eaves, which are supported by wooden brackets. Formerly contained a roofed walk-through bay to hold the time-keeping appointments.

Possible uses: estate management, commercial.

Blacksmiths Workshop

Polychromatic brick building with classical influences such as pilasters, string course and pediment. Roof trusses are lightweight and cast iron semi-circular headed windows have 12 panes of circular openings with louvres.

Possible uses: community recreation and amenities, commercial

Plumbers Workshop

Two storey brick building with parapet string course, semi-circular arches, surmount doors and multi-paned windows.

Possible uses: An interpretive display illustrating the historical roles of Breakfast Point, its locality and people is to be provided on site. The facility should include indoor and outdoor exhibits.



Figure K4-11 Heritage Conservation Principles

K4.11 Remediation

The land has been remediated under an audited Remediation Action Plan (RAP).

Land Use and Development Constraints

The four certified remediation zones are as follows:

1. Unrestricted Residential Zone

There are no restrictions on land use in this zone. Development anticipated in the certification of this zone includes all forms of residential buildings, child care and school facilities, commercial and industrial buildings, recreational facilities and open space.

2. Restricted Residential Zone

There are no restrictions on this type of land use in this zone, however, development is constrained by a Section 88b Instrument attached to the land title. This instrument effectively prohibits construction or disturbance below RL AHD 13.00.

Development anticipated in the certification of this zone includes all forms of residential buildings, child care and school facilities, commercial and industrial buildings, recreational facilities and open space.

Council will not grant Development Consent in this zone involving construction or disturbance below RL AHD 13.00, unless the Application includes a 'Work Method Statement' certified by the site auditor.

3. Non Residential Zone

This land includes areas which may contain low level residual contamination, It includes the area above the 'containment cell stratum'.

The anticipated uses in this zone include open space, playing fields, commercial or industrial, roads and infrastructure. Limited residential development could be permitted in this zone subject to certification by the site auditor.

4. Commercial/ Industrial Zone

This land includes areas under existing buildings proposed to be retained. The nature and extent of development and construction in this zone is constrained by a Section 88b Instrument attached to the land title.

Anticipated uses include commercial or industrial. Council will not grant Development Consent in this zone unless the Application includes a 'Work Method Statement' certified by the site auditor.



Figure K4-12 Remediation Zones

K4.12 Environmentally sustainable design

Objectives

O42 To reduce dependence on non-renewable and environmentally detrimental energy resources.

O43 To reduce household energy demands.

O44 To provide convenient and pleasurable access alternatives to the use of motor vehicles for local trips.

O45 To reduce residential waste to landfill.

O46 To minimise pollutants to atmosphere, ground and water.

Controls

Controls	
C80.	90% of the individual population is within 5 minutes walking distance from the Village Centre.
C81.	All major destinations, the Village Green, the Recreation Centre, the Village Centre and Intensive Water Activities are located on a bus route.
C82.	A ferry/ bus interchange links the community to the regional employment centres of Sydney and Parramatta. Ferry usage is encouraged by provision of commuter parking at the wharf.
C83.	A comprehensive pedestrian/ cycleway network provides safe, convenient and attractive links between facilities.
C84.	Priority is given to deciduous trees and shrubs to the north of internal and external living spaces to maximise solar and light availability in winter.
C85.	The extensive foreshore landscape area is predominantly planted using indigenous species, remnant mangroves in Kendall Bay are retained.
C86.	Hardstand areas, roads and other impervious surfaces are minimised.

K4.13 Definitions

"Storey" means a floor which has more than 50% of its volume above finished ground level.

"Finished ground level" means finished ground level which is determined at any point by straight-line interpolation between the designed (or built) levels at street frontage, adjacent allotment or open space boundaries.

“Existing ground level” means existing ground level which is determined at any point by straight-line interpolation between the existing levels at street frontage, adjacent allotment or open space boundaries.

A basement bounding wall is not to exceed 1.5m above the finished landscaped level unless adequately screened to Council approval.

An attic area wholly within a roof space, except for dormer style windows, is not a storey.

A mezzanine, as defined under the Building Code of Australia (BCA), may not be considered a storey subject to Council's merits assessment.

“Community” referring to land or property means land within Lot 1 of the Community Scheme DP 270347.

“Community plan” means the registered deposited plan under Community Scheme DP 270347.

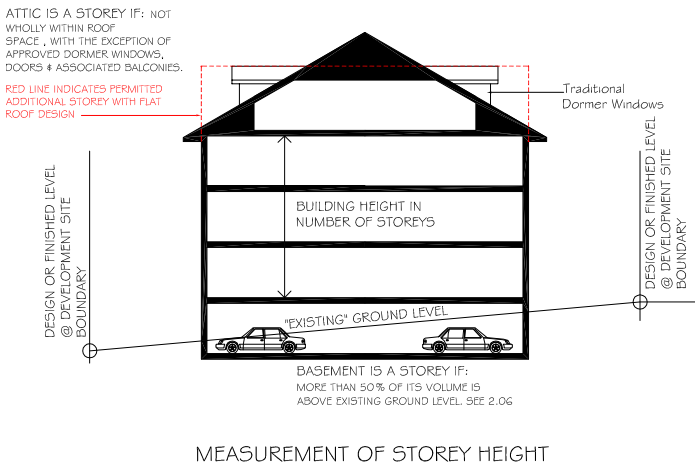


Figure K4-13 Measurement of storey height

K4.14 Provisions for single dwellings

The following additional provisions for single dwellings apply to the area identified in Figure K4-14 Additional provisions for single dwellings location map.

Objectives

O47 To preserve and enhance the established character of existing streets to the perimeter of the Breakfast Point site.

O48 To ensure the bulk, scale, pattern and character of the new dwellings are consistent with existing development.

O49 To avoid abrupt changes in visual character between the existing development and the Breakfast Point development.

O50 To provide high standards of residential amenity to the new development.

O51 To encourage best practice in Environmentally Sustainable Development.



Figure K4-14 Additional provisions for single dwellings location map

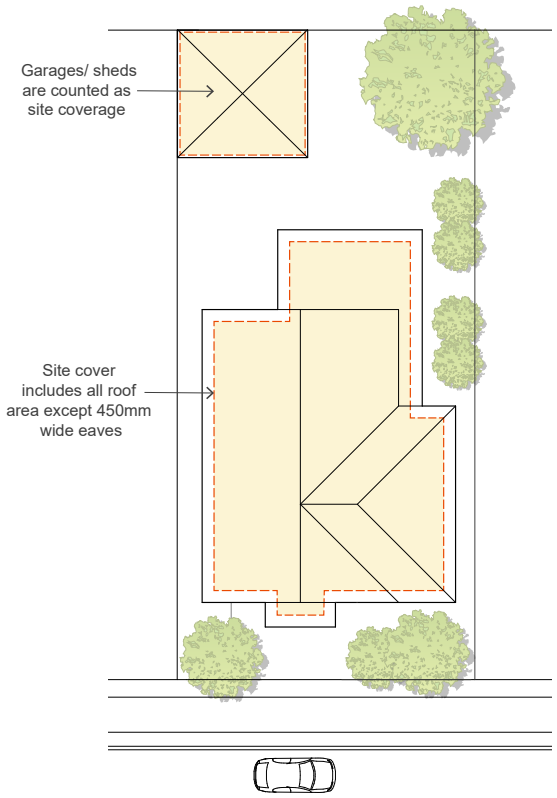


Figure K4-15 Building site cover

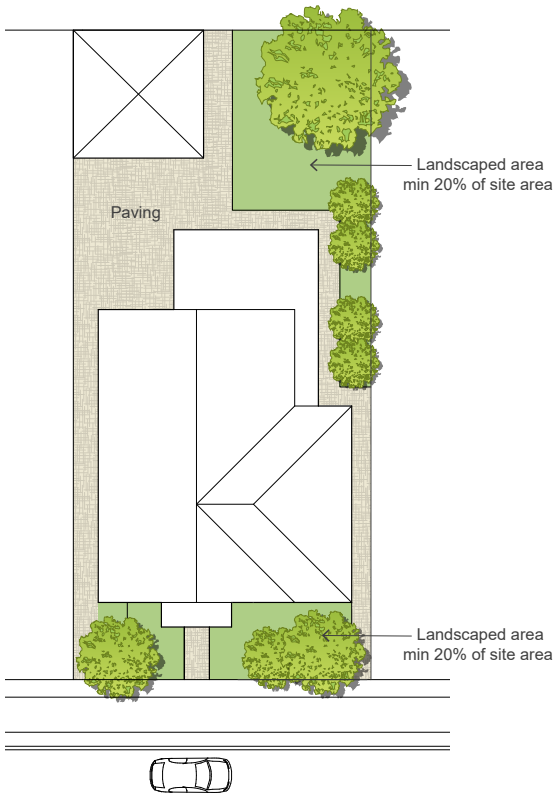


Figure K4-16 Landscaped area

Subdivision

O52 To maintain the streetscape character and the planned residential density.

Controls	
C87.	One single dwelling only is permitted per lot. Subdivision is prohibited.

Building Site Cover

O53 To maintain sufficient land available for private open space, light and sun penetration, landscape, storm-water absorption and flow in accordance with sustainable development principles.

Controls	
C88.	No more than 50% of a lot area is covered by built development. Built development includes all roofed areas except eaves extending up to 450mm from external walls. Refer to Figure K4-15.

Landscaped Area

O54 To ensure the residential precinct has an atmosphere of a ‘garden suburb’.

O55 To provide adequate site absorption of storm water and to provide for reasonable photosynthesis in line with sustainable environmental principles.

Controls	
C89.	A minimum of 20% of the site area is to be soft landscape, grass, ground-cover, shrubs, and trees. Refer to Figure K4-16.

Dwelling Setbacks

Primary Frontage

O56 To complement the character of existing neighbouring streetscape.

O57 To maintain generally consistent landscape area between kerb and dwellings on both sides of the street.

O58 To encourage elements that break down the visual bulk and scale of buildings in the streetscape.

Controls	
C90.	Main House Walls: minimum 5m setback.
C91.	Single storey elements such as pergolas, verandas, terraces, porticos, bay windows and partially enclosed elements: minimum 3m setback. Refer to Figure K4-17.
C92.	Main house setbacks may be averaged to provide an area between the house and the front boundary equal to that area provided by a 5m setback. A minimum setback for any part of 3m must be maintained. Refer to Figure K4-18.

Adjoining Lots (Side Boundary)

O59 To provide separation between houses fronting streets.

O60 To provide opportunity for landscape between dwellings.

O61 To permit reasonable solar and light access between dwellings.

Controls	
C93.	Wall height up to 3.6m above natural ground level: 1.0m minimum. Wall height up to 7.2m above natural ground level: 1.5m minimum. Refer to Figure K4-19.
C94.	Garden or retaining walls: when over 500mm high, to be setback a distance equal to the height of the wall.
C95.	Single storey garages wall height up to 3m: nil, provided all maintenance and services can be satisfactorily achieved wholly within the allotment, and solar access criteria can be met.

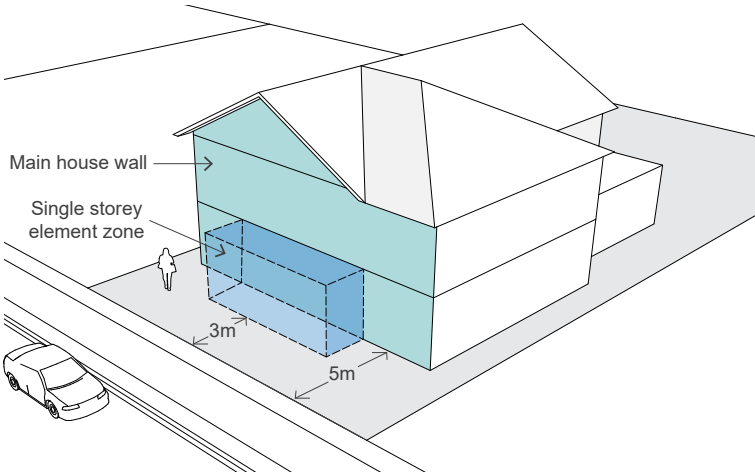


Figure K4-17 Minimum front setback requirements

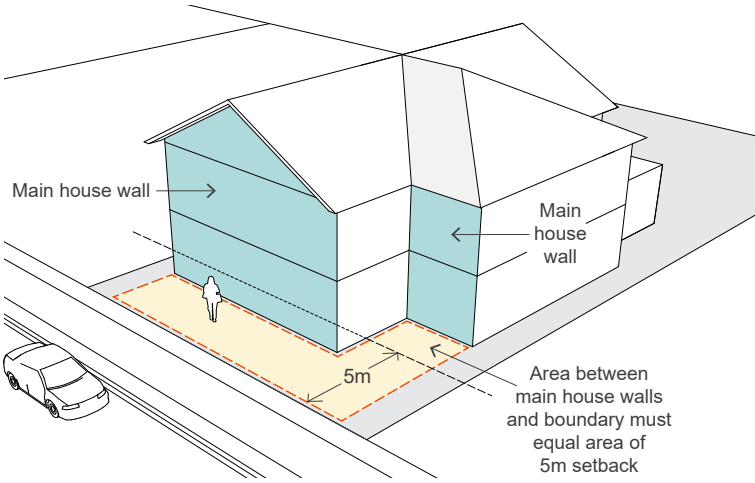


Figure K4-18 Minimum front setback requirements - alternative

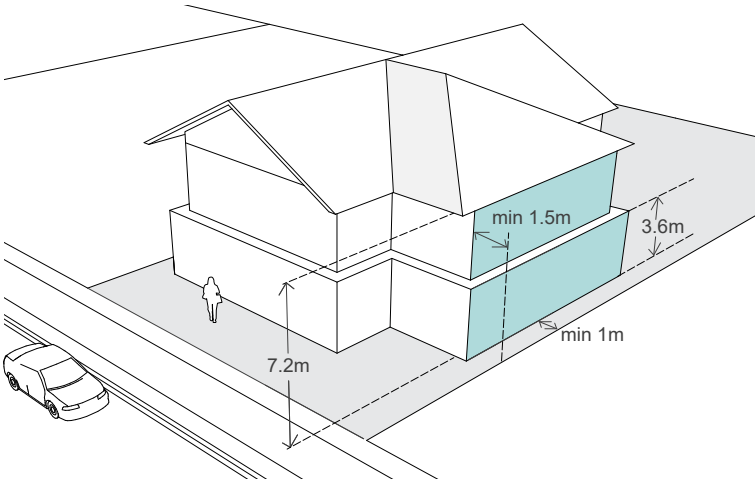


Figure K4-19 Minimum side setback requirements

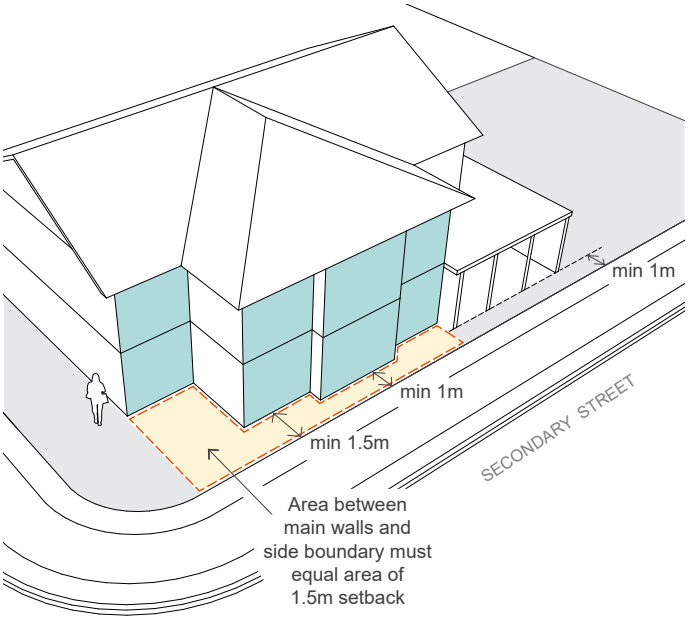


Figure K4-20 Secondary street frontage setback requirements

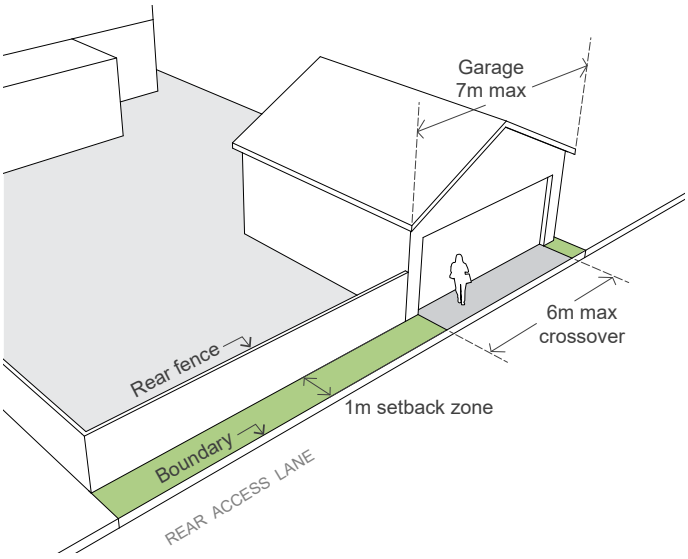


Figure K4-21 Required minimum setback from access lanes

Secondary Street Frontage (Corner Lots)

O62 To maintain streetscape character whilst retaining reasonable privacy and security to private open spaces.

O63 To encourage variation and relief in facade treatment facing public space.

Controls	
C96.	Main House Walls: 1.5m minimum.
C97.	Pergolas, Verandas, Terraces, porticos and other partially enclosed elements: 1.0m minimum.
C98.	Main house setbacks may be averaged to provide an area between the house and the front boundary equal to that area provided by a 1.5m setback. A minimum setback for any part of 1.0m must be maintained. Refer to Figure K4-20.

Encroachments

Controls	
C99.	Eaves, gutters and downpipes may encroach into setbacks in accordance with BCA and to 450mm maximum.

Setback from Access Lanes

O64 To provide a consistent access lane character softened by landscape.

Controls	
C100.	All structures, garages and fences are to be setback 1.0m from any boundary adjoining a lane. Refer to Figure K4-21. Note: This setback area is to be an easement in favour of the Community Association who will be responsible for its treatment and maintenance.

Access

O65 To maintain existing streets as the address of new dwellings.

O66 To ensure the design of dwellings presents a frontage to existing streets consistent with the existing street character.

Controls	
C101.	Street numbers and mailboxes will be located on the streets to which the dwellings permitted by this DCP are required to have the primary frontage.
C102.	Public and visitor access will be from these streets.
C103.	On-street visitor parking will be provided on these streets.
C104.	On-street parking will not be available in lanes.
C105.	Dwellings will address and be designed to ‘front’ these streets.

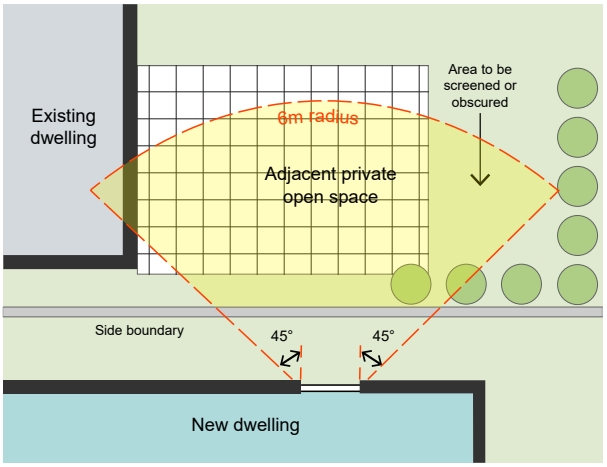


Figure K4-22 Screening of views to adjacent private open space from a side window

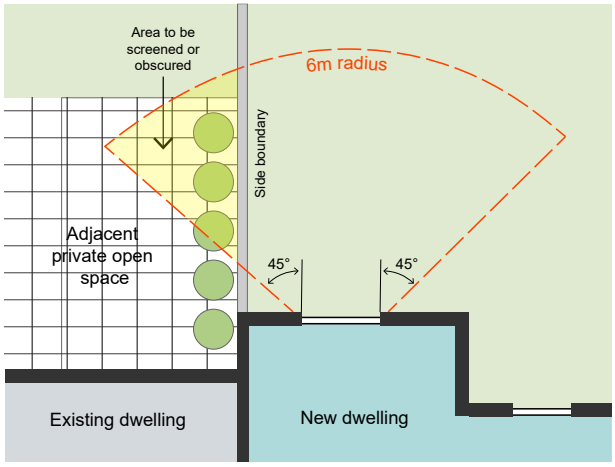


Figure K4-23 Screening of views to adjacent private open space from a back window

Tree Preservation

O67 To preserve and maintain the master-planned prominence of landscape in the character of the residential street.

O68 To assist in meeting environmentally sustainable development objectives.

Controls	
C106.	All trees are subject to Council's Tree Preservation Order.
C107.	Street trees must not be interfered with without the prior consent of Council.
C108.	Existing trees within the site and on public land must be protected throughout construction.

Landscaping

O69 To ensure landscape and planting is considered and integrated with house planning and design.

O70 To ensure sustainable development principles are acknowledged and that impacts on neighbouring amenity are considered at the planning stage.

Controls	
C109.	A Landscape Principles Plan is to be submitted for approval with building plans and include detail of tree location, mature size, evergreen or deciduous, screening, hedges, shrubs, turf areas, fences, and paths and paved areas.

Privacy

O71 To ensure the siting, design and landscaping of buildings minimises direct overlooking into habitable rooms and private open space.

O72 To ensure the siting, design and landscaping of buildings provides acoustic privacy to habitable rooms and open space.

Controls	
C110.	Habitable room windows are to be predominantly oriented to the street and rear of lots.
C111.	Habitable room windows are to be located outside a 45° angle of view from any habitable room window of any adjacent dwellings within 6m. Refer to Figure K4-22.
C112.	Alternate screening, obscure glazing and other solutions will be considered on merits.
C113.	A minimum separation between habitable room windows and balconies of 12m is to be provided unless provided with approved screening.
C114.	Landscaped plans are to include planting designed to minimise overlooking adjacent private open spaces.

Swimming Pools and Surroundings

O73 To ensure the construction and use of swimming pools does not unduly impact on neighbourhood amenity.

Controls	
C115.	Prohibited: Pools between dwellings and the primary street frontage and above ground pools.
C116.	Safety requirements are to be to Australian Standards, and Statutory requirements.
C117.	Pools and surround paving are to be setback a minimum of 1.0m from any boundary. This setback is to be soft landscape treated.

Fencing

Primary Street Frontage Fencing (Front Fence)

O74 To provide a consistent street-scape character.

O75 To maintain a landscaped dominated street-scape visual environment.

O76 To minimise 'built elements' in front of dwellings.

Controls	
C118.	Fences are to be no greater than 1m in height. Refer to Figure K4-24.
C119.	Front fence treatment is to extend along side boundaries to the line of the adjacent front wall of the dwelling or 5m from the front boundary whichever is greater. Refer to Figure K4-24.
C120.	Fences are to be of semi-open design with low shrubs planted behind. Materials can include masonry, timber picket, metal spearpoint and combinations. Refer to Figure K4-26.

Rear Lane, Side Street and Public Area Fencing

O77 To provide a consistent fencing character throughout the estate.

O78 To permit reasonable privacy and security without streets and public access ways being dominated by paling fences.

Controls	
C121.	Maximum 1.8m in height, lapped and capped timber paling fence to estate detail, painted Dulux Timbercolour Birch Grey or equal. Refer to Figure K4-25.
C122.	Paling fences to boundaries fronting side streets or public access ways are not to extend more than 2/3 the length of boundary.
C123.	The paling face of fencing is to address streets and public areas.

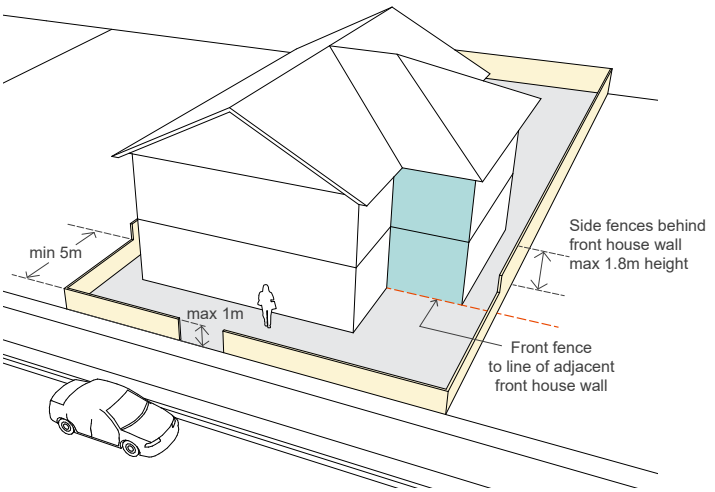


Figure K4-24 Front and side fence requirements

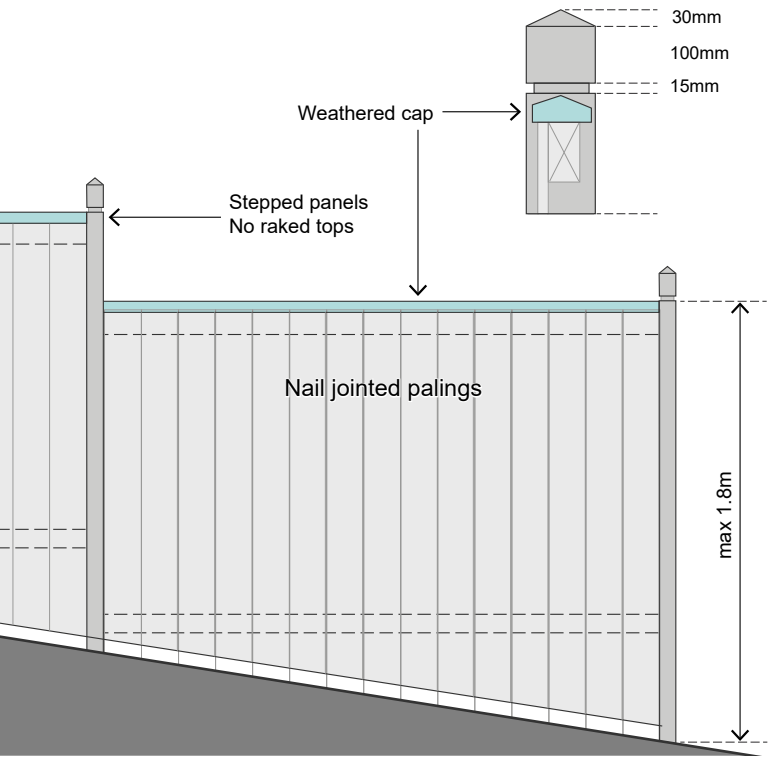


Figure K4-25 Fence detail (adjoining allotment)

Adjoining Allotment Fencing (Side and Rear)

O79 To provide privacy and security to private outdoor spaces.

O80 To allow for containment of domestic pets permitted under the management plan.

Controls	
C124.	Maximum 1.8m high lapped and capped timber paling fence to estate detail, painted Dulux Timbercolour Birch Grey or equal. Refer to Figure K4-25.
C125.	No side fence is to be closer to the street than the main house wall facing the street. Refer to Figure K4-24.

Adjoining Community Open Spaces

O81 To provide a natural landscaped edge to the community open space whilst providing for individual privacy and security.

Controls	
C126.	Maximum 1.8m high black galvanised pipe and chain wire fences and gates backed by screening landscape.

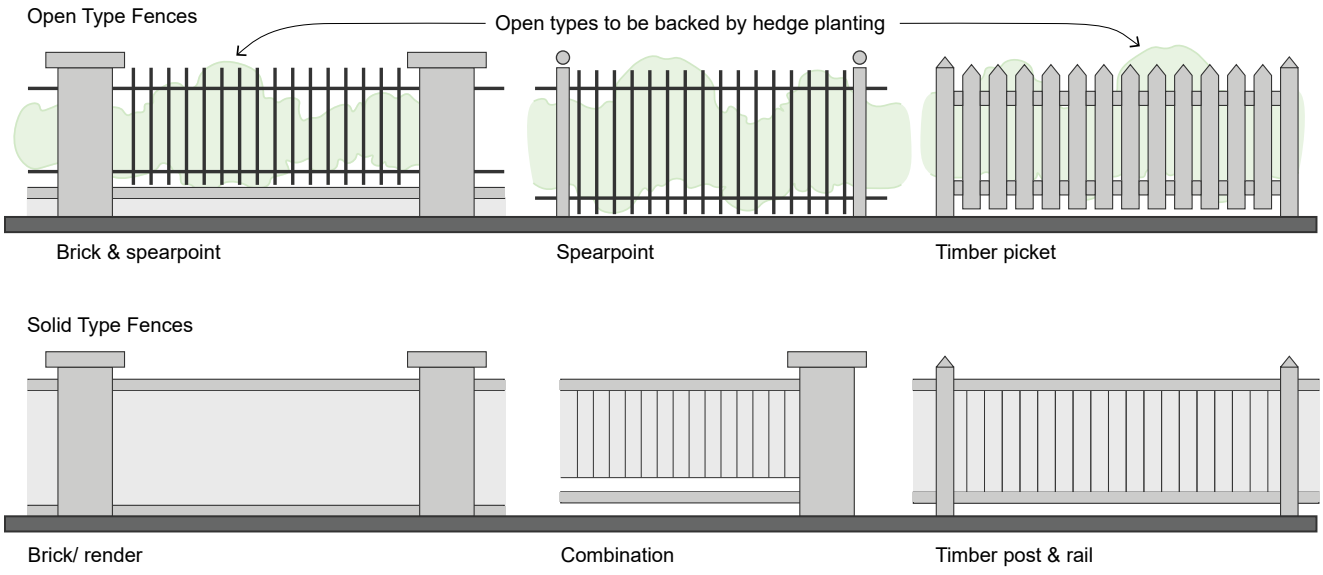


Figure K4-26 Fence types

Mail Box and Street Number

O82 To facilitate location of individual dwellings and to maintain consistency in visual elements contributing to street-scape character.

Controls	
C127.	Each dwelling is to have a mailbox, and a clearly visible street number unit to the primary street frontage integrated in fencing treatment to Australian Post requirements.

Building Form, Height & Character

Wall Height and Storeys

O83 To preserve views and outlooks.

O84 To minimise shadow and privacy impacts.

O85 To ensure buildings reflect the natural slope of the land.

O86 To maintain a consistent two storey residential scale.

O87 To provide residents reasonable expectations for adjacent development.

Controls	
C128.	The external wall height is to be no greater than 7.2m above the natural ground level at any point. Refer to Figure K4-27.
C129.	A higher gable treatment up to the maximum ridge height of 9.5m may be permitted, where it can be shown that there is no additional impact on neighbourhood amenity. Refer to Figure K4-27.
C130.	No building shall exceed 2 storeys in height.
C131.	Attic accommodation wholly within the roof space may be permitted subject to satisfactory design of dormer or skylight windows in terms of streetscape and neighbours amenity.

Roof Height and Shape

O88 To maintain a consistent visual roof-scape character and form, compatible with existing Concord residential precincts, when viewed from the public domain and higher buildings and vantage points.

Controls	
C132.	A minimum roof pitch of 27.5° is required. Refer to Figure K4-27.
C133.	The maximum ridge height is to be 9.5m above the natural ground. Refer to Figure K4-27.
C134.	Flat, curved and other nontraditional roof forms will only be considered where Council can be satisfied they are appropriate under the circumstances.

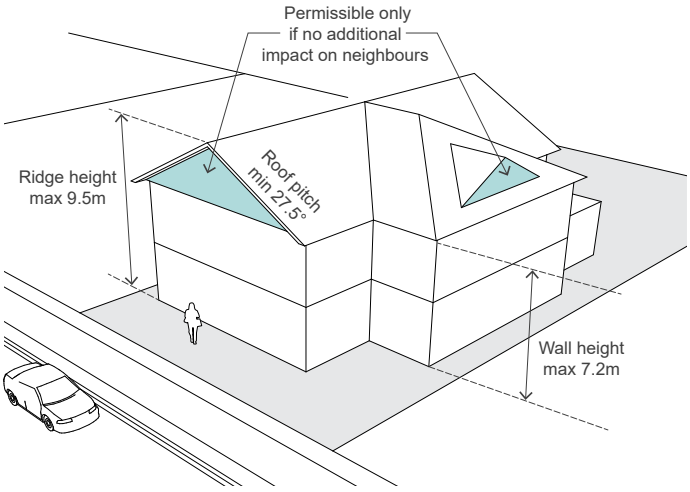


Figure K4-27 Maximum heights and minimum roof pitch

Streetscape Character

O89 Design, detailing and finish is to:

- be in scale with the existing development in the street.
- add visual interest.
- enable differentiation between dwellings viewed from the street.
- provide entries readily apparent from the primary street.
- convey a sense of address.

O90 Garages and parking are to be sited and designed to minimise impact on the street.

Controls	
C135.	The front door and some main windows are to face the primary street frontage.
C136.	Street facades are to be articulated by elements such as bay windows, dormer windows, verandas, pergolas, balconies, gables, etc.

Note: vehicle access prohibited from Brays Road, Bishop Street, Medora Street and Adams Lane.



Example of a well articulated facade with the main entry, windows, balconies and a verandah clearly addressing the street

External Materials, Finishes and Colours

O91 Materials, Finishes and Colours are to:

- be compatible with those found in the existing surrounding residential precinct.
- reflect light between dwellings and heat away from dwellings without undue glare or rogue reflections.
- avoid harsh contrasts in tone, colour or texture.
- assist in creating the desired light, bright, warm and cheerful neighbourhood character.

O92 Provide a backdrop for the desired landscape dominated streetscape.

Controls	
C137.	Wall Materials are to be: • Facebrick with appropriate joints, rendered or bag rendered. Masonry, painted, timber or FC weatherboard cladding, painted or approved combinations of the above. • Wall colours are to be light reflective pastel shades. No walls are to be darker than the traditional 'liver brick' found in the precinct. • Strongly mottled facebrick blends are inconsistent with the desired character and are not permitted. • Brick joints are to blend, not contrast, with brickwork.
C138.	Roof Materials are to be: • Tile, slate, shingle, or ribbed metal sheet. • Roof Colours are to be low reflectance. • Glazed finishes and materials causing nuisance glare are not permitted. • Strong colours, mottled blends or flashed tiles are not permitted.
C139.	Secondary Elements, trim, eaves, gutters, windows, joinery, etc, can be used to provide contrast in texture and colour to the primary wall and roof surfaces.

Roof Mounted Fixtures

O93 To avoid unattractive adhoc installations detracting from the roofscape and skyline outlook viewed from vantage points within and beyond the neighbourhood.

Controls	
C140.	No more than one miniature UHF type antenna mounted no higher than 1.5m above the highest point of the roof is permitted per dwelling.
C141.	No satellite disc receivers or similar devices are to be installed.
C142.	Solar collectors are to be mounted at the same pitch as the roof and are not to be visible from the street. Roof mounted water storage units are prohibited.

Ancillary Buildings

O94 To ensure that the visual character of the neighbourhood is not prejudiced by ad-hoc sheds, outbuildings and the like.

Controls	
C143.	No ancillary buildings or structures, including prefabricated sheds, are to be erected on any lot without consent.



Example of a building and fence design that successfully addresses the public domain and allows for views to and from the street



Wall colours are to be light pastel shades and wall materials can be rendered facebrick, weatherboard or a combination



Example of roof materials and colours that integrate into the neighbourhood and are low reflective/ non-glare

ESD Principles

Energy Efficiency

O95 To achieve energy efficient housing using passive solar design, that provides residents with year-round comfort and reduces energy consumption.

Solar Access and Orientation

O96 Orientation, layout and landscape are to make best use of natural ventilation, sunlight and solar energy.

Controls	
C144.	Buildings are to be oriented to maximise solar access to living areas.
C145.	Windows are to be located and shaded to reduce summer heat load and permit entry of winter sunlight.
C146.	Exterior shading devices are to be used, eg. eaves, balconies, verandas, pergolas, window shutters, adjustable louvres, landscape devices.
C147.	Living areas are to be located to the north side of the dwelling.
C148.	Sun is to be available to a living area for at least three hours between 9am and 5pm on 21 June (mid winter).

Building Materials and Landscape

O97 Materials and insulation are to be selected to assist thermal performance and maintain internal comfort levels.

O98 To encourage the use of building materials and finishes which maximise the use of renewable energy sources.

Controls	
C149.	High thermal mass materials are to be used for living areas and are to be designed to receive maximum sun during cooler months.
C150.	Insulation is to achieve an 'R' value (AS 2627.1993) of: • R2.0 for roofs and ceilings. • R2.0 for walls - except where the construction materials used embodies an equivalent total R value.
C151.	Deciduous trees are to be planted to provide summer shading and allow winter sun entry.
C152.	Outdoor clothes drying areas are to be provided with sun and breeze access.
C153.	Details of finishes, materials and colours are to be submitted to Council with the Development Application.
C154.	The applicant is to demonstrate that materials used in construction: • Maximise renewable resources. • Are energy efficient (low embodied energy). • Are generally non-polluting, durable, recyclable or reuseable.
C155.	No rainforest timbers or timbers cut from old growth forests are to be used. All timber used on site is to be stamped accordingly.
C156.	Porous pavers or similar which increase infiltration and reduce stormwater runoffs are to be used on driveways, and pathways wherever possible. The total impervious pavement is not to exceed 25% of the site area.

Ventilation

O99 Building design is to assist internal air movement to provide acceptable thermal conditions.

Controls	
C157.	Dwellings are to be oriented to catch cooling summer breezes.
C158.	Window and door openings are to be located to facilitate cross-ventilation.

Service and Appliances

O100 To maximise energy efficiency and minimise energy consumption.

Controls	
C159.	Development Applications are to demonstrate how energy conservation measures are incorporated in the design, including: • Hot water systems using renewable or low pollutant energy sources. • Energy efficient reticulation planning and insulation. • Energy efficient appliances.
C160.	Energy efficient lighting.

Water Management

O101 To control freshwater consumption by reducing demand and integrating systems and appliances in dwelling design.

Controls	
C161.	New dwellings are to incorporate: • Low flow shower roses. • Dual flush toilets. • Water efficient washing machines. • Irrigation systems, if used, that are micro or drip type soil moisture sensor controlled.
C162.	A storm water management plan is to be submitted with the development application.

Waste Management

O102 To provide adequate waste storage facilities and to facilitate recycling with a view to minimising waste entering land fills.

Controls	
C163.	Development Applications are to indicate: • Adequate space for at-source separation of waste within each dwelling. • Facilities for storing recyclable and waste products in locations which are not directly visible or are screened from public areas and which do not pose a threat of noise, odour or safety and which are readily accessible to Council's waste contractors.

Definitions

Wall Height: Is measured vertically from the Natural Ground Level to the highest of the following: underside of the eaves, guttering, parapet, capping, and top of wall or wall plate supporting roof framing.

Primary Frontage: The primary street frontage is the lot frontage edged heavy black on the DCP Map (fig 1)

Secondary Frontage: A corner lot boundary fronting a street other than a primary street frontage.

K5 Cape Cabarita



Figure K5-1 Aerial photo (source: nearmap.com)

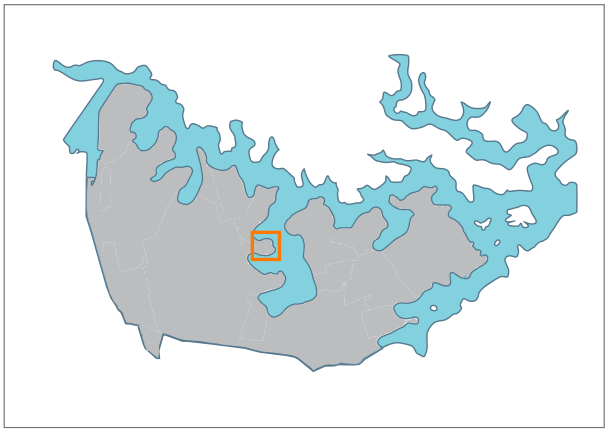


Figure K5-2 Council area map

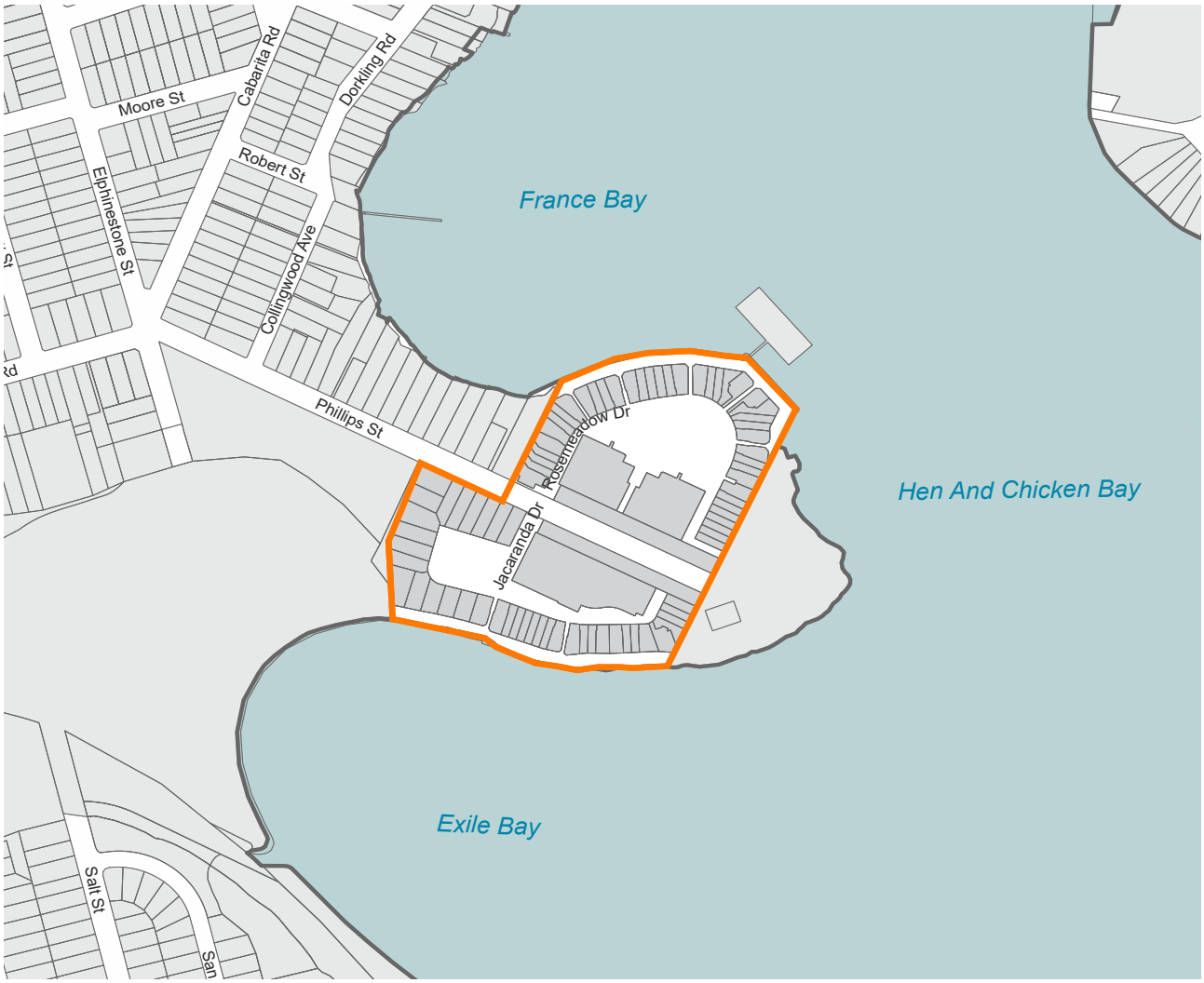


Figure K5-3 Cape Cabarita - Location Plan

K5.1 General objectives

O1 Provide a pleasant, functional and safe environment to and along the foreshore for cyclists and pedestrians;

O2 Maintain significant views and vistas into and out of the site;

O3 Ensure adequate provision of landscaping and usable private and public open space;

O4 Provide for pedestrian and cycle linkage through the site to adjoining areas;

O5 Maximise visual and acoustic privacy to adjoining properties and within the development itself;

O6 Ensure adequate daylight and sunlight are maintained to existing development, new development and open spaces;

O7 Ensure the existing streetscape character is enhanced;

O8 Ensure development and access networks are integrated with the existing built and natural environment;

O9 Ensure development presents an appropriate bulk and scale to public areas having regard to existing development and the topography of the site; and

O10 Ensure the design orientation of buildings and materials used in construction utilise renewable resources.

K5.2 Specific provisions

Design and Siting - Streetscape

Objective

O11 To integrate new development in a manner which complements the character of the area and relates to the pedestrian environment.

Controls	
C1.	Development on public street frontage has had regard to the character of existing development in the vicinity of the site including: • setbacks of existing buildings on Cabarita Road; • landscaping; • fence height; • spaces between dwellings; • views through the site; and • roof pitch.
C2.	New development and fences contribute to and is integrated into the overall streetscape at a scale which relates to the pedestrian environment.
C3.	Building height plane to apply from the existing boundary with Phillips Street.
C4.	Buildings are to be setback a minimum of 9 metres from the Phillips Street frontage.
C5.	Building facades are to be orientated towards public street frontages (See Figure K5-5 Site Controls).
C6.	Buildings are not to exceed the following (See Figure K5-5 Site Controls): • 5 storeys in height along the Phillips Street frontage; • 3 storeys in height adjoining Massey Park Golf Course; and • 2 storeys in height adjacent to the boundaries with No.31 Phillips Street, Prince Edward Park and the waterfront areas.
C7.	Fences having frontage to public open space or public roadway are: • not to exceed 1 metre in height of solid construction; and • not to exceed 1.8 metres if of ‘open’ type design.
C8.	Continuous wall and/or fencing for more than 20 metres should have some visual or physical relief.
C9.	Seating areas in a landscaped setting are to be provided every 100 metres along the frontage.

Side boundaries

Objective

O12 To minimise the impact of new development on adjoining areas.

Controls	
C10.	Buildings adjoining side boundaries will not adversely impact on the amenity enjoyed by existing adjoining dwellings. Consideration has to be given to: • maintaining of views; • overshadowing of private open space to give visual relief; • minimising the impact of bulk and scale of new development on adjoining areas; • fence design and height relates to and does not detract from Cabarita Park; • buildings are separated or articulated and do not present blank walls; and • maintenance of privacy.
C11.	Compliance should be achieved with the building height plane (see Figure K5-6 Building Height Plane Diagram).
C12.	Fences adjoining Prince Edward Park should not exceed 1.8 metres in height and be of ‘open’ appearance.

Foreshore Frontage

Objective

O13 To ensure the integrity of the foreshore is maintained and enhanced for public enjoyment

Controls	
C13.	Development along the foreshore contributes to the character of the foreshore. The development has had regard to: • minimising the visual impact of development as viewed from the water and the foreshore access way; • creating a visually integrated environment which contributes to a sense of safety and security for users of the public open space, (see also 'Access and Landscaping' sections); • the provision of cycleways, pedestrian pathways; and • providing appropriate street furniture, lighting and planting for the comfort, safety and security of users.
C14.	Building height plane to apply from the property boundary.
C15.	An average setback of 13.5 metres, having a minimum width of 9 metres, is to be provided from the high water mark to the development for a public foreshore accessway (see Figure K5-5 Site Controls).
C16.	Buildings are to be setback a minimum of four metres from the public foreshore accessway.
C17.	The location of buildings should not result in overshadowing to the foreshore between the hours of 9am to 3pm (EST) or 10am to 4pm (Daylight saving time).
C18.	The foreshore access is to be in a landscaped setting and comprise: • a pedestrian pathway with minimum dimensions of 1.0 metre; and • a cycleway with minimum dimensions of 0.8 metres with a separation distance of 0.7 metres.

Height of Building

Objective

O14 To ensure the building envelope relates to the topography of the site, providing an appropriate bulk and scale, having regard to the foreshore location, streetscape and adjoining properties.

Controls	
C19.	Building height has had regard to: • maintenance of significant views from buildings to public areas; • topographic variation minimising visual impact as viewed from the water, streetscape and public open spaces and conformity with the treeline along the Cabarita Road frontage; • overshadowing of open spaces and other buildings; • setbacks from adjoining developments; • character of the surrounding area; and • the human scale and relationship to open space.
C20.	Buildings should not exceed the building height plane on all boundaries and development should be no higher than: • 5 storeys within a distance of 50 metres from Phillips Street Subject to the height restrictions placed on other boundaries; and • the ceiling height for buildings greater than two storeys shall be no greater than 2.7 metres (see Figure K5-5 Site Controls and Figure K5-6 Building Height Plane Diagram).

Bulk and scale

Objective

O15 To ensure the location, layout and design of buildings has regard to the impact of development on views from surrounding public spaces and within the development.

Controls	
C21.	The development has had regard to: • massing to reduce its visual impact from open spaces, roadways and the Parramatta River; • separation between buildings should provide view corridors through the site; • privacy between buildings; and • providing a reasonable level of solar access to dwellings and open spaces.
C22.	Buildings comply with the building height plane, floor space ratio, and landscaping provisions.

Building Design

Objective

O16 To ensure a high quality design which is integrated into the existing environment

Controls	
C23.	The design of buildings: • provides variety and presents as a cohesive development; • includes architectural features which reflect the character of Concord (see also street frontage and shading); and • garages and carparks are not intrusive or visually dominant.
C24.	Generally, buildings are to have pitched roof forms.
C25.	Access driveways are to provide a landscaped entry.
C26.	Solar hot water tanks are to be located within the roofspace of development.

Views

Objective

O17 To maintain views through the site from public spaces.

Controls	
C27.	Buildings are designed to: • maximise views of Parramatta River and public open space within and throughout the development; • minimise obstruction of views from other buildings; and • provide vistas.
C28.	A view corridor is to be maintained from Phillips Street, through the development to the foreshore on both sides.

Paved Areas

Controls	
C29.	Porous pavers or similar treatment which increases infiltration and reduces stormwater runoffs is used extensively on driveways, pedestrian access routes and for pathways in public and private outdoor open space.
C30.	The total impervious surfaces used for vehicular access driveways are not to exceed 10% of the total site area.

Landscaping and Open Space

Objective

O18 To ensure adequate and appropriate provision of usable private, communal and public open space and landscaping to meet all user needs, having regard to microclimate, security, safety, privacy, visual appearance and biodiversity.

Controls	
C31.	Landscaping should have regard to: • retention of significant vegetation, which is not affected by the remediation of the site; • the relationship between buildings and open spaces; • enhancing pathway and street connections within the site and between adjoining sites; • providing privacy to adjacent development; • location and function of open space • providing for thermal comfort of the users in terms of shade and shelter; • using native species, where appropriate; • surveillance of communal open; • enhancing the visual appearance of the development; • differentiating between private and public open space; • assists in stormwater management; and • complements the materials and colours used in the development.

Open Space provision

Objective

O19 To provide quality open space for the enjoyment of users.

Controls	
C32.	Open space includes: • adequate pedestrian and cycle linkages through the development and along the foreshore; • communal spaces which have access to sunlight for year round use; • landscaping to enhance the amenity of the environment and enjoyment of the users; • promoting a sense of security and safety for users; • provides for passive and active recreational needs for the residents; and • has regard to the heritage items on the site.
C33.	A landscaped area of 50% of the site area.

Public Foreshore Access

Objective

O20 To provide foreshore access which is clearly identifiable for public use.

Controls	
C34.	Public foreshore access is appropriately landscaped to minimize the impact of development as viewed from the water. The entrances to the foreshore are designed to reinforce its public accessibility.
C35.	Directional signage is to be provided at the entrance to the foreshore path.

Public and Communal Open Space

Controls	
C36.	Open space follows pedestrian/cycle desire lines through the site creating visually appealing spaces for both passive and active recreation.

Private Open Space

Objective

O21 To ensure adequate usable private open space to meet the needs of residents

Controls	
C37.	The development provides usable private open space which is of sufficient dimensions having regard to the size of the dwelling and: • allows for outdoor seating and dining; • provides outdoor drying facilities screened from public view; and • provides for landscaping at ground level.
C38.	For above ground development, the open space may take the form of a balcony directly connected to the dwelling with the following minimum requirements: • 1 bdr - minimum area of 6m² having a minimum dimension of 2m; • 2 bdr - minimum area of 8m² having a minimum dimension of 9m; and • 3 bdr or greater - minimum area of 12m² having a minimum dimension of 2m.
C39.	For development at ground level the following requirements apply: • 1 bdr - minimum area of 10m² having a minimum dimension of 3m; • 2 bdr - minimum of 16m² having a minimum dimension of 4m; and • 3 bdr or greater - minimum area of 35m² having a minimum dimension of 4m.

Lighting

Objective

O22 To provide lighting which enhances the security and appearance of the development

Controls	
C40.	The applicant has demonstrated that provision has been made for adequate lighting which enhances the appearance of the development and maximises security of: • building entrances; • public spaces and pathways; • driveways and carparks; and • without impacting on adjoining properties

Car Parking Provision

Objective

O23 To ensure adequate, safe and convenient provision of parking, cycle facilities and pedestrian access which is integrated into the overall design of the site and adjoining areas.

Controls	
C41.	Adequate parking is provided having regard to: • existing and future public transport provision; • cyclist and pedestrian linkages through the site to adjoining areas; • efficient and effective entry and egress to the sites; • adequate resident and visitor carparking and parking for disabled; • adequate bicycle storage facilities; and • safe, convenient parking and access which minimises conflicts between motorist, cyclists and pedestrians.
C42.	Secure resident parking spaces are to be provided for all dwellings in apartment buildings at basement level with internal access to the development.
C43.	Secure resident parking spaces may be provided in ground level enclosed garages for attached or detached dwellings at ground level.
C44.	Basement car parking is to be generally naturally ventilated and have access to some natural lighting.
C45.	Parking spaces located above ground are in a landscaped setting, and are not directly visible from the Phillips Street frontage.
C46.	Parking is not permitted between the building and street alignment. Parking shall be in the form of a garage, basement car park, covered carport or an equivalent open area.
C47.	Entry driveways are in a landscaped setting with the appearance of being open and accessible.
C48.	Security gates are not to be installed at entry and exit points into the development

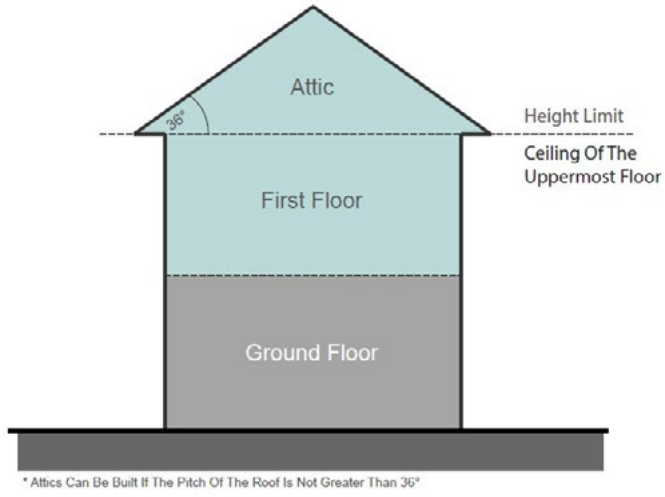


Figure K5-4 Attic Pitch Controls

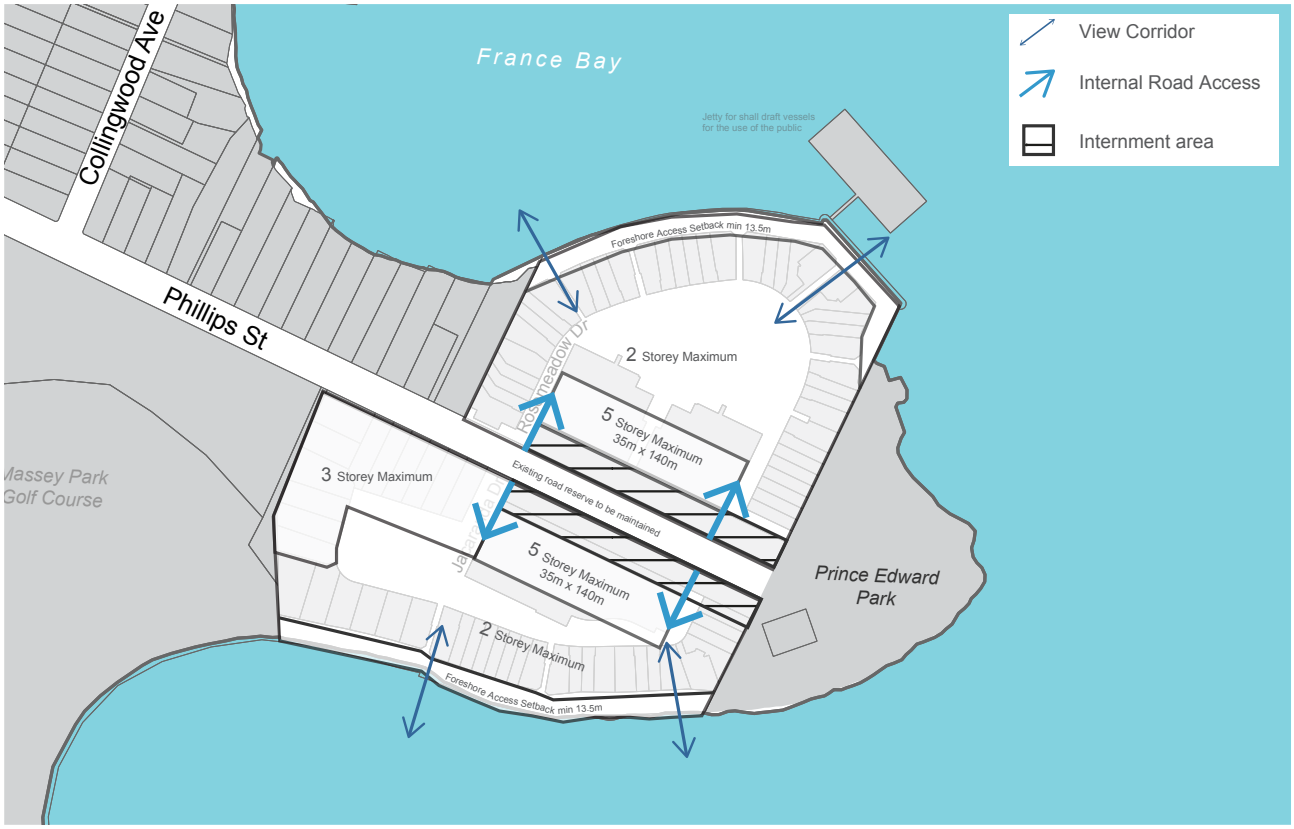
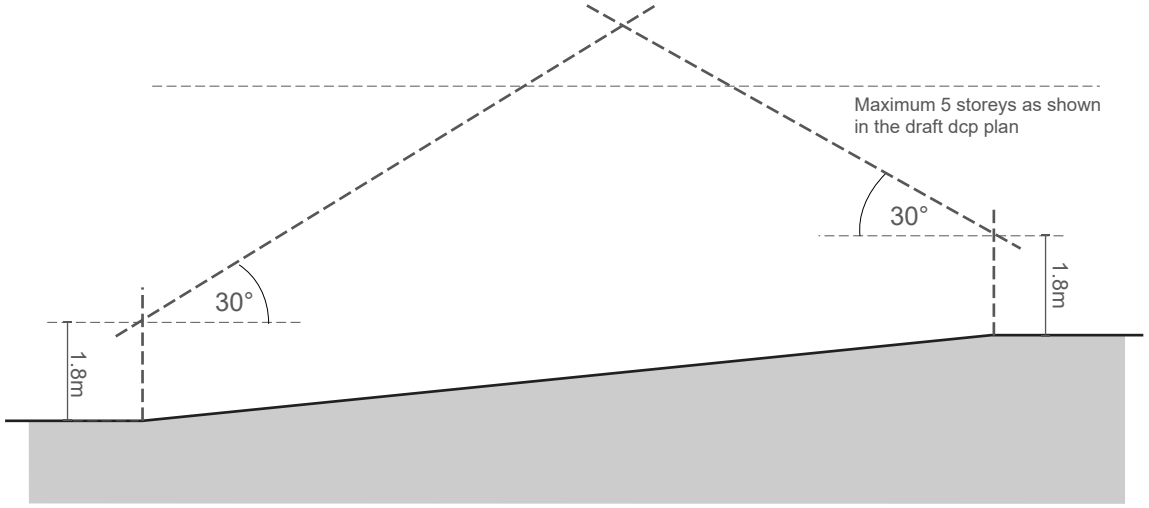


Figure K5-5 Site Controls



* Building height plane applies to all boundaries in this precinct

Figure K5-6 Building Height Plane Diagram

K6 Concord West

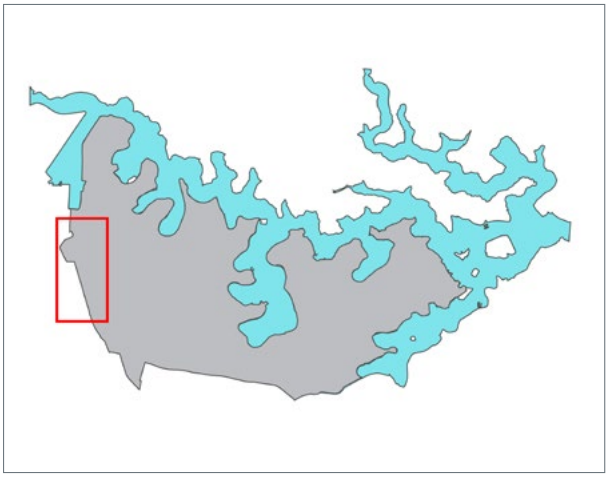


Figure K6-1 Council area map

K6.1 Introduction

Context

The Concord West Precinct (the Precinct) is bound by Liberty Grove to the north, Pomeroy Street to the south, the main Northern Railway Line to the east and Powell's Creek Reserve to the west. The area is characterised by a variety of built form and uses, including a mix of dwelling houses, town houses, apartment buildings, education and industrial uses. In terms of vehicle movement the precinct is effectively self-contained, with George Street forming the only vehicular access point to the surrounding road network at the southern end of the precinct.

Studies have identified a number of industrial sites within the precinct that are currently underutilised. The identified sites are well suited for residential purposes, featuring good access to public transport and local amenities.

Land to which this section of the DCP applies

This section provides development controls for specific areas addressed within the adopted Concord West Precinct Master Plan, Urban Design Study (May 2014). Currently, this section of the DCP applies only to the area/s listed below:

- Sub-Precinct 3, where the land is located at 3 King Street, Concord West (see Figure K6-2 Location Plan).
- Sub-Precinct 6, where the land is located at 2, 2A and 4 Rothwell Ave, Concord West (see Figure K6-2 Location Plan).
- Sub-Precinct 7, where the land is located at 25 George Street, Concord West (see Figure K6-2 Location Plan).

Desired Future Character

The desired future character of the precinct is a transit oriented community which features higher densities that maximise site renewal opportunities. Development proposals in the precinct are to achieve the following desired future characteristics:

- **Well Integrated Built Form**: Development will provide a considerate built form that steps down in height toward adjoining lower-rise residential areas. The siting, bulk and scale of development will ensure there are no significant adverse impacts to sunlight access and privacy within the precinct.
- **Mixed Use**: Development adjoining the public square will provide a focal point for the neighbourhood by providing active uses such as shops, cafes and restaurants.
- **Accessibility**: Development will better connect the precinct as a whole by creating a permeable street network for pedestrians and vehicles. Connections will strengthen existing or promote new routes to the station and open space.

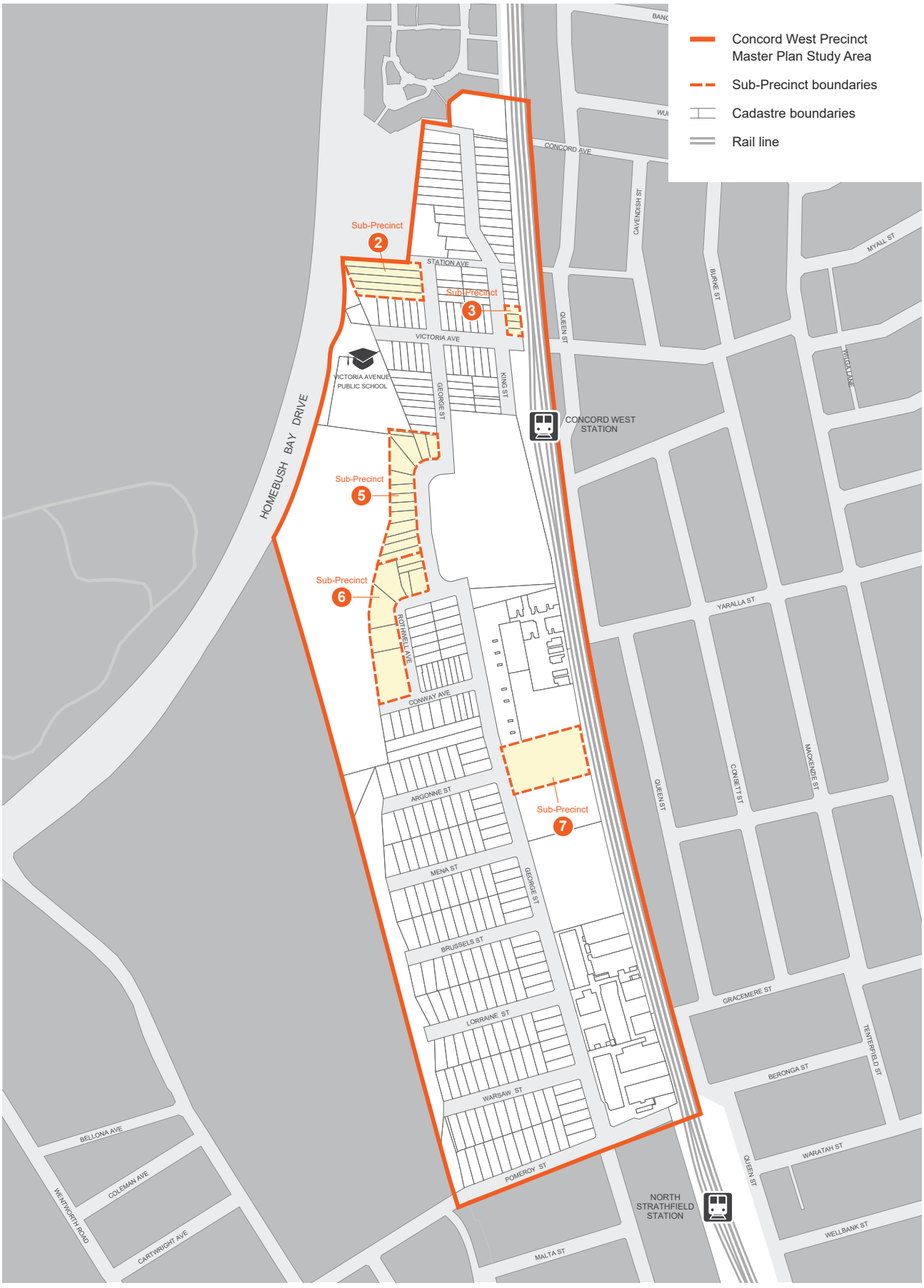


Figure K6-2 Location Plan

K6.2 Public Domain and Movement

Pedestrian and Cycle Connections

Objectives

O1 To improve pedestrian connectivity to open space and the Canada Bay Public School.

O2 To create new access routes through sites to strengthen the connections to and between places.

O3 To better connect the neighbourhood as a whole.

O4 To make it easier and more attractive to walk and cycle through the neighbourhood.

O5 To improve access to public transport and nearby commercial and retail areas.

Controls	
C1.	Provide a new pedestrian connection between the western end of Station Avenue and the western end of Victoria Avenue within the area identified in Figure K6-3 Public Domain Plan.
C2.	Provide multiple mid-block pedestrian connections between George Street and the playing fields within the area identified in Figure K6-3 Public Domain Plan.
C3.	Provide a new mid-block pedestrian connection between Rothwell Avenue and Powells Creek Reserve within the area identified in Figure K6-3 Public Domain Plan.
C4.	All new pedestrian connections are to be a minimum 10 metres wide
C5.	All pedestrian connections and footpaths are to be publicly accessible 24 hours a day through access easements.
C6.	All new pedestrian connections are to be consistent with Safer-by-Design (or CPTED) principles (i.e. clear lines of sight).
C7.	Implement kerb build outs at intersections and other key pedestrian crossings to narrow the width of the street.
C8.	Provide an on-road or separated cycle path along George Street and King Street from Pomeroy Street to Liberty Grove as identified in Figure K6-3 Public Domain Plan.
C9.	Provide for new footpaths as indicated in Figure K6-3 Public Domain Plan.

New Shareways

Objectives

O6 To improve connectivity and make it easier for people to walk through the neighbourhood.

O7 To integrate future development sites into the existing neighbourhood fabric.

Controls	
C10.	Provide a new north-south share way connecting Concord Avenue to Station Avenue which: • has built form between the share way and the eastern boundary; and • is publicly accessible.
C11.	Extend Station Avenue to the west as a share way to provide vehicular access to adjacent buildings and pedestrian access to the pedestrian network as identified in Figure K6-3 Public Domain Plan.
C12.	The new extended Station Avenue is to provide unobstructed views from the pedestrian tunnel under the rail line to Homebush Bay Drive.
C13.	Upgrade Concord Avenue and Station Avenue west of King Street to provide a seamless continuation of the share way as identified in Figure K6-3 Public Domain Plan.
C14.	All share ways are to be publicly accessible 24 hours a day through access easements.

Public Open Space

Objectives

O8 To give the neighbourhood a meeting place and focal point.

O9 To create a George Street and King Street 'spine' to visually unify the character of the neighbourhood.

Controls	
C15.	Provide a public square at the end of Victoria Avenue in front of the railway station as identified in Figure K6-3 Public Domain Plan. The public square is to: • have a minimum area of 400m^2. • have minimum dimensions of 17m x 18m; and • feature characteristics for passive recreation such as hardstand paving, tree planting to provide shade, lighting and seating.
C16.	Tree planting on the verge of George Street and King Street from Pomeroy Street to Liberty Grove is to feature: • Regularly spaced planting of trees; and • Planting of consistent tree species.
C17.	Kerb build outs are to include rain gardens or low level landscaping where appropriate.

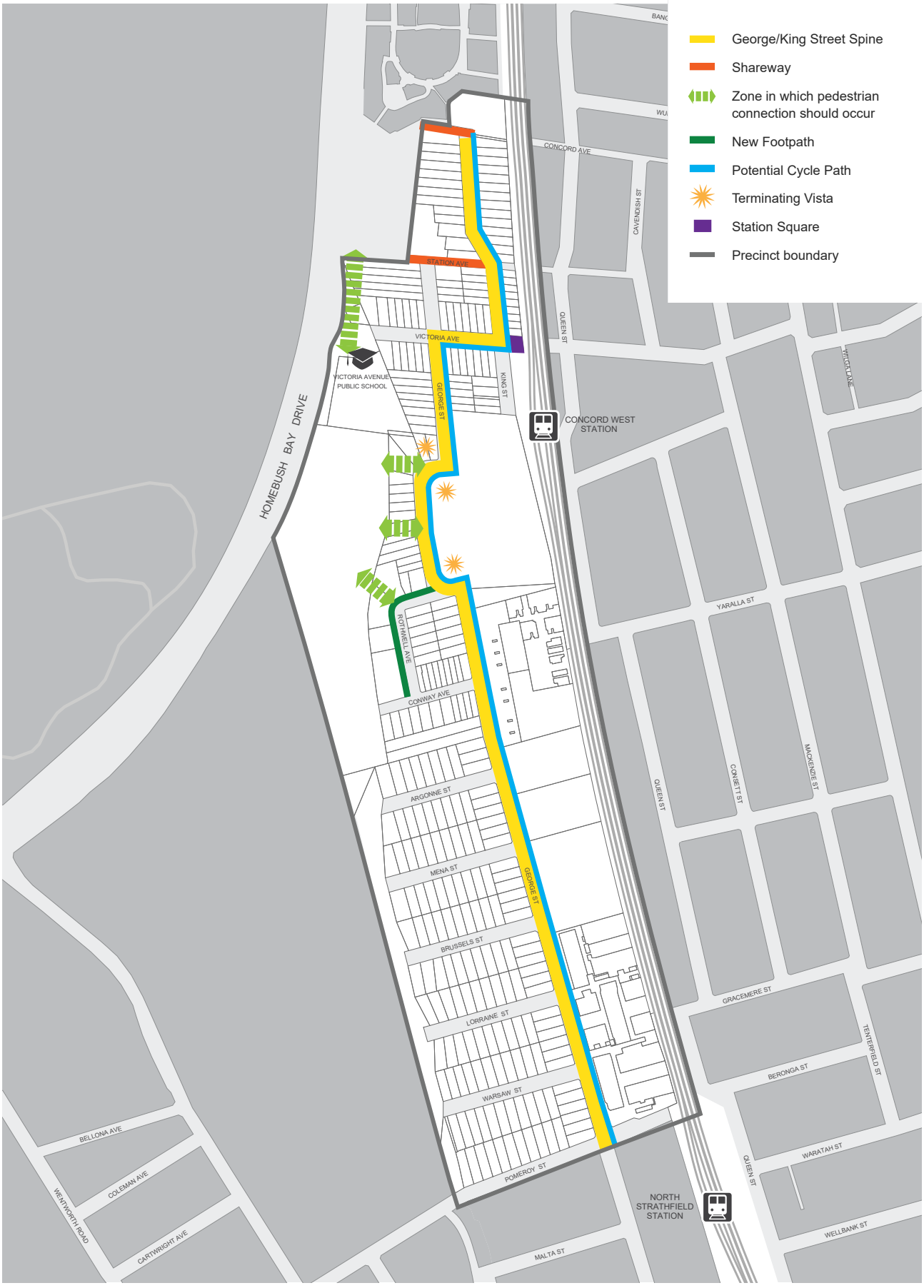


Figure K6-3 Public Domain Plan

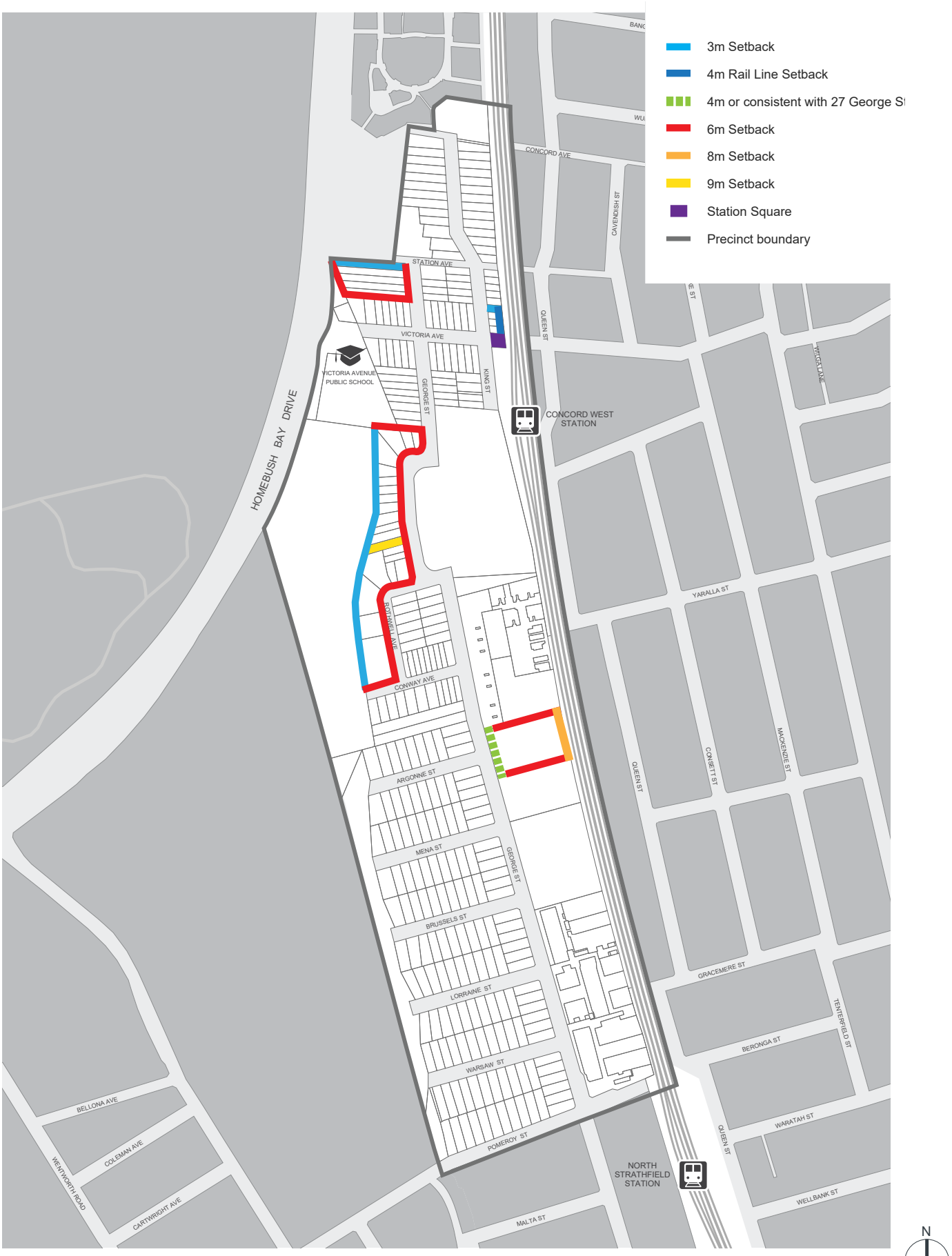


Figure K6-4 Primary Setbacks Plan

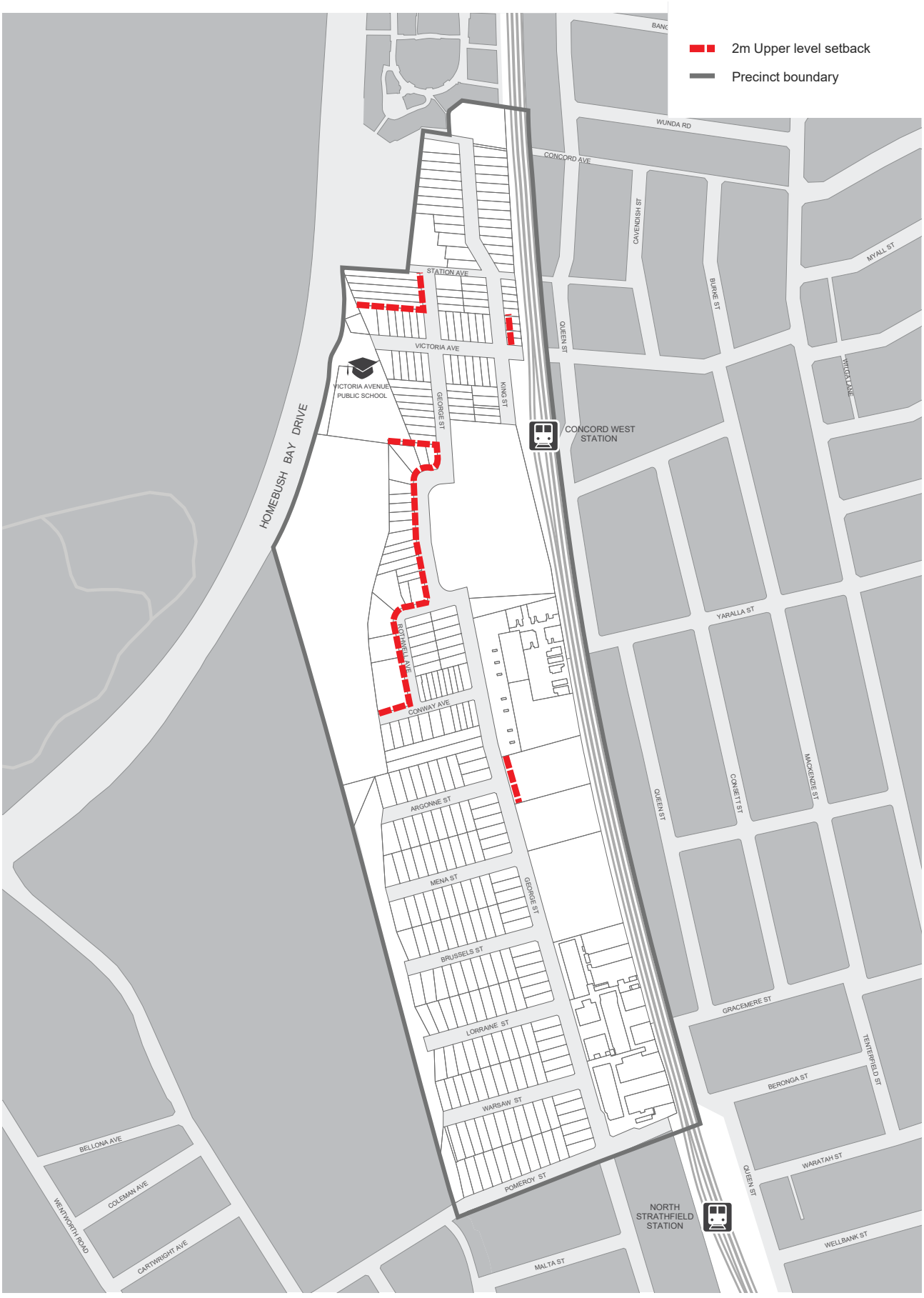


Figure K6-5 Secondary (Upper Level) Setbacks Plan



Figure K6-6 Maximum Building Heights Plan

K6.3 Built Form

Building Setbacks

Objectives

O10 To minimise the impact of new development on existing development.

Controls	
C18.	Development setbacks are to be in accordance with Figure K6-4 Primary Setbacks Plan.
C19.	The upper most level of new development four storeys or higher is to provide a 2 metre setback in accordance with Figure K6-5 Secondary (Upper Level) Setbacks Plan.
C20.	The area within the primary setback of the street frontage is to be a deep soil zone and is to have no structures below.
C21.	Access points to underground parking are encouraged to be located between existing and new development if that will provide for increased building separation.

Building Height

Objectives

O11 To allow redevelopment while at the same time respecting the existing character of the neighbourhood.

Controls	
C22.	New buildings are to be consistent with Figure K6-6 Maximum Building Heights Plan. *Note: Maximum building heights are to be in accordance with the LEP. This control provides further, more detailed guidance, and is intended to articulate building height in storeys to better achieve the objective of this point, in particular minimising negative impacts on existing development.*
C23.	Development at Sub-Precinct 2 must provide a building height transition zone with a maximum of 4 storeys on land fronting George Street and adjacent to rear boundaries of adjoining properties facing Victoria Avenue. The maximum height of 6 storeys is to be provided towards the north-west corner of the site. Refer to Figure K6-8 Section C-C and Figure K6-9 Section D-D for more information.
C24.	Development at Sub-Precinct 3 is not to exceed two storeys within 10 metres of its northern property boundary. Refer to Figure K6-11 Section E-E for more information.
C25.	A maximum height of 6 storeys in Sub-Precinct 5 is to be limited to the portion of the site south of Lot 7 in DP 15973. A building height transition zone with a maximum height of 4 storeys is to be provided to the north of (and inclusive of) Lot 7 in DP 15973. Refer to Figure K6-13 Section F-F for more information.
C26.	The maximum 4 storey transition height as shown on Figure K6-18 Section J-J for Sub-Precinct 7 shall have a setback of 30m from the front boundary. The setback shall be consistent with the rear building line of the street facing building on adjoining allotments.

Building Articulation

Objectives

O12 To provide well-articulated built form that reduces the visual bulk and scale of buildings.

Controls	
C27.	Where a building is greater than 60 metres in length the facade is articulated through the use of: • significant recesses or projections. • deep balconies. • elements of a finer scale than the main structural framing including the eaves and overhangs. • vertical elements such as blade walls or fins.

Ground Floor Residential

Objectives

O13 To ensure ground floor dwellings have a high level of amenity and create a positive interface with the street.

O14 To provide for increased passive surveillance of the public domain.

Controls	
C28.	Dwellings on the ground floor facing the street are to have individual entries from the street.
C29.	Ground floor private open space is to be designed as a private terrace. *Note: The area and dimension of private open space is to be consistent with Part 6 (6.4.6) of the Canada Bay DCP.*
C30.	Where fronting a pedestrian connection, ground floor dwellings are to be designed to maximise passive surveillance.

Ground Floor Mixed Use

Objectives

O15 To promote activity and interest and enhance the public domain, particularly at Station Square

O16 To provide the community with a focal point.

O17 To enhance safety and security at the station.

O18 To provide for increased passive surveillance of the public domain.

Controls	
C31.	Provide ground level active uses where fronting Station Square (see Figure K6-11 Section E-E). *Note: Active uses that are encouraged include Cafes, Restaurants and the like.*
C32.	Where fronting station Square development is to engage and activate the square through design measures that may include: • public seating that spills into the square. • design measures that enable an open frontage at ground level to the square; and • awnings that encourage the public to spend time during all weather types.

K6.4 General

Flooding

Objectives

O19 To mitigate potential flood impacts on new and existing development.

Controls	
C33.	New development is to be consistent with the findings, conclusions and recommendations of the Concord West Precinct Master Plan Flood Study.

Important Views

Objectives

O20 To ensure new development enhances vista opportunities.

Controls	
C34.	New development at terminating vista sites shown in Figure K6-3 Public Domain Planare to include features or articulation to provide visual interest which may include: • Expressive roof features. • Emphasised vertical elements. • Façade elements which vary in colour or in material type from those used at other parts of the building.

Passive Surveillance

Objectives

O21 To increase passive surveillance of public open space.

O22 To encourage public use of open space by providing a safe environment.

Controls	
C35.	Where fronting Powell's Creek Reserve, the Canada Bay Primary School playing fields or Olympic Park, development is to engage and activate open space through layout and design measures which include: • Orienting living areas and areas of principal open space toward open space, having large, transparent windows facing the open space. • Avoid dense screen vegetation within private open space. • Increasing opportunities for passive surveillance. • Avoiding large / expansive walls. • Providing low or transparent fencing. • Avoiding significant grade change of built form.

Example Built Form Sections

Sub-Precinct 2



Figure K6-7 Key Plan Sub-Precinct 2

George Street Interface

Section C-C below illustrates height transition and upper level setback to George Street.

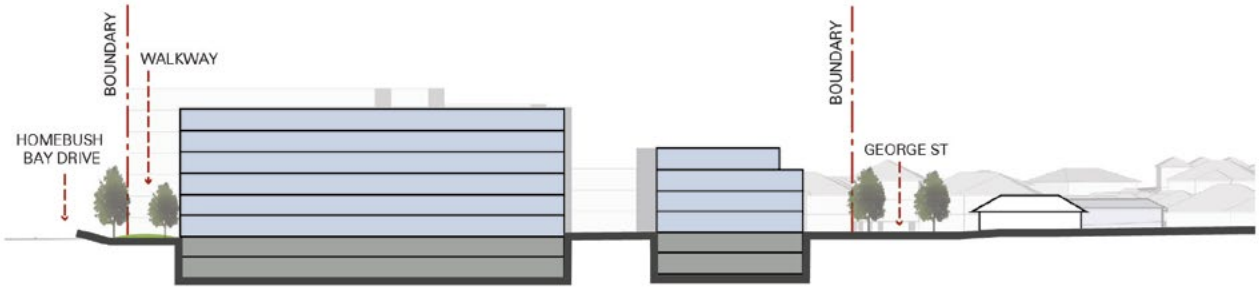


Figure K6-8 Section C-C

Interface Station Avenue

Section D-D depicts the principle of four storey built form where adjacent to existing housing and where the top level has a greater setback.

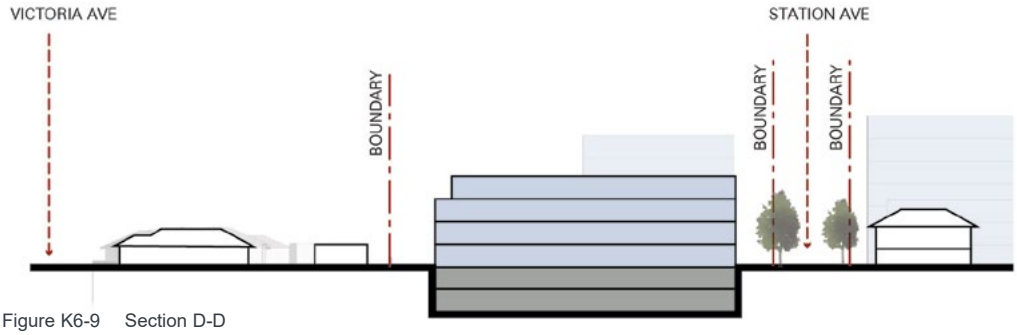


Figure K6-9 Section D-D

Example Built Form Sections

Sub-Precinct 3

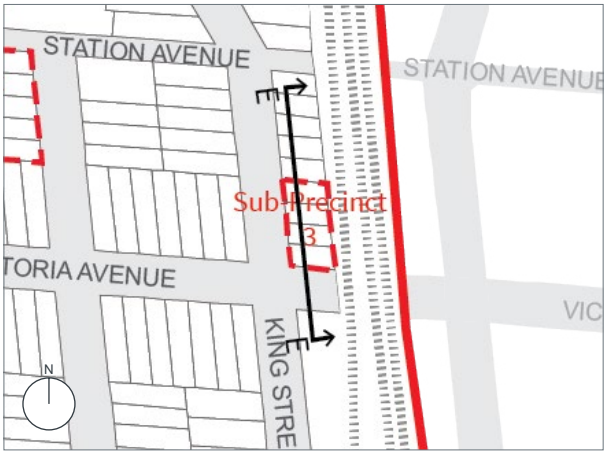


Figure K6-10 Key Plan Sub-Precinct 3

King Street Interface

Section E-E below illustrates the building mass for the site immediately north of the future urban plaza. The northern boundary has a 3 metre setback and requires a two storey interface height with 10 metres of the northern boundary. Ground level active uses are to provided at Station Square.

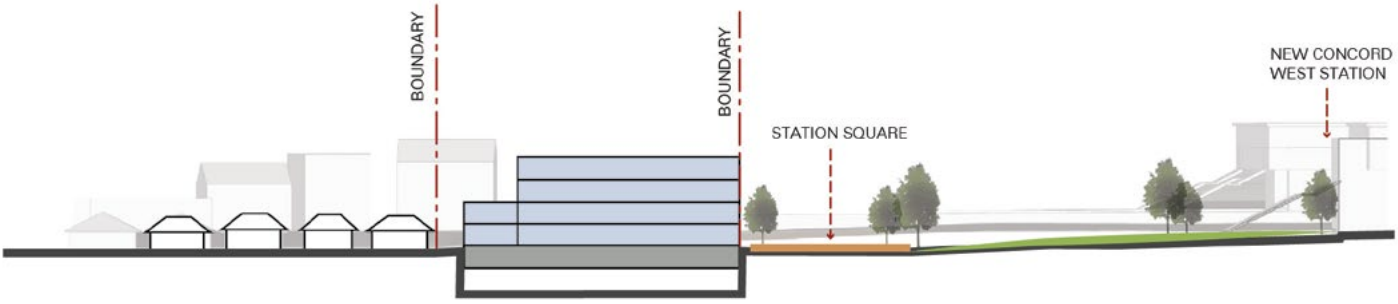


Figure K6-11 Section E-E

Example Built Form Sections

Sub-Precinct 5

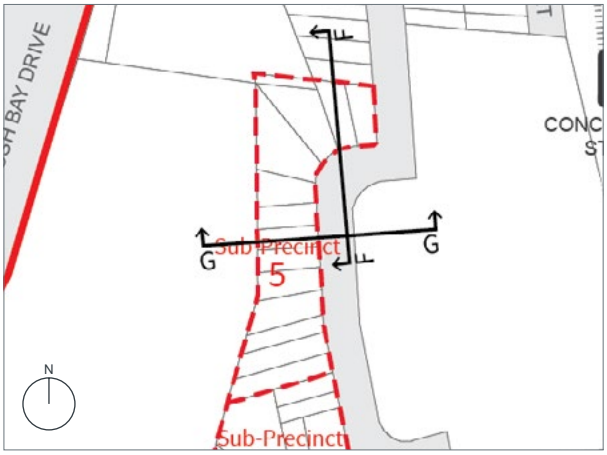


Figure K6-12 Key Plan Sub-Precinct 5

George Street Interface

Section F-F below illustrates the stepping down of building heights from 6 storeys to 4 storeys at the northern interface to low scale residential.

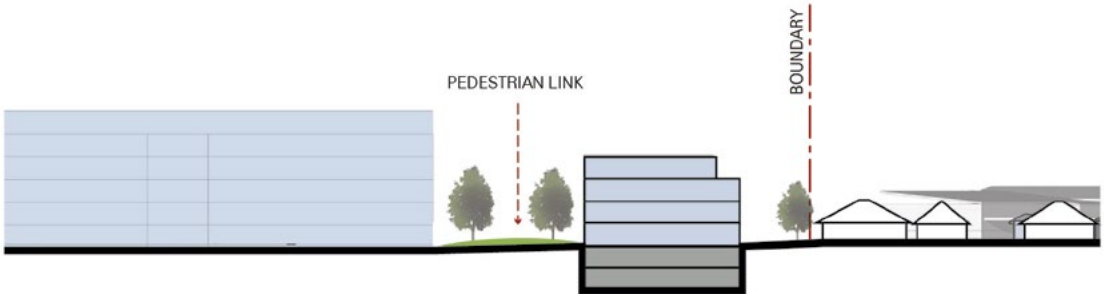


Figure K6-13 Section F-F

George Street Interface

Section GG depicts built form to George Street and upper level setbacks.

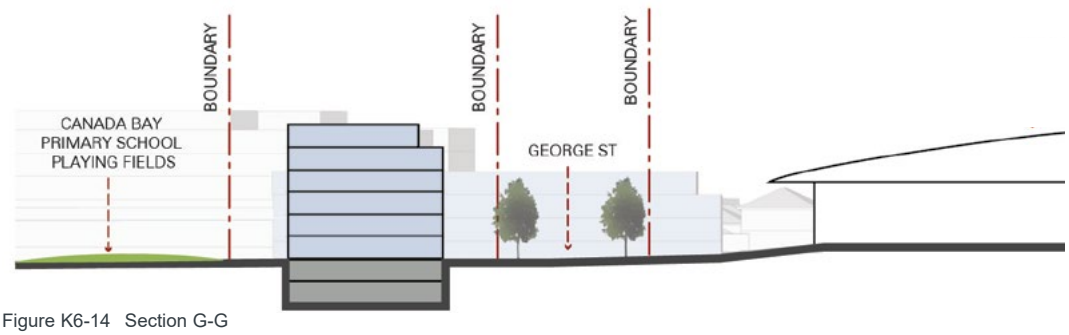


Figure K6-14 Section G-G

Example Built Form Sections

Sub-Precinct 6

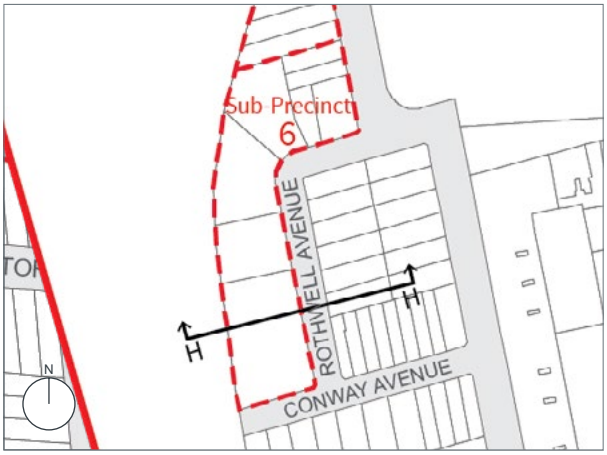


Figure K6-15 Key Plan Sub-Precinct 6

Rothwell Street Interface

Section H-H below illustrates 4 storey built form to adjacent low scale residential.

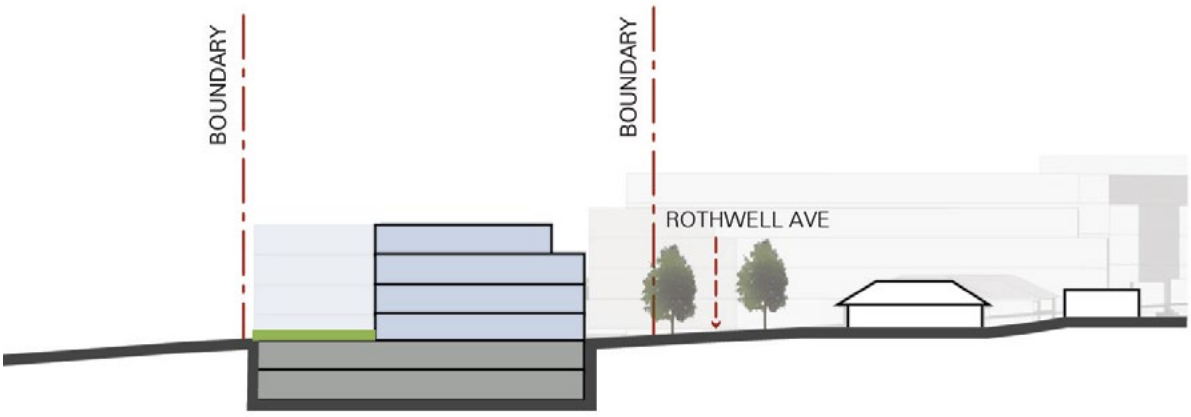


Figure K6-16 Section H-H

Example Built Form Sections

Sub-Precinct 7

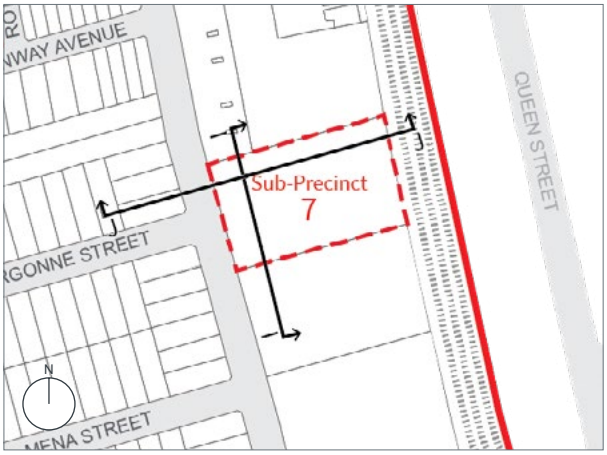


Figure K6-19 Key Plan Sub-Precinct 7

George Street Interface

Section I-I below illustrates a 4 storey building height to George Street maintaining the existing street wall character of the neighbouring properties.

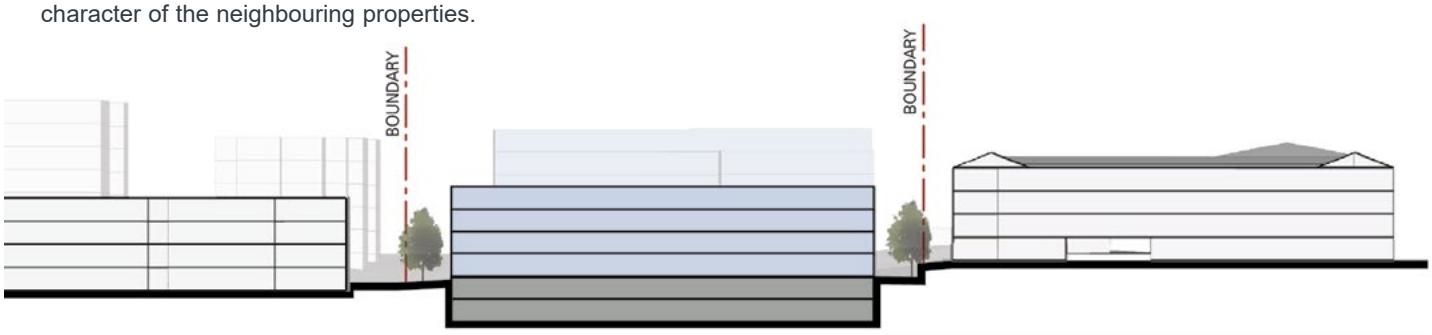


Figure K6-17 Section I-I

George Street Interface

Section J-J shows the transition in height from George Street to the rear of the site and in conjunction with neighbouring properties to the north and south.

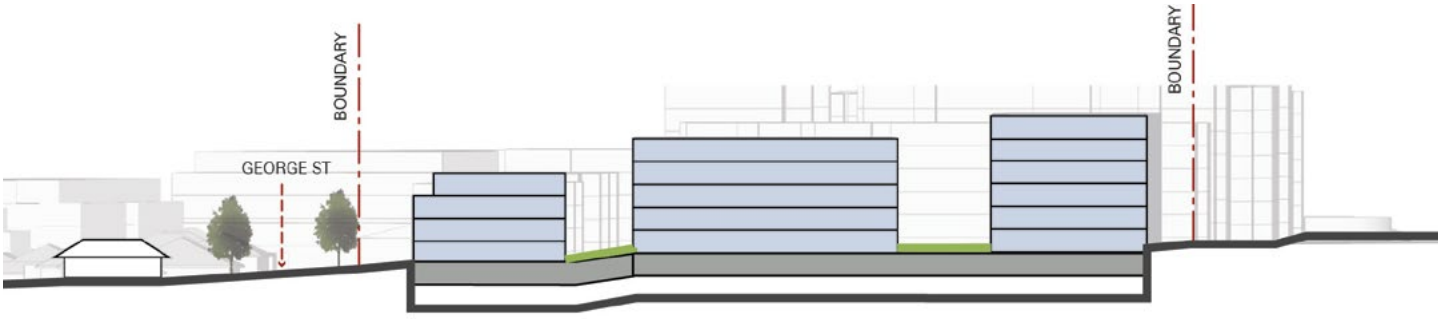


Figure K6-18 Section J-J

K7 Edgewood and Kendall Inlet (former Dulux site)

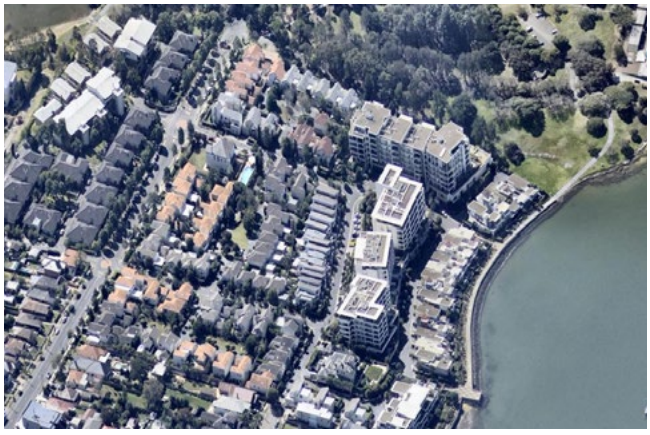


Figure K7-1 Aerial photo (source: nearmap.com)

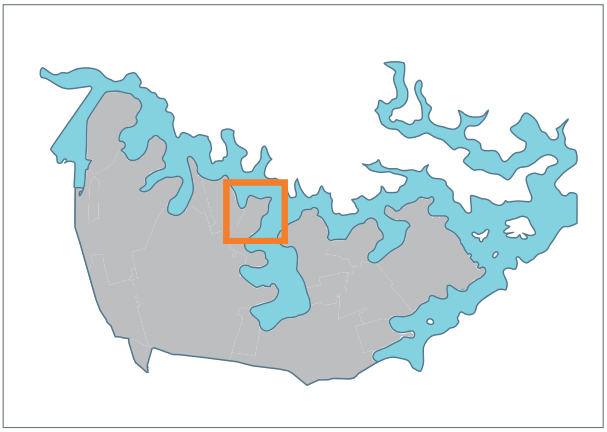


Figure K7-2 Council area map



Figure K7-3 Edgewood and Kendall Inlet - Location Plan

K7.1 General objectives

O1 Provide a pleasant, functional and safe environment to and along the foreshore for cyclists and pedestrians;

O2 Maintain significant views and vistas into and out of the site;

O3 Protect the heritage buildings, Correys House and Strathroy, and their setting on the site;

O4 Ensure adequate provision of landscaping and useable private and public open space;

O5 Provide for pedestrian and cycle linkages through the site to adjoining areas;

O6 Provide adequate carparking and bicycle storage facilities on the site;

O7 Maximise visual and acoustic privacy to adjoining properties and within the development itself;

O8 Ensure adequate daylight and sunlight are maintained to existing development, new development and open spaces;

O9 Ensure the existing streetscape character is maintained and enhanced;

O10 Ensure development and access networks are integrated with the existing built and natural environment;

O11 Ensure development presents an appropriate bulk and scale to public areas having regard to existing development and the topography of the site; and

O12 Ensure the design orientation of buildings and materials used in construction utilise renewable resources.

K7.2 Specific provisions

Streetscape

O13 To integrate new development in a manner which complements the character of the area and relates to the pedestrian environment.

Controls	
C1.	Buildings are to be setback 9 metres from the Cabarita Road frontage.
C2.	Buildings facades are to be oriented towards existing public street frontages.
C3.	Buildings are not to exceed two storeys in height on the Cabarita Road frontage.
C4.	Building length on Cabarita Road is not to exceed 20 metres to give the appearance of separate buildings and provide views into the site.
C5.	Fences having frontage to public open space or public roadway are: • not to exceed 1 metre in height if of solid construction; and • not to exceed 1.5 metres if of 'open' type design.
C6.	Continuous fencing for more than 20 metres (average frontage of existing development) should have some visual or physical relief.
C7.	Seating areas in a landscaped setting are to be provided every 100 metres along the frontage.

Side Boundaries

O14 To minimise the impact of new development on adjoining areas.

Controls	
C8.	Buildings must comply with the building height plane. (see definitions)
C9.	Wall openings should be provided at a minimum of 3 metre separation.
C10.	Fences on the southern boundary will need to comply with the Dividing Fences Act.
C11.	Fences adjoining Cabarita Park should not exceed 1.8 metres in height and be of 'open' appearance.

Foreshore Frontage

O15 To ensure the integrity of the foreshore is maintained and enhanced for public enjoyment.

Controls	
C12.	Building height plane to apply from the property boundary. An average setback of 13.5 metres, having a minimum width of 9 metres, is to be provided from the high water mark to the development for public foreshore access.
C13.	Buildings are to be setback a minimum of four metres from the public foreshore accessway. The location of buildings should not result in overshadowing to the foreshore between the hours of 9am - 3pm (EST) 10am - 4 pm (Daylight saving time).
C14.	The foreshore access is to be in a landscaped setting and comprise: • a pedestrian pathway with minimum dimensions of 1.0 metre; and • a cycleway with minimum dimensions of 0.8 metres with a separation distance of 0.7 metres.

Height of Building

O16 To ensure the building envelope relates to the topography of the site, providing an appropriate bulk and scale having regard to the foreshore location, streetscape and adjoining properties.

Controls	
C15.	Buildings should not exceed the building height plane on all boundaries and development should be no higher than: • 11 metres from existing ground level to the ridge lines of the building as measured from Cabarita Road.

Bulk and Scale

O17 To ensure the location, layout and design of buildings has regard to the impact of development on views from surrounding public spaces and within the development.

Controls	
C16.	Buildings comply with the building height plane, floor space ratio, landscaping and tree lining of Cabarita Road.

Building Design

O18 To ensure a high quality design which is integrated into the existing environment.

Controls	
C17.	All buildings are to have pitched roof forms.
C18.	Access driveways are to provide a landscaped entry.

Visual and Acoustic privacy

O19 To provide visual and acoustic privacy to adjoining properties and within the development itself.

Controls	
C19.	The minimum separation distance between directly overlooking dwelling units is: • 6m between non-habitable rooms; and • 9m between habitable and non-habitable rooms; and • 12m between habitable rooms.
C20.	Where there are direct views between living areas or into adjoining private open space, fixed windows should be obscured or windows offset or screened appropriately. Balconies are to adhere to the following setbacks: • 6m from walls without balconies or windows; and • 12 metres from walls with balconies or windows.
C21.	Bedrooms of one dwelling do not share walls with living rooms or garages of adjacent dwellings. Bedroom windows are at least 3m from shared streets, driveways and parking areas of other dwellings. Shared walls and floors between dwellings are constructed in accordance with the noise transmission and insulation requirements of the Building Code of Australia.

Views

O20 To maintain views through the site from public spaces.

Controls	
C22.	A view corridor is to be maintained from Cabarita Road, through the development to the foreshore on both sites.

Open Space Provision

O21 To provide quality open space for the enjoyment of users.

Controls	
C23.	A landscaped area of 45% of the site area.

Private Open Space

O22 To ensure adequate usable private open space to meet the needs of residents.

Controls	
C24.	For above ground development, the open space may take the form of a balcony directly connected to the dwelling with the following minimum requirements: • 1 bdr - minimum area of 6m² having a minimum dimension of 2m; • 2 bdr - minimum area of 8m² having a minimum dimension of 2m; and • 3 bdr or greater - minimum area of 12m² having a minimum dimension of 2m.
C25.	For development at ground level the following minimum requirements apply: • 1 bdr - minimum area of 10m² having a minimum dimension of 3m; • 2 bdr - minimum area of 16m² having a minimum dimension of 4m; and • 3 bdr or greater - minimum area of 35m² having a minimum dimension of 4m.

Location of Parking

Controls	
C26.	Parking is not permitted between the building and street alignment.
C27.	Parking shall be in the form of a garage, basement car park, covered carport or an equivalent open area.

Vehicular Access

Controls	
C28.	Security gates are not to be installed at entry and exit points into the development from Cabarita Road. Vehicular access into the development is to be directly from Cabarita Road, with the exception of service vehicles to access Strathroy.

Protection of Heritage Buildings and Context

O23 To protect and enhance heritage buildings on the site and in their context.

Controls	
C29.	No development is to be within the Cabarita Road frontage and Correy's House. In addition, a minimum curtilage of 10 metres is to be maintained around Correy's House. No development is to be located between the Parramatta River and Strathroy House. In addition, a minimum curtilage of 10 metres is to be maintained around Strathroy House.
C30.	The curtilage of the heritage buildings is to be landscaped, using species appropriate to the heritage context.

Use of Heritage Items

O24 To ensure the use of buildings will not impact on the heritage significance or detract from residential amenity.

Controls	
C31.	Where a public or community use is proposed, the hours of operation will be dependent upon: • the nature of use proposed; • the proximity to residences; and • the likely noise generated. A Heritage Management Plan is to be prepared which includes: • uses proposed for Correy's House and Strathroy House; • landscaping • means of access; • hours of operation; • maintenance program; and • management program.

K8 27 George Street North Strathfield



Figure K8-1 Aerial photo (source: nearmap.com)

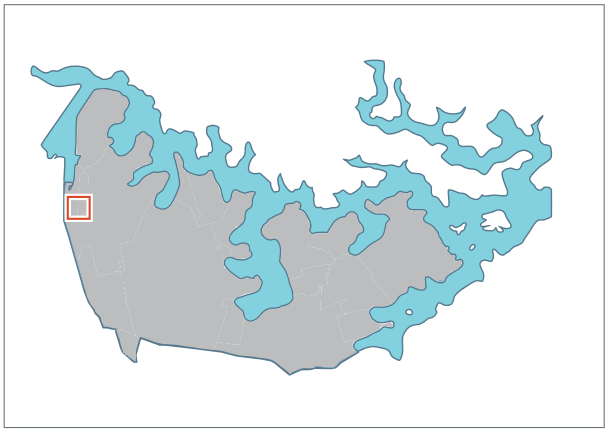


Figure K8-2 Council area map



Figure K8-3 27 George Street, North Strathfield - Location Plan

K8.1 General objectives

O1. To encourage and facilitate development on the site which, in terms of scale, bulk, form and character reflects the physical context of the site and is sympathetic to surrounding residential development;

O2. To minimise the impact of the development in terms of overlooking and loss of sunlight from adjoining and neighbouring properties;

O3. To provide for the active and passive recreation needs of residents of the development and incorporate recreation facilities such as a swimming pool and tennis courts; and

O4. To provide for safe access to and from the site.

K8.2 Specific provisions

Density, Design, Scale and Bulk

Objective

O5. To achieve a development outcome which, in terms of its density, design, scale and bulk, responds in a sympathetic and harmonious manner to the site and surrounding residential development.

Controls	
C1.	A minimum of 10% of the gross floor area of the site must be used for commercial development.
C2.	A minimum of 10% of the residential floor space must be developed for older persons and people with a disability.

Height

Controls	
C3.	Buildings shall be a maximum of four (4) storeys.

Setbacks and Building Lines

Controls	
C4.	The following building lines are imposed: • Six metres to George Street and the eastern boundary with the rail corridor; and • Five metres to the northern, eastern and southern side boundaries.

Design and Form

Controls	
C5.	Buildings are to be articulated and are not to present long, unrelieved structures that dominate the landscape.

Site Coverage

Controls	
C6.	The total site cover of all buildings within the development shall be equal to or less than 40% of the total site area.

Dwelling Amenity

Controls	
C7.	Dwellings should be designed and orientated to take advantage of views, solar access and proximity to open space areas.
C8.	Consideration should be given to the efficiency of interior layout, room size, security and safety, opportunities for cross breezes, energy efficiency, conservation and privacy.
C9.	At least 50% of the area of communal open space should have a minimum 3 hours of solar access between 9am and 3pm at the Winter Solstice (21 June).

C10.	Shadow diagrams for the hours of 10am, 12 noon and 2pm for 21 June will be required to accompany any development application for the site.
C11.	All units should be provided with clothes drying facilities and adequate storage capacity.
C12.	Openings (windows and doors) from living areas must not be located directly opposite neighbouring windows or openings where it is likely to result in unreasonable noise problems between buildings.
C13.	Buildings shall be designed and located to take account of rail related noise and vibration from the Main Northern Rail Line in accordance with standards as set out in the Environmental Protection Authority (EPA) 'Environmental Noise Control Manual' 1994, Australian Standard 2670 Part 1 'evaluation of Human exposure to Vibration and Shock in Buildings (1 to 80Hz)' and any rail policy endorsed by the EPA or any noise and vibration publications by State Rail and Rail Infrastructure Corporation.
C14.	In designing the layout, arrangement etc. of buildings, regard shall be made to possible existing noise sources and especially the adjacent industrial premises so as to minimise the impact of noise on future residents, eliminate the likelihood of any reflection or reverberation adversely affecting existing residential properties.
C15.	All units should be provided with energy efficient clothes drying facilities, either: • in cross ventilated drying cupboards or other drying provisions on balconies; • in private open spaces; or • dryers with 4 NATHERS rating.

Landscaped Open Spaces

Objective

O6. To ensure the provision of open space and landscaped areas for the amenity of residents.

Controls	
C16.	To ensure adequate provision of open space, maximum permissible site coverage is 40%.
C17.	Landscaped open spaces should be provided to accommodate a range of communal and individual needs. There should be a primary open space area containing a recreation facility such as a pool/spa or similar, and this facility be easily accessible to all residents on site. Smaller, more intimate landscaped areas should be provided throughout the site and be accessible via a pathway system.
C18.	Landscaped areas should generally be dominated by vegetation and not masonry elements with areas capable of supporting deep soil planting. Hard paved areas should, where possible, be kept to a minimum in order to reduce stormwater runoff, although wheelchair access and remediation requirements must be considered.

Public and Private Open Spaces

Controls	
C19.	Useable communal and open space is to be provided at a rate of 40m² per dwelling. Driveways, pathways and parking areas are excluded from the open space calculations.
C20.	A minimum area of 20m² of private open space with a minimum dimension of 4m is to be provided for ground floor units and accessible from the main living areas. A minimum area of 10m² of private open space with a minimum dimension of 2m is to be provided for all above ground units, accessible from the main living areas.

Car Parking and Access

Objective

O7. Adequate provisions should be made for on-site resident parking and visitor parking without causing any detrimental impact on the amenity of the development, streetscape and neighbourhood.

Controls	
C21.	The provision of at least one (1) loading dock for each residential building is desirable.
C22.	Loading docks are to be provided for the commercial areas.
C23.	Access to the site is not to be provided by a 'gatehouse' security system, which limits public access to the site.

Pedestrian Access

Controls	
C24.	Safe pedestrian access is to be maintained throughout the site.

Impact on Adjoining Properties

Objective

O8. To provide attractive streetscapes which enhance the amenity of neighbouring development.

Streetscape

Controls	
C25.	The setback of buildings from the street frontages to be appropriate to the streetscape character.

K9 186 Great North Road, Five Dock



Figure K9-1 Aerial photo (source: nearmap.com)

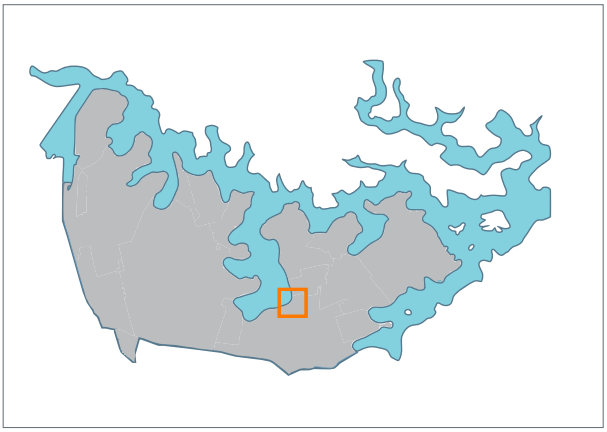


Figure K9-2 Council area map



Figure K9-3 186 Great North Road, Five Dock - Location Plan

The following objectives and controls have been prepared to ensure that the land at 186 Great North Road, Five Dock accommodates a high quality development.

K9.1 Objectives and provisions

O1. Future development has adequate building setbacks and separation so that buildings are seen within a landscaped setting;

O2. Provide lower building heights on the McKinnon Avenue and Great North Road frontages to provide an appropriate bulk/scale relationship with the surrounding locality;

O3. To protect important built and natural elements both in the private and public domain; and

O4. Ensure the use of high quality facade and design finishes.

Controls	
C1.	The maximum number of storeys permitted on the site is shown in Figure K9-4 Maximum Heights, Figure K9-9 Cross Section A, Figure K9-11 Cross Section B and Figure K9-13 Cross Section C.
C2.	The minimum setbacks from boundaries are shown in Figure K9-5 Setbacks.
C3.	A minimum of 38% of the site is to comprise landscaped area. (Landscaped area means any part of the site used for growing plants, grasses and trees but does not include any building, structure or hard paved area).
C4.	A minimum of 28% of the site area is to comprise deep soil landscaping. (Deep soil area means any part of the total landscaped area that does not include buildings or other structures under - with the exception of measures for the remediation of contaminated land).
C5.	The Fig trees on Lyons Road are to be protected throughout construction and following completion of building through setbacks of the building and associated basements.
C6.	Vehicle Access from Great North Road and Lyons Road is not permitted. Vehicular access to and from the site must be from McKinnon Avenue. Refer to Figure K9-7 Vehicle Access.
C7.	The Tobruk Memorial is to be retained on the corner of Great North Road and Lyons Road.
C8.	In addition to the 8.0m from the southern boundary adjacent to Lyons Road, all buildings are to be set back an additional 1.5m from the canopy of the Fig trees.
C9.	Buildings are to be designed to face the street, and to enhance the public domain through entrances, good quality finishes and well resolved architectural design.
C10.	Fencing on the site is to be designed so that sight lines for both pedestrian and vehicles are not obscured.
C11.	Roof forms, plant and lift overruns are to be designed to be simple compact forms that are visually unobtrusive.



Figure K9-4 Maximum Heights



Figure K9-5 Setbacks



Figure K9-6 Landscaping



Figure K9-7 Vehicle Access

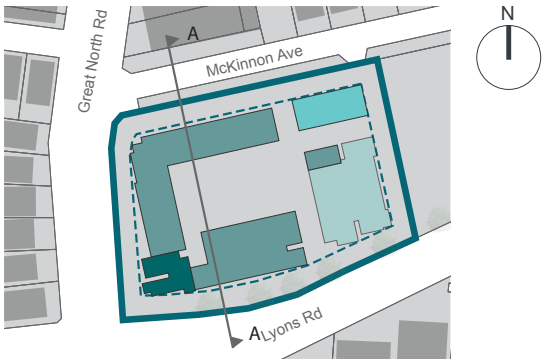


Figure K9-8 Key plan

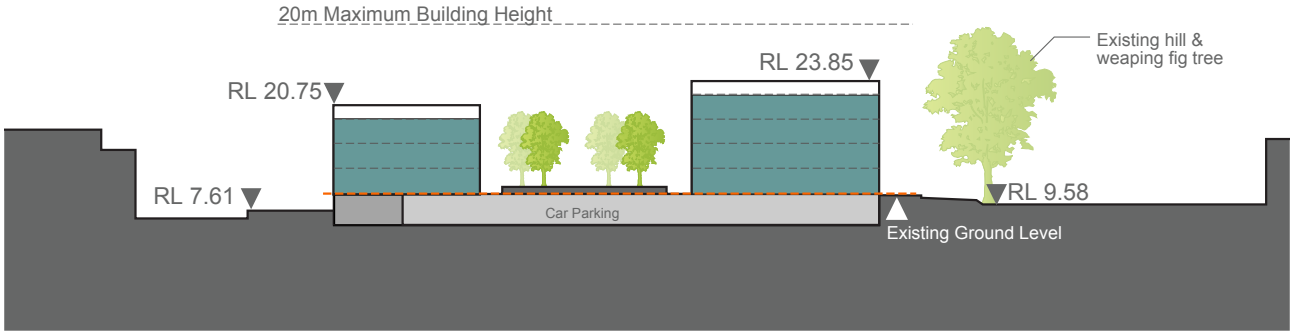


Figure K9-9 Cross Section A

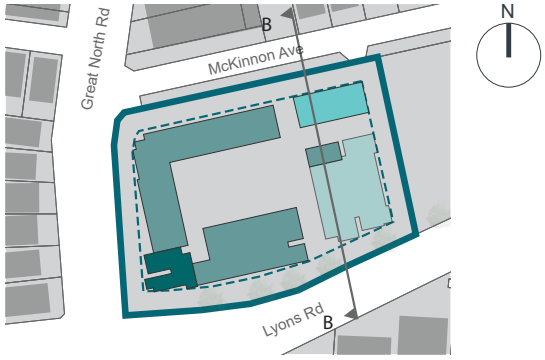


Figure K9-10 Key plan

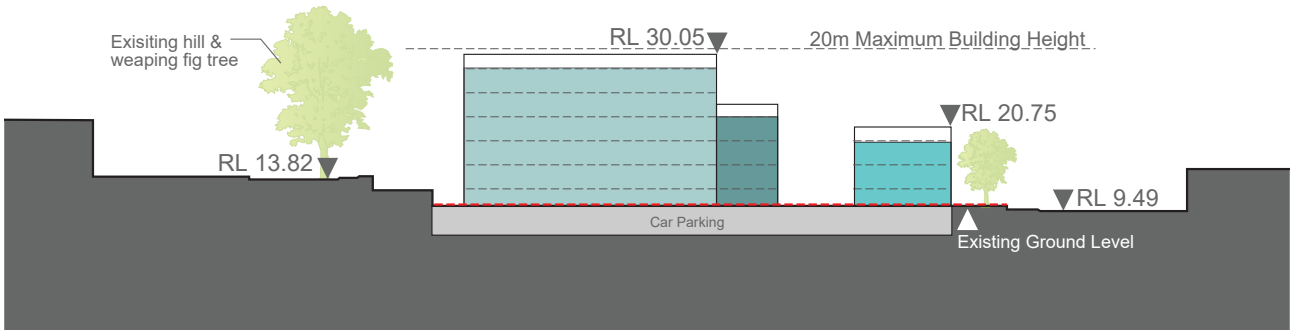


Figure K9-11 Cross Section B

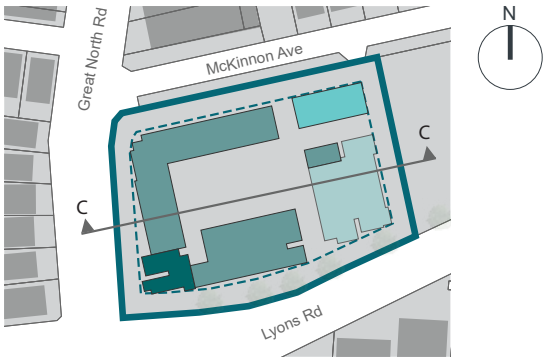


Figure K9-12 Key plan

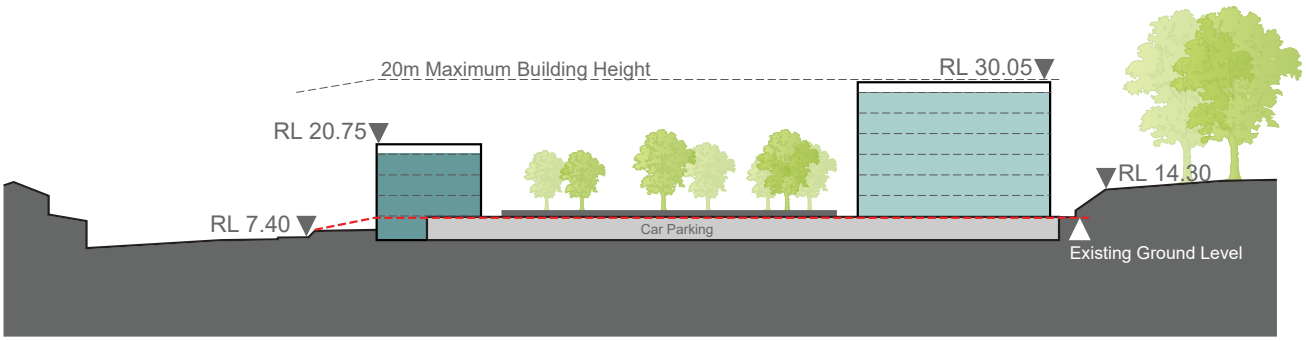


Figure K9-13 Cross Section C

K10 2A Hythe Street, Drummoyne



Figure K10-1 Aerial photo (source: nearmap.com)

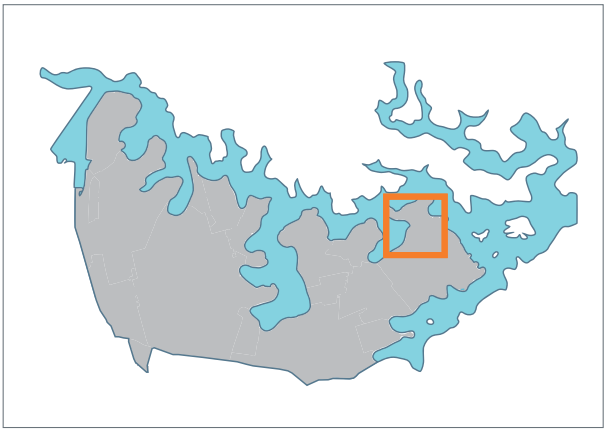


Figure K10-2 Council area map



Figure K10-3 2A Hythe Street - Location Plan

K10.1 General objectives

O1 To achieve a coordinated urban design outcome.

O2 To enhance the existing streetscape and ensure appropriate development scale and interface near residential areas.

O3 To minimise solar access and privacy impacts upon surrounding properties.

O4 To minimise the impact of any excavation on adjoining buildings and existing landscape.

O5 The design of balconies is not to significantly increase the visual bulk of the building.

Controls	
C1.	Buildings are to adhere to the following setbacks: 6m to the south-western property boundary; 6m to the western boundary; 8m to the north-western property boundary.
C2.	The maximum building height is RL 19.9 on the corner of Westbourne Street and Hythe Street. The maximum building height on the remainder of the site is 8.5 metres.
C3.	Water Sensitive Urban Design systems are to be implemented and detailed in landscape plans and stormwater solutions on the site.
C4.	No excavation is to occur within the “Nil excavation zone”.
C5.	Balconies within the balcony zone are to have a light weight design character, for example a glass or metal balustrade
C6.	Preclude vehicular access and egress from Westbourne Street and Hinkler Court.

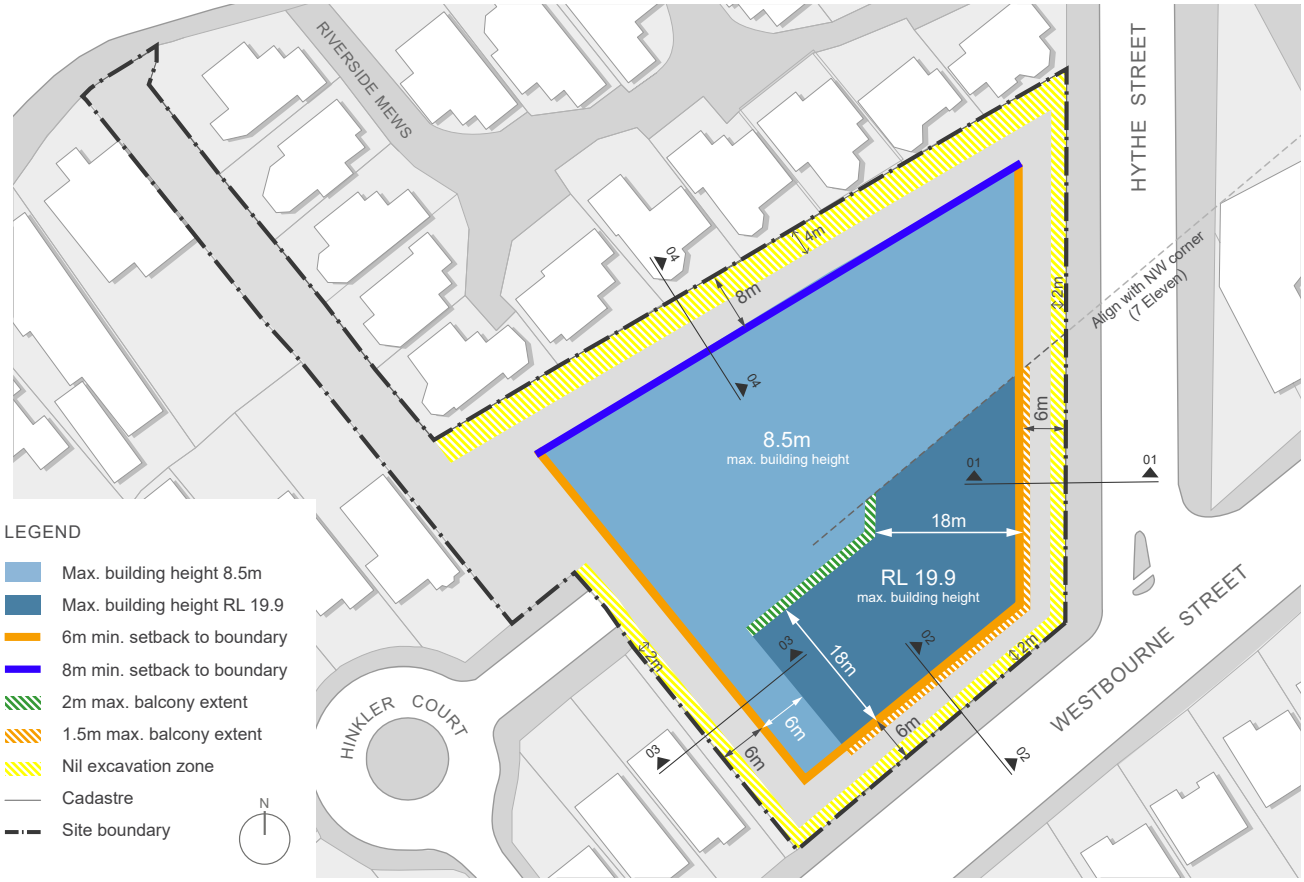


Figure K10-4 Consolidated development controls plan

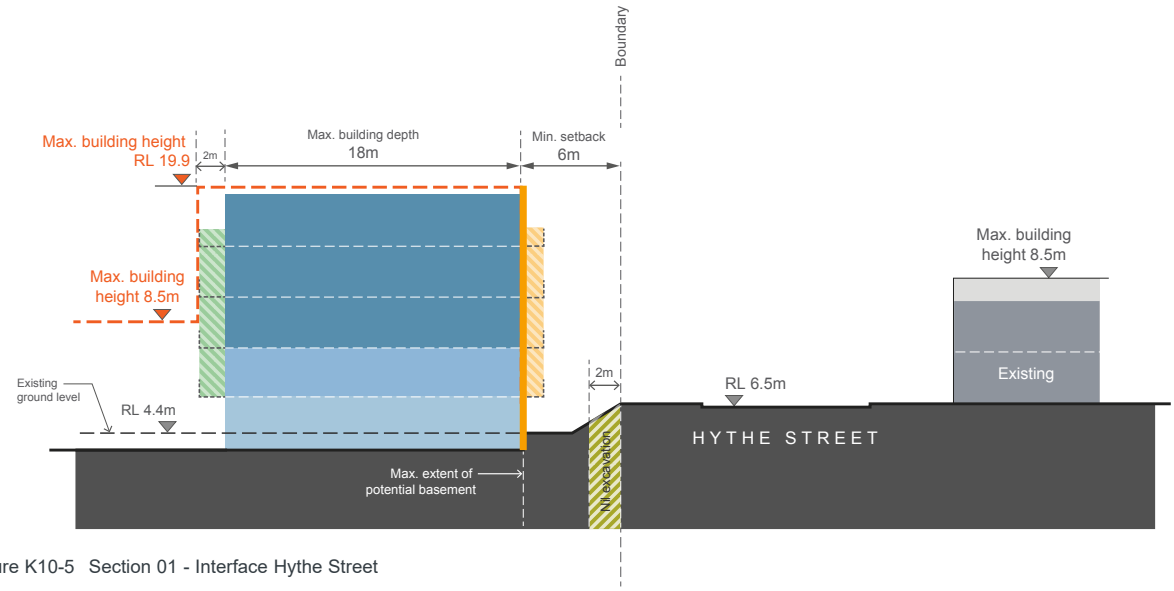


Figure K10-5 Section 01 - Interface Hythe Street

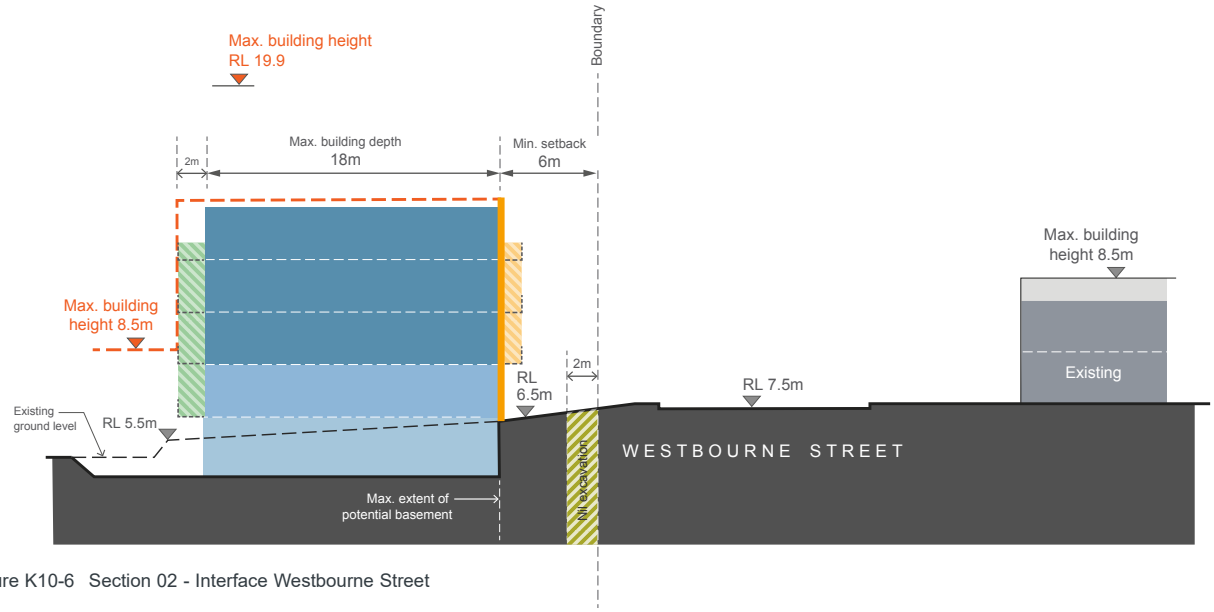


Figure K10-6 Section 02 - Interface Westbourne Street

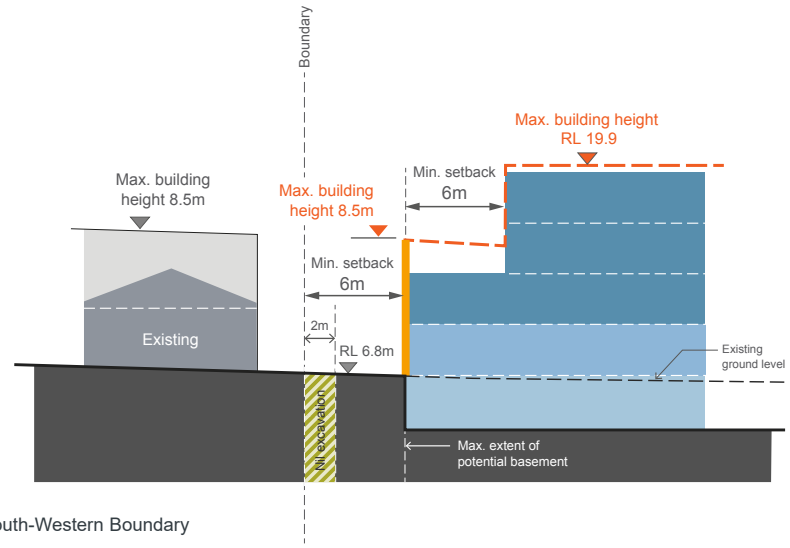


Figure K10-7 Section 03 - Interface South-Western Boundary

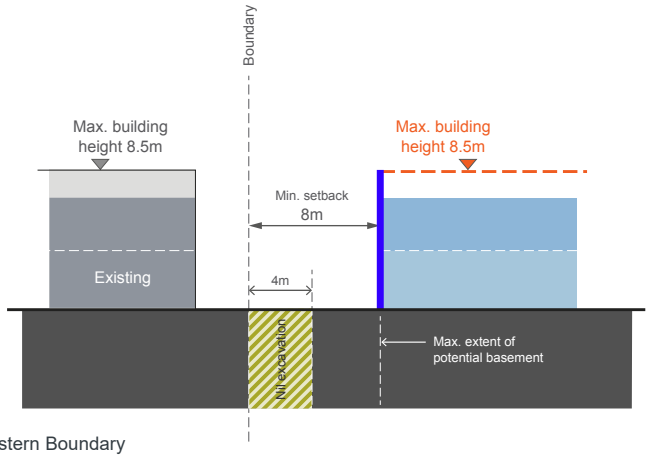


Figure K10-8 Section 04 - Interface North-Western Boundary

K11 Kings Bay (former Hycraft site), Five Dock



Figure K11-1 Aerial photo (source: nearmap.com)

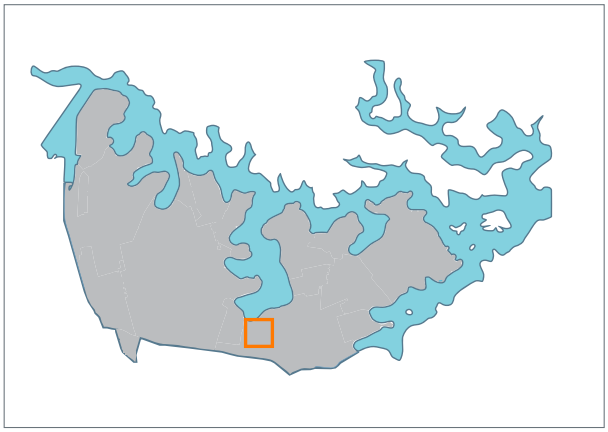


Figure K11-2 Council area map



Figure K11-3 Kings Bay (former Hycraft site), Five Dock - Location Plan

K11.1 General objectives

O1. To create a new form of housing in this area which in terms of scale, bulk and form respects the existing pattern of the public domain and mediates between the built form of the area and earlier inner city suburbs;

O2. To facilitate development of the site which responds to the context of the site by locating larger scale development adjacent to open space areas or non residential uses;

O3. To minimise the impact of the new development on the site on privacy and sunlight access of neighbouring residential properties;

O4. To provide for the recreation needs of the new residents of the site;

O5. To identify and retain any significant trees on the site; and

O6. To provide safe access to and from the site for cars and pedestrians.

K11.2 Specific provisions

Density, Design, Height, Scale and Bulk

Objectives

O7. To achieve development of the site which will introduce new housing forms to this area in a way which respects the traditional urban environment; and

O8. To ensure that the bulk and scale of the new development is sympathetic to the existing development in the area.

Height

Controls	
C1.	Subject to the maximum height of buildings, is to comply with the heights for the various sections of the site as shown in Figure K11-4 Maximum height of buildings.
C2.	Not withstanding the above, the roofspace of buildings west of the central park as shown hatched on the height plan (see Figure K11-4 Maximum height of buildings) can be used as floor space.

Site coverage

Controls	
C3.	Building footprints must not occupy more than 30% of the total site area.

Setbacks

Controls	
C4.	The wall to the below grade parking structure is to be set back a minimum of 3.5m from the boundary of William Street.
C5.	Buildings are to be set back a minimum of 6m from the boundary of William Street at ground level.
C6.	Buildings are to be set back a minimum of 5m from the boundary of Harris Road at ground level.
C7.	Buildings are to be set back a minimum of 7.5m from the rear property boundaries in Kings Road at ground level.
C8.	For the 5 & 6 storey building heights shown on Figure K11-4 Maximum height of buildings the top floor of each will be set back a further 2.5m from the floor below along William Street.
C9.	Houses at the eastern side of the central park are to be setback a minimum of 4.5m from lot boundary.

Design and Built Form

Controls	
C10.	The site is to be developed as part of a comprehensive scheme where there is a strong relationship in design terms between the various elements of the development.
C11.	There is to be a variety of medium density development on the site ranging from terrace houses to residential flat buildings located around a central open space area (see Figure K11-4 Maximum height of buildings).
C12.	Higher density development should be located at the western end of the site where its apparent height and bulk can be related to open space and non residential uses or serviced apartments on neighbouring boundaries.
C13.	Where appropriate, buildings should formally present to the existing street frontages and integrate with existing streetscapes.
C14.	Roof forms should be predominantly pitched especially on the lower density development on the site.
C15.	The orientation of development should capitalise on solar access and views, and buildings should be located in relation to roads and open space to create a strong sense of place.

Open Space

Objectives

O9. To provide open space which will form a physical focus for the development;

O10. To meet the requirements of the residents of the site in relation to formal and informal recreation activities. These requirements are to be assessed on the basis of the likely future population of the site; and

O11. Design and integrate landscaping into the development both as part of the open space areas and other areas of the public domain.

Location and Design

Controls	
C16.	Figure K11-4 Maximum height of buildings shows the location for the major open space areas on the site. Other smaller areas may be provided on the site for informal activities. A standard of 2.51ha per 1,000 residents of dedicated public open space has been adopted by Council. A minimum of 5,000m^2 is to be provided on site.
C17.	Where possible there should be pedestrian linkages between the open space areas.
C18.	Landscaped open space areas should provide for a range of recreation needs covering both formal and informal activities.

Private Open Space

Controls	
C19.	At least 40m^2 per dwelling of landscaped private open space is to be provided on the site. This does not need to adjoin each dwelling but can be provided in larger areas.
C20.	Each dwelling must have an area of open space attached to it. This may be by way of a balcony or roof terrace, or at ground level. This open space area should have a minimum area of 10m^2.



Figure K11-4 Maximum height of buildings



Figure K11-5 Access roads & parking

K12 Liberty Grove

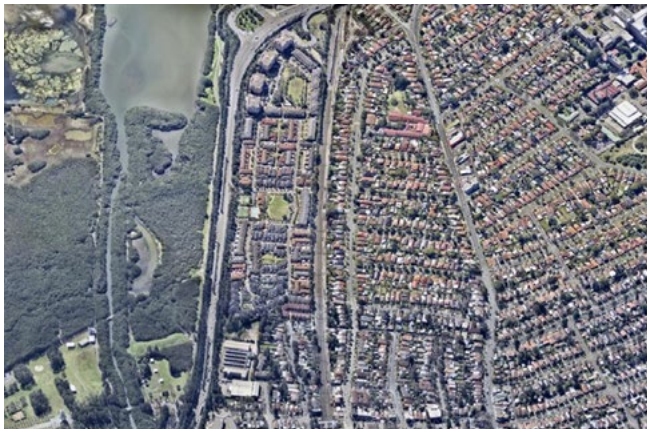


Figure K12-1 Aerial photo (source: nearmap.com)

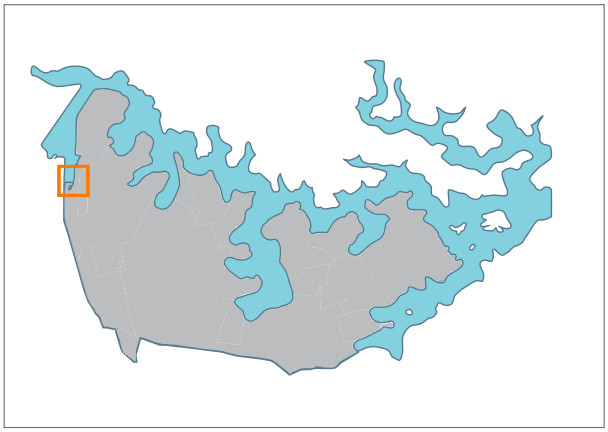


Figure K12-2 Council area map



Figure K12-3 Liberty Grove - Location Plan

K12.1 General objectives

To provide guidance for the residential development of the land which is attractive to potential and existing residents of Canada Bay, appropriate for the local environment and which takes account of the following:

O1. Maintenance of the amenity of existing nearby residents of Canada Bay as far as possible with regard to stormwater drainage, landscape quality, privacy, solar access, traffic and noise impacts;

O2. Maintenance of existing levels and quality of public open space facilities in Canada Bay;

O3. Integration of the built form with the existing landscape and the locality generally; and

O4. Public access to achieve integration into the Canada Bay community.

K12.2 Specific provisions

Development Density

Objective

O5. To provide a maximum density control that will assist in encouraging a variety of building forms which would be appropriate within the local area by providing for development which takes into account the opportunities and constraints imposed by local infrastructure while providing for an acceptable bulk and scale of development.

Controls	
C1.	The maximum permitted density based on the Gross Site Area shall be 65 dwellings per hectare. “Gross Site Area” means the area of the whole of the land shown edged orange on Figure K12-3 Liberty Grove - Location Plan.
C2.	Where possible there should be pedestrian linkages between the open space areas.
C3.	Landscaped open space areas should provide for a range of recreation needs covering both formal and informal activities.

Site coverage

Controls	
C4.	The total site cover of all buildings shall not exceed 35% of the Gross Site Area. This clause applies to all buildings except those provided solely for the following purposes: • Public recreation, open space or amenities; and • Garbage storage areas.

Site requirements

Objectives

O6. To ensure siting of buildings and landscaping to meet reasonable user and neighbour requirements for privacy.

O7. To provide flexibility in the siting of buildings and minimise adverse impact on adjacent and adjoining properties.

O8. To achieve a coherent site layout that provides a pleasant, attractive, manageable and resource-efficient living environment.

O9. To provide adequate space for landscaping, visual and acoustic privacy.

Setbacks

Controls	
C5.	The following Building Line setbacks apply: • To the Gross Site property boundary - 10m provided however that this may be increased to 15m taking into account the height of any building or structure and its likely impact; and • To any internal road - 4m.
C6.	Generally at least one half of any Building Line Setback shall be comprised solely of soft landscaping.

Traffic and Access

Objective

O10. To provide vehicular access that is efficient in layout and provides a safe and pleasant environment for residents and visitors.

Controls	
C7.	There shall be no vehicular access to or from the site via Concord Avenue or King Street and all access shall be via Homebush Bay Drive and Oulton Avenue.

Open Space

Objectives

O11. To provide convenient open space and recreational opportunities for the residents of multi-unit housing projects;

O12. To enhance the quality of the built environment, and the appearance and character of the site by providing for landscaping;

O13. To meet the wider community needs for open space and recreation and assist in maintaining the levels of quality and provision of open space;

O14. To provide for landscaping which takes into account the sensitivity of the adjoining environment of Homebush Bay and minimises the impact of stormwater discharge;

O15. To provide for passive recreation opportunities; and

O16. To provide for privacy and shade.

Landscaping

Controls	
C8.	All areas not occupied by buildings or roads shall be landscaped predominantly with 'soft' landscaping.
C9.	Not more than 10% of all landscaping may be used for hard landscaping.
C10.	Paths and paving within landscaped areas should be kept to a minimum and within soft landscaped areas allowed only so as to provide access and for discrete passive recreation opportunities.
C11.	Selection and plantings of trees and shrubs should primarily reflect trees and plants of the Parramatta River valley.
C12.	A balance of upper, mid and lower canopy trees is required in all landscaped areas but especially in perimeter setbacks.

General Provisions

Objective

O17. To maintain the amenity of existing dwellings near the site and reflect the character of Concord.

Architectural Design

Controls	
C13.	External design of buildings should have regard to the traditional styles of Concord and especially the California Bungalow theme and especially to the principal features thereof including the following: • gable ended pitched roofs; • pilasters and pillars supporting roofs and awnings; • verandahs; and • detailed eaves.

K13 Mortlake Point



Figure K13-1 Aerial photo (source: nearmap.com)

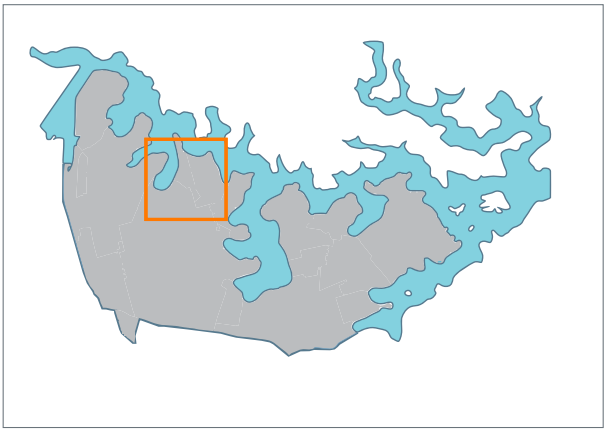


Figure K13-2 Council area map

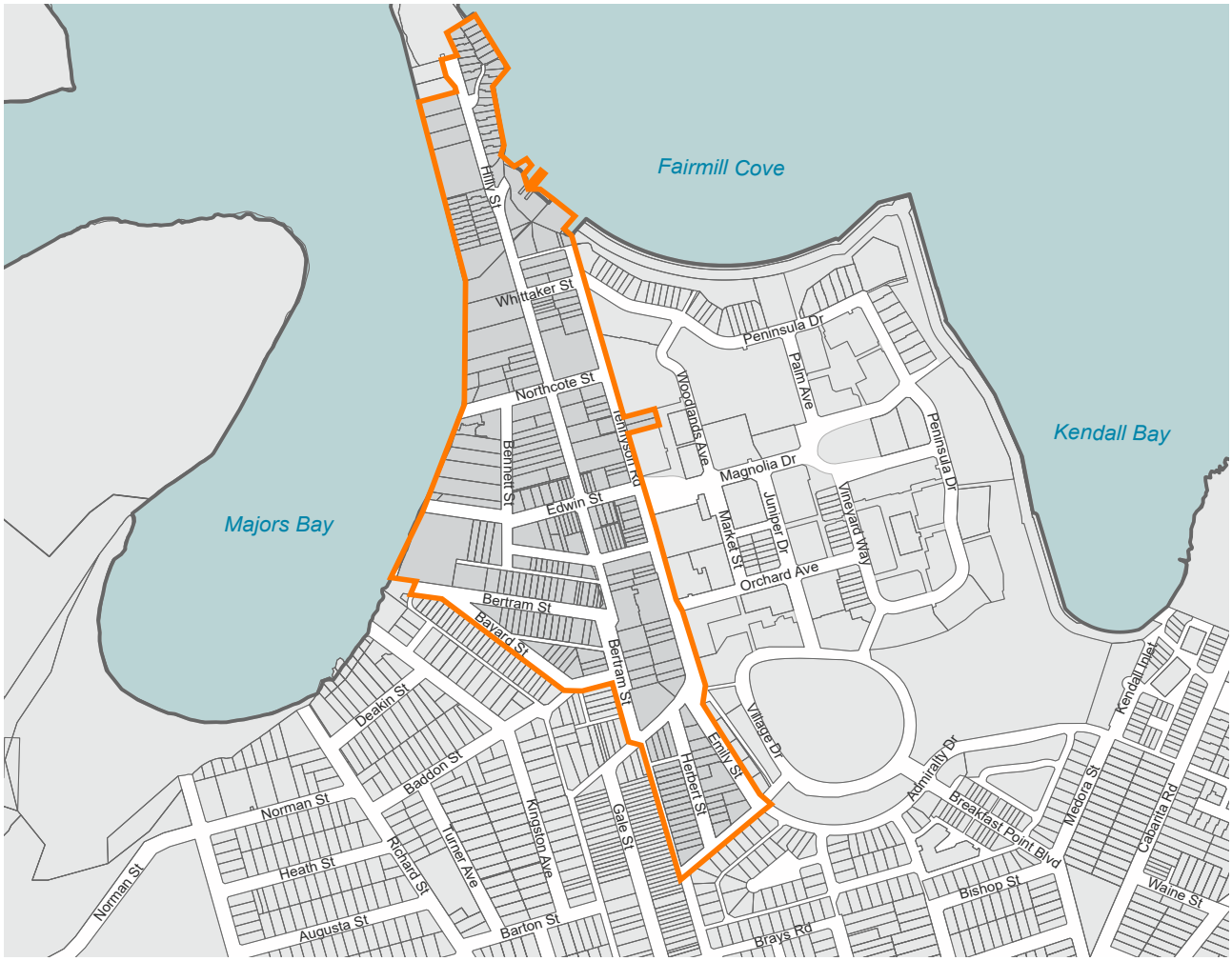


Figure K13-3 Mortlake Point - Location Plan

K13.1 General objectives

The objectives of the Land Use Compatibility component of this DCP are outlined below. All development in Mortlake Point is to comply with these Objectives.

O1 Ensure that all potential amenity impacts of proposed development are mitigated through appropriate design responses;

O2 Ensure that new residential development provides an acceptable level of amenity where located adjacent to non-residential land uses, through design responses that mitigate any impact from existing non-residential land uses;

O3 Ensure that residential development would not in any way affect the lawful consent of existing non-residential land uses;

O4 Ensure that the impact generated by new non-residential development, such as operating hours, noise, privacy, vehicular and pedestrian traffic and other factors is controlled so as to not affect the amenity of adjacent residential development; and

O5 Ensure that Council is provided with relevant and sufficient information that allows Council to determine the land use compatibility impacts of a proposed development.

K13.2 Specific provisions

General Compatibility Standard for All Development

Controls	
C1.	All development is to utilise a continuous buffer treatment along the interface with adjacent non-compatible land uses. In particular, this should apply to the side and rear boundaries of proposed developments.
C2.	While frontages must be designed so as to not create an unnecessary “solid” frontage that would be unacceptable as streetscape treatment.
C3.	Development is to use appropriate site layouts that use buildings, walls and other physical aspects to minimise environmental impact on adjacent land uses.
C4.	Adequate provision shall be made for off-street parking on all developments to ensure that no conflicts arise between residential and non-residential developments in the utilisation of on-street parking generally.

Design Requirements for Non-Residential Developments

Controls	
C5.	New non-residential development adjacent to residential development should not generate industrial airborne emissions causing noise, odour, fumes and dust to the extent to which it will affect the amenity of adjacent residential development.
C6.	External walls facing residential properties are to be constructed of materials with good sound insulating quality and no large openings that would transmit noise.
C7.	Plant equipment and machinery is to be located within the building or screened from adjacent residential uses.
C8.	Vehicular access must not be provided along the boundary adjacent to residential uses.
C9.	Loading and maneuvering areas are to be located within the building or screened from adjacent residential uses.
C10.	The development must be designed so that any traffic generated has a minimal impact on adjacent residential uses and on the local road system.
C11.	Signage must be of a character that does not detract from the visual amenity of the existing residential uses.

C12.	Lighting systems within the development must not create light spillage onto adjacent residential uses.
C13.	Hours of operation (including waste collection) being limited to between 7am and 6pm, Monday to. Friday, with limited hours on Saturday for some uses and no operation on Sunday.
C14.	New non-residential development is to use site layouts that use buildings, walls and other physical elements to provide further protection for noise-sensitive uses from off-site noise.

Compatibility Requirements for Residential Development

Controls	
C15.	External walls facing non-residential properties are to be constructed of materials with good sound insulating quality and no large openings (including windows) that would transmit noise.
C16.	The building plan; walls, windows, doors and roof are to be designed to reduce intrusive noise levels from potential sources of noise emanating from adjacent non- residential uses. Attention should be paid to re-orientating noise sensitive rooms (living, dining, bedrooms) away from potential sources of noise.
C17.	Balconies and other external building elements are to be located, designed and treated to minimise noise infiltration.
C18.	Where windows are to face non-residential development, they are to be fitted with noise-attenuating glass to minimise the impact of background noise from non-residential development.
C19.	Landscaping with appropriate setbacks is to be provided on communal and private open space to create a visual buffer between adjacent non-residential development and filter any air-borne particles generated by industry.

Building Height and Scale

Objectives

O6 To ensure that new development:

a) Provides appropriate scale and compatibility with the Mortlake streetscape and the Parramatta River foreshore context;

b) Ensures reasonable access of all development to significant views, vistas and landmarks within and around Mortlake Point;

c) Maintains and enhances environmental amenity in the immediate context of the development, including reasonable solar access, adequate levels of privacy and an acceptable level of view sharing; and

d) Achieve comfortable street environments for pedestrians in terms of daylight, scale, sense of enclosure, as well as providing a healthy environment for street vegetation.

Controls	
C20.	Maximum height of new development is not to exceed 12 metres from natural ground level to the uppermost point of the roof structures.
C21.	Building heights are to respond to the topography of Mortlake Point through building heights that ensure the sharing of views to significant land marks and encourage appropriate response to the natural topography.
C22.	Where appropriate, new development is to adopt the predominant height and shape of adjoining development and have similar bulk and mass, taking into account the size and shape of the lot, with taller buildings or elements of one building placed on the higher parts of the site.

Building Setbacks

To ensure that new development:

a) Provides appropriate relationship to the existing streetscape, by ensuring uniform built form patterns in new development;

b) Ensures that new development contributes to the public domain in Mortlake Point by providing front setbacks that ensure a comfortable street environment for pedestrians in terms of providing solar access, appropriate human scale and a healthy environment for street vegetation;

c) Strengthens the relationship of new development in Mortlake Point to significant landmarks in the immediate and broader context; and

d) Provide side and rear setbacks that provide adequate opportunity for ventilation, solar access, view sharing and privacy in residential buildings.

Controls	
C23.	The front setback is 7.5 metres on all sites.
C24.	On the frontages to Northcote Street, Edwin Street, McDonald Street and Bertram Street, a minimum frontage of 7.5 metres is required to facilitate vista termination and visual access to significant views to the west.
C25.	Where Non-Residential development is directly adjacent to Residential development, development is set back at least 4.0 metres from the side and rear boundaries.
C26.	All other residential development is to be set back a minimum 3 metres from the side and rear property boundaries.

Foreshore access

Controls	
C27.	Foreshore access is to be encouraged and promoted by securing public access to the foreshore areas of open space for improvement of and linkages with local and regional areas of open space.
C28.	All development on land located along the foreshore in the area to which this DCP applies is to ensure that adequate public access is provided, to a width of eight (8) metres.
C29.	The Council is to consider all opportunities to increase public access to the foreshore through acquisition, dedication or right-of-way.

Streetscape and Public Domain

Objectives

O7 To create a high quality environment for local residents and workers in Mortlake Point;

O8 To ensure that new development within Mortlake Point makes a positive contribution to the streetscape and public domain in the area by ensuring a safe, attractive and comfortable environment; and

O9 Ensure that development includes aspects of landscaping that add to the habitat values of the area.

Controls	
C30.	Mid-block connections are to be provided for pedestrians on large sites, in particular those sites directly abutting public foreshore areas. Links should be a minimum of 3 metres in width and where appropriate, be dedicated as public right of way.
C31.	Landscaping is to be utilised by development to encourage improved pedestrian amenity through the provision of shade-giving trees spaced at regular intervals of at least 6 metres.
C32.	Landscaping should incorporate, where possible, native vegetation to improve the habitat potential of the area.
C33.	Pedestrian access is to be clearly legible from the street.

K14 Pelican Point, Pelican Quays and Philips Landing, Concord



Figure K14-1 Aerial photo (source: nearmap.com)

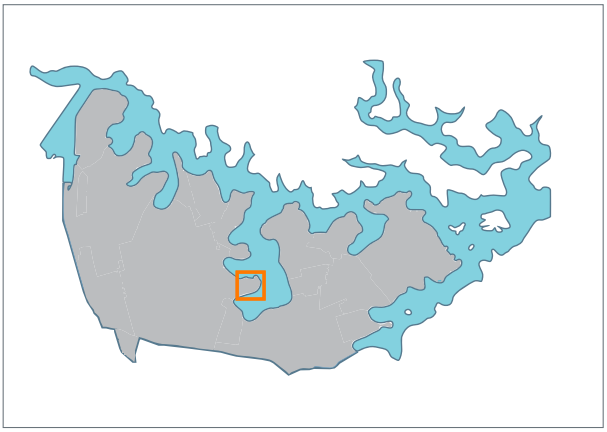


Figure K14-2 Council area map

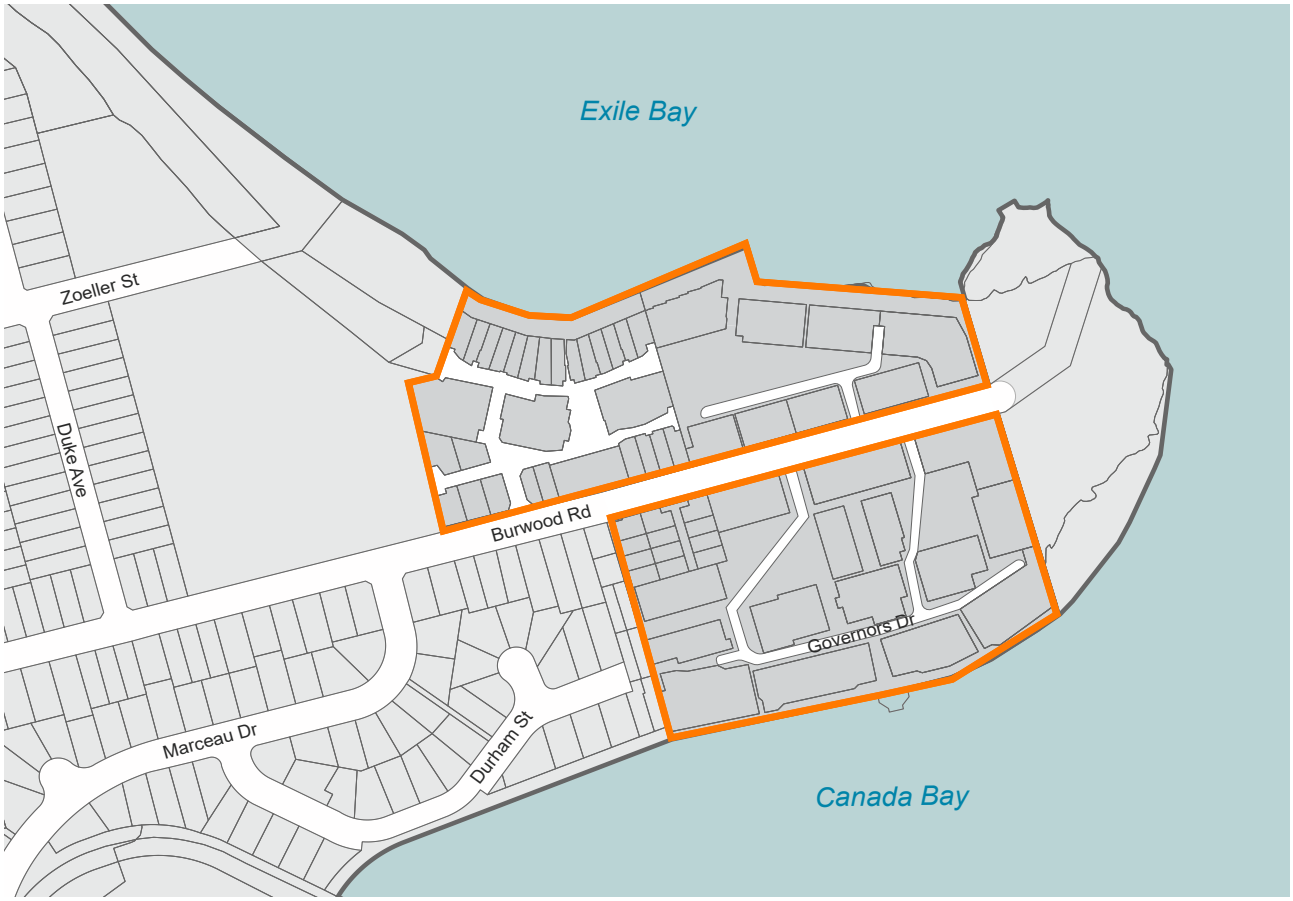


Figure K14-3 Pelican Point, Pelican Quays and Phillips Landing, Concord - Location Plan

K14.1 General objectives

O1. The development of the site shall promote public access to and along the waterfront for residents and the general public; and

O2. To ensure that the development of the site does not cause detriment to the public enjoyment of the foreshore, by providing standards for development, including height, site cover and density, minimum standards of landscaped areas, and design standards for driveways, and materials and finishes of the buildings, etc.

K14.2 Specific provisions

Development Density

Controls	
C1.	The Council shall not consent to any residential development of the land to which this plan applies if the total dwelling density exceeds forty-five (45) dwellings per gross hectare.

Public Foreshore Access

Controls	
C2.	Provision shall be made for public access to the foreshore of the Parramatta River. The requirement in this regard is to be a corridor with a depth of thirteen point five (13.5) metres measured from the relevant property boundary or where that boundary comprises a seawall, battered embankment or the like, 13.5 metres from the top of that wall or embankment and for the full extent of any frontage to the Parramatta River.
C3.	The area for public access shall be landscaped and maintained to Council's satisfaction and include a pedestrian pathway with a minimum width of two (2) metres.

Setbacks and Building Lines

Controls	
C4.	The following Building Lines are imposed: a) To the foreshore. 13.5 metres. (Note: For the purpose of this clause, the building line shall be measured from Medium High Water Mark or where existing, the top of any seawall); b) To Burwood Road, generally 9 metres, with an absolute minimum of 7.5 metres at any point; c) To Bayview Park, 9 metres; and d) To any boundary other than as in a), b) or c) 5 metres.
C5.	Buildings which exceed two storeys in height shall be setback, on average, as follows: • From the foreshore, 20 metres; and • From Burwood Road, 15 metres.

Height of Buildings

Controls	
C6.	Buildings within 20 metres of the foreshore or within 15 metres of Burwood Road, shall generally not exceed a height of two (2) storeys.
C7.	Buildings generally shall not be in excess of three (3) storeys.
C8.	Buildings generally shall have a height no greater than fifteen (15) metres where the height is measured from ground level to the highest point of the roof at any place.
C9.	No external wall of any building shall have a vertical rise of more than two (2) storeys without some architectural feature which interrupts the vertical plane of that wall, to Council's satisfaction.

Site cover

Controls	
C10.	The total site cover of all buildings within the development shall be equal to or less than 35% of the total site area for buildings of two or more storeys.

Driveways and Paved Areas

Controls	
C11.	Driveways and paved areas should be of brick or cobblestone pavers or the like, selected to complement the materials and finishes and landscaping of the development.

Materials and Finished of Main Buildings

Controls	
C12.	The buildings shall be predominantly masonry construction with tiled roofs. External materials and finishes and the architectural style and features such as balconies, gables, etc. shall reflect the predominant style and character of existing residential development within the City of Canada Bay Council, particularly the 'California Bungalow' Federation and related influences.

General

Controls	
C13.	The sandstone kerbing to Burwood Road is to be maintained.

K15 Rhodes Corporate Park



Figure K15-1 Aerial photo (source: nearmap.com)

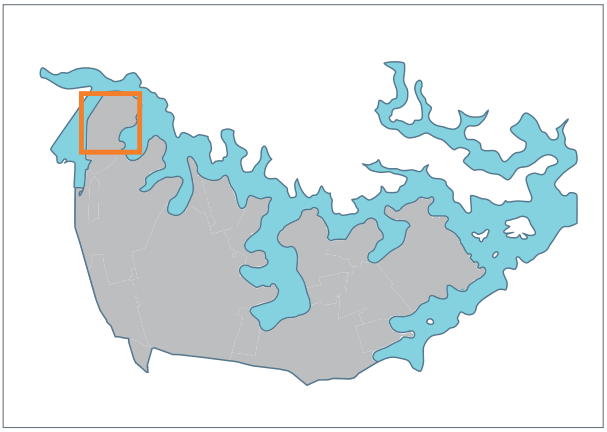


Figure K15-2 Council area map

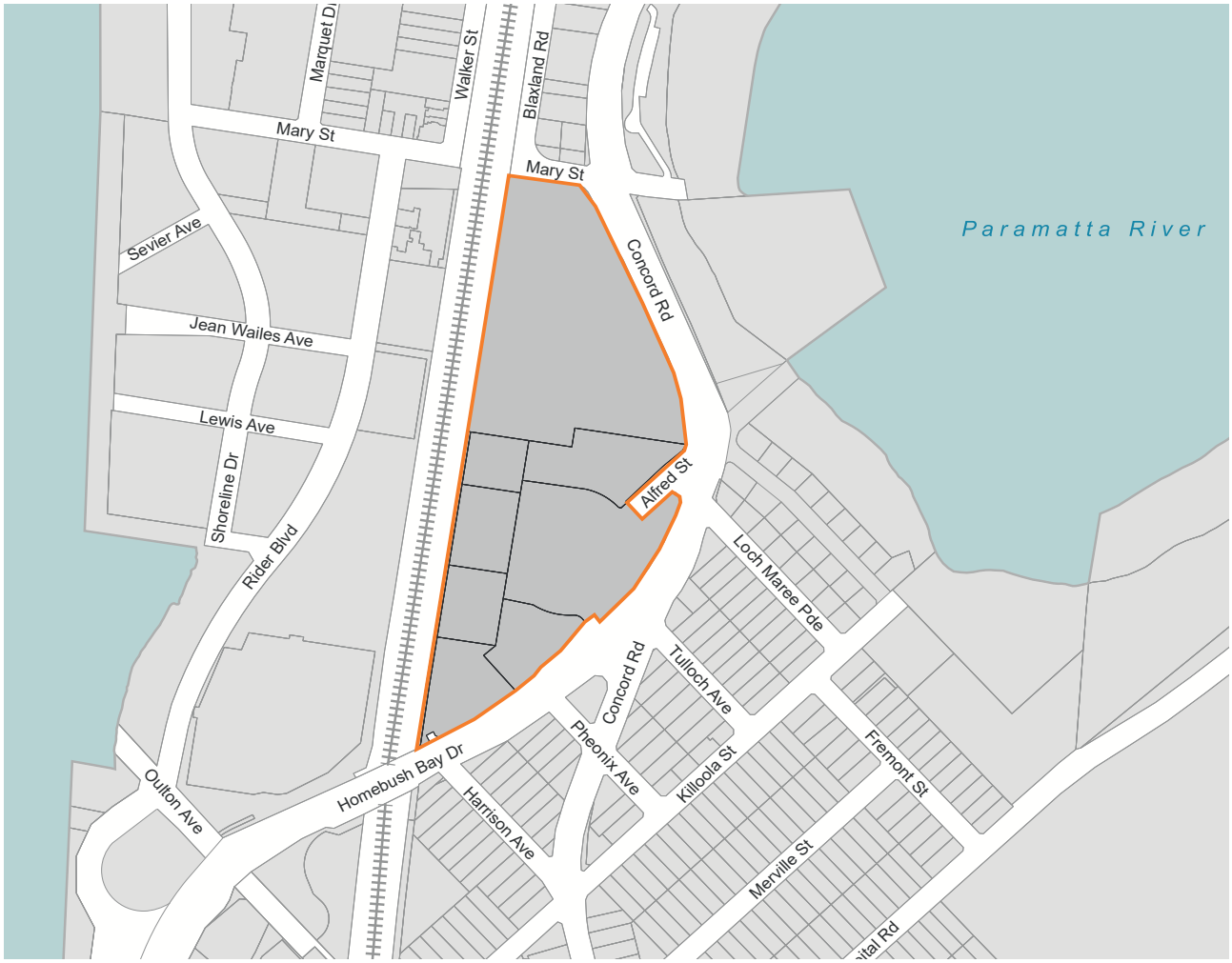


Figure K15-3 Rhodes Corporate Park - Location Plan

K15.1 General objectives

O1 To encourage a high standard of modern business park development;

O2 To ensure new development complements the existing “Digital” development;

O3 To provide a range of office and light industrial uses;

O4 To encourage employment opportunities;

O5 To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area;

O6 To encourage the erection of buildings suited to development requiring large floor areas, and to discourage small scale uses unless they are of an ancillary or service nature;

O7 To provide for site planning and layout which includes landscaped set backs to major roads and residential areas and modern building forms;

O8 To enable the grouping of activities and, where practicable, the sharing of facilities;

O9 In the case of the land zoned B7 Business Park bounded by Concord Road, Mary Street, Homebush Bay Drive and the Main Northern Railway, Rhodes, to ensure that any new development is complementary in scale, siting, form, materials, landscaping and height with the buildings on the eastern side of the Main Northern Railway; and

O10 To facilitate public access throughout the zone.

K15.2 Specific provisions

Building Setbacks

Controls	
C1.	Building set-backs shall be provided to present a “buildings in parkland” image consistent with the “business park” nature of the zoning, particularly in relation to Concord Road and Alfred Street.
C2.	A minimum set-back of 15m and an average set-back of 20m to Alfred Street shall be provided. The two standards are intended to provide for stepped or articulated building elevations.
C3.	Buildings should be set-back from Concord Road to achieve a compatible alignment to the Digital building.
C4.	The remnant landscaping that was retained within the Concord Road frontage shall be retained.
C5.	Within the setback to the Main North Rail Line the public access/cycleway required by the original consent to Digital linking Mary Street to Alfred Street shall be identified and timing of construction identified.

Building Height

Controls	
C6.	Building heights should generally be consistent with the existing Digital building, and should be related to building siting intended to avoid overshadowing of residential property in Alfred Street.
C7.	Buildings should not exceed a height of 6 storeys above finished ground level and should not exceed the relative levels that are established by the roof heights of the existing Digital buildings.
C8.	The Council may require parts of a building to be of a lesser height so as to avoid overshadowing on residential land.
C9.	The Council may approve where it is satisfied that: • Any such part of a building is substantially separated from residential land; and • The variation in height will contribute to a better form and arrangement of buildings on the site.
C10.	Building should be sited, restricted in height or include stepped facades in order to limit overshadowing of residential properties in Alfred Street. In this regard properties should not be overshadowed between the hours of 9am and 3pm on June 21st.
C11.	Council may exclude plant and lift motor rooms and any screening structure, parapet walls and roof top amenities from any consideration of building height, other than shadow effects.

Building Materials

Controls	
C12.	Building materials and colours and glazing should be selected to achieve compatibility with existing development, without necessarily seeking uniformity. The design intent should be specified in the development application.

Landscaping

Controls	
C13.	Site landscaping should be generally designed to reinforce the intended “buildings in park” image.
C14.	A unified landscaping theme should be applied to the frontages to Concord Road and Alfred Street. It will be necessary to justify any intended interruption to the established theme, either by way of fences, walls and the like or by plant materials.
C15.	Development on the southern part of the site should extend and complement the existing landscaped courtyard in the Digital complex.

Subdivision

Controls	
C16.	Proposals for subdivision will need to demonstrate that subdivision will not prejudice the reasonable development of other lands in the zone, or hinder the attainment of objectives to achieve an integrated and compatible development of the overall site.

Types of Use

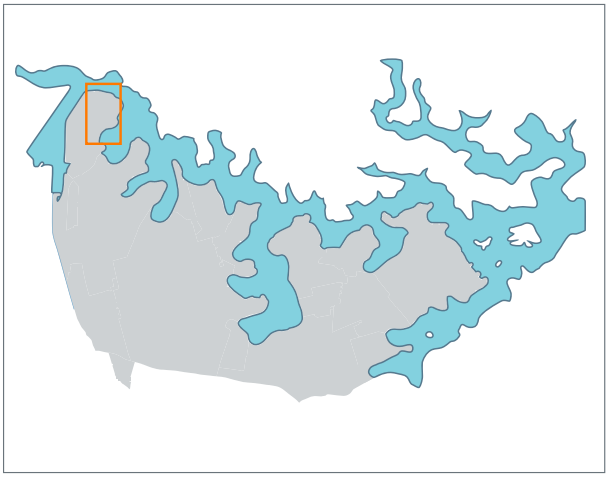
Controls	
C17.	The types of use Council seeks to encourage on the site should have the following characteristics: • A requirement for large floor areas; • A requirement for a substantial corporate presence in a modern campus style environment; • Quiet and clean operations; • No requirement for significant heavy vehicle access; and • No requirement for extensive public visits or “walk-in” trade.
C18.	Small scale uses are discouraged unless they are ancillary to or provide services to the overall development.
C19.	In the case of a development application which involves a high proportion of office type space intended to be used for office type purposes, the Council shall take into consideration whether the proposed use would be more appropriately located in a business zone in the City of Canada Bay.

Relationship with Residential Zones

Controls	
C20.	As set out above, the Council will consider development applications in terms of the potential effect on residential zones, including visual impact, overshadowing, overlooking, noise, lights and traffic.
C21.	Hours of operation will generally be limited to between: • 7am and 6pm Monday to Friday; and • 9am and 3pm Saturday. Except for: • Routine after hours activity (cleaning, etc); • Normal incidental out-of-hours activity, where premises are not open to the public or for deliveries, etc; • Any incidental seasonal requirement (e.g. stocktaking); and • Any requirement for extended hours for operating computer equipment, international communications or similar.
C22.	Where it is intended that a use operates outside the specified hours, justification should be included in the development application. This will need to demonstrate that operation out-of-hours will have no discernible impact on any adjoining residential land.

This page was intentionally left blank

K16 Rhodes East



K16.1 Introduction

This Development Control Plan (DCP) establishes a framework to guide development in the Rhodes East Priority Precinct (the Precinct).

Name of this DCP

This DCP is called the Rhodes East Development Control Plan. The DCP has been prepared pursuant to the provisions of the Environmental Planning and Assessment Act 1979 (the Act).

Land to which this DCP applies

This DCP applies to development indicated within the boundary of the Rhodes East Precinct as shown in **Figure K16-1**.

Purpose of this DCP

The purpose of this DCP is to guide the future development of the Precinct by:

- identifying the vision, development principles, key elements and indicative structure for the Precinct;
- communicating the planning, design and environmental objectives and controls against which the consent authority will assess development applications;
- ensuring the orderly, efficient and environmentally sensitive development of the Precinct; and
- promoting a high quality urban design outcome.

Relationship to other plans

This DCP adopts the following provisions of the City of Canada Bay Development Control Plan 2017:

i) Part B - Notification and Advertising
ii) Part C - General Controls with the exception of C3.1 and C3.2
iii) Part D - Heritage
iv) Part E - Residential Development E2.5, E2.6 and E4.2
v) Part H - Signage and Advertising
vi) Part I - Child Care Centres.

A provision of this DCP will have no effect to the extent that:

i) it is the same or substantially the same as a provision in the Canada Bay Local Environmental Plan 2013 (CBLEP 2013) or another environmental planning instrument (EPI) applying to the same land; or
ii) it is inconsistent with a provision of the CBLEP 2013 or another EPI applying to the same land, or its application prevents compliance with a provision of the CBLEP 2013 or another EPI applying to the same land.

In either case the provision in the CBLEP 2013 or other EPI will prevail.

This DCP should be read in conjunction with:

- The Canada Bay Local Environmental Plan 2013
- The City of Canada Bay Engineering Specifications
- The City of Canada Bay Contaminated Land Policy
- The City of Canada Development Contribution Plans
- The City of Canada Bay Planning Agreements Policy

The onus is on any prospective applicant to confirm with Council if there are any additional or updated documents.

Apartment Design Guide compliance

The State Environmental Planning Policy No 65 - Design Quality and Residential Apartment Development applies to residential flat buildings, shop top housing and mixed use development with a residential accommodation component in the Precinct.



Figure K16-1 Land to which this DCP applies

Consent authority

Unless otherwise authorised by the Act, City of Canada Bay Council is the consent authority for all development in the Precinct to which this DCP applies.

Application of this DCP

This Development Control Plan (DCP) is to supplement the Canada Bay Local Environmental Plan (LEP) 2013 and provide more detailed provisions to guide development.

This DCP has been made in accordance with the Environmental Planning & Assessment Act 1979 (the Act) and must be read in conjunction with the provisions of Canada Bay LEP 2013.

Compliance with the provisions of this DCP does not necessarily guarantee that consent to a Development Application (DA) will be granted. Each DA will be assessed having regard to the LEP, this DCP, other matters listed in Section 4.15 of the Act, and any other policies adopted by the consent authority.

If there are circumstances when it is not relevant to comply with the controls in this DCP, applicants must provide a written submission clearly demonstrating compliance with the objectives of this DCP, and detailing the reasons the control/s should be varied. The proposed variation must result in a better outcome and meet all objectives of this DCP. The submission must also clearly demonstrate the variation sought will not adversely impact on the local amenity.

Role of the draft Precinct Plan

The Rhodes East draft Precinct Plan at **Figure K16-3 on page K-122** shows how the overall Precinct may develop over time. It is intended as a guide to demonstrate how the vision, overarching objectives, development principles and key elements for the Precinct may be achieved.

Consistency with objectives and controls

Clauses in this DCP contain objectives and controls relating to various aspects of development. The objectives enable Council and applicants to consider whether a particular proposal will achieve the development outcomes established for the Precinct. The controls, if met, mean that development would be consistent with the objectives.





Above: Artist impressions of the desired future look and feel of Rhodes East Precinct

K16.2 Desired Future Character

Vision for Rhodes East





Rhodes East Vision Statement

"Rhodes East will be a model for sustainable, low-rise high density development, which builds upon the existing character and heritage of the area. It will provide more high quality housing choice, close to public transport and catering to a variety of household types.

It will be supported by connections to the water, and local streets will be redesigned to support walking, cycling and use of public transport. Improved amenity will encourage residents and visitors to spend time and continue to take pride in the area."

Overarching Objectives

Planning

Ensure Rhodes East can meet the challenges of the future by building sustainability and longevity into planning, design and commercial capability from the start.

Active transport

Design integrated transport services and experiences that prioritise walking, cycling and the use of public transport.

Affordable housing

Provide affordable housing options for key workers in the area, for example people working in occupations such as teaching, child care, policing or nursing.

Density with a human scale

Deliver buildings with podiums and a range housing typologies that promote activity on the lower levels of buildings. The range of built forms will result in more open space, more sunlight into buildings, and a closer connection to the ground.

Waterfront access

Provide enhanced public access to the Parramatta River foreshore, including the provision of housing and public open space with views to the water.

Public spaces

Provide a range of high quality, pedestrian prioritised public spaces that are safe for gathering and socialising.













Design Principles

A place led approach

The redevelopment of Rhodes East has been framed around a place led approach that builds on the existing urban fabric and character to create a pedestrian friendly human scaled outcome.

Traditional city-building has created the world's most successful urban places which typically consist of a broad range of lots, blocks and buildings assembled to create livable, mixed use walkable communities. Development was incremental, with a diversity of lot sizes and building types, ranging from the very small to the very large, and also a strong public realm.

Throughout the consultation process, the local community has consistently affirmed a desire to celebrate the inherent character of Rhodes East. As a result, the existing urban structure has informed a fine grain human scale urban renewal that will provide a genuine point of difference and create a unified community that is greater than the sum of its parts.





A peninsula of choice

Rhodes East is an established urban area with an existing community. It contains a number of different places, each with its own unique identity and character, contributing to the overall experience and attraction of the Peninsula. The commitment to delivering 5% Affordable Housing combined with the definition of a housing mix within the LEP, will ensure that Rhodes East provides choice and variety to the Peninsula.

Urbanity through density

Successful urban renewal projects increase intersection density or the number of intersections in a given area. Intersection density corresponds closely to block size, so the greater the intersection density, the smaller the block. Small blocks make neighbourhoods more walkable and, in conjunction with smaller redevelopment sites, creates the pre-conditions to deliver authentic fine grain, human scale development in accordance with the Rhodes East Vision for Cavell Avenue Precinct.

Opportunities for a modal shift

A key focus is to create an urban structure that maximises opportunities for walking, cycling and public transport patronage. Improving connectivity through additional street and pedestrian connections is critical to achieving the modal shift required to support the new Rhodes East community.

An integrated high quality urban design outcome, not just density, is required to engage and stimulate the pedestrian, particularly along key desire lines, improving the pedestrian experience.

Active transport infrastructure, and reduced or low parking rates within close proximity to public transport, is part of an integrated urbanity model. Modal shift is also supported by creating the environment to support active transport including 'Context Sensitive Streets', a well connected access network, creating more compact blocks, and increasing intersection densities.

A fine-grain pedestrian friendly environment

A fine-grain pedestrian friendly environment is supported by the 'high–low' built form model, where height is distributed in a manner that allows for good solar access, orientation and view corridors in addition to active facades and ground floor controls.

Desired densities can be achieved without overshadowing community open space, parks or other buildings by strategically locating the tallest elements on the south west of blocks with the balance of development being low to mid rise.

A feasible and sustainable outcome

A liveable, walkable and sustainable environment will encourage active transit and reduce reliance on private vehicle trips. This not only reduces local traffic volumes and eases congestion, but provides healthier lifestyles and activates the public realm.

Site specific floor space ratio bonuses is available to incentivise developers to deliver new streets ensuring the additional population can be sustained as the development progresses. Similarly, floor space ratio bonus is available for delivery upon higher sustainability targets set out in the LEP.



Character Areas

The following Character Areas, shown in **Figure K16-2**, have been identified for Rhodes East based upon their function, use, street pattern and built form attributes:

- *Station Gateway East Character Area* - a key transport hub located between Rhodes Station and Concord Road, with a character influenced by adjoining built form and functions.
- *Leeds Street Character Area* - a predominately light industrial area with large building structures, which is heavily transport dominated (vehicles and river traffic).
- *Cavell Avenue Character Area* - centrally located area, situated on the most elevated part of the Investigation Area, with a mix of residential and community uses.

Character Statements

Station Gateway East

This character area will proudly announce arrival at Rhodes East from the south and guide people to the Station and McIlwaine Park. The built form will reflect its location adjacent to the Station with increased density and encourage the use of public transport as opposed to the private vehicle.

The built form will provide an active, mixed used podium and street level frontage with formal landscaping that complements the character of McIlwaine Park.

There will be street level activation and a safe, pedestrian friendly environment will be prioritised to promote connectivity between the Station, across Concord Road, into McIlwaine Park with a link to Parramatta River.

Leeds Street Character Area

This character area will provide a multi-modal, water-based destination. The Leeds Street Character Area will introduce meaningful visual and physical connections to the water in addition to a vibrant mix of uses. The lifestyle and activities promoted within this character area will prioritise pedestrians and facilitate human interaction.

Buildings will be flexible and multi-purpose and, whilst they may have larger floor plates, an active street frontage to public areas will be created. The built form will respond to the northern aspect of the character area through the sensitive location of height combined with block permeability and building separation ensuring pedestrian level views of Parramatta River from the centre of Rhodes East.

Cavell Avenue Character Area

The Cavell Avenue Character Area will largely consist of residential and community uses through a ‘density done well’ approach that will deliver a diversity of heights and human scale built form focusing on a balance between increased housing, public/ private amenity and an active and safe pedestrian environment.

Future development will facilitate enhanced connectivity, between the east and west of the Peninsula and to public transport and will also create localised ‘place’ features along key desire lines and view axes.

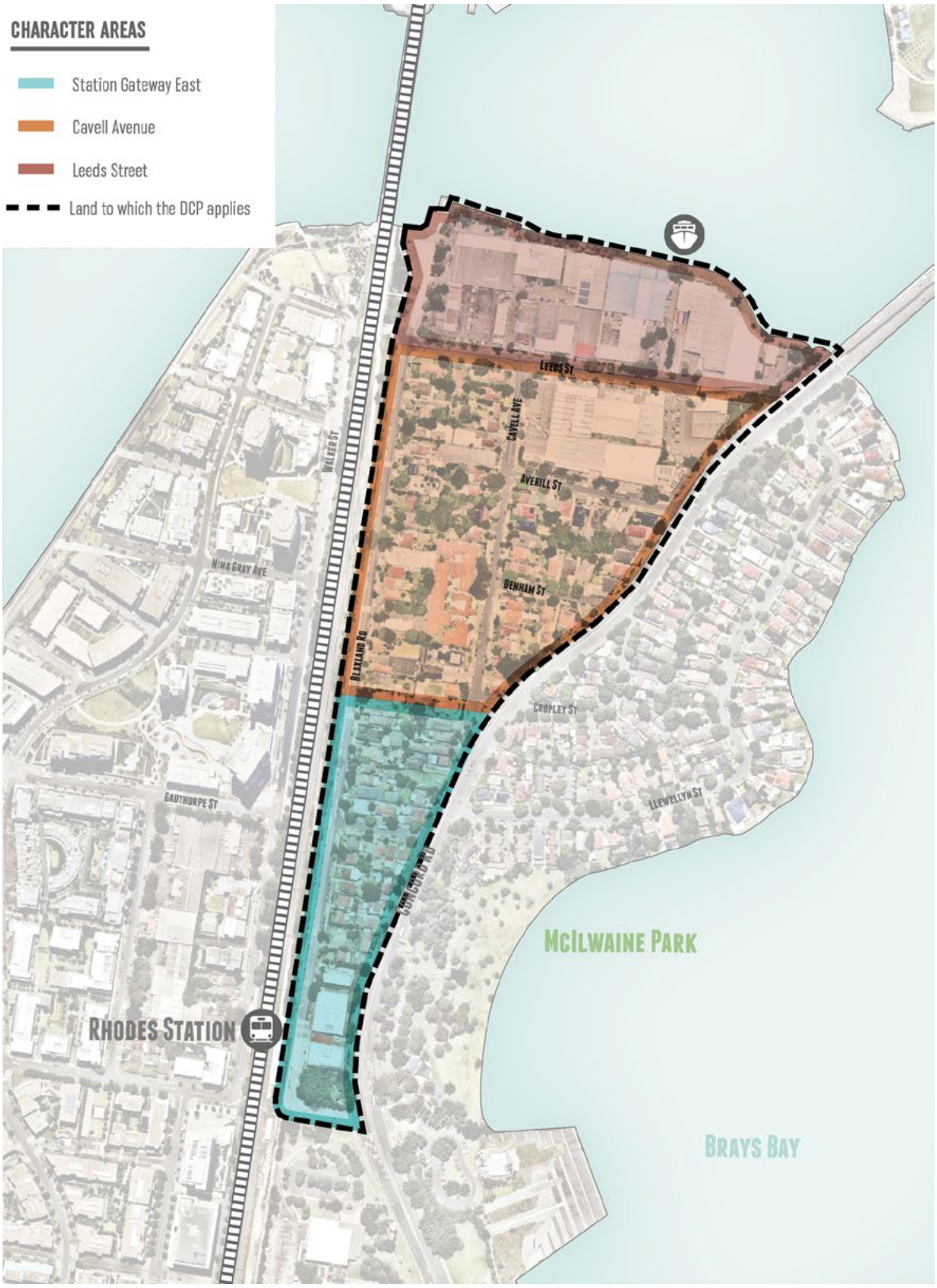


Figure K16-2 Character areas

Rhodes East Precinct Plan

Development is to be generally consistent with the key elements in **Table K16-1** and the Rhodes East Precinct Plan at **Figure K16-3**.

Where variations are proposed, development is to demonstrate how the vision, development principles, key elements for the Precinct and relevant specific objectives are to be achieved.

Table K16-1 Key elements of Rhodes East Precinct

Land use
Residential • 3537 new dwellings (8210 population) by 2036 comprising a mix of dwelling types • 5% affordable housing across the Precinct **Retail / commercial** • 400m² GFA of convenience retail • 4600 m² GFA of destination retail • 11,100m² GFA of commercial space **Education and community** • A new primary school for 1000 students • 300m² of publicly accessible plazas at key corners along pedestrian routes, each plaza co-located with non-residential uses on the ground floor of developments. • 1750 m² of adaptable community uses space
Movement network
• Pedestrian and cycle activity and public transport interchange functions are prioritised • New streets will create a more permeable movement network and increase connectivity • New pedestrian station bridge will increase connectivity and encourage active transport • Interchange upgrades, bus and rail upgrades
Open space and public domain
• New areas of public open space including: • Minimum 7500 m² of a new foreshore park • Continuous 15m-wide foreshore promenade providing connectivity to the precinct and future ferry wharf • Minimum 550 m² Bridge Plaza providing connection between the train station and McIlwaine Park • New parks plazas improved foreshore access and river activation
Built form
• The built form will be characterised by a mix of residential development supported by commercial, educational and community uses • Building heights range from 1 to 37 storeys incorporating terraces to apartment buildings in addition to a number of taller landmark buildings • Integration of existing heritage items within the development



Figure K16-3 Precinct Plan

K16.3 Key development parameters

The key development parameters for the Rhodes East Precinct identify metric limits to the size of (amalgamated) lots, their maximum and minimum frontage length, building heights and floor space ratios. An overview of these key controls is provided in **Table K16-2 on page K-127**.

Maximum lot size

The maximum lot size control applies to The Cavell Avenue Character Area. This control seeks to limit development that incorporate large floorplates and to protect the values and desired future character of the area.

Objectives

O1 To deliver fine grain, activated and visually interesting developments and streetscapes on a variety of lot sizes.

O2 To avoid large scale development that dominates the character of an area.

O3 To facilitate a range of development sizes resulting in built form diversity.

Controls	
C1.	All new development is to comply with maximum lot size as per **Figure K16-4** and **Table K16-2**. Also refer to relevant Local Environmental Plan 2013 clauses and maps.

Maximum lot frontage length

Maximum lot frontage lengths apply to the Cavell Avenue Character Area.

Similar to the maximum lot size control, the intention is to limit large scale amalgamation and development, particularly in areas that have an existing fine grain lot pattern and narrow frontage widths.

Objectives

O4 To integrate new development into existing fine grain streetscapes and avoid long lengths of continuous, homogeneous development.

O5 To facilitate a fine-grain built form outcome which creates architectural variety and visual interest along streetscapes.

Controls	
C2.	All new development is to comply with maximum and minimum frontage length as per **Figure K16-4** and **Table K16-2**. Also refer to relevant Local Environmental Plan 2013 clauses and maps.



Figure K16-4 Maximum lot size and frontage length plan

Maximum building height

Building form and scale contribute to the physical definition of the street network and the hierarchy of public spaces. A range of building heights across Rhodes East is encouraged to deliver variety, diversity and different architectural styles whilst ensuring the creation of low-rise, high density development.

Taller buildings are to be located close to key community services and facilities, near the train station before stepping down towards Concord Road. Please refer to *Section K16.6 Built form strategy* for futher information.

Objectives

O6 To facilitate appropriate growth and housing delivery across the Precinct.

O7 To locate higher scale residential uses close to Rhodes Station to optimise access to the station facilities and around the mixed use area at Leeds Street.

O8 To step down heights and density towards the Parramatta River within a human scale, fine grain development pattern.

Controls	
C3.	All new development is to comply with maximum building height as per **Figure K16-6** and **Table K16-2**.
C4.	In selected locations, an increase in permissible height may be possible, linked to the provision and delivery of new streets. Refer to *Section K16.3 Bonus Height and FSR* of this DCP. Also refer to relevant Local Environmental Plan 2013 clauses and maps.
C5.	Maximum building height are inclusive of floor space bonus achievable through application of Basix Affected Building clause in the Canada Bay LEP.

Maximum floor space ratio

The floor space ratio standards, in tandem with the maximum building heights, allow for taller built form elements to be located within each block, while the remainder of the development would be at lower scale. This minimises overshadowing impacts to adjoining development whilst achieving a high quality, pedestrian friendly public realm and encouraging the provision of a range of building typologies and housing choice.

Objectives

O9 To minimise the visual and overshadowing impact of new development on lower scale neighbouring properties and the public domain, by limiting the bulk and scale of new development.

O10 To protect existing and future open spaces from overshadowing impacts and ensure adequate solar amenity for these open spaces.

Controls	
C6.	All new development is to comply with maximum floor space ratio as per **Table K16-2**.
C7.	In selected locations, an increase in permissible FSR may be possible linked to the provision and delivery of new streets and delivery of Basix targets. Refer to *Section K16.3 Additional Height and FSR* of this DCP. Also refer to relevant Local Environmental Plan 2013 clauses and maps.

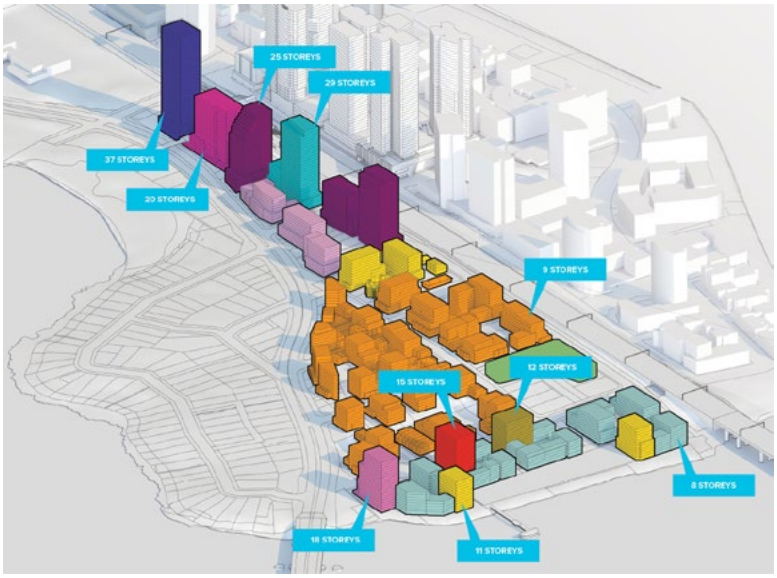


Figure K16-5 Height distribution



Figure K16-6 Maximum building heights plan

Table K16-2 Overview of key development parameters

Cavell Avenue	
Max. lot size	4,000m^2
Max. lot frontage length	60m
Max. building height	Up to 36m (11 Storeys) including Basix bonus
Max. floor space ratio	Refer to LEP

Transfer of Floorspace and FSR

The location of two new streets are identified within the Precinct Plan for Rhodes East. These new streets are fundamental to the delivery of the intersection and frontage densities necessary to support the public life envisaged and encourage a modal shift.

An increase to building height and FSR is possible for selected locations identified on **Figure K16-8** to facilitate the provision of the new streets.

Objectives

O11 To support/ deliver new streets to improve connectivity within the Precinct.

Controls	
C8.	Additional heights and FSR apply to selected locations as per **Figure K16-8** and are linked to the delivery of new streets as outlined above.
C9.	Across the precinct, an increase in permissible FSR is possible linked to delivery of BASIX targets.

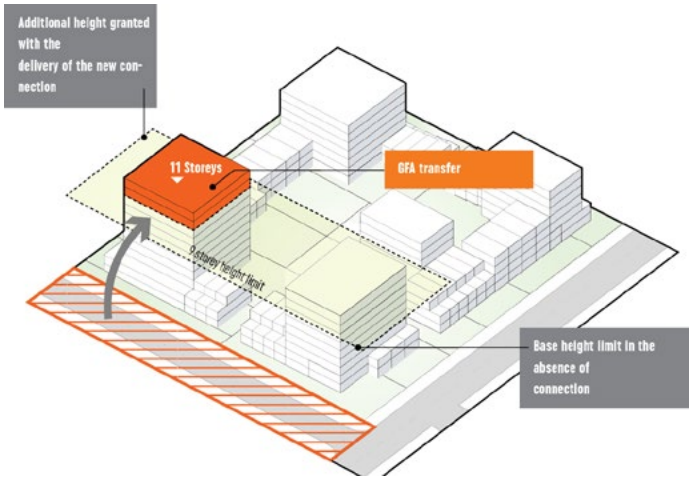


Figure K16-7 Explanatory diagram of bonus height and FSR



Figure K16-8 Bonus height and FSR plan

K16.4 Public Domain

Street network and access

Context sensitive streets

Context Sensitive Street design aims to balance the often competing objectives of traffic capacity with place amenity, or place-led character, considering both character and capacity. Streets that connect key destinations will support and prioritize pedestrians and cyclist through cycleways, wider pedestrian paths and shade trees.

The proposed street types shown in **Figure K16-9 to Figure K16-14** reflect this intent, and support the land use, density and street function of the different Character Areas.

A number of new connections are proposed to improve connectivity and promote pedestrian activity across the Precinct. Their addition encourages a finer grain of development as smaller, more compact blocks are created to provide a human scaled environment that has the ability to accommodate a range of housing types and sizes.

The two new streets shown in **Figure K16-10** provide east-west connections between Cavell Avenue and Blaxland Road. It is proposed that these streets will be delivered via transfer of floorspace as outlined in *Section K16.3 (Transfer of Floorspace and FSR subheading)* of this DCP.

Objectives

O1 To create a public domain that supports and encourages pedestrian movement through activated streets and human-scale development fronting onto a defined hierarchy of streets.

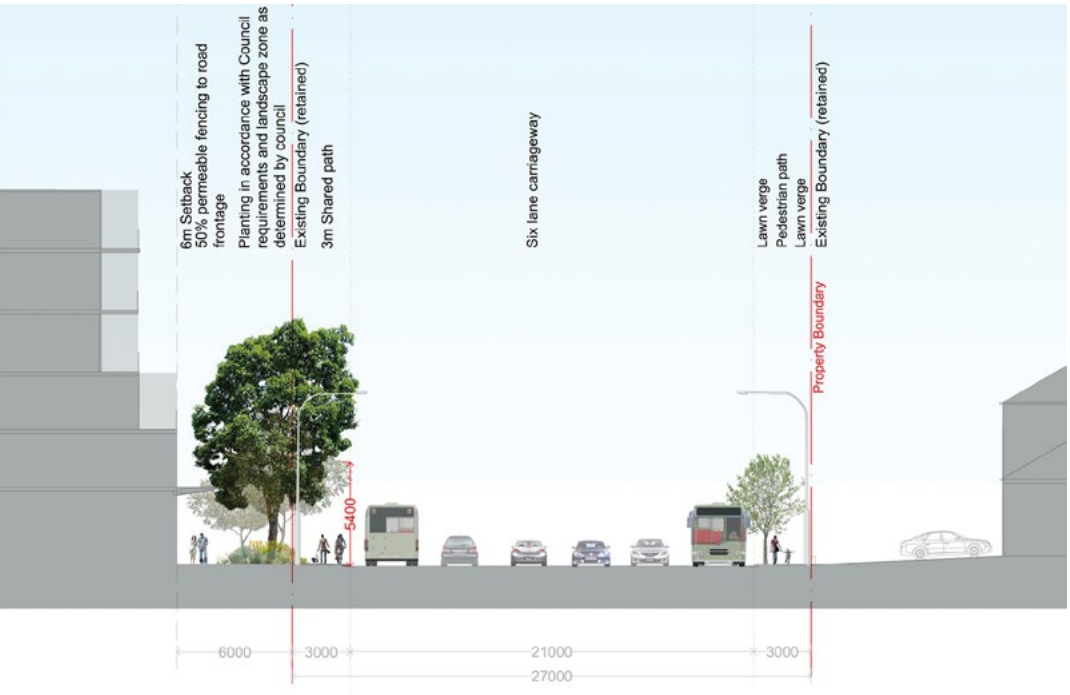
O2 To support the concept of a fine grain, vibrant streetscape experience whilst ensuring that a viable built form siting and access solution can be achieved.

O3 To provide a clear street hierarchy and a more permeable urban structure.

O4 To provide a safe space for walking and cycling and offer universal access, providing greater independence for children and families as well as the elderly and disabled.

O5 To strengthen the landscape character and quality of the Precinct through the retention and enhancement of existing and planting of additional street trees and landscaping.

Controls	
C1.	The existing street pattern is to be retained and new streets are to be provided as per **Figure K16-10**
C2.	Street design including the upgrade of existing and the delivery of new streets are as per **Figure K16-9** and **Figure K16-11 to Figure K16-14**. For further guidance refer to the *Canada Bay Rhodes East Public Domain Plan*.



Greenway Boulevard (Corridor Road)

An arterial road with generous setbacks to allow for mature landscaping and wide footpaths creating a buffer between Concord Road and the adjacent development.

Figure K16-9 Street section - Greenway Corridor



Figure K16-10 Street network plan

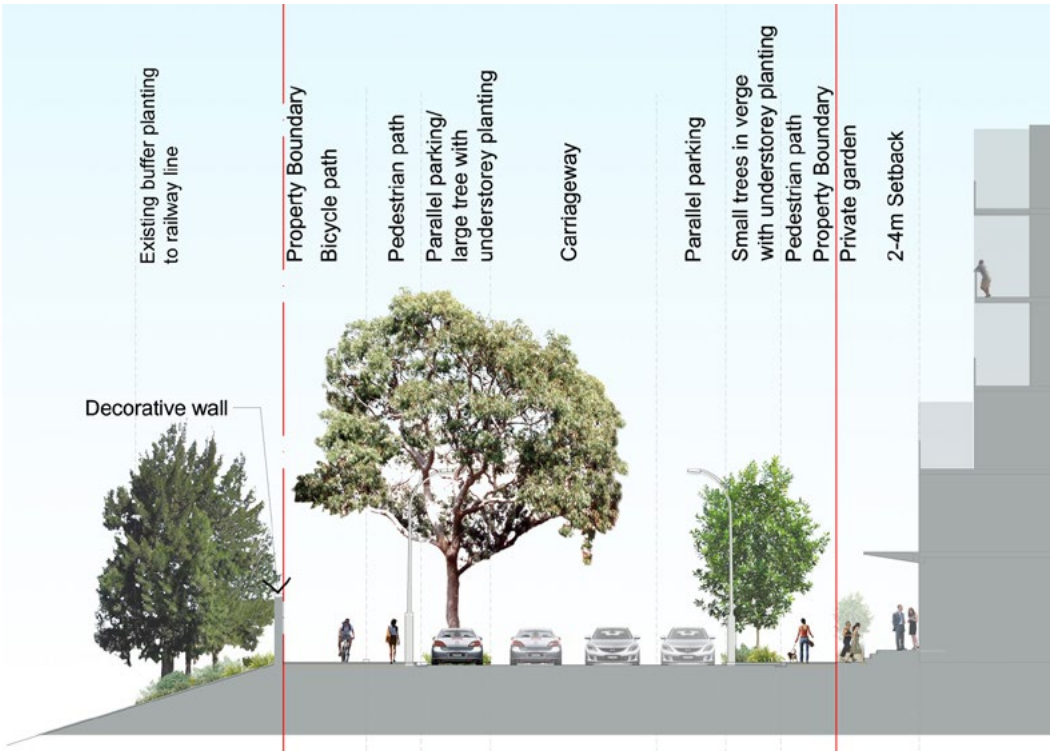


Figure K16-11 Street section - Commuter Street

Commuter Street (Blaxland Road)

An important link between the Leeds Street Foreshore Park / Ferry Wharf and the station, with a dedicated cycleway connecting commuters and residents to these key destinations. New tree planting between parking bays will provide screening of the rail infrastructure and shade for pedestrians.

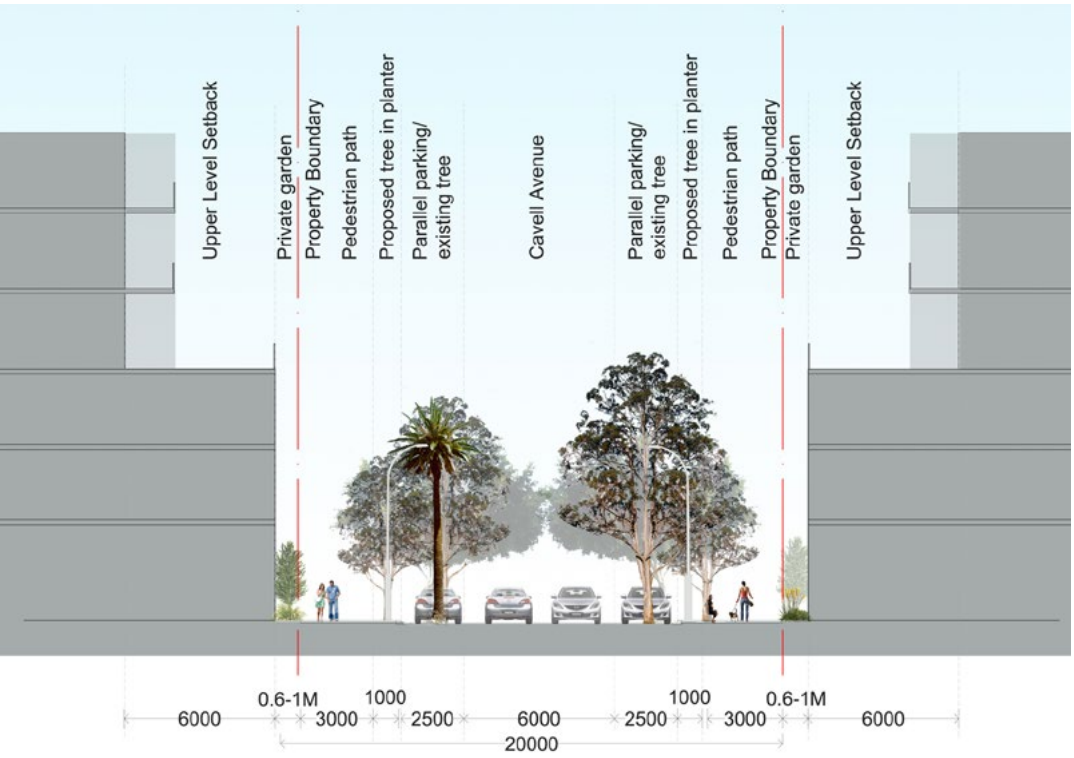


Figure K16-12 Street section - Community Spine

Community Spine (Cavell Avenue)

An important connection between Leeds Street Character Area and Station Gateway East, providing access to key existing community uses such as the Coptic Church, Community Hostel and Community Centre.

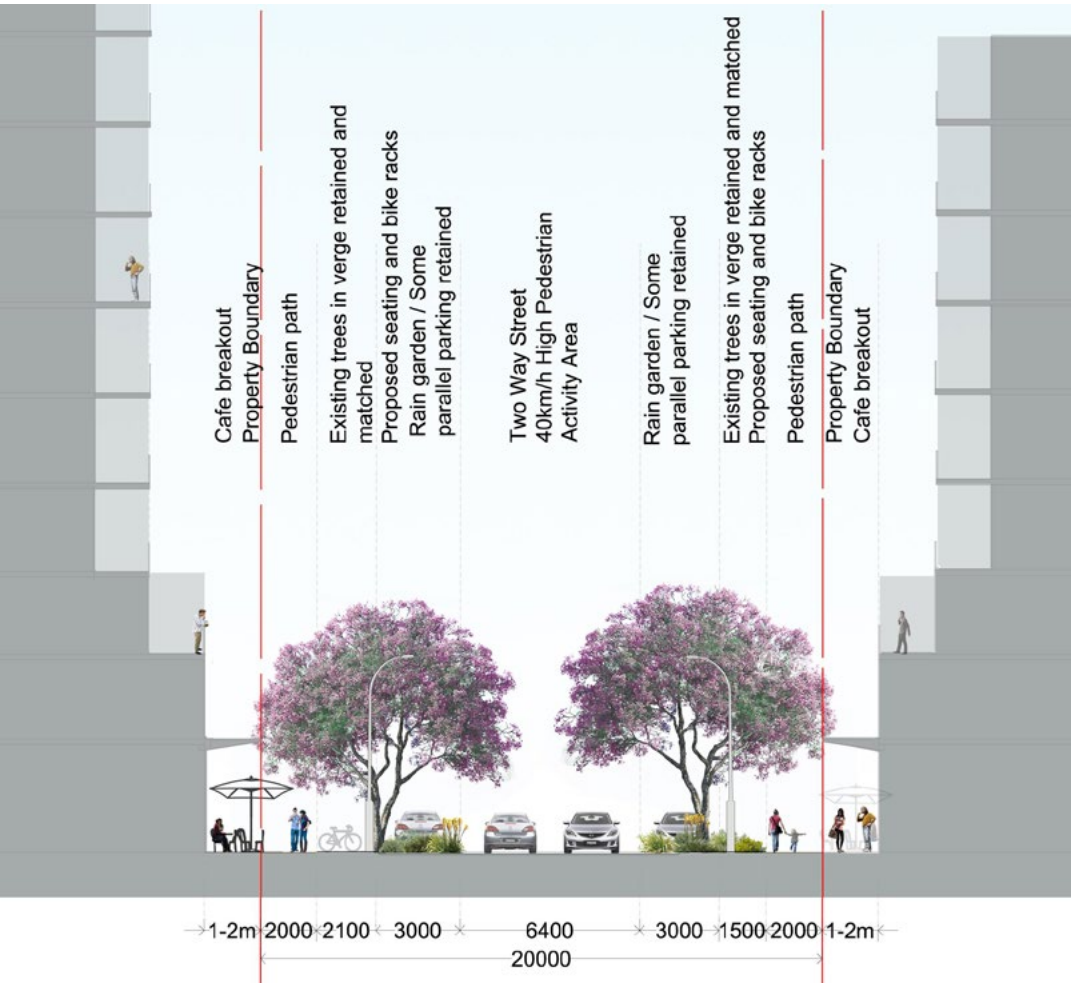


Figure K16-13 Street section - Destination Street

Destination Street (Leeds Street)

A shared street where pedestrians have priority, reflective of the intent to create an activated mixed use destination around the Leeds Street Foreshore Park.

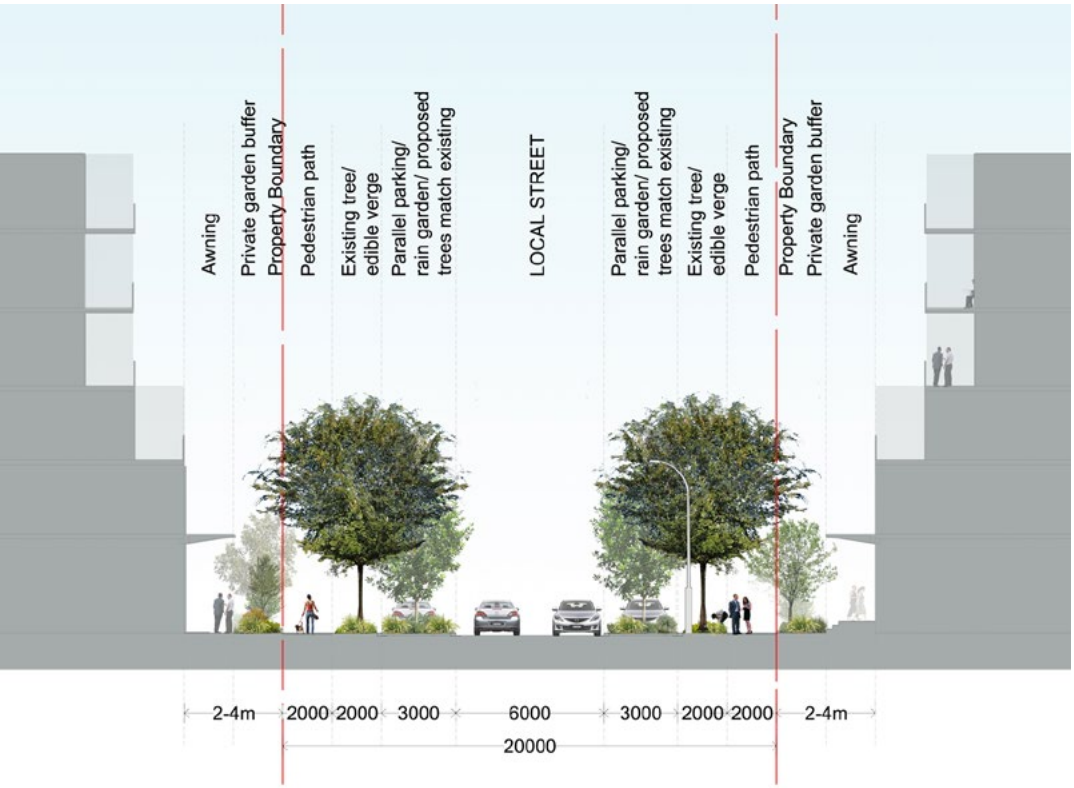


Figure K16-14 Street section - Local Street

Local Street (Averill Street, all new streets)

Fine grain diverse streets that offer pedestrian amenity with landscaping that provides seasonal variation.

Pedestrian and cycle network

The proposed network of pedestrian and cycle paths connects to key destinations within and beyond the Rhodes Peninsula and encourages active transport that benefit the health of individuals and wider community, including less air and noise pollution from private motor vehicles.

The key improvements include:

- Linking into broader foreshore network beyond Rhodes East Precinct
- Connecting separated cycleway and pedestrian paths within the Leeds Street Character Area to the Rhodes West foreshore promenade
- Widening and upgrading pathway connections under the northern foreshore bridges
- Delivering a designated 'Commuter Cycleway' along Blaxland Road
- Delivering new pedestrian links over the railway and Concord Road to create a continuous pedestrian loop within Rhodes.

Objectives

O6 To provide a convenient, efficient and safe network of pedestrian paths and cycle ways between key locations within and beyond the Precinct.

O7 To encourage more physically active lifestyles and support a modal shift reducing car ownership and reliance.

O8 To ensure development addresses the pedestrian and cycle network and enables ease of access to entry lobbies, links and bicycle facilities.

Controls	
C3.	The pedestrian and cycle network is as per **Figure K16-15** and designed as per the *Canada Bay Rhodes East Public Domain Plan*.
C4.	Provide spaces on private property that enable pedestrian access and use (eg. Connections within a site, lobbies and the like) that are accessible and at-grade.
C5.	Bicycle facilities, such as parking, secure storage and end-of-trip facilities are required to be easily accessible from the public domain and conveniently located near entrances and/or lifts of new development.
C6.	The location of the building entrances must be clearly visible from the public open space network to support surveillance and safety of the pedestrian and cycle network.



Figure K16-15 Pedestrian and cycle network plan

Open Space Network

The open space network in Rhodes East is envisaged to become a continuous network of 'Green Streets' and parks over time. New development on land adjoining this network plays an important role in supporting its quality, usability and pedestrian priority.

Objectives

O9 To provide an integrated, continuous open space network that links existing and proposed open spaces within the Precinct and beyond.

O10 To enhance the everyday quality of life for residents, workers and visitors by providing new quality public open spaces including pocket parks, plazas and green links.

O11 To ensure that new development adjoining the open space network complements the landscape character and supports ease of access, public use, safety and pedestrian priority.

Controls	
C7.	The open space network is as per **Figure K16-16** and designed as per the *Canada Bay Rhodes East Public Domain Plan*.
C8.	Private spaces that are visible but physically inaccessible to the general public (i.e. front setbacks, communal open space and the like) are designed so that they integrate with the treatment of the open space network.
C9.	The selection of furniture, pavement and lighting for private space visible from the public domain is to demonstrate a similar style and treatment as outlined in the *Canada Bay Rhodes East Public Domain Plan.*
C10.	Public domain in Green Streets are to be configured and designed to prioritise walking and cycling along both footpaths and carriageways.
C11.	McIlwaine Park must not receive any additional overshadowing from new development between 8.30am and 12.30pm on the Winter Solstice. Turfed area within McIlwaine Park (**Figure K16-16**) must not receive any additional overshadowing from new development between 8.00am - 2.00pm on the Winter Solstice. Bray's Bay must not receive any additional overshadowing from new development between 8.30am and 12.30pm on the Winter Solstice. King George Reserve must not receive any additional overshadowing from new development between 8.30am and 12.30pm on the Winter Solstice. Uhrs Reserve must not receive any additional overshadowing from new development between 8.30am and 12.30pm on the Winter Solstice.
C12.	Open Space of the School Site must not receive any additional overshadowing from new development between 10.00am and 2.00pm on the Winter Solstice. Location of school's open space is to be determined through a detailed architectural design process.
C13.	The Foreshore Park in Leeds Street Character Area must not receive any overshadowing from new development between 8.30am and 12.30pm in the Primary Zone on the Winter Solstice. The Foreshore Park must not receive more than 50% overshadowing from new development after 12.30pm on the Winter Solstice.



Figure K16-16 Open space network plan

Landscape Treatment and Urban Elements

The design of the public domain is to adhere to plans prepared by *City of Canada Bay*. Landscape design on private land needs to integrate with the design intention and treatment outlined in this document.

This will help to integrate new development into the streetscape, enhance the appearance and amenity of the area, provide for recreation, preserve biodiversity and improve micro-climatic conditions.

Objectives

O12 To promote high quality landscape design as an integral component of the overall design of new development.

O13 To conserve and incorporate significant natural features, vegetation and native fauna and flora habitats.

Controls	
C14.	Existing street trees and landscape features are retained wherever possible.
C15.	Landscape design complements the proposed built form and minimises the impacts of scale, mass and bulk of the development in its context.
C16.	Landscape design highlights architectural features, defines entry points, indicates direction, and frames and filters views from and into the site.
C17.	Native species must comprise at least 50% of the plant schedule, incorporating a mix of locally indigenous trees, shrubs and groundcovers appropriate to the character of the area.
C18.	The selection and location of vegetation and trees should: a) Provide shade in summer and sun access in winter to building facades and public and private open spaces b) Reduce glare from hard surfaces c) Channel air currents into the building d) Provide windbreaks where desirable e) Screen noise and enhance visual privacy where desirable.
C19.	Where suitable, landscape areas on the development sites are to be made publicly accessible to pedestrians unhindered by fencing or other structural barriers.
C20.	All development is to provide places for residents to meet. This is to be in the form of a community notice board or room, shared laundry spaces, picnic tables and / or covered seating areas in landscaped surroundings.
C21.	Mature tree canopies must achieve at least 25% site coverage as calculated cumulatively as private and public domain.
C22.	A detailed landscape plan is to be provided as part of a Development Application to demonstrate how the street block of the subject development site will achieve 25% canopy cover at ground level, including within the development site. Trees on building structures do not contribute to canopy cover under this control, and where relevant may be considered as contributing to the green view index requirements.
C23.	On site landscape replacement must be provided as the equivalent or more of the total site area. Landscape replacement can be provided through the following: • Vertical and facade greening; • Rooftop greening and greening of communal podium spaces; and • Public open space, through site links within the site boundary.

C24.	All development must contribute to and demonstrate a 25% Green View Index using the methodology outlined in **Figure K16-17 to Figure K16-21** and described below. The Green View Index (GVI) is a numerical value given to the amount of green canopy and landscape perceived by an individual at street level. Tree canopies, understorey vegetation, and facade greening are the three primary contributors to the GVI. The GVI target for Station Gateway West (Precinct D) is 25%. To achieve this, the design of streets and new developments must include an objective assessment of the GVI value achieved, using the following method: • Where tree canopies and understorey vegetation do not achieve the GVI target, facade greening is required to the extent necessary to achieve the minimum requirement.
C25.	Compliance with the green view index and urban tree canopy cover are not interchangeable, and must be considered as separate requirements.
C26.	All public space design must adhere to the Australian Standard Design for Access and Mobility (AS1428).
C27.	Public domain step risers must be no less than 100mm, and no greater than 150mm (exception can be made for vanishing steps). Seating steps shall be in the range of 150mm-500mm
C28.	Circulation paths must be a minimum of 2.4m in width and extend to a minimum of 80% of the depth of the space. Trees planted flush-to-grade, light poles, public space signage, and litter bins are permitted within circulation paths, however, 1.8m of continuous path must remain clear of fixed furniture elements at all times. Circulation paths must have a cross-fall no greater than 2.5%.
C29.	The following elements are prohibited from the public park / plaza / building interfaces, and if located adjacent to the public park / plaza, should be screened or concealed from view: Garage entrances, driveways, parking spaces, loading berths, exhaust vents, mechanical equipment, and building bin storage facilities. Vents and mechanical equipment are prohibited on any adjacent building walls within 5m of the level of the public park / plaza. Air intake vents and intake shafts, such as those to serve underground facilities, are permitted within the public domain if they are incorporated into design features and do not impair view lines.
C30.	Quality paving is required for all public domain areas.

C31.	Seating requirements: At least 1 lineal metre of seating must be provided for every 30m2 of public domain space along the foreshore and within parks and plazas. Movable seating for cafes may constitute up to 50% of the seating requirement, and may be stored outside of trading hours. Up to 50% of seating may be informal (e.g. low walls/seating steps). 50% of formal seating is required to have backs and armrests. There are six types of seating that may be used to satisfy the seating requirements: moveable seating, fixed individual seats, fixed benches, seat walls, planter ledges, and seating steps.
C32.	Seating must be minimum 450mm depth, and in the height range of 400mm to 500mm. Seating provided on planter ledges are required to be at least 550mm deep. Seating steps can provide flexible seating – from simple perches to generous, amphitheater-style seating --and are permitted to range between 150mm and 500mm in height.
C33.	Deterrents to seating, such as spikes, rails, or deliberately uncomfortable materials or shapes, placed on any surfaces that would otherwise be suitable for seating are prohibited within public plazas. Devices incorporated into seating that are intended to prevent damage caused by skateboards are permitted. Such deterrents are required to be spaced at least 1.5m apart from one another, be constructed of high-quality materials that are integrated with the seating design, and must not inhibit seating.
C34.	Light levels should be uniform and be maintained at adequate levels for the use of the park. Lighting should be provided to all public open spaces and through site links in accordance with the principles of CPTED, Australian Standards, and Council requirements. Lighting should be considered in a hierarchy. Any pedestrian movement zone or area of circulation should be adequately illuminated to identify ‘safe routes’ for users. Areas not intended for night activity should not be lit with the same level of illumination as those that are. All lighting within the public domain must be shielded to avoid impacts on nearby residential units. Street lighting will be evenly spaced wherever possible. Distance from existing and new trees will be maximised to minimise conflict with canopies. Additional outreach of fittings and/or providing secondary luminaries for the pedestrian path may be appropriate to achieve both the required light levels and canopy cover.
C35.	Requirements for event power supply are to be as directed by council. All power supply points are to be thoughtfully located for convenience and to minimize visual clutter. Power supply must be located in lockable in-ground power boxes wherever possible.
C36.	Public drinking fountains / water refill stations must be provided as directed by Council. The product selection and location must consider accessibility for all, including children and pets. The design must consider proximity to key areas such as the play space, amenities building, and ferry wharf.

C37.	Bollards should only be included where it is necessary to discourage vehicle movement. They must not be perceived as a pedestrian barrier. They should only be used as an element of access control. Bollards are recommended where trafficable areas adjoin flush with public spaces (e.g. plazas, through site links). In alignment with best practice, a variety of bollards can be used. This includes bollards that contain planting, removable bollards, fixed bollards and bollards as seating elements.
C38.	Requirements for general waste and recycling bins are to be as directed by Council. All waste facilities are to be located within 15m of seating and gathering spaces. Visual appearance and impacts of smell should be carefully considered when locating waste facilities.
C39.	All signage in public space must be visible and legible. Signage design (i.e. font, colour and shape) should be aligned with the greater public domain elements palette. Where appropriate, wayfinding and signage should integrate digital technologies, as outlined in the City of Canada Bay's Operational Plan 2019-2020.
C40.	Public bicycle parking is required in accordance with the City of Canada Bay's standards, as outlined in the Development Control Plan (DCP).
C41.	To ensure a vibrant and visually appealing public space, consideration must be given to the treatment of adjoining walls and facades. Any building entry must be clear and legible. The entries must be unobstructed within 5m of entry. Walls required for planters or to mitigate changes in grade must not be visually or spatially intrusive on the space, and must be designed to a comfortable seating height wherever possible. Blank building walls or facades facing onto public space must be treated with public art or screened with vertical planting to a minimum height of 5m above the ground.
C42.	Public art must be delivered in accordance with City of Canada Bay's Public Art Plan 2014. Public art gives people reason to stop and engage with the public domain. It can also celebrate cultural and environmental diversity and instill a sense of belonging. A site specific Public Arts Plan is to be prepared by an arts and cultural planner and will be required to address the following: Identify opportunities for the integration of public art in the proposed development; Identify themes for public art; Durability, robustness and longevity of the public art; Demonstrate how public art is incorporated in the site and built form design; Demonstrate that the scale of the public art is appropriate and proportionate to the development and thoughtfully sited & integrated with the building to create a point of interest and define the location of area; and Provide a program for installation and integration with the construction program for the development.

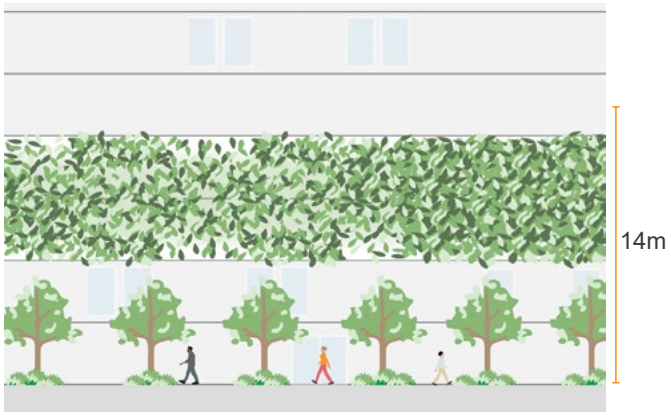


Figure K16-17 GVI: Small Tree Typical Option

- Small full canopy trees spaced at 5m centres
- Understorey planting at base of tree (understorey planting at 0.6m high)
- Extensive facade greening



Figure K16-18 GVI: Large Tree Typical Option

- Large Tree spaced at 10m centres
- Understorey planting at base of tree (understorey planting at 0.6m high)



Figure K16-20 GVI: Medium Tree Typical Option for Plazas and Parks

- Medium foreground trees spaced at 3-5 m centres for plazas and parks.



Figure K16-21 GVI: Medium Tree Typical Option

- Medium trees spaced at 8m centres
- Understorey planting at base of tree (understorey planting at 0.6m high)
- Medium facade greening



Figure K16-19 GVI: Double Row Trees Typical View

- Medium foreground trees spaced at 8m centres
- Understorey planting at base of tree (understorey planting at 0.6m high)
- Possible where there is widened verge or open space to the streetscape

Heritage landscape

Most heritage landscape elements in the Rhodes East Precinct are located on public land, however, new development can impact on their heritage value.

Objectives

O14 To ensure that new development does not impact on the heritage value or threaten the retention of the landscape elements, i.e. provision of vehicular access, methods of construction, future runoff or overshadowing impacts.

O15 To ensure that contributory landscape elements are retained and conserved to the greatest extent possible.

Controls	
C43.	New development must not threaten the retention and impact on the heritage value of the following items: i) heritage listed reserves of Uhrs Reserve, King George Park and Mcllwaine Park ii) indigenous planting in Mcllwaine Park iii) heritage listed street trees on Cavell Avenue iv) remnant trees at the northern part of 4A Cavell Avenue (incorporated into future development).
C44.	Where trees are missing from the established planting rhythm or are in poor health, they should be replanted to create a substantial streetscape character and public benefit in keeping with the existing character.
C45.	Other significant landscape elements which are not heritage listed should be individually assessed for their contributory value if threatened.

Integration of art

Permanent public art and art on private land visible from the public domain is to be integrated throughout the Precinct and may include sculptural art, lighting, typography, facade treatments and interactive art.

Objectives

O16 To provide opportunities to celebrate local history and culture and foster community dialogue.

O17 To enhance a sense of place and support the values of the Character Areas and the Rhodes East Precinct as a whole.

Controls	
C46.	New artwork should be integrated throughout the Precinct and on both public and private land, e.g. corner plazas, parks, reserves, the foreshore, built form facades, and within setbacks and foyers.
C47.	New artwork reflects the principles, themes and opportunities as outlined in the *City of Canada Bay Rhodes Peninsula Art Plan.*
C48.	New development above 4 storeys are to allocate 0.5% of the capital cost of development towards artwork. This art can either be provided/ integrated on the site of the development or paid as contribution to Council's public art fund. Art integrated on site must be visible from the public domain and be permanent with a lifespan of 30+ years.

K16.5 Public-private interface

Street and upper level setbacks

The proposed front setbacks have been identified to provide appropriate outcomes for the designated function, land use and intended character of the street. Upper level setbacks seek to lessen the visual impact of taller development and create a unified, human-scale streetscape environment.

Objectives

O1 To respect and enhance the existing streetscape presence and character of the Precinct.

O2 To facilitate a sensitive transition from existing built form to future development.

O3 To enhance development and its relationship with adjoining sites and the public domain, particularly access to sunlight, outlook, view sharing, ventilation and privacy.

O4 To provide a sense of enclosure to the street and contribute to the Precinct's desired human-scale character.

Controls	
C1.	Street setbacks and upper level setbacks are as per **Figure K16-22 and Figure K16-23** with the exception of development of or within the vicinity of heritage items. Refer to *Section K16.6 (Heritage items subheading*) of this DCP.
C2.	The setback between the property boundary and the building line is to be landscaped, with a minimum 50% of the setback area to be deep soil.
C3.	Fencing is a maximum of 1.2m in height and at least 50% transparent.
C4.	Ground floors with 'vibrant' uses such as retail, commercial or cafes/ restaurants address the public space, are occupied by uses that contribute to pedestrian activity and are easily accessible at grade. Refer to *Section K16.5* (*Façade design subheading*) of this DCP.

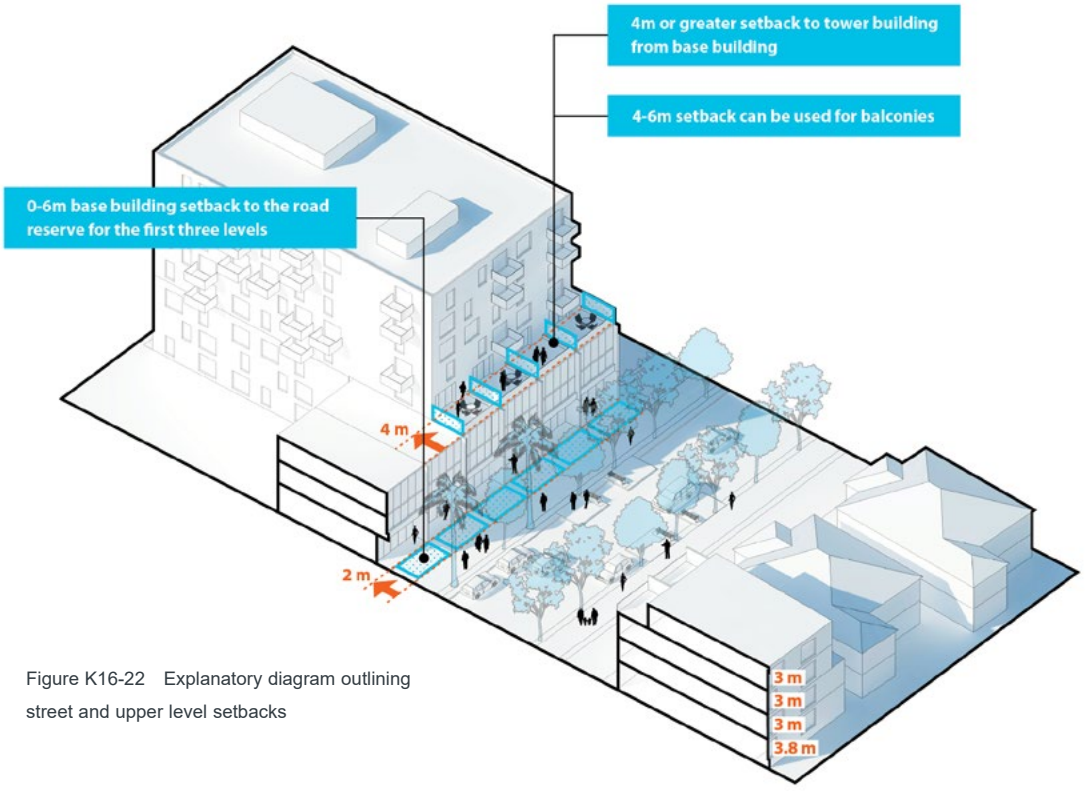


Figure K16-22 Explanatory diagram outlining street and upper level setbacks



Figure K16-23 Street and upper level setbacks plan

Primary and secondary streets

Primary Streets are important pedestrian connections and should be the principal address for any new development with particular emphasis on a high quality interface to the public domain and appropriate built form scale.

A significant portion of Primary Street frontages is envisaged to consist of terraces and multi-unit terrace apartments to achieve a safe and animated streetscape environment, while Secondary Streets will allow for vehicle access points and shared residential lobby entries.

Objectives

O5 To create a public domain that supports and encourages pedestrian movement through activated streets and human-scale development fronting onto a defined hierarchy of streets.

O6 To support the concept of a fine grain, vibrant streetscape experience whilst ensuring that a viable built form siting and access solution can be achieved.

O7 To promote streetscape legibility along key pedestrian desire lines.

O8 To facilitate street tree planting and landscaping along priority pedestrian streets (uninterrupted by driveway crossovers) to provide shade and amenity.

O9 To promote passive surveillance on primary and secondary streets whilst balancing the practical requirement for access and servicing on secondary streets.

Controls	
C5.	Primary and Secondary Streets are to be delivered as per **Figure K16-25**.
C6.	Multi-dwelling housing (terraces and multi-unit terrace apartments) that address the street is required along 85% of any Primary Street frontage and along 60% of any Secondary Street frontage. (Buildings north of Leeds Street and within the Station Gateway East Character Area are exempt from this control in order to enable large floorplate non-residential uses).
C7.	Vehicular access points are not permitted along Primary Streets unless a development has no Secondary Street frontage.
C8.	'Undesirable' elements along Primary Streets such as vents, electric substations, or plant and equipment spaces should not be located within the setback area.

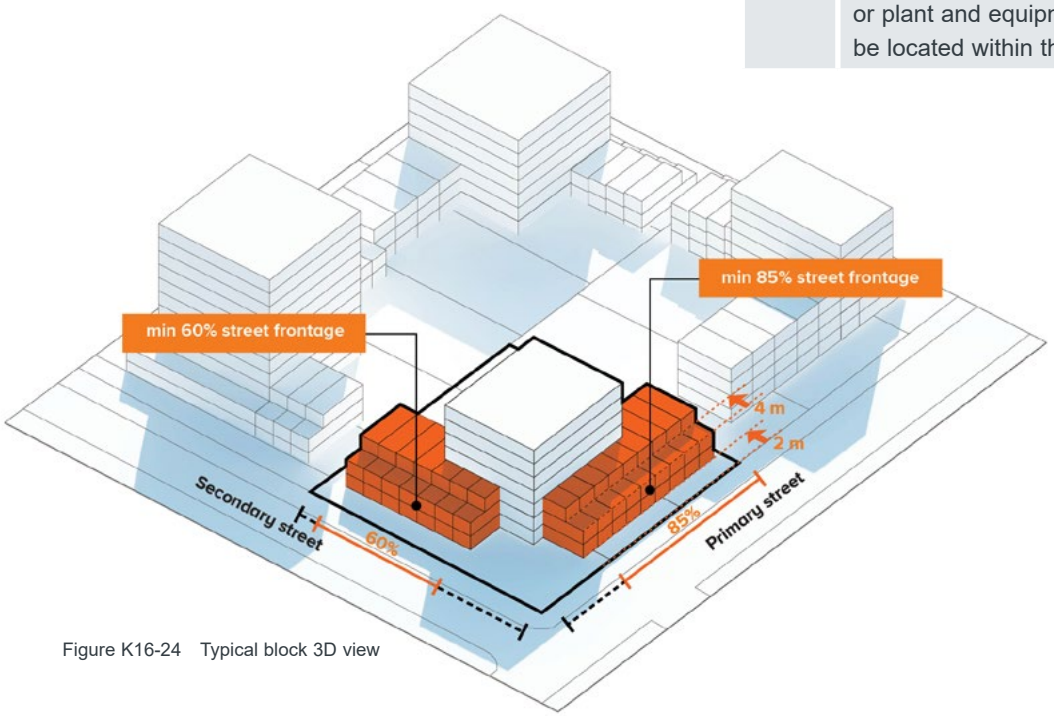


Figure K16-24 Typical block 3D view



Figure K16-25 Primary and secondary frontages

Facade design

New development can fall into one of the three facade categories identified: 'Vibrant' facades, 'Friendly' facades or 'Mixed' facades. These categories are based on the intended function and pedestrian priority of the public space they address. For example, Vibrant facades are located along key desire lines and provisions for this category are more detailed than those that apply to the other two categories.

Objectives

O10 To support pedestrian activity by ensuring a high level of interest and facade design quality addressing the public domain.

O11 To maximise the number of building entries that clearly address the street.



Example of a 'vibrant' facade



Example of a 'friendly' facade



Example of a 'mixed' facade

Controls	
C9.	Facade categories that apply to new development are as per **Figure K16-26**.
C10.	The maximum length of a straight wall, without articulation such as a balcony or return, is 8m.
C11.	'Vibrant' facades are to deliver: • Small (narrow) units with a minimum of 15 front doors per 100m facade length • Ability to cater for a wide variety of uses such as shops, cafes, restaurants, bars, fruit/ vegetable markets, community uses and live-work units • A high degree of visual richness in facade details and architectural expression with a focus on vertical facade articulation, 'ins and outs' (recesses and projections to create shadows) • Vehicle access and servicing zones are not permitted • Signage is integrated into the overall architectural design.
C12.	'Friendly' facades are to deliver: • Relatively small (narrow) units with a minimum of 10 front doors per 100m facade length • Ability to cater for some variety of uses such as shops and live-work units, including residential lobbies • Some degree of visual richness in facade details and architectural expression • Limited vehicle access and servicing via tight, recessed openings is permitted • Signage is integrated into the overall architectural design.
C13.	'Mixed' facades are to deliver: • A minimum of 6 front doors per 100m facade length • Blank facades over 10% of facade or $10m^2$ are required to be of visual interest, i.e. by architectural treatment, detailing, art or greenery/ green walls • Signage is integrated into the overall architectural design.



Figure K16-26 Public domain interface plan

K16.6 Built form, diversity and use

Built form strategy in the Cavell Avenue Character Area

The built form strategy in the Cavell Avenue Character Area seeks to deliver quality density and is based on a 'high-low' model, where taller buildings and towers are mixed with low to mid rise development such as terraces, terrace-style apartments and/ or walk-up apartments (typically 2-3 storeys). This desired built form outcome achieves a number of benefits, including:

- the mix and transition of height limits the impact on the amenity of existing lower scale residential areas, including overshadowing or loss of views;
- the mix of housing form creates a stimulating interface to the street and a human-scale environment, which supports pedestrian activity.

The maximum heights identified on the Local Environmental Plan map '*Height of Building*' illustrates the maximum height achievable on a site.

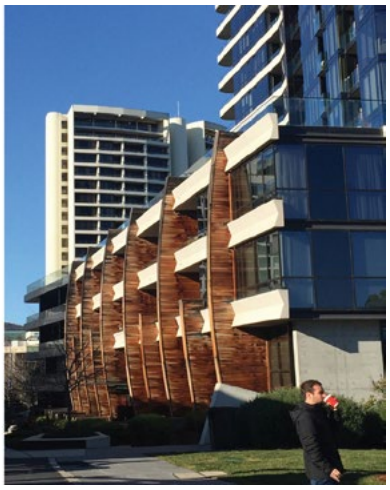
A requirement included in the Local Environmental Plan is for multi-dwelling typologies to be provided as part of all development which addresses primary and secondary street frontages (see *Section K16.5 - Primary and secondary streets subheading*). It is therefore not possible for the maximum height to be achieved across the entirety of any site.

The preferred outcome for development sites is a *'high plus low'* built form outcome, which is achieved when the height limit is only fully realised on part of the site in order to comply with the maximum FSR constraints.

This typically occurs when a development comprises a single taller element to optimise views and/ or minimise solar impact on communal open space and key public open spaces. The developer benefits from a height limit that allows a strategically located taller element, whilst the public domain is protected from the impact of a more consistent bulk and mass.

The alternate option is a *'low to medium'* built form outcome which maximises the FSR with none of the buildings reaching the maximum height. The FSR is evenly spread across the development site to form a consistent height envelope.





Examples of the desired 'high-low' built form outcome

Tower and Podium Design

The Rhodes Planned Precinct builds on the ADG to provide a location-specific recommendation that gives equal priority to the public realm and experience as to that of the private open spaces and residences.

Therefore, additional floorplate controls, building separation and a height transition strategy are implemented (in excess of ADG at certain heights).

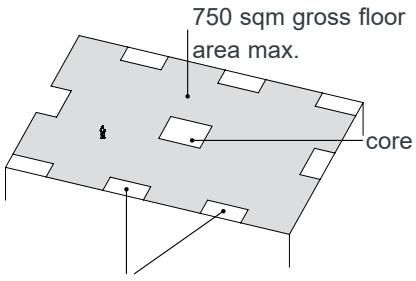
Objectives

O1 To minimise overshadowing and wind impacts to co-located open spaces and public domain

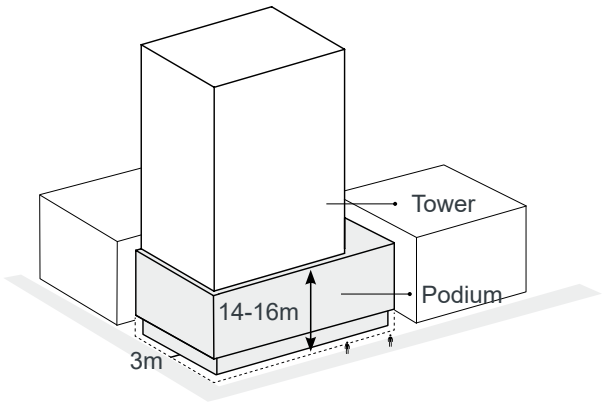
O2 To minimise loss of sky views and enable equitable view sharing

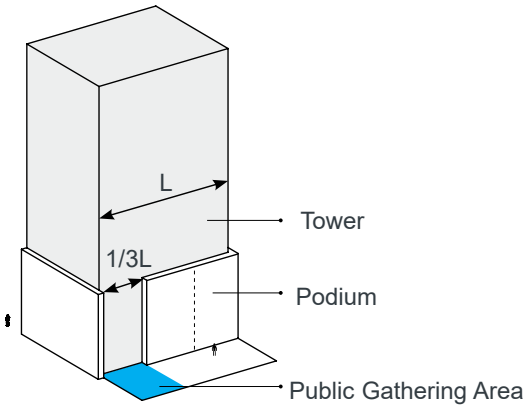
O3 To allow for the passage of natural light and reduce "wall of buildings" from key public spaces.

Controls	
C1.	Consistent with the Objectives and supplementing SEPP 65, building-to building setbacks within the Precinct are to achieve the following separation controls: 15 - 20 storeys - 24m Above 20 storeys - 40m
C2.	Residential towers above podium level shall have a maximum gross floor area of 750 square metres.
C3.	Towers above 20 storeys are to provide a 5 storey differential in building height from all adjacent towers.
C4.	A minimum podium height of approximately 14-16m building height is required.
C5.	A tower and podium building typology is required, subject to the following outcomes: a) A ground floor setback of 3m is to be provided. b) A Podium to Tower setback of 4m is to be provided. c) Maximum 1/3 of a tower frontage along a street or public space can be extended down to the ground. Public gathering areas must be associated with the 2/3 of the façade that is grounded by a podium.



(Above) Maximum gross floor area of 750 square metres







Examples of the desired built form outcome incorporating tower design controls

Floor to ceiling heights

Floor to ceiling heights are directly linked to the potential use of a building, and the level of natural ventilation and daylight access. The ground floor levels of all new development in Rhodes East should have increased ceiling heights to ensure good internal amenity and long term adaptability.

Objectives

O4 To create resilient urban places by ensuring buildings, in particular at ground floor, are flexible and adaptable over time to a wide range of uses and changing demands.

Controls

C6. Development is to be consistent with the following minimum floor to ceiling heights:

Use	Min. height (m)
Retail/ commercial	3.6m
Community	3.3m
Residential/ terraces	3.1m
Above ground parking	not permitted

C7. The minimum floor to ceiling height of all ground floors is to comply with the category of “Retail/ commercial' in the above table.

C8. The finished floor level of the ground floor above the footpath level is to be no greater than 1.0 metres for residential uses and 0.4 metres for retail and commercial uses.

Residential uses not covered by the Apartment Design Guide

The NSW Apartment Design Guide (ADG) applies buildings that are three or more storeys high and that comprise at least four dwellings. For other residential development types, such as 2-3 storey terraces, low rise up-over or walk-up apartments, multiplexes, urban courtyard houses and the like, the following controls apply.

Objectives

O5 To ensure design quality, performance of and amenity created by new residential development is of a high standard and consistent across the Precinct.

Controls

C9. The maximum building depth is 18 metres unless it can be demonstrated that all habitable rooms receive adequate ventilation and solar access, e.g. through the use of a courtyard design.

C10. The minimum private open space of a ground floor dwelling is calculated by the number of bedrooms x 4m^2.

C11. Single aspect dwellings, if unavoidable, are only permitted if they have a northerly or easterly aspect.

C12. Parking is not permitted to be visible from streets and open spaces. Access to parking via a driveway, lane or basement carpark entry is permitted if one access point services a minimum of 5 dwellings. Front garages, carports and individual driveways are strictly not permitted.

C13. At least 70% of living rooms and private open spaces of a dwelling receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter.

C14. Master bedrooms have a minimum area of 10m^2 and other bedrooms 9m^2.

C15. Building separation is as per the *Apartment Design Guide, Section 3F Visual Privacy.*

Affordable housing

Affordable housing means rented housing occupied by households on very low, low or moderate incomes. For Rhodes East, there is a requirement to provide a proportion of affordable dwellings as specified in the Canada Bay Affordable Housing Contribution Scheme.

Objectives

O6 To ensure that low to moderate income households can afford to live in Rhodes East by increasing the stock of appropriate affordable housing.

Controls	
C16.	A minimum of 5% total gross floor area is dedicated as affordable housing in the areas identified in **Figure K16-27**.
C17.	Dwellings dedicated to affordable housing are to be of equivalent design quality, diversity and mix as all other dwellings.
C18.	Affordable housing is to be consistent with the requirements of the *Canada Bay Affordable Housing Contribution Scheme.*



Figure K16-27 Affordable housing plan

Materials, finishes and colours

The selection and choice of materials, finishes and colours should have regard to robustness, durability, energy performance and compatibility to the surrounds.

Objectives

O7 To ensure building exteriors positively contribute to the desired future character of the area and streetscape.

Controls	
C19.	The composition of facades balances solid and void elements and does not display large areas of a single material, including reflective glass.
C20.	External walls are constructed of high quality and durable materials and finishes with low maintenance attributes such as face brickwork, rendered brickwork, stone, concrete and/or glass.
C21.	Sidewalls are designed as an architecturally finished surface that complements the main building facade.
C22.	Visually prominent elements such as balconies, overhangs, awnings, and roof tops are to be of high design quality.
C23.	Roof plant, lift overruns, utilities, vents and other service related elements are to be integrated into the built form design and complementary to the architecture of the building.
C24.	Facades reinforce the vertical proportions and support a vertical rhythm along the street.
C25.	Adjoining buildings are considered in terms of setbacks, awnings, parapets, cornice lines, selection of materials and finishes, and facade proportions.
C26.	Design to be approved by the City of Canada Bay Design Review Panel.

Heritage items

A number of local heritage items are situated within the Precinct, shown in **Figure K16-28** and listed in the LEP. This section outlines provisions for adaptive reuse of and development in the vicinity of selected heritage items in addition to the provisions contained in the Heritage controls in the *Canada Bay DCP.*

Objectives

O8 To protect buildings, spaces and streetscapes of heritage significance within and in the vicinity of the Precinct.

O9 To ensure that new development responds sensitively to the heritage significance of each listed item and does not physically overwhelm or dominate a heritage item or impact on its setting.

Controls	
C27.	All development of and in the vicinity of a heritage item is to address the requirements of the Heritage controls in the *Canada Bay DCP.*
C28.	New development provides appropriate transitions to existing buildings, structures and streetscapes of heritage value.
C29.	New development uses sympathetic materials, colours and finishes that reflect and harmonise with original materials to maintain the character of heritage items and contributory buildings.
C30.	Whilst not formally heritage listed, the Coptic Church on Cavell Avenue has a strong historical association with the Community. If it is to be retained in situ then the setting and orientation of the building is to be respected.
C31.	The Canada Bay Local Environmental Plan sets out building setback controls for sites adjacent to Heritage Items.



Figure K16-28 Heritage items plan

*The Coptic Church has a strong historical association with the community and is to be retained in situ.

There are a number of heritage items within the Rhodes East Precinct for which specific development controls apply as follows:

59 Blaxland Road

Controls	
C32.	The existing Federation period house to remain in situ and be retained as residential or incorporate a complimentary change of use.
C33.	The two palm trees in the front garden are to be either retained or relocated within the current site.
C34.	The paved court at the rear can be redeveloped with a low scale building.
C35.	The existing front lawn presentation to the north of the house is to be retained.
C36.	Adjacent development to the south is to be set back by a minimum of two metres from the common boundary for the first two storeys before a further setback of four metres from three to eight storeys.
C37.	Street setbacks of adjacent development are to match the prevailing front setbacks.

63 Blaxland Road

Controls	
C38.	The former school building is to be retained in-situ for community use or compatible change of use.
C39.	Existing trees, particularly those to the north, are to be retained.
C40.	The paved areas can be re-used or landscaped for pedestrian amenity.
C41.	The historic core of the school building is to be conserved and revealed by the demolition of the later enclosure.
C42.	No vertical additions will be permitted to the retained school building.

4a Cavell Avenue

Controls	
C43.	The existing heritage listed trees are to be retained and incorporated into any redevelopment of the northern part of the site.
C44.	The land to the south of the listed trees can be redeveloped subject to the relevant controls.

14 Cavell Avenue

Controls	
C45.	Existing face brick to be retained and incorporated into any new development at the rear or on adjoining sites.
C46.	New development at the rear can abut the existing brick building, with the first saw tooth roofed portion retained at the same height as the brick building.
C47.	Adjoining sites may be redeveloped with zero lot boundary separations but must apply a front setback consistent with the heritage building.

35 Cavell Avenue

Controls	
C48.	The existing Federation period house is to remain in situ and be retained as residential or incorporate a complimentary change of use.
C49.	Adjacent development is to be set back by a minimum of two metres from the common boundary for the first two storeys before a further setback of six metres from the boundary for three to eight storeys.
C50.	Street setbacks of adjacent development are to match the prevailing front setbacks.





Above: Artist impressions of the desired future look and feel of Rhodes East Precinct

K16.7 Access and parking

Bicycle parking and facilities

The provision of bicycle facilities and parking is required in all new developments.

Objectives

O1 To encourage cycling as a highly convenient transport mode by providing easily accessible and secure parking and end-of-trip facilities.

O2 To reduce car-usage and reliance, promote sustainability and a more active, healthy lifestyle.

Controls	
C1.	Secure, conveniently located bicycle parking is to be incorporated in all new development at the rates specified in **Table K16-3**.
C2.	End of trip facilities (showers, lockers) are provided for all new development with more than 5 employees.
C3.	Secure bike parking facilities are to be provided in accordance with the following: a) Class 1 bike lockers for occupants of residential buildings; b) Class 2 bike facilities for staff/ employees of any land use; and c) Class 3 bike rails for visitors of any land use
C4.	Where bike parking for residents is provided in a basement, it is to be located: a) on the uppermost level of the basement; b) close to entry/exit points; and c) subject to security camera surveillance where such security systems exist.
C5.	A safe path of travel from bike parking areas to entry/exit points is to be marked.
C6.	Bike parking for visitors is to be provided in an accessible on-grade location near a major public entrance to the development and is to be signposted.

Table K16-3 Minimum bicycle parking provision

Land Use	Resident/ staff	Visitor
Residential	2 per dwelling within 400m of the station	2 per 10 dwellings
Commercial	2 per 150m^2 GFA	2 per 400m^2 GFA
Retail	2per 250m^2 GFA	4 per unit +2 per 100m^2 GFA
Industrial	2 per 10 employees	4 per unit +2 per 100m^2 GFA

Car parking design

Car parking needs to be accessible and convenient. It should also be designed so that it does not detract from the amenity of the streetscape.

This DCP prescribes maximum car parking rates (as opposed to minimum requirements) for all new development. These rates are based on the proximity of the development to the train station and supplemented by car share car parking provision and increased minimum bicycle parking rates.

Objectives

O3 To ensure off street car parking has a minimum impact on the quality of the streetscape.

O4 To future-proof development in anticipation of reduced private vehicle reliance.

O5 To strengthen pedestrian safety by minimising conflict points and ensuring good sight-lines.

O6 To maximise retail, community and residential street frontage uses.

O7 To encourage the use of alternative types of transport, including active transport (walking, cycling), the use of public transport and car sharing schemes.

O8 To assist with housing affordability and flexibility of ownership by decoupling car parking from the dwelling.

Controls	
C7.	Car parking is to be located at the rear of buildings or within a basement car parking structure.
C8.	The outer perimeter of the basement is to be behind the setback.
C9.	Garages and parking structures are not to project forward of the building line and are to be screened from the public domain by active uses.
C10.	Vehicular access ways are designed to be integrated with the building and preferably with single entry/ exit lane. The width and number of vehicle access points should be limited to the minimum
C11.	All residential car parking is to be decoupled through separate titles. The transfer of car space ownership is encouraged within the precinct.
C12.	Car parking spaces are to be provided at the rates specified in **Table K16-4** and shown in **Figure K16-24**.
C13.	Where car parking spaces are provided for car share schemes, these are to be provided in lieu of the maximum car parking rates in accordance with the figures in **Table K16-5**.
C14.	Electric vehicle charging stations are to be provided as per **Table K16-6**.
C15.	For any use not specified in **Table K16-6** rates in the *City of Canada Bay Development Control Plan* apply.
C16.	Parking is to comply with the requirements of E3.9 of the *City of Canada Bay Development Control Plan* except for an inconsistency with this Section.
C17.	Motorcycle parking is to be provided as set out in **Table K16-7**.

Car share

Controls	
C18.	Car share spaces are encouraged within all new developments. Car share spaces are to be for the exclusive use of car share scheme vehicles and provided as per the standings in **Table K16-5**.
C19.	Car share parking spaces are to be: • Provided as set out in **Table K16-5** • Exclusive of visitor car parking • Retained as common property of the Owners Corporation of the site and not sold or leased to an individual owner/ occupier at any time • Made available for use by operators of car share schemes • Grouped together in the most convenient locations relative to car parking entrances and pedestrian lifts or access points • Located in well-lit places that allow for casual surveillance • Signposted for use only by car share vehicles; and made known to building occupants and car share members through appropriate signage which indicate the availability of the scheme and promotes its use as an alternative mode of transport.
C20.	Development Applications are to demonstrate how the car share parking space(s) is to be accessed, including where access is through a security gate. A covenant is to be registered with the strata plan advising of any car share parking space. The covenant is to include provisions that the car share parking space(s) cannot be revoked or modified without prior approval of Council.

Table K16-4 Maximum car parking rates

Land Use	
Residential	0.1 spaces per studio dwelling, and 0.3 spaces per dwelling with 1 bedroom, 0.7 spaces per dwelling with 2 bedrooms, and 1 space per dwelling with 3 or more bedrooms, and 1 visitor car parking space per 20 dwellings. If the total number of car parking spaces under this clause is not a whole number, the total is to be rounded down to the next whole number.
Commercial	1 space per 150m^2 GFA
Retail	1 space per 100m^2 GFA
Cafes and restaurants	1 space for 150m^2 GFA

Table K16-5 Car share rates

Land Use	Within 400m of station	Outside 400m of station
Residential	1 per 20 dwellings	1 per 40 dwellings
Car share rate to reduce car parking provision	N/A	1 car share space in lieu of 3 private car parking spaces

Table K16-6 Minimum electric vehicle charging stations

Type of charging facility	Minimum number of charging facilities/stations
Level 1 • Regular 240V wall socket (10 amps) • No specialist installation required • 16-20 hours to fully charge average vehicle	1 per parking space 1 per five bicycle parking spaces (a dedicated space and charging point for electric bicycles and mobility scooters to be charged must be provided for every five bicycle parking spaces)
Level 2 AC • Directly wired into a dedicated circuit (16 amp - 40 amp) • Level 2 provides between 18 km to 110 km of charge per hour • Total charge time of between 4 - 12 hours depending on the vehicle	1 shared facility for developments with 5 - 10 dwellings And 1 additional shared facility for every additional 10 dwellings or part thereof To be provided in common or visitor parking areas

Table K16-7 Motorcycle rates

Land Use	
Residential	2 per 10 dwellings

K16.8 Environmental resilience

Sustainable Utility Infrastructure

The provisions in this part apply to all developments that require new or upgraded utility connections. The aim is to improve the environmental performance and future resilience of the Rhodes East area through the use of district infrastructure that supplies low carbon and/or renewable electricity and water recycling.

All developments to which this part applies shall make provisions for:

- Private Wire Network connection
- On-site Solar Photovoltaic installation
- Recycled Water Network connection
- Private Sewer Network connection
- Green Roofs

Private Wire Network

Objective: The objective of the Private Wire Network is to futureproof the Precinct, enable renewable energy installation and reduce the operating costs of the Precinct.

A Private Wire Network permits the distribution of electricity between individual dwellings or buildings and is intended to facilitate and distribute onsite renewable electricity installations as well as potential future battery storage.

The Private Wire Network is intended to supplement and/or replace the conventional electrical networks. It is intended that a nominated operator will be granted an easement within council owned lands and streets for the purposes of operating the Private Network.

Controls	
C1.	All developments requiring new or upgraded electricity connections shall grant an easement in favour of the council or its nominated operator from the site street boundary to the roof of the building for the purposes of electricity transmission. Council or its nominated operator shall be granted access to this easement.
C2.	All easements in ground shall be dedicated for the sole purpose of electricity transmission and not shared with other utilities. In ground easements shall be no less than 1m wide.
C3.	Any easements within buildings shall be in the form of an accessible conduit or riser sized sufficiently to carry no less than the peak load of the building and/or any on site generation or storage.
C4.	All switchboards, metering and circuits shall be designed for not less than 400V 3 phase connection in accordance with the greater of a. applicable Australian Standards or b. Supplier of last resort standards.
C5.	All developments shall make an Application for Connection Requirements with respect to the private wire network to the council or its nominated operator prior to submitting a development application.

On-site Solar Photovoltaic

Objective: To reduce the overall carbon footprint of Rhodes East, increase resilience and reduce operating costs of the Rhodes East Precinct.

Controls	
C6.	All developments which require new or upgraded utility connection shall grant an easement in favour of council or its nominate solar provider for the installation of Solar Photovoltaic panels not less than 50% of the area of roof area.
C7.	Any easement granted shall not be overshadowed by buildings or trees within the same property.
C8.	The easement shall permit access to the roof by council or its nominated solar provider for the purposes of installation, maintenance or operation.
C9.	All roof structure subject to the easement shall be designed to structurally accept photovoltaic panels.
C10.	An internal dedicated space shall be provided within 10m of the solar easement. The space shall be not less than 2.5m by 2.5m and 2.8m in height.

Precinct Private Wire Network

Objective: Each development shall be capable of connecting to the Precinct Private Wire Network. The Precinct Private Wire Network will enable the distribution and metering of electrical production from the Solar Photovoltaic systems and conventional electrical distribution to developments.

Controls	
C11.	The Precinct Private Wire Network is to be operated by the council or its nominated operator.
C12.	The Precinct Private Wire Network shall be operational prior to the connection of the first development.
C13.	The Precinct Private Wire Network will have a gate metering system at the connection point to the public electrical system.
C14.	A nominal 1 m wide continuous easement will be established by council in the public domain, for the purposes of reticulation within the Precinct Private Wire Network.
C15.	Precinct Private Wire Network infrastructure easements located within the public domain shall be designed in accordance with Ausgrid standards. Variations in the easement to accommodate the standards in public domain will be coordinated by council as required.

Recycled Water Network

Objective: To provide recycled water to all buildings and the public domain and ensure sufficient demand and scale to support efficient and economic recycled water plant. The recycled water network will reduce potable water demand within the Precinct, reduce upstream and downstream infrastructure impacts and increase resilience and drought-proofing.

Controls	
C16.	All new buildings shall be provided with a suitably sized purple pipe recycled water reticulation to all non-potable fittings and fixtures including as a minimum all irrigation locations and toilets.
C17.	All new buildings shall provide a connection point and meter location at the site boundary for recycled water.
C18.	All developments shall make an Application for Connection Requirements with respect to the recycled water network and private sewer network to the council or its nominated operator prior to submitting a development application.

Private Sewer Network

Objective: To provide a source for recycled water production to enable provision of recycled water to all buildings, the public domain within Rhodes East as well as buildings and parks in surrounding precincts.

Controls	
C19.	All developments shall make an Application for Connection Requirements with respect to the recycled water network and private sewer network to the council or its nominated operator prior to submitting a development application.

Precinct Recycled Water and Private Sewer

Objective: Each development shall be capable of connecting to the Precinct Recycled Water and Private Sewer Networks. The Precinct Private Sewer Network will provide feedstock to the Recycled Water plant for Recycled Water production.

Controls	
C20.	The Recycled Water plant shall be operated by the council or its nominated operator.
C21.	The Recycled water plant and associated reticulation must be operational prior to the connection of the first development.
C22.	The Recycled water plant shall be located in the basement area a new development within either the Station Gateway East Character Area or the Leeds Street Character Area Character Area.
C23.	An easement for an 1,800 m x 5 m (digestion tanks borne below slab grade) Recycled Water plant shall be constructed at the lowest area of the Precinct.
C24.	A nominal 1 m wide continuous easement will be established by council in the public domain, for the purposes of reticulation within the Recycled Water and Private Sewer networks.
C25.	Precinct Recycled Water and Private Sewer network infrastructures easements located within the public domain shall be designed in accordance with the Water Industry Competition Act 2006. Variations in the easement to accommodate the standards in public domain will be coordinated by council as required.

Green Roofs

Objective: to maximise the opportunity to provide rooftop space as passive and active open space.

Controls	
C26.	Communal roof tops are to be provided on all buildings for passive and active open space, such as fenced ball-courts, BBQ area and low maintenance gardens.
C27.	Roof tops are be structurally sound and have the capacity of supporting deep soil planting on at least 30% of the rooftop space.
C28.	Rooftop spaces are to be shared with solar photovoltaic panels connected to the precinct solar network wire grid.
C29.	Rooftops are to incorporate wind shielding design to provide user comfort.



Figure K16-29 Special projects location plan

K16.9 Special projects

Key special projects have been identified within the Precinct that require specific controls. These special projects include the following and are identified on **Figure K16-30**:

- Station Gateway East – mixed use area, land bridge and primary school
- Leeds Street Character Area
- Mixed use corners.

Station Gateway East

Mixed Use Area

The Station Gateway East Character Area has been identified as a key gateway into the Precinct which builds upon its proximity to important rail and road connections.

Rhodes Station lies immediately adjacent to the Character Area, therefore providing an opportunity to develop into a mixed use area that provides a focus for convenience based retail, community uses and services, around a transit oriented centre (see **Figure K16-31**).

Objectives

O1 To establish the Character Area as a transit orientated, convenience retail and mixed use centre for Rhodes East.

O2 To ensure that this Character Area contributes to the overall legibility of Rhodes East and create a gateway landmark mixed use centre in the Precinct.

O3 To establish a safe, active, vibrant, mixed use environment to support the Station and attract investment, quality development and people.

O4 To future-proof Rhodes East for public transport improvements.

O5 To facilitate connectivity to and from the Station, across Concord Road and into McIlwaine Park.

O6 To promote and protect views from the Station to the water.

O7 To encourage built form that enables view sharing within and across the Precinct and maximises solar access.

O8 To ensure that Blaxland Road street level activation is not negatively impacted through the introduction of the station bridge.

O9 To recreate attractive and cohesive streetscapes.

O10 To ensure that buildings are compatible with the desired further character of the area in terms of building bulk and scale.

O11 To ensure that development provides appropriate and sensitive transitions to existing and planned development.

Controls	
C1.	Station Gateway East - Commercial Space: 11,000 m^2 Aged Care is an encouraged use within Station Gateway East commercial space and is a permissible use within the residential floorspace allocation.
C2.	The built form must achieve a high quality of architectural design, maximise solar access to the public domain and demonstrate the achievement of view sharing within and across the Precinct.
C3.	Proponents are required to contribute to and provide spatial provisions as set out by the NSW government towards a station bridge for pedestrians and cyclists, that connects the Station Concourse across Blaxland Road through the Character Area, across Concord Road to McIlwaine Park and the foreshore to the east.
C4.	Where the bridge travels through the Character Area it shall be a minimum of 16m wide and form a Station Bridge Plaza. The plaza must have active, retail frontage. Refer to the station bridge and bridge plaza controls in the next section.
C5.	A visual impact assessment shall be undertaken at the Development Assessment stage illustrating any impact on views from the Station and McIlwaine Park.

C6.	Design along Concord Road must respond to, and prioritise the provision of, future public transport improvements and provide high quality infrastructure for customers incorporated into the built form and public domain design.
C7.	Provision of a convenience supermarket on site must provide residential above.
C8.	Areas identified for specialty retail must: • Adhere to the requirements of the 'Vibrant Facade' – see *Section K16.5* (*Façade design subheading*). • Not exceed a 10m individual shop frontage. • Utilise either the Retail Shopfront and Awning or Posted Veranda frontage type. • Provide adequate pedestrian scale lighting, integrated into bollards and street furniture, wherever possible.
C9.	Street level development fronting Concord Road that comprises a large floorplate use with minimal windows and address such as a supermarket and or carpark must utilise the frontage types provided for 'Mixed Facades' with podium – see *Section K16.5* (*Façade design subheading*).
C10.	Upper level retail address: • Is in addition to the requirement of ground floor active frontage required in the LEP plan. • Is required in accordance with the detail plan and cross section. • Where not related to ground level location, the 'Vibrant Facade' requirements shall be applied – see *Section K16.5* (*Façade design subheading*). • Outdoor verandas, dining or public activity space is required.
C11.	Bridge Plaza frontage: • Is in addition to the requirement of ground floor active frontage required in the LEP plan. • Is required in accordance with the detail plan and cross section. • Must adhere to the requirements of the 'Friendly Facade' – see *Section K16.5* (*Façade design subheading*).
C12.	The proposed development must comply with 3m ground floor setback and minimum 4m upper podium setback facing Concord Rd
C13.	A minimum podium height of approximately 14-16m building height is required facing Concord Rd.

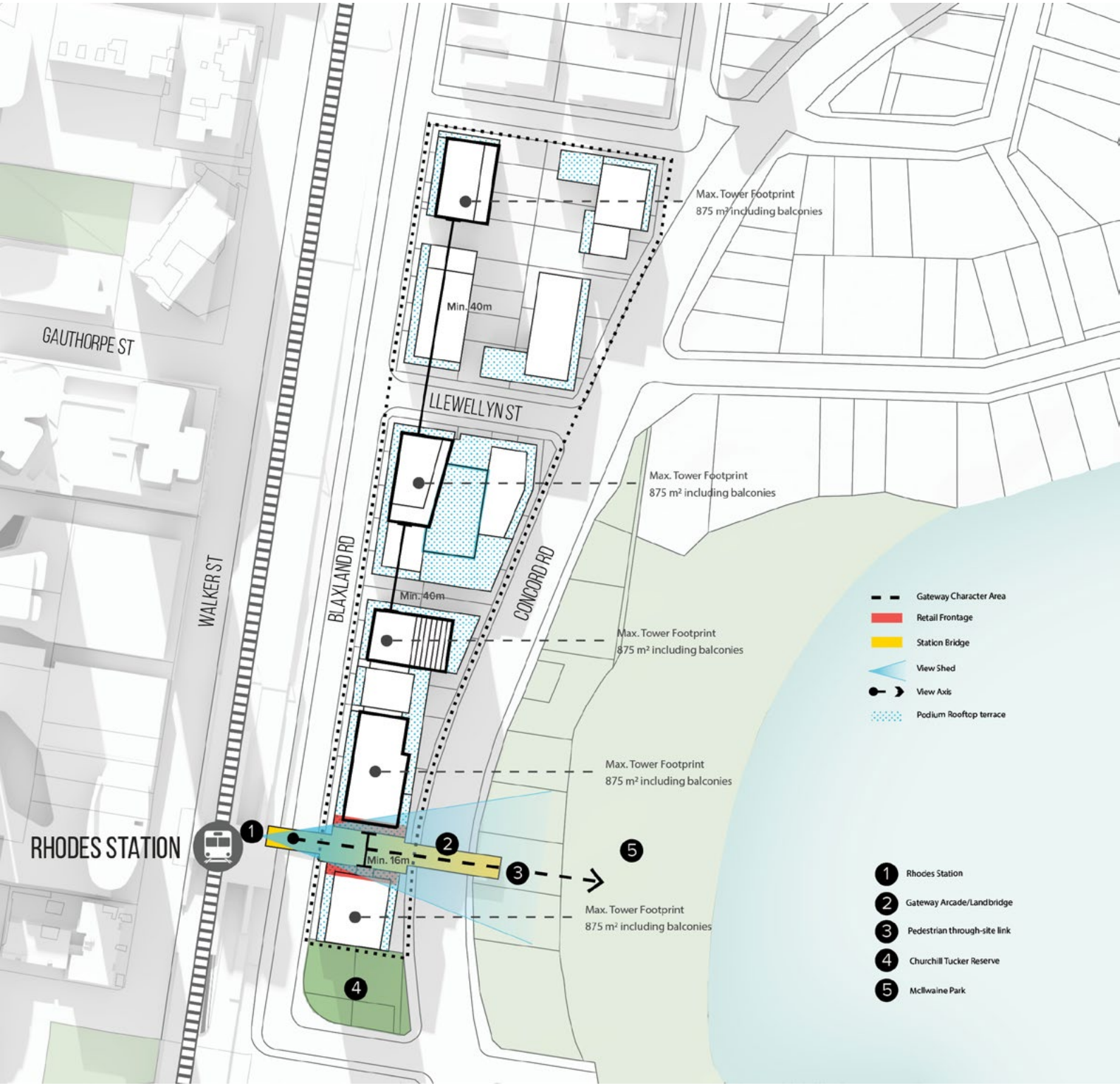


Figure K16-30 Station Gateway East Character Area Regulating Plan

Station Bridge and Station Bridge Plaza

As part of Station Gateway East, a new station bridge is proposed which will provide a safe and convenient pedestrian connection between the station (and Rhodes West), the new community, and retail hub, and McIlwaine Park (including the potential river pool), crossing both Blaxland Road and Concord Road.

Station bridge connections have the potential to transform disconnected urban neighbourhoods into thriving precincts. The bridge not only connects people, but also the landscape to the civic heart of Rhodes. The proposed higher density development at Station Gateway East creates an opportunity for this key public infrastructure to be funded as part of a major private development.

The station bridge will be developed with adherence to the key design parameters outlined by the NSW "Pedestrian Bridge Design Standards for Built up Areas", in particular the minimum clearance height of 5.5m. It is proposed that ramped walkways be provided (as well as steps) to provide inclusive access to McIlwaine Park.

Objectives

O12 To create a gateway landmark mixed use centre for Rhodes East.

O13 To future- proof Rhodes East for public transport improvements.

O14 To ensure that this Character Area contributes to the overall legibility of Rhodes East.

O15 To facilitate connectivity to and from the Station, across Concord Road and into the enhanced open space network.

O16 To promote and protect views from the Station to the water.

O17 To establish this Character Area as the transit oriented, convenience retail and mixed use centre for Rhodes East.

O18 To create a safe and active pedestrian bridge link.

O19 To ensure that Blaxland Road street level activation is not negatively impacted through the introduction of the pedestrian bridge.

O20 To create attractive and cohesive streetscapes.

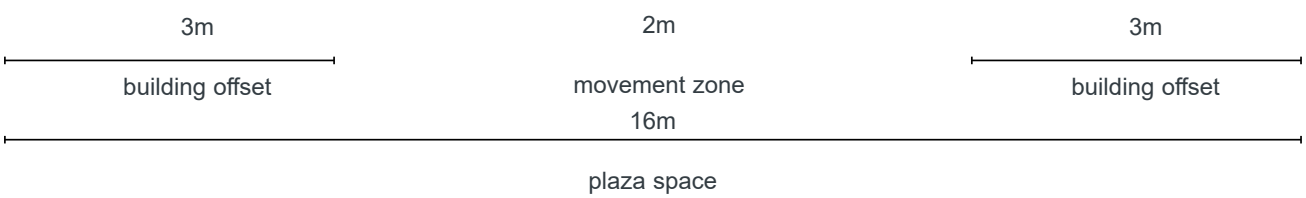
O21 To ensure that buildings are compatible with the desired future character of the area in terms of building bulk and scale.

O22 To ensure that development provides appropriate and sensitive transitions to existing and planned development.

Controls	
C14.	A pedestrian bridge is to be provided that connects the Station Concourse to the rooftop Bridge Plaza, across Concord Road and to McIlwaine Park.
C15.	A Station Bridge Plaza must be: • An integrated development solution between land owners and IfNSW • Connecting to the Active Travel (Station and McIlwaine Park) • A minimum width of 16m for the entire private development length, and accommodate a two-way pedestrian path and a separated two-way bicycle path including landscaping to the northern and southern edges. • A minimum of 550 sqm in area • 80% vibrant retail frontage and 15/ 20 doors/ 100 meters • Developed with adherence to the key design parameters outlined by the NSW "Pedestrian Bridge Design Standards for Built up Areas", in particular the minimum clearance height of 5.5m. • The stubs must be at least 8m wide
C16.	Where the land bridge travels through the Gateway Precinct it shall be a minimum of 16m wide and be fronted by active, retail uses.
C17.	The station bridge's eastern landing must be access compliant and integrate with public domain improvements at McIlwaine Park.

C18.	The station bridge is to be designed and constructed to have sufficient architectural integrity to support deep soil planting and landscaping, integrating stormwater management, native planting and irrigation. The deep soil planting is to be a minimum of 2m width and span the entire lengths of the northern and southern edges of the bridge across Concord Road.
C19.	A visual impact assessment shall be undertaken at the DA stage illustrating view impact from the Station and from McIlwaine Park.
C20.	Advertising structures are not permitted to be attached or placed on the land bridge.
C21.	The Bridge Plaza should incorporate tree planters to provide amenity, shade and contribute to quality urban space. The planters are should be offset a minimum of 3m from the retail frontages to retain circulation. The raised planters feature single large specimen trees of a variety of species (both evergreen and deciduous) to provide a balance of year-round seasonal variation, solar access and shade.
C22.	The pedestrian bridges must be designed in accordance with TfNSW requirements. It is vital that the design aesthetic of these bridges is exemplary. Guidance on achieving best practice outcomes for pedestrian bridges in NSW is provided by NSW Government's Centre for Urban Design document "Bridge Aesthetics: Design guideline to improve the appearance of bridges in NSW", Feb 2019.







Examples of the desired use of tree planters on the bridge plaza



Examples of the desired vegetation on the bridge plaza



Examples of the bridge design



Artist impression of the indicative desired character of the Bridge Plaza

Urban Primary School

There is the potential for an urban primary school to be delivered using SIC funding potentially collocated with multi-purpose community space. The central location of the Station Gateway East on the Rhodes Peninsula, in addition to the proximity to the public transport network.

Objectives

To provide a primary school suitable to accommodate up to 1000 students.

O23 To be supportive of the SINSW general educational principles.

O24 To provide amenity for the new school and the shared use of school facilities.

Controls	
C23.	Any application for a school is to demonstrate how shared public facilities will be accommodated, through: • Community and/or administrative facilities that are accessible to the public • Open space that is accessible to the public outside of school hours and on the weekends
C24.	Open Space of the School Site must not receive any additional overshadowing from new development between 10.00am and 2.00pm on the Winter Solstice.

Leeds Street Character Area

An active destination and experience-based retail offering at Leeds Street, is consistent with the Character Area intent. It will be a unique destination and could successfully operate with limited and / or no parking requirements. It will be the northern bookend and ultimately linked by the continuous foreshore boardwalk to the Station.

The proposed ferry wharf location has been identified north of the Leeds Street providing a unique opportunity to provide a water- based transit focal point.

The large, light industrial landholdings in this area make amalgamation less challenging, increasing the likelihood of early redevelopment.

The topography, foreshore location and existing land use make the Precinct an ideal location for a density that could support a public domain contribution in the form of foreshore plaza space or similar. Increased density in this location was supported by the community.

Objectives

O25 To create an active, destination / experience - based retail offering adjacent to the water.

O26 To establish a safe, active, vibrant, mixed use environment to support and promote use of the Ferry and that will attract investment, quality development and people.

O27 To ensure the Character Area is not dominated by a single supermarket use.

O28 To provide inclusive public access to the foreshore.

O29 To give pedestrians priority at Leeds Street.

O30 To facilitate connectivity along the River and Foreshore Promenade including to and from the future Ferry Stop.

O31 To provide a variety of public open space at the waterfront that is usable for all ages and abilities.

O32 To protect and enhance views to the water.

Controls - Uses	
C25.	Potential specialty destination uses may include: micro-brewery, wine, cheese, olives, wine bars, cafés, small gourmet supermarket.
C26.	Areas identified for specialty retail must: • Adhere to the requirements of the 'Vibrant Facade'. • Not exceed a 10m shop frontage. • Utilise either the Retail Shopfront and Awning or Posted Veranda frontage type. • Provide adequate pedestrian scale lighting and integrated into bollards and street furniture wherever possible.
C27.	Where retail uses, such as tables and chairs, spill out into the plaza, these activities must ensure public access is unhindered by fencing or other structural barriers.

Controls - Design	
C28.	Development along frontages identified as 'Promenade Frontages' must utilise the frontage types provided for 'Vibrant Facades' – see *Section K16.5* (*Façade design subheading*) of this DCP.
C29.	Ground floor residential units must have individual unit access.
C30.	Pedestrian links must be activated on all sides for a minimum of two storeys with vibrant retail at ground floor and residential surveillance and balconies above unless upper level retail is specified on the plan opposite.
C31.	Residential towers above podium level shall have a maximum total floor area of 875sqm .
C32.	A minimum podium height of approximately 14-16m building height is required.

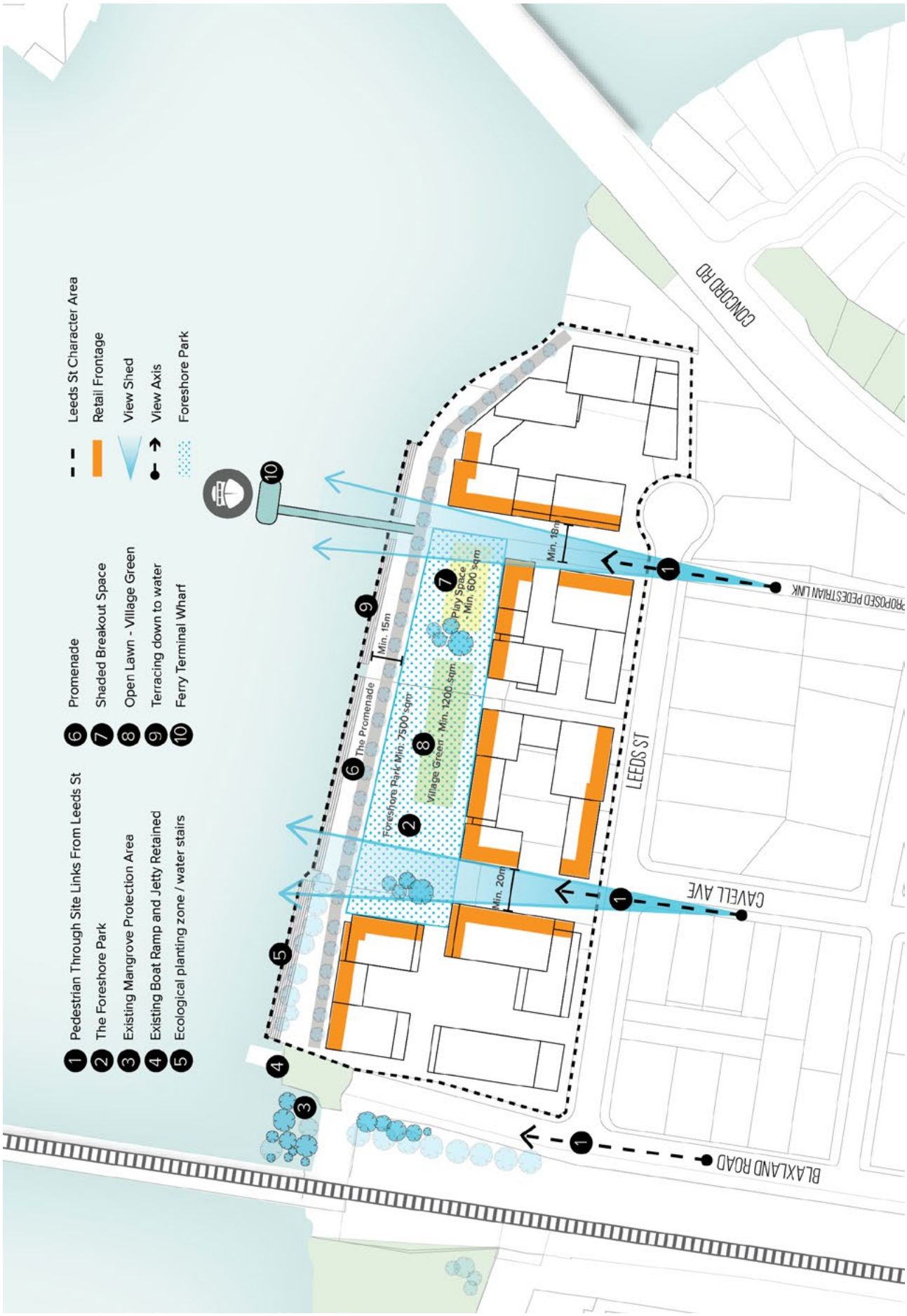


Figure K16-31 Leeds Street Character Area Regulating Plan

Controls - Open Space	
C33.	A variety of open spaces should be provided within the Character Area, including; • Foreshore Promenade • Foreshore Park • Multi use paved space for sports and events • Pedestrian connection to the new Ferry Wharf • Access to the existing boat ramp and jetty • Terracing to the water edge.
C34.	The Foreshore Promenade must be 15m wide and should be designed in accordance with **Figure K16-33**.
C35.	The promenade must provide a continuous path of travel along the foreshore edge, minimum 5m in width, consistent with the existing Rhodes West foreshore, and with alignments that connect seamlessly with the existing and future promenade to the west and east, respectively. Large trees with a minimum mature canopy diameter of 10m should be incorporated into the Foreshore Promenade, and spaced to achieve a continuous canopy in maturity, Utilising deep soil available, these trees will grow to provide shade and amenity to the promenade walk and active water edge, and make a significant contribution the sense of place.
C36.	A minimum 50% of foreshore edge must step down into the river, and minimum of one equal access location provided to mean high tide level. The remainder of edge may consist of elevated terraces (with appropriate fall protection) or 'natural' edges (such as rip rap walling, mangrove planting, etc.). Open views to the water at eye level must be retained for at least 50% of the park interface
C37.	The Foreshore Park should be designed in accordance with **Figure K16-32** and comprise a total of 7,500m^2.
C38.	The Foreshore Interface with the park is required to have a minimum 50% of its area free of obstructions. The remaining 50% may contain obstructions such as fixed and moveable seating, plantings and trees, light poles, public space signage, litter bins or other design elements that are permitted within public parks.
C39.	A minimum clear zone of 3m offset from the façade interfacing with The Foreshore Park is required. The remaining 5m of Built Form Interface with the park is required to have a minimum 50% of its area free of obstructions. The remaining 50% may contain obstructions such as fixed and moveable seating, plantings and trees, light poles, public space signage, litter bins or other design elements that are permitted within public parks.
C40.	A large level open lawn space must be provided in the park, with minimum dimensions of 20 x 60m, and grades in all directions of 1-2.5%. This space must be framed with seating and shade amenity.
C41.	An inclusive play space should be incorporated into the park. The play space must be minimum 600m^2. The range of play elements must cater for all abilities and ages, including young children, adults, and the elderly. The play experience must include bespoke elements that connect with the natural landscape and local context, contributing to a unique sense of place and creating an iconic destination.
C42.	An amenities building must provided within the park, with accessible toilet/s and change facilities (babies, children, adults). Its location shall prioritise convenience from the ferry wharf and play space. The building shall be integrated into the park's design aesthetic and minimise disruption of water views from the park.
C43.	The Blaxland Road terminus area (northern end) will be resurfaced, provide a multi use paved space for sports, recreation facilities and events. Landscape treatment must include new planting and on-site rain water detention / retention facilities.

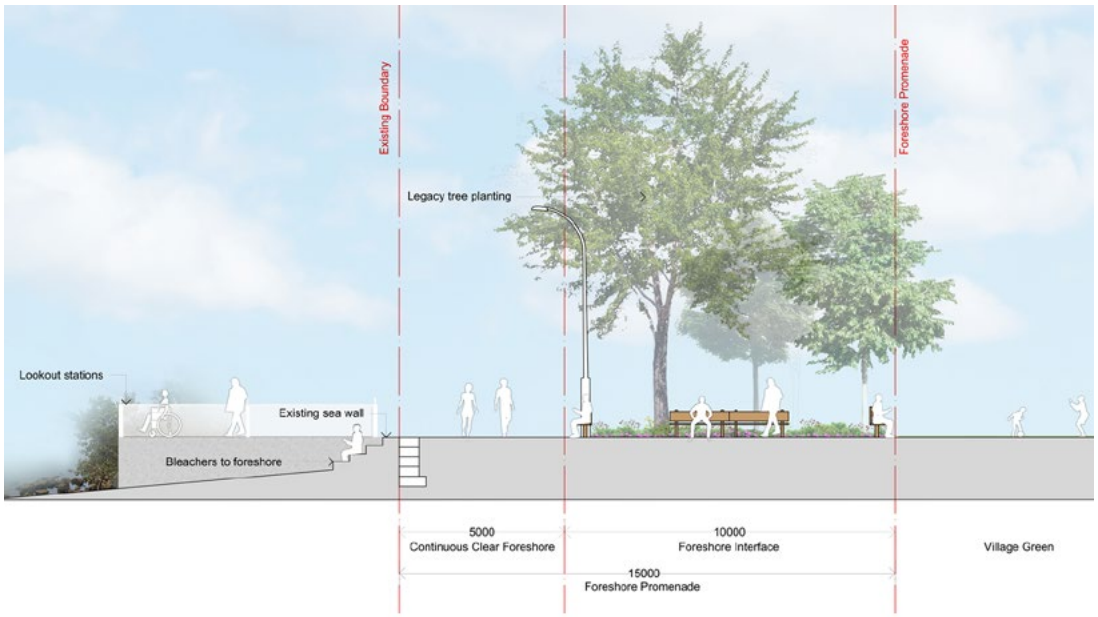


Figure K16-32 Foreshore / Park Interface (nts)

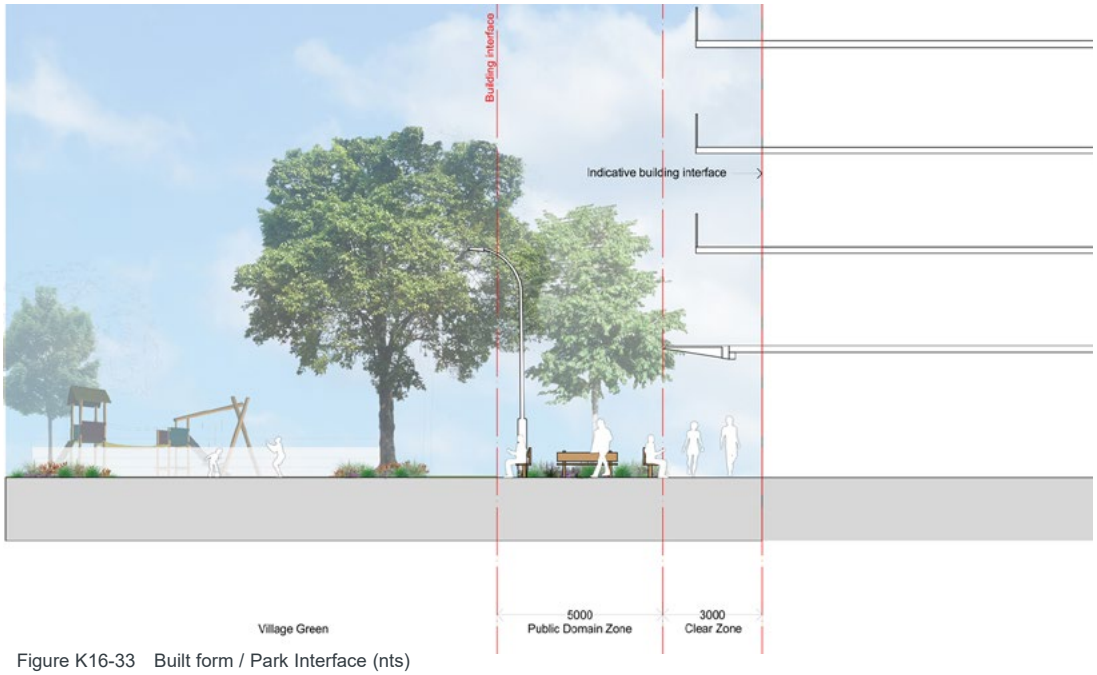


Figure K16-33 Built form / Park Interface (nts)

C44.	All areas of open space, including the Foreshore Promenade and Foreshore Plaza, must; • Be publicly accessible 24 hours a day, 7 days a week. • Be designed as an extension to the public domain. • Not be privatised through walls, fencing or the like. • Allow unobstructed pedestrian access at all times (with the exception of approved events and activities).
C45.	Uhrs Point Reserve will be upgraded with new planting, on-site rain water detention/ retention facilities and the provision of a launch ramp. (Note: any upgrades to the existing building facilities is the responsibility of the Sea Scouts and Crown Lands).
C46.	The Foreshore Park must not receive any overshadowing from new development between 8.30 and 12.30pm in the Primary Zone on the Winter Solstice. The Foreshore Park must not receive more than 50% overshadowing from new development after 12.30pm on the Winter Solstice.
C47.	King George Reserve must not receive any additional overshadowing from new development between 8.30am and 12.30pm on the Winter Solstice. Uhrs Reserve must not receive any additional overshadowing from new development between 8.30am and 12.30pm on the Winter Solstice.
C48.	The proposed development within Leeds Street Character Area must not overshadow the open space of the school site between 10.00am and 2.00pm on the Winter Solstice. Location of school's open space is to be determined through detailed architectural design process.
C49.	Development must demonstrate a response to areas identified as a Sculpture / Landscape / Public Art Feature.
C50.	View sheds and visual axis must be protected and terminated by Architecture / Landscape / Public Art Feature.

Controls - Access

C51.	Primary vehicular access and servicing is to be provided via Blaxland Road.
C52.	Pedestrian links and facilities for non-car modes of transport must be provided.
C53.	The pedestrian links from Leeds Street to the northern foreshore are to be as follows: • Ferry Wharf pedestrian link 18m minimum width. • Cavell Avenue extension pedestrian link to be 20m minimum width. • Fronted by active, retail uses. • Open to the sky and unroofed.
C54.	Leeds Street Precinct basement carpark access/ servicing is to be: • Shared amongst all developments irrespective of land ownership and/ or land use in a superbasement or shared basement configuration in order to maximize deep soil potential underneath the Leeds Street Foreshore Park.
C55.	Access to the new Ferry Wharf must be designed in accordance with the appropriate Transport for NSW standards and requirements. This could include disabled parking, vehicle turning heads, kiss-n-ride facilities and bus interchange opportunities.
C56.	A wind impact assessment is required as part of any Development Applications relating to the Leeds Street Character Area. The assessment must demonstrate the mitigation of any wind impact through the design and architectural treatment of new buildings, without relying on the enclosure of laneways and through site links.



Figure K16-34 Section Location Plan

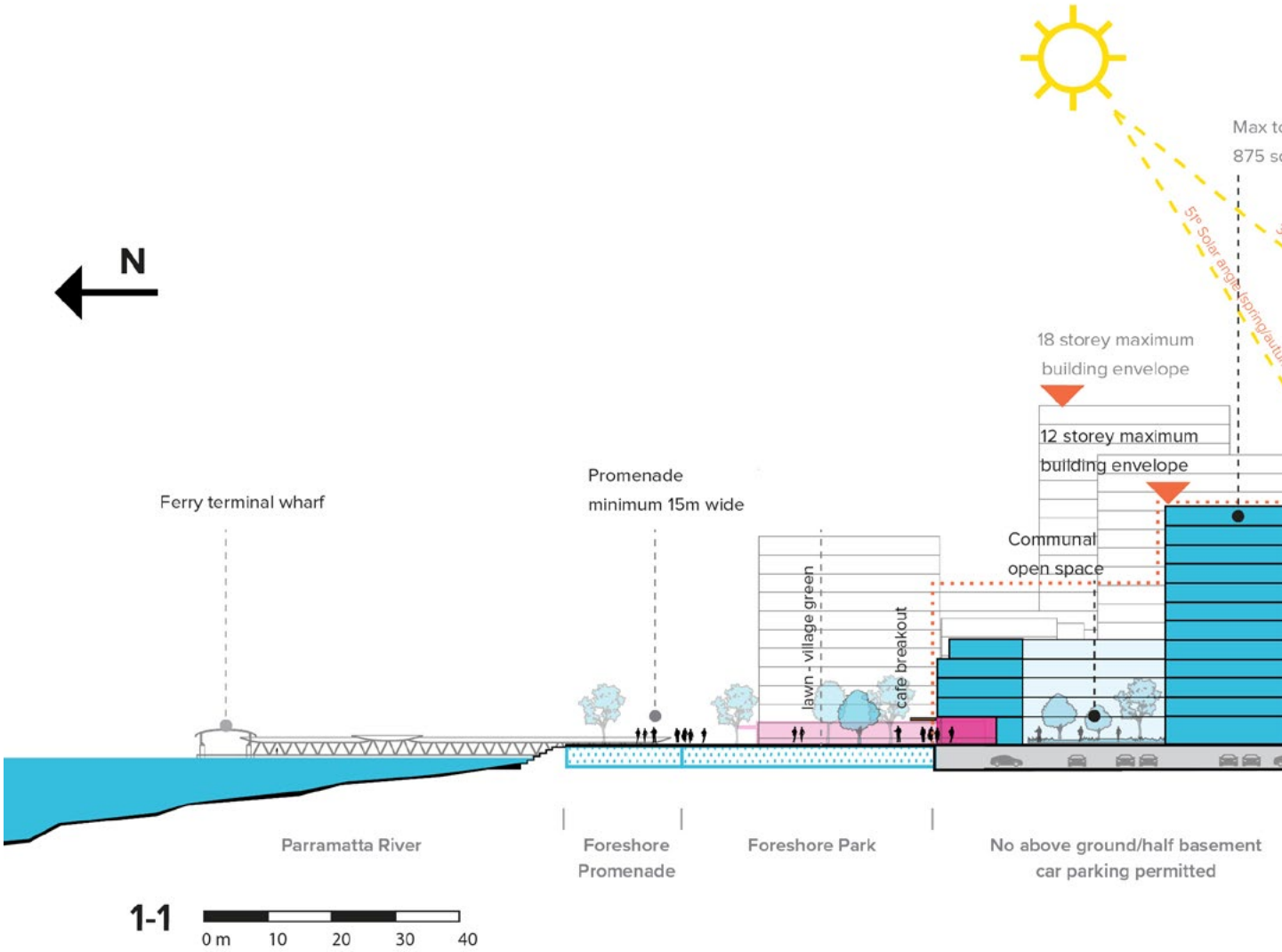
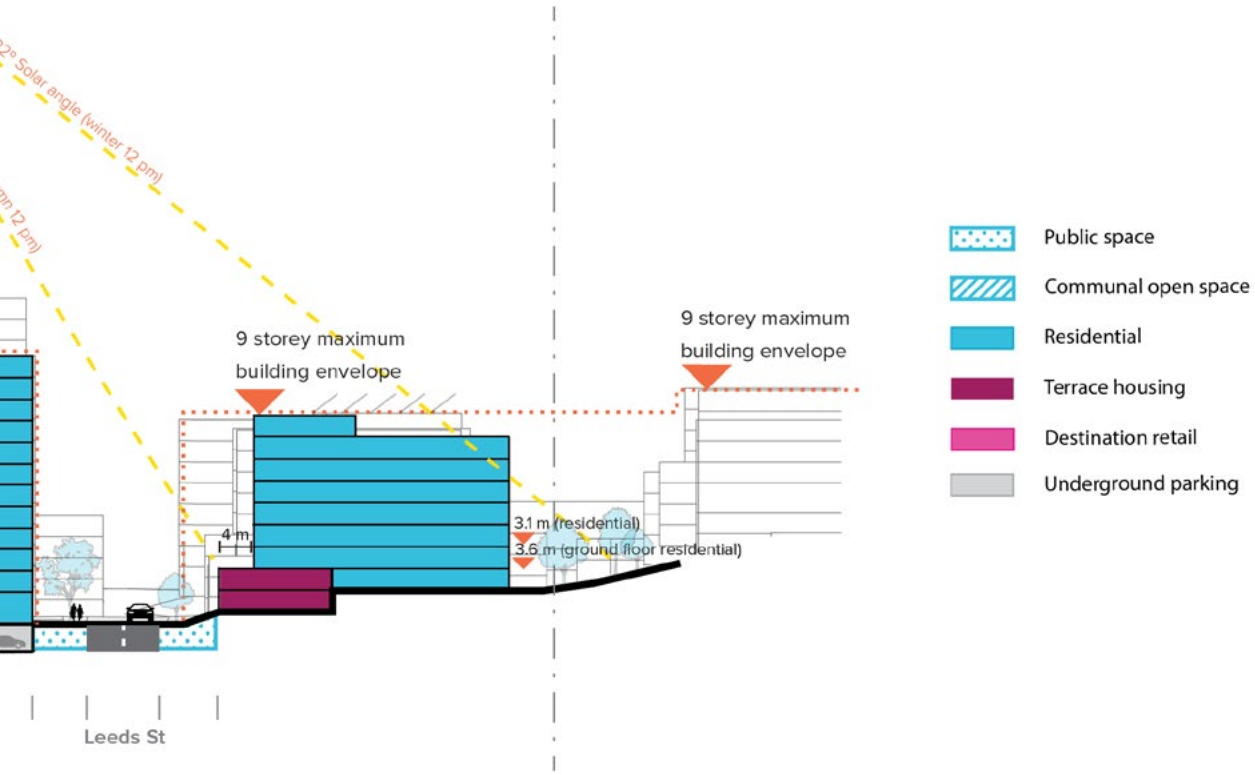


Figure K16-35 Section 1-1

ower footprint
qm including balconies



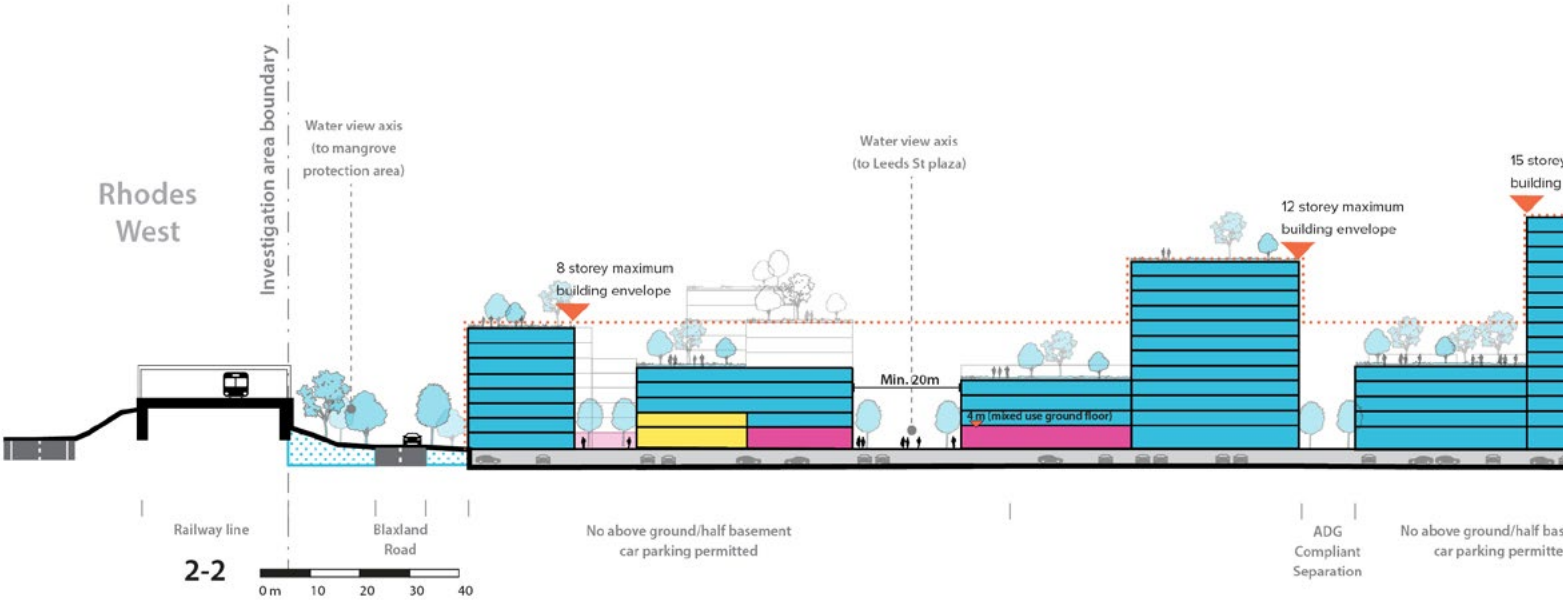
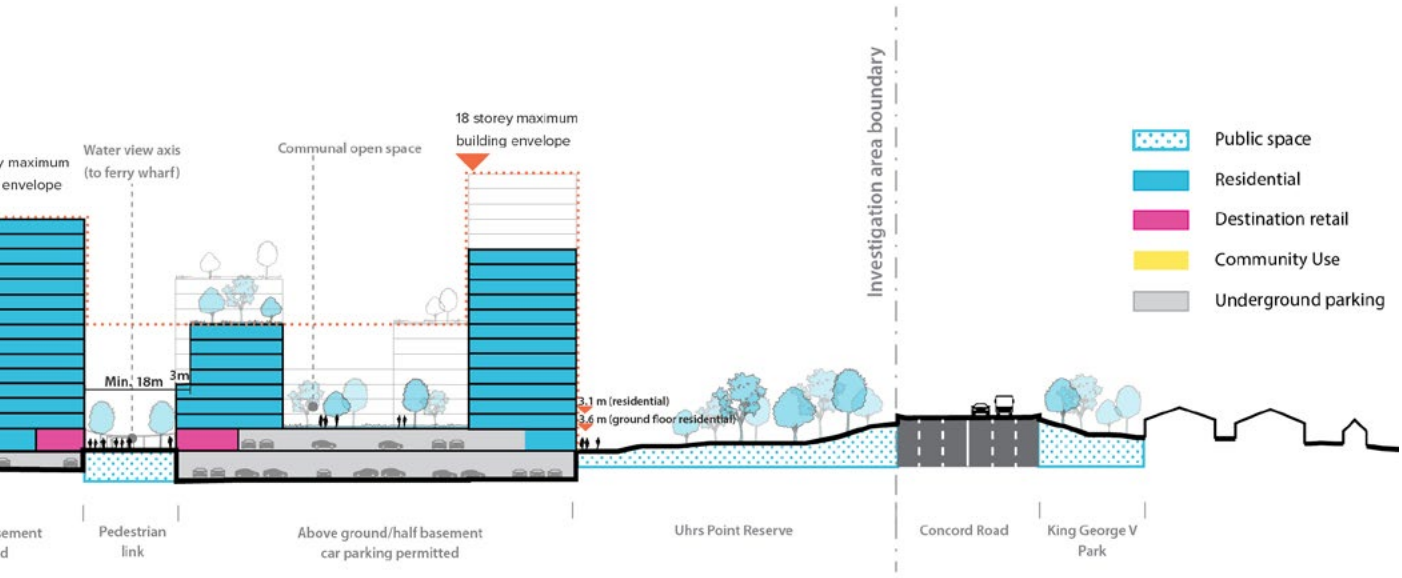


Figure K16-36 Section 2-2


maximum
envelope
Water view axis
(to ferry wharf)
Communal open space
18 storey maximum
building envelope
Investigation area boundary
Public space
Residential
Destination retail
Community Use
Underground parking
Min. 18m
3m
3.1 m (residential)
3.6 m (ground floor residential)
Pedestrian
link
Above ground/half basement
car parking permitted
Uhrs Point Reserve
Concord Road
King George V
Park

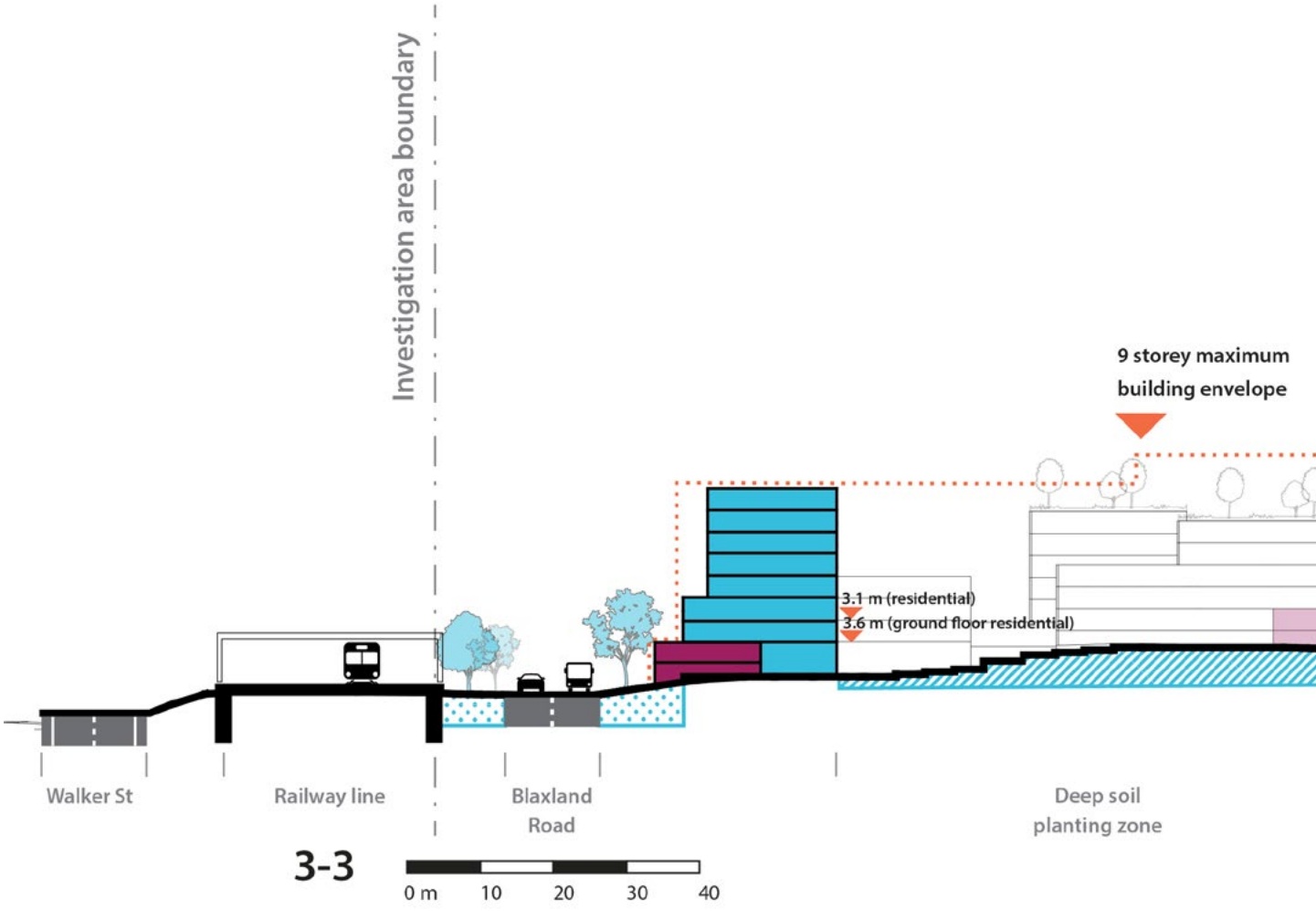
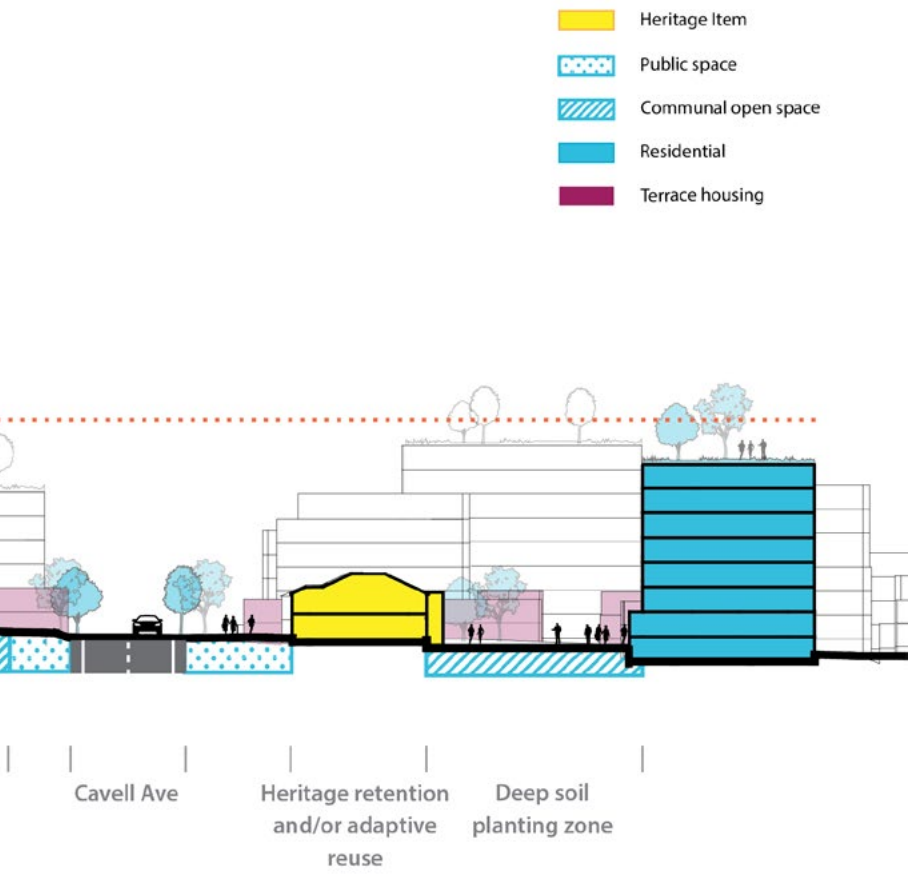


Figure K16-37 Section 3-3


Heritage Item
Public space
Communal open space
Residential
Terrace housing
Cavell Ave
Heritage retention and/or adaptive reuse
Deep soil planting zone

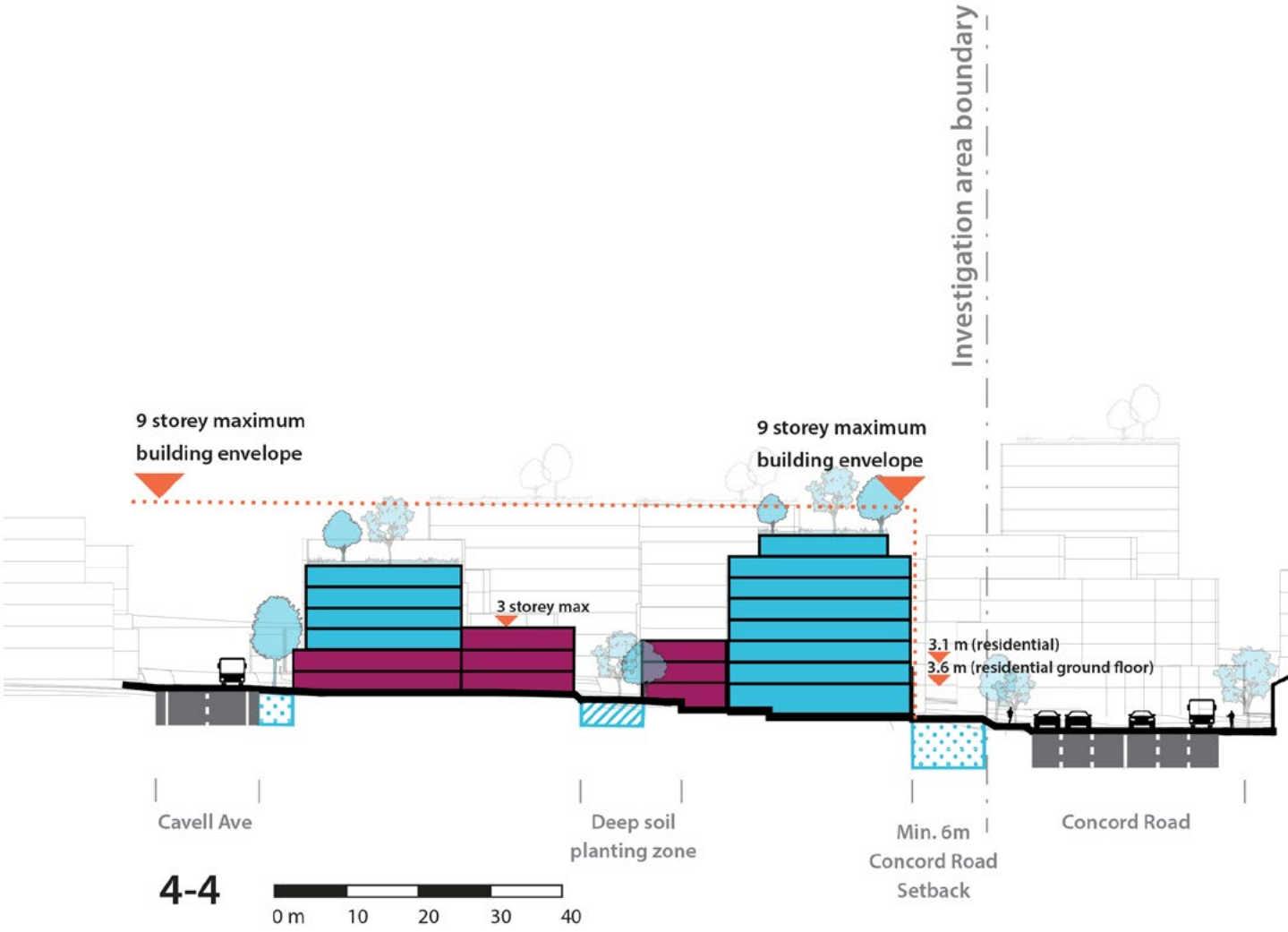


Figure K16-38 Section 4-4


Public space
Communal open space
Residential
Terrace housing

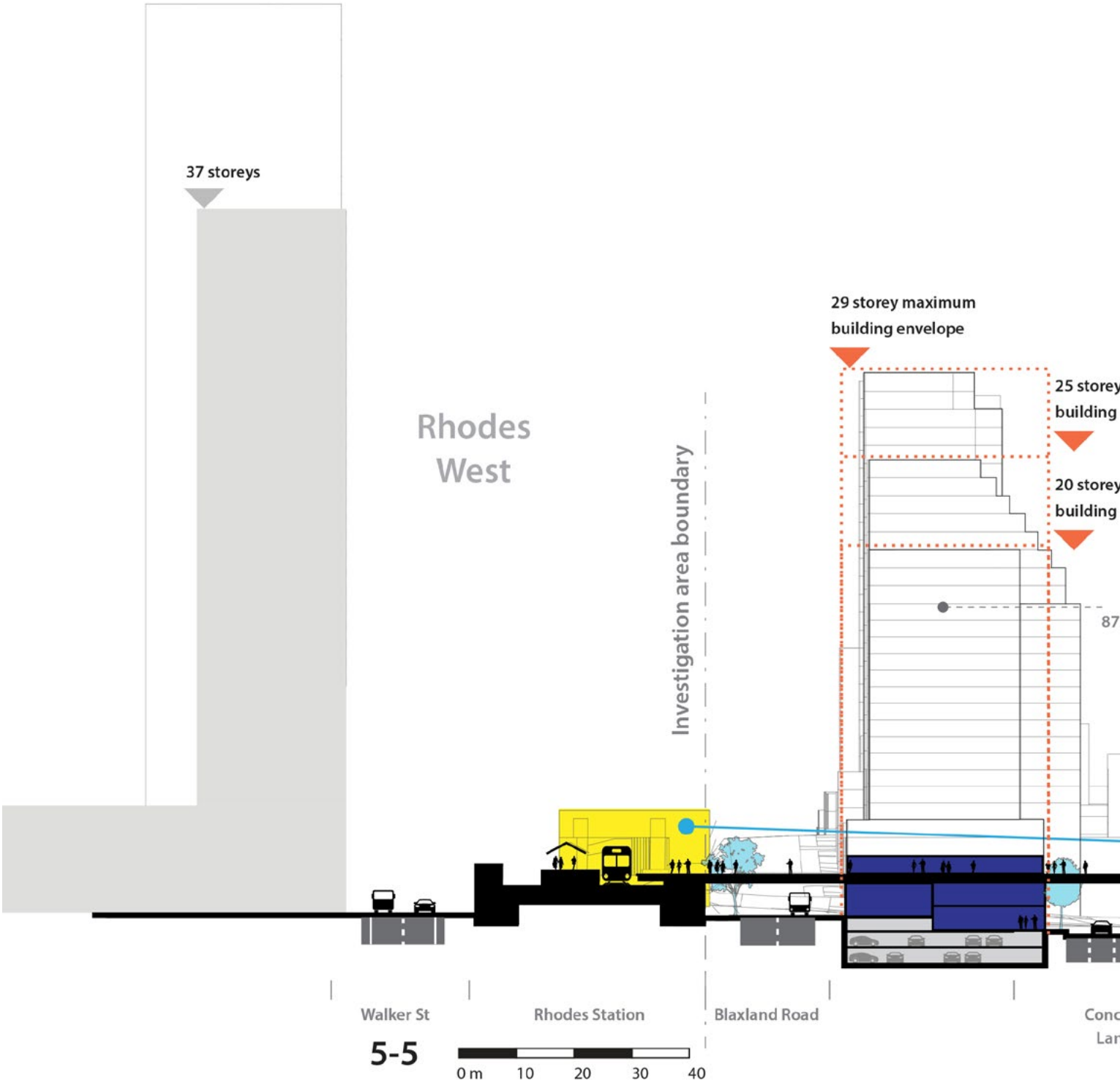


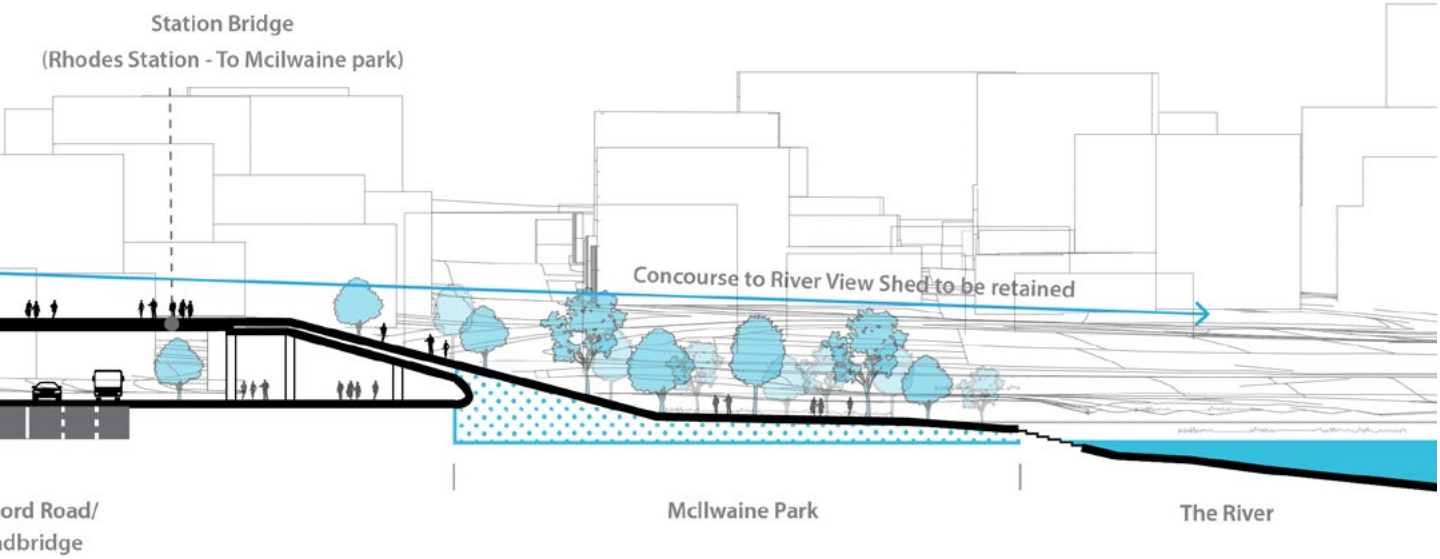
Figure K16-39 Section 5-5

Public space
Communal open space
Residential
Commercial
Underground parking

maximum
envelope

maximum
envelope

Max tower floorplate
5m² including balconies



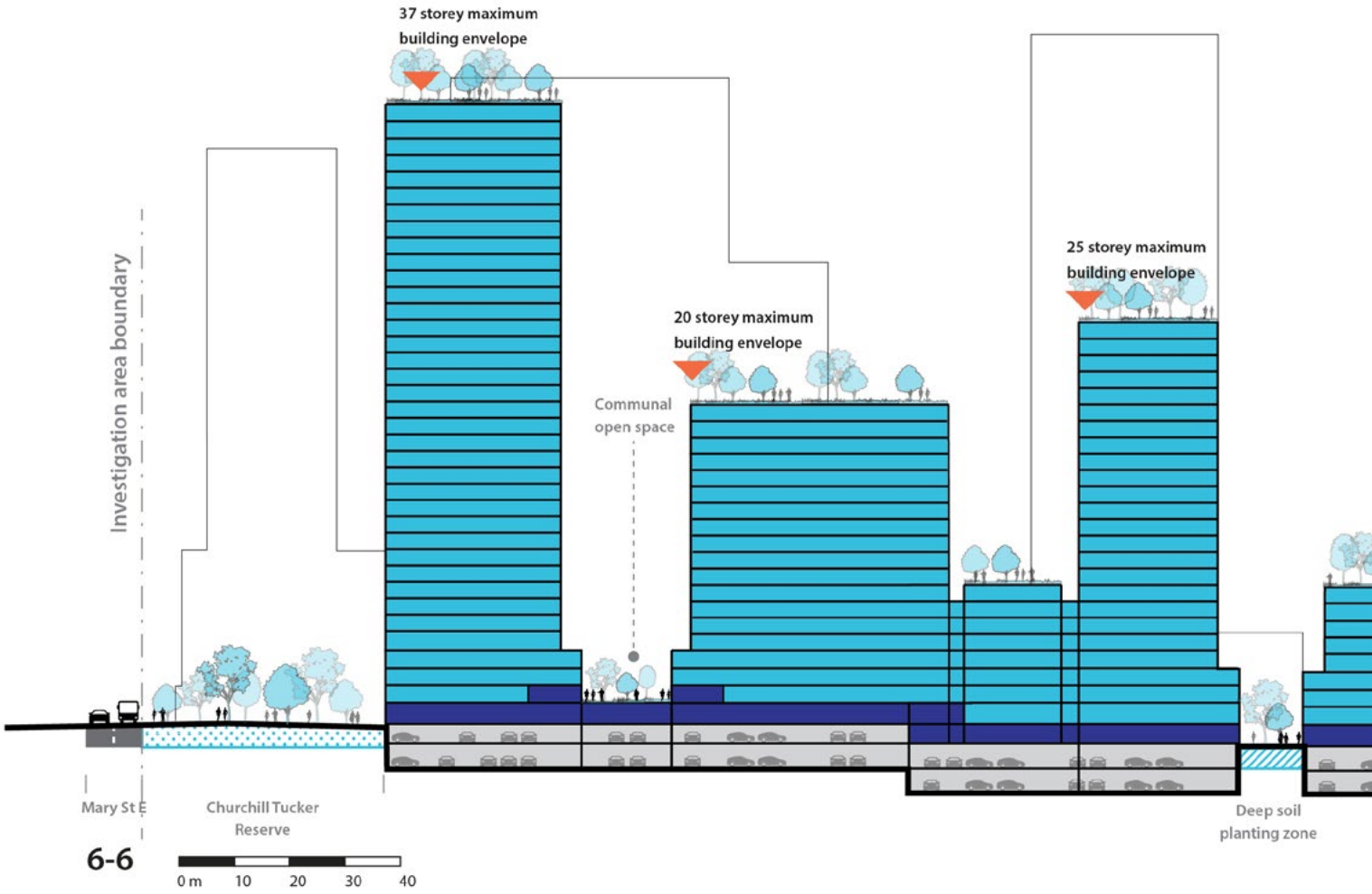
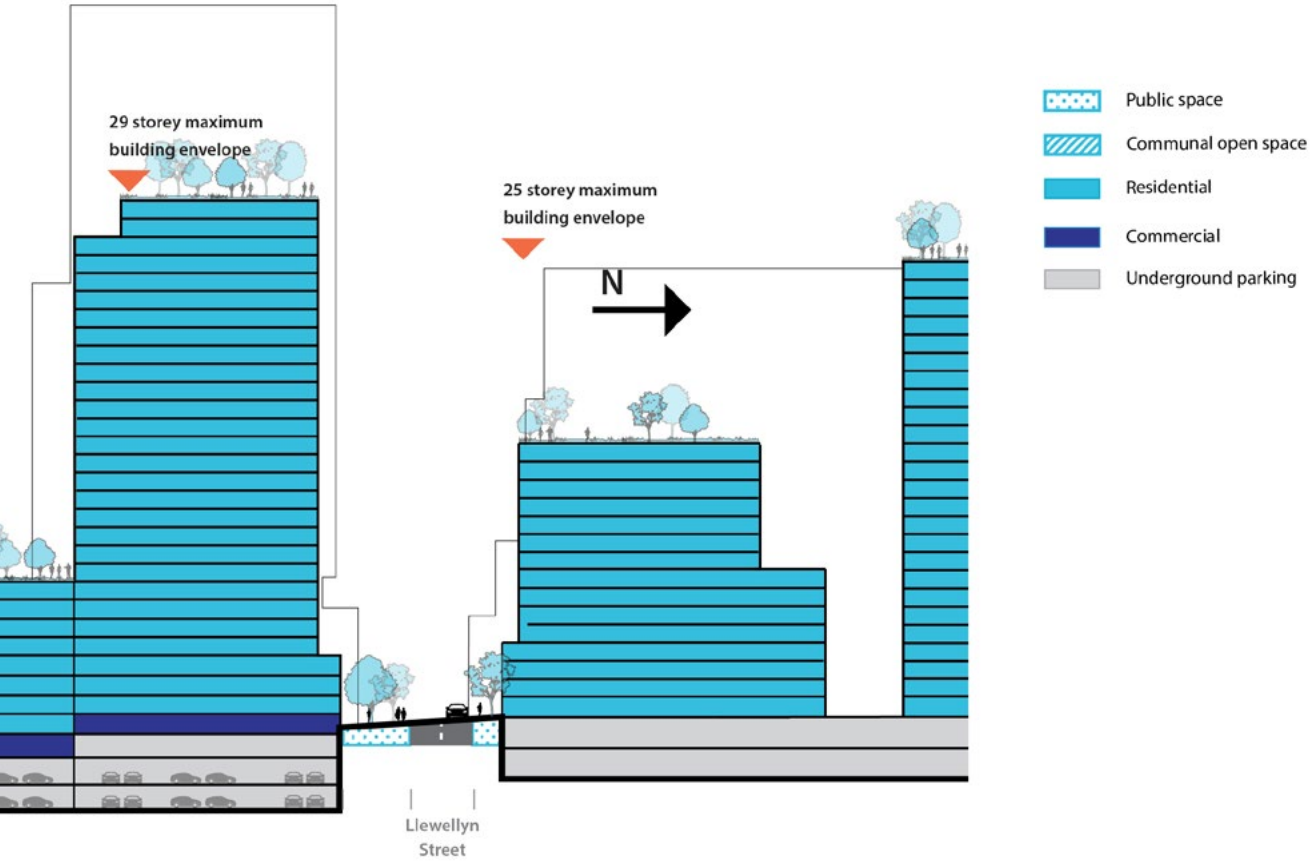


Figure K16-40 Section 6-6


29 storey maximum
building envelope
25 storey maximum
building envelope
N
Llewellyn
Street
Public space
Communal open space
Residential
Commercial
Underground parking

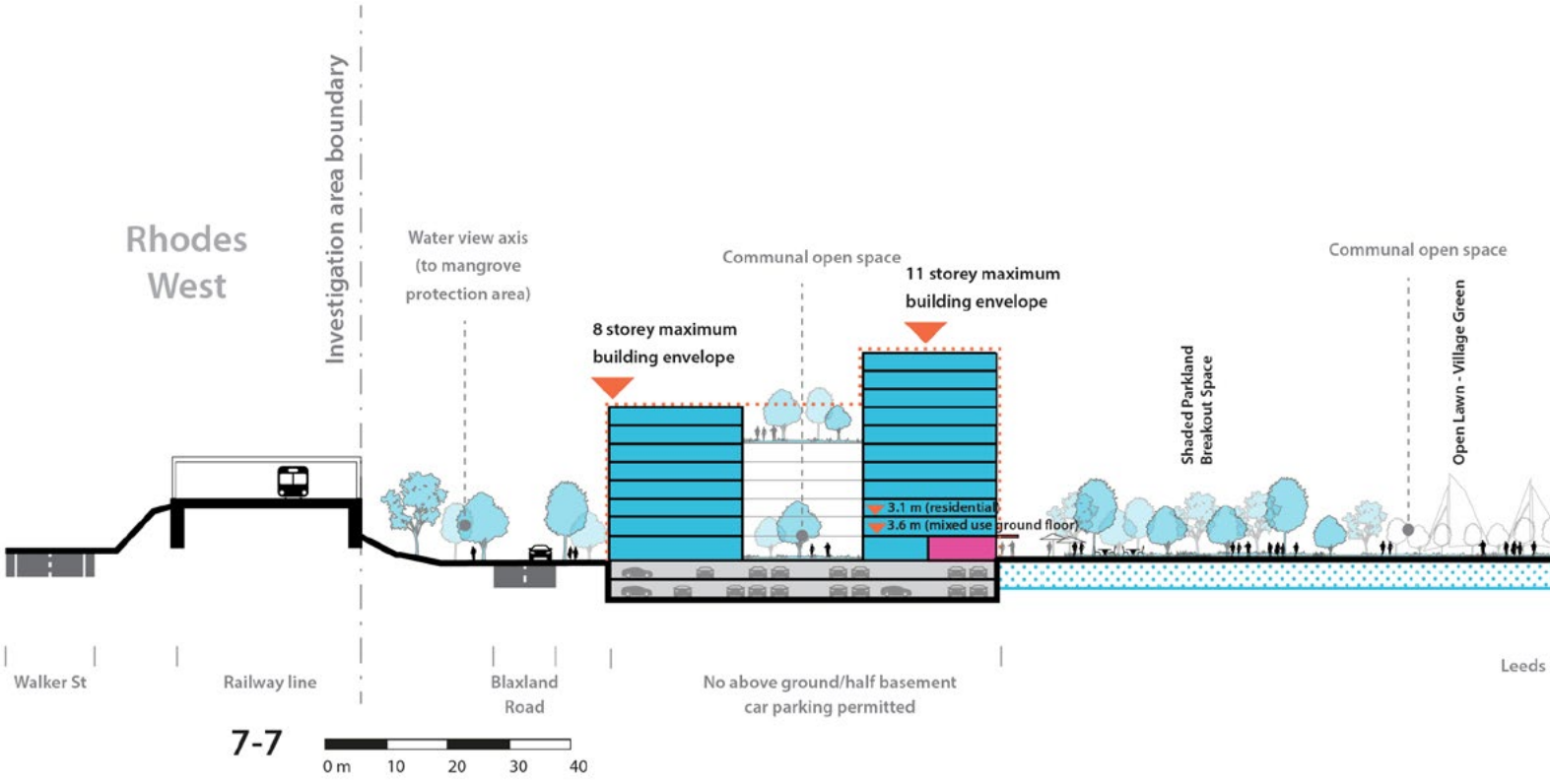
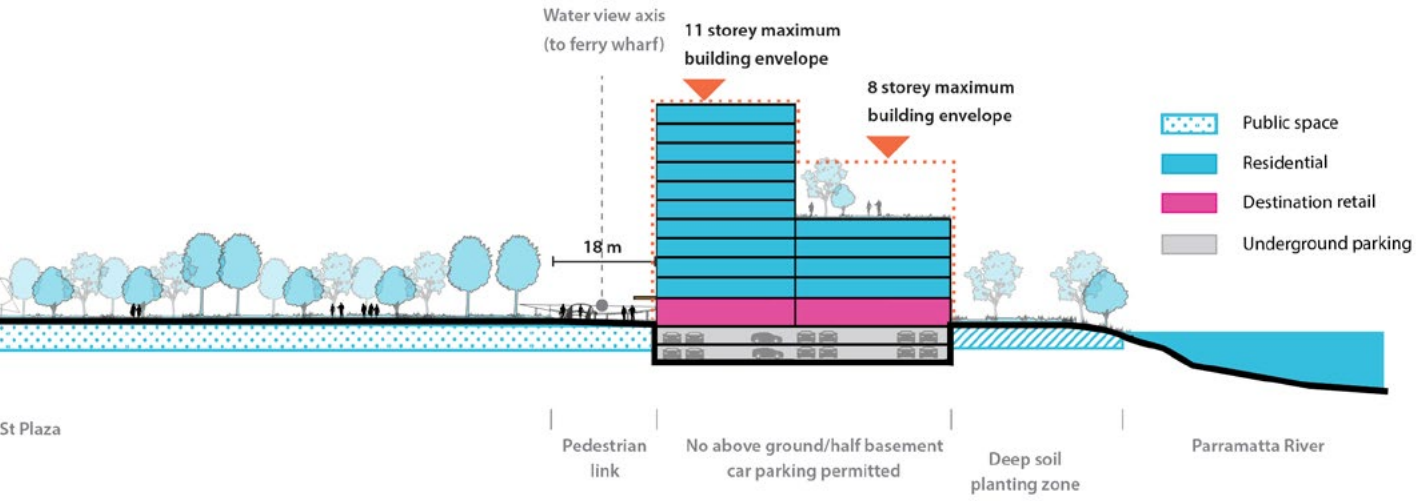


Figure K16-41 Section 7-7


Water view axis
(to ferry wharf)
11 storey maximum
building envelope
8 storey maximum
building envelope
18 m
Public space
Residential
Destination retail
Underground parking
St Plaza
Pedestrian
link
No above ground/half basement
car parking permitted
Deep soil
planting zone
Parramatta River

Mixed use corners

Three small mixed use corners with associated corner plazas have been strategically located along important desire lines within the Rhodes East Precinct.

Objectives

O33 To create intimate, localized spaces and gathering points for the community reflective of the Character Areas, co-located with small pockets of open space.

O34 To provide frequent points of interest in between destinations, enabling better way-finding.

O35 To embed opportunities for non-residential uses such as shops, cafes, start-ups and other small-scale commercial or community uses.

Controls	
C57.	Mixed use corners are to be located as identified in **Figure K16-42**.
C58.	The open space plaza associated with each mixed use corner must be: • a minimum of 100m^2 • Be publicly accessible 24 hours a day, 7 days a week. • Be designed as an extension to the public domain. • Not be privatised through walls, fencing or the like. • Allow unobstructed pedestrian access at all times (with the exception of approved events and activities).
C59.	A minimum of 25m^2 ground floor GFA is to be used for the purpose of mixed, non-residential use addressing the open space/ plaza and be accessible at grade.
C60.	Mixed use facades are at least 80% transparent and address the open space.
C61.	The mixed use component may occupy the open space in the form of outdoor seating and/ or a raised platform.
C62.	Upper level residential: • must not have blank walls addressing the open space / plaza. • must not use the mixed use corner as a residential lobby.



Figure K16-42 Mixed use corners plan

Mixed Use Corner A (Concord Road):

Controls	
C63.	New development in this location: • should reinforce its function as a key feature along Concord Road. • is to be in accordance with **Figure K16-43**. • is to provide a high degree of building and facade articulation to both street frontages with particular attention given to the view of the corner from the northeast. • is to provide landscape treatment is encouraged to attenuate noise associated with traffic on Concord Road.

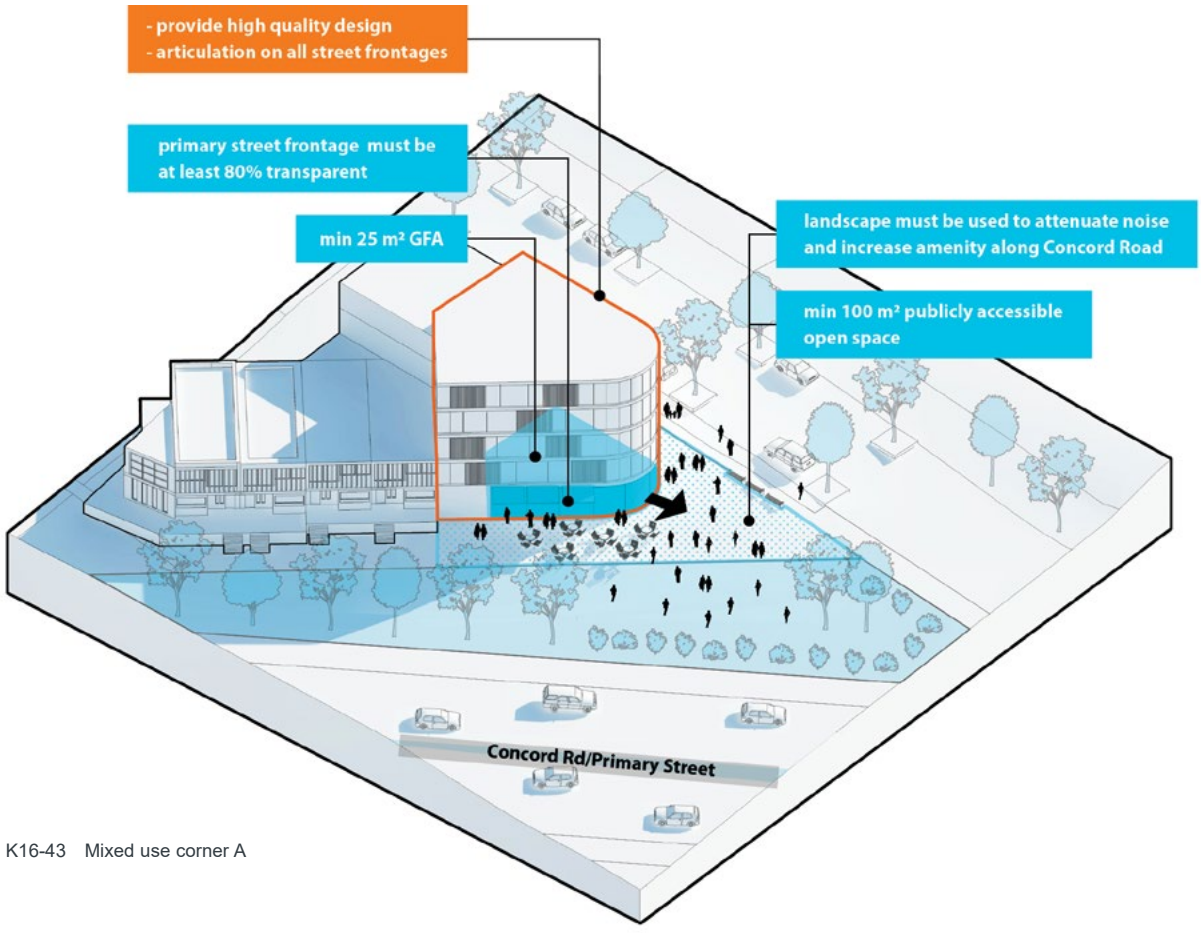


Figure K16-43 Mixed use corner A

Mixed Use Corner B (heritage trees):

Controls	
C64.	New development in this location: • is to be in accordance with **Figure K16-44**. • is to be in accordance with the remnant tree heritage controls for 4A Cavell Avenue. Refer to *Section K16.6 (Heritage items subheading*) of this DCP.

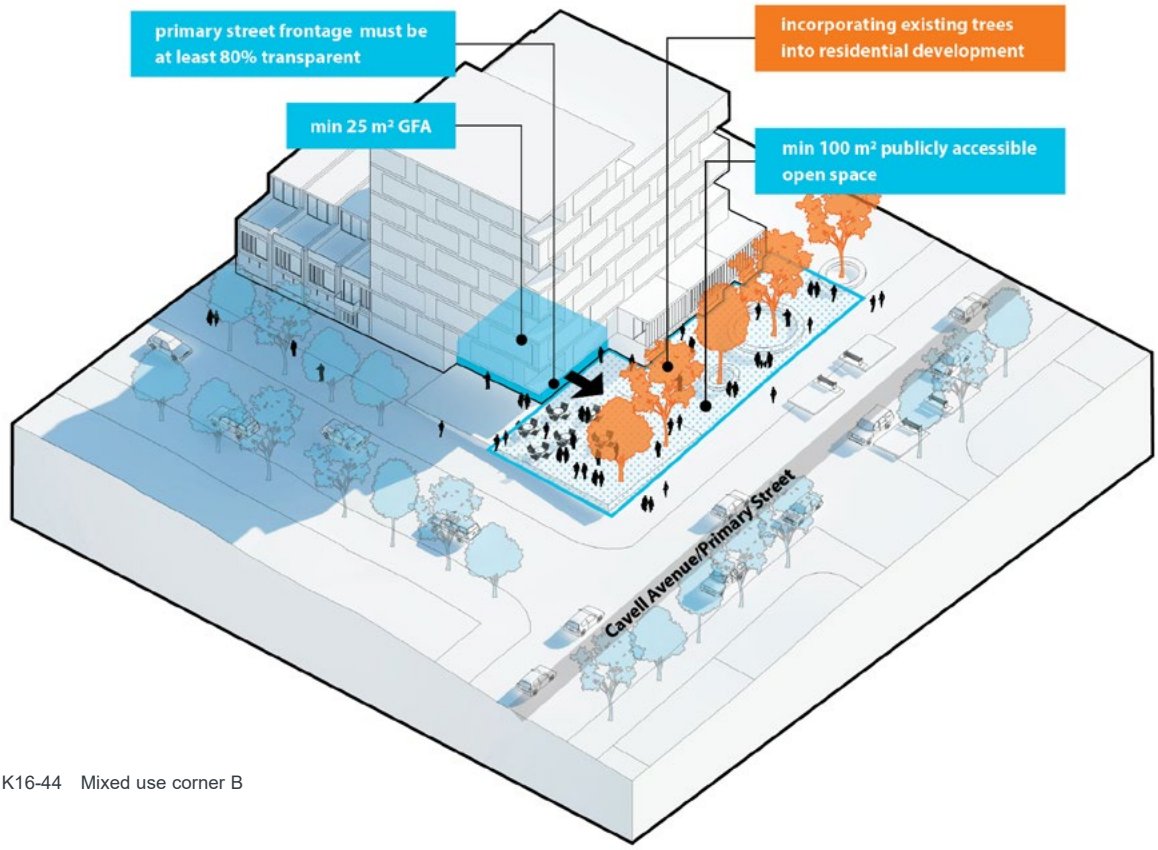


Figure K16-44 Mixed use corner B

Mixed Use Corner C (Concord Road):

Controls	
C65.	New development in this location: • should reinforce its function as a key feature along Concord Road. • is to be in accordance with **Figure K16-45**. • is to provide a high degree of building and facade articulation to both street frontages with particular attention given to the view of the corner from the northeast. • is to provide landscape treatment is encouraged to attenuate noise associated with traffic on Concord Road.

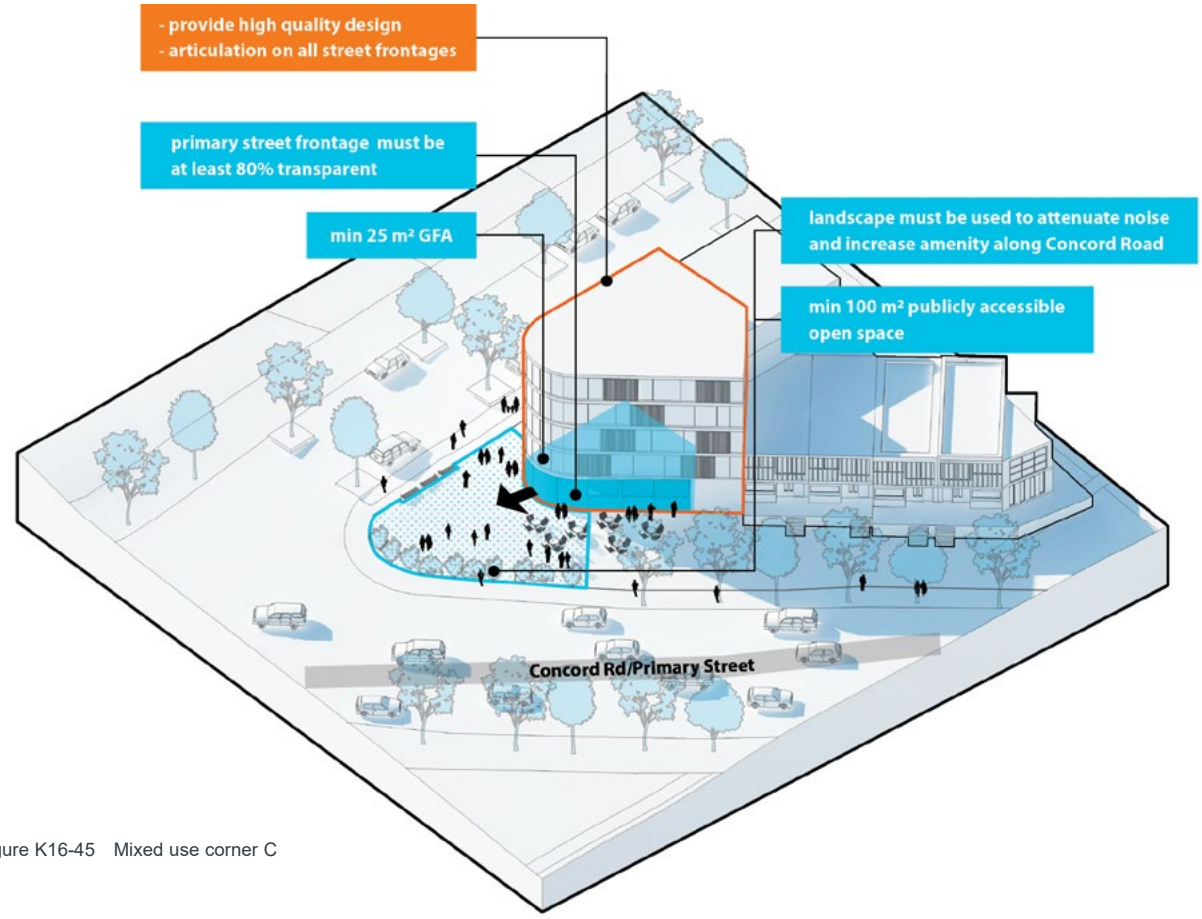


Figure K16-45 Mixed use corner C

This page was intentionally left blank

K17 Rhodes West

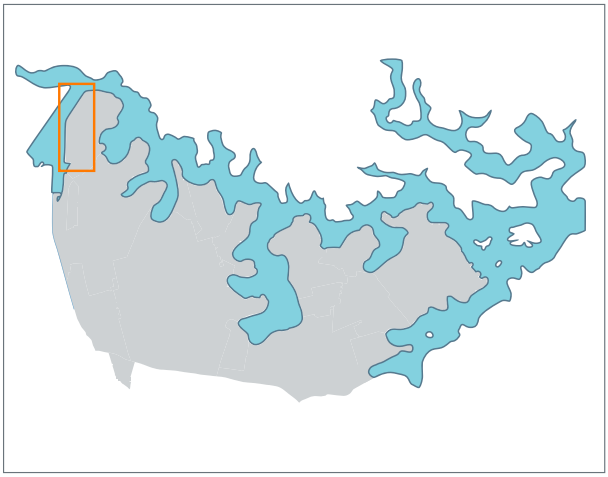


Figure K17-1 LGA map

K17.1 Introduction

Preliminary

Rhodes West is a Specialised Centre in Canada Bay Local Government Area (LGA) located on the eastern shore of Homebush Bay, Sydney Harbour's western most bay. Rhodes West has progressively developed under a planning framework established in 1999 under the Sydney Regional Environmental Plan 29: Rhodes Peninsula (SREP 29) (Now repealed) and the Renewing Rhodes Development Control Plan 2000 (RRDCP 2000) (now superseded).

The City of Canada Bay Council was delegated the role of consent authority from the Minister for Planning in 2009. Since that time, Council has investigated the potential opportunities to enhance the community's facilities and public open space and to build on the existing urban design and planning framework to incorporate sound place making principles in the development of the remaining development sites.

The Rhodes West DCP 2010 formed an important part of the previous implementation of Council's vision for Rhodes West. This site and precinct specific DCP, Rhodes West DCP 2015, will continue and strengthen this vision to create a sustainable, liveable and well connected place on the peninsula.

This DCP includes:

- A Framework Plan to set the urban design structure for development sites; and
- Development controls for the public and private domain.

Vision

The 'vision' for Rhodes West is to:

1. Create a diverse and visually interesting commercial centre supported by a high density residential community;
2. Integrate the new community of Rhodes West with the existing community east of the Northern Railway line, Wentworth Point and Sydney Olympic Park through bus, pedestrian and cycle connections and the provision of new community facilities, which are accessible to all;
3. Engender a meaningful 'sense of place' and community with a network of activity areas that combine neighbourhood shops, recreation opportunities, and public open space with residential dwellings;
4. Create a range of high quality public open spaces and community facilities;
5. Ensure high quality architectural design that contributes positively to the role of Rhodes as a Specialised Centre in Sydney; and
6. Demonstrate leadership in ESD initiatives.

Aims and objectives

The intention of the Rhodes West Development Control Plan is to set the detailed development objectives and controls that support the Canada Bay Local Environment Plan 2013 (as amended).

Aims

The following Aims seek to implement Council's vision for a precinct of high quality urban design that is well connected, liveable and environmentally, economically and socially sustainable.



Figure K17-2 Rhodes West Precinct Plan

High quality design

A1 High quality public domain design to create memorable places that the community use and enjoy.

A2 Pleasant streetscapes with active street frontages.

A3 High quality architectural design that creates a visually interesting skyline as well as pleasant streetscapes.

Well connected

Connectivity achieved by:

A4 Supporting an integrated, well connected and accessible area to it's local and regional context.

A5 Providing pathways and cycleways that link public spaces and activity areas through and between residential and mixed use areas and that link with adjacent residential areas.

A6 Enhancing existing connections and creating new connections between Rhodes West and Rhodes East, Wentworth Point and Sydney Olympic Park which supports the proposed construction of the Homebush Bay Bridge between Rhodes West and Wentworth Point.

A7 Promoting and providing a well connected network of public, private and communal areas which offer a range of recreational needs including places with high amenity for workers, local residents and other visitors to enjoy.

Liveable

Liveability achieved by:

A8 Establishing an urban design framework that optimises views, sunlight access and natural air movement and that minimises environmental impacts within Rhodes West and adjacent residential areas.

A9 Providing safe and secure public spaces, pedestrian pathways and cycleways.

A10 Providing well designed public open spaces through the use of high quality materials, street furniture and public art.

A11 Promoting high levels of internal residential amenity in the design of communal areas and internal layout of dwellings having regard to visual and acoustic privacy, thermal comfort, natural airflow and ventilation, sunlight access, adequacy of storage areas, views and aspect.

Sustainable

Environmental sustainability achieved by:

A12 Promoting sustainable transport, reduce car use and increase use of public transport, walking and cycling.

A13 Providing high quality open spaces and a range of recreational facilities.

A14 Conserving the environmental heritage of Canada Bay.

A15 Promoting ecologically sustainable development.

A16 Supporting foreshore areas for parkland open space that balances the need for ecological restoration with functional open space required for public foreshore access.

A17 Promoting a high level of building sustainability performance through energy and water efficiency.

A18 Promoting waste minimisation in building construction and operation.

A19 Promoting pedestrian and cycling network through integrated circulation and wayfinding which will provide safe and enjoyable access to facilities and open space.

Economic sustainability achieved by:

A20 Promoting an appropriate mix of uses that will enhance the role of Rhodes as a Specialised Centre for employment growth.

A21 Promoting a dwelling mix that supports demand for housing that is affordable whilst providing housing choice for a range of household types.

Social sustainability achieved by:

A22 Providing community facilities of an appropriate use and size to cater to the demands of a growing population.

A23 Providing an adequate amount of public open spaces designed to suit the needs of the growing population for a variety of passive and active recreational needs.

Objectives

The DCP is based on the following objectives in support of Canada Bay Local Environment Plan 2013 (as amended).

Create a specific identify for Rhodes Peninsula

O1 Optimise the waterfront location by providing continuous public access to the foreshore that links adjoining parks.

O2 Substantially retain the alignment of existing seawalls.

O3 Design public open spaces that create a special amenity and passive and active recreation opportunities, which are safe and promote ease of pedestrian movement.

O4 Retain and enhance opportunities for views from the public domain, including views to the water from along the ridge, to Homebush Bay and Brays Bay looking east and west along Mary Street, west along Parramatta River from the point, and to the Millennium Markers and Olympic Park.

O5 Preserve the cultural heritage value of the place by retaining wherever practical existing streets, established stands of trees, site benching, prereclamation shoreline and the flat terrain of the reclaimed area.

O6 Reflect and emphasis the topography with lower buildings at the foreshore and greater height to the east of Shoreline Drive.

O7 Create a visible identity to Rhodes West through the design of high quality tower buildings of slender design.

Provide a street layout that maximises connections to all surrounding areas and creates a high quality public domain that is permeable and safe

O8 Integrate the east and west parts of the Rhodes Peninsula and improve pedestrian and cycle links to Concord West.

O9 Build the Homebush Bay Bridge to provide connectivity for pedestrians and public transport between Rhodes Peninsula and Wentworth Point.

O10 Provide for future flexibility by maximising connections to adjoining areas from Mill Park in the north, across the rail line in the east, and to Oulton Avenue in the south.

O11 Create pedestrian and cycle connections from Bicentennial Park and Millennium Parklands in the south to the Leeds Street boat ramp in the north via streets and the foreshore reserve;

O12 Improve pedestrian connections to the north by providing stairs from Mill Park to John Whitton Bridge and at the ferry wharf at Meadowbank;

O13 Locate streets to enhance views to Homebush Bay, Parramatta River and associated open spaces, and ensure a view to water, open space or sky at the end of every street, to the maximum extent possible.

O14 Establish a continuous network for vehicles, pedestrians and throughout the peninsula, close to the Railway Station, and minimise public dead end streets;

O15 Create pedestrian permeability by providing through block pedestrian access;

O16 Establish a hierarchy of streets that distinguishes between major streets for through traffic and public transport, and local streets to assist orientation and improve legibility;

O17 Create a safe and vibrant public domain by designing streets as social spaces that incorporate a mix of transport modes, including pedestrians, cyclists, moving and parked vehicles;

O18 Give pedestrians and cyclists priority in residential areas by means such as pedestrian through block connections, footpaths, kerb ramps, street trees, minimising vehicle crossings of footpaths, and designing minor carriageways for slow vehicle speeds to deter through traffic.

Create a range of public open spaces that complement and supplement the existing local and regional park network, and that maximise connections to all surrounding areas

O19 Contribute to the regional network by providing continuous public open space along the foreshore that is publicly accessible, connecting to Bicentennial Park and the Blaxland Road Boat Ramp and pedestrian/cycleway connections on John Whitton Bridge.

O20 Contribute to the regional network by constructing the proposed Homebush Bay Bridge between Rhodes Peninsula and Wentworth Point creating the Homebush Bay Loop.

O21 Provide a point park that extends the typology of point parks in the harbour and along the Parramatta River foreshores creating the Parramatta River Loop.

O22 Provide an active Foreshore Park as the major public activity point along the foreshore, between Mary and Gauthorpe Streets.

O23 Provide a conservation park which conserves the existing mangroves along the foreshore to the south.

O24 Provide a linear reserve for local recreation including the three major foreshore parks, incorporating planting to extend habitat, enhancing the view of development from the reserve and Homebush Bay, and providing privacy to park front development.

O25 Provide neighbourhood open space as a gathering point in the mixed use zone close to the railway station, near the junction of the major pedestrian routes to the foreshore and retail complex.

O26 Provide local parks along Shoreline Drive to enhance the amenity of this primary through street, which have quality landscaping, trees for shade and areas for supervised children's play.

O27 Provide strategically positioned local parks and squares in the B4 - Mixed Use and R4 - Residential Zones to provide places for people to meet, gather, sit, actively use or relax.

O28 Maximise public pedestrian and cycle access to all public open spaces.

O29 Create high quality landscaped parks that include deep soil landscape areas, that allow planting of large trees.

Integrate best practice ESD principles in the design and management of the public and private domain

O30 Minimise energy consumption by creating low maintenance environments and encouraging green supply electricity.

O31 Minimise resource deletion by selecting environmentally sustainable building materials in the public and private domain.

O32 Control the quality of water entering Homebush Bay by integrating stormwater management strategies.

O33 Conserve water by maximising opportunities for infiltration of runoff, reducing irrigation requirements through the planting of locally indigenous species, and using water saving devices in public amenities.

O34 Control the potential impact on air quality by minimising car dependency, promoting pedestrian and cyclist movement throughout the site and encouraging the use of public transport.

O35 Reduce energy consumption by encouraging non-motorised forms of transport.

Optimise the use of public transport and reduce travel demand

O36 Provide a mix of residential, community, employment, local and district retail activities within the Rhodes Peninsula.

O37 Concentrate public accessible facilities, commercial development and the entrance to retail facilities with direct and convenient access to Rhodes Station, within 500m of the station entrance.

O38 Maximise access to Rhodes Station by creating a permeable layout of streets, pedestrian arcades and walkways, and create an appropriate setting in terms of pedestrian access, facilities and modal change.

O39 Create a primary retail/commercial street linking Mary Street and a retail centre adjacent to Homebush Bay Drive.

O40 Enable local shops and home based business in residential areas, along Walker Street, within and adjacent the Foreshore Park to complement community facilities, and fronting onto local parks.

O41 Minimise public and private car parking in all developments.

O42 Accommodate a bus route through Rhodes West in the design of streets and connecting bus routes to Wentworth Point over the Homebush Bay Bridge.

O43 Promote cycling as a sustainable alternative to the automobile for commuting as well as for local travel through the provision of an integrated on-road and off-road cycleway network and the provision of bicycle parking within private developments as well as at key activity places in the public domain including Rhodes Railway Station.

O44 Minimise car dependence by encouraging car sharing by providing dedicated on-street spaces for car share companies to use.

Enliven the public domain and encourage walking by distributing active uses, including retail and communal facilities, at street level, particularly along major streets in the mixed use zone

O45 Consolidate mixed uses including publicly accessible facilities, local retail and commercial adjoining Rhodes Railway Station.

O46 Encourage active ground floor uses on primary streets, in particular along the major spine connecting Rhodes Station and the retail centre adjacent to Homebush Bay Drive.

O47 Encourage activities in, and surveillance of, all public areas.

O48 Provide publicly accessible facilities and small scale retailing adjoining and opposite parks and squares, including facilities that accommodate or are ancillary to recreational opportunities relating to the use of the public domain.

Embody ESD principles into the design of buildings and external spaces

O49 Create street blocks that facilitate subdivision and building orientation to the north, east and west, provide excellent address to Homebush Bay, the foreshore parks and local parks and that follow the design guidelines within SEPP65.

O50 Encourage the design of long life buildings that are durable and designed to accommodate adaptation to future uses, and buildings that innovatively combine ecological, social, cultural and economic objectives.

O51 Conserve energy by maximising the use of natural lighting and ventilation, passive heating and cooling, energy efficient hot water heating and low energy lighting and appliances.

O52 Minimise resource depletion by the selection of environmentally sustainable building materials.

O53 Providing on site facilities for composting, recycling and bulky goods.

O54 Conserve water by matching water quality with its intended use and using water saving devices.

O55 Conserve water by connecting Rhodes West to the water conservation infrastructure known as WRAMS at Sydney Olympic Park, if available.

O56 Maximise water quality by implementing soil erosion and sedimentation control measures during remediation and construction phases, maximising opportunities for infiltration of stormwater, and minimising nutrients and pollution in urban runoff.

O57 Control the potential impact on air quality by minimising reliance on cars, provision of bicycle parking within the basement and providing information to respective residents about the transportation alternatives to private motor vehicles, requiring car share arrangements to integrate into developments and the public domain and the continuance of the reduced on-site parking requirements for private development.

O58 Reduce landfill by:

- » Minimising the generation of waste;
- » Recycling 80% of weight of construction waste.

Create a model suburb characterised by high quality architecture, landscape architecture, and urban and environmental design which enhances the locality

O59 Promote a high quality of architectural and landscape design, to create a strong identity for all new development.

O60 Encourage design excellence in architectural and landscape design and follow the design guidelines within SEPP65.

O61 Create an architectural character specific to urban location, public domain interface and landscape setting.

O62 Encourage built form that creates a positive urban edge to streets and public open spaces and the foreshore of Homebush Bay.

O63 Encourage built form that optimises sun access to new and existing streets and public open spaces.

O64 Minimise the bulk of tower and tall buildings to protect amenity of adjoining residential areas and parklands.

O65 Encourage built form that has articulated facades to create visually interesting building forms and to assist in breaking up building bulk.

O66 Create private internal and external environments that achieve a high level of amenity to building occupants and neighbours and that create pleasant streetscapes.

Provide workplace and housing choice through a variety of building types to cater for a diverse community

O67 Provide a variety of building types, and encourage flexible living and working accommodation.

O68 Accommodate the needs of people with mobility impairment, including young children in prams and the elderly by providing accessible housing.

O69 Ensure that non-residential activities do not detract from residential amenity.

Provide well connected private external spaces that are well integrated with the buildings

O70 Design communal landscape spaces to be useable and easily accessible from adjoining buildings, and that provide a pleasant and comfortable environment;

O71 Provide residential front gardens to dwellings that are set back from the street edge.

Land covered by this DCP

This plan applies to the precinct known as Rhodes West, being the precinct generally bounded by the main Northern Rail Line, Outlon Avenue (near Homebush Bay Drive), Homebush Bay and Parramatta River as identified in Figure K17-2 Rhodes West Precinct Plan.

Structure of the DCP

The DCP comprises four main sections:

- Section K17.1 Introduction
- Section K17.2 Framework Plan – sets out the urban design structure and principles of the DCP
- Section K17.3 General controls - provides the controls for public and private domain that apply to all development at Rhodes West
- Section K17.4 Site-specific controls – provides the specific controls that apply to the remaining development sites within each of the Precincts

K17.2 Framework Plan

Urban design and place making principles

The Framework Plan at Figure K17-3 Rhodes West Framework Plan illustrates the overall urban design framework for Rhodes West. This DCP has been prepared making regard to the following urban design and place making principles:

(a) Provide a stronger identity for Rhodes West to enable it to achieve its wider metropolitan potential as a Specialised Centre, particularly for employment generating activities by:

- Establishing a visually interesting and appealing skyline of tower buildings that display high architectural design quality in their slender form as well as detailed articulation and design.
- Designing high quality public open spaces that encourage people to gather, mingle, and traverse. Achieved in the alignment and form of squares and parks that recognise pedestrian desire lines, the framing of public spaces with appropriately scaled built form and in the achievement of excellence in urban design and landscape architecture. Refer to Figure K17-4 Rhodes West Open Space Plan.
- Creating interesting places that people want to visit and that have an appropriate mix of uses that activate and give address to streets and open spaces.

(b) Create focal points with different levels of activity that build on the activity areas that currently exist. Particularly at the Shopping Centre along Rider Boulevard and at the corner of Mary Street and Rider Boulevard adjacent the Rhodes Station. Active recreation spaces include the following:

- Town Square and commercial and retail uses close to the Rhodes Station
- Central Park
- Waterfront activity incorporating community facility, cafes and restaurants
- Shoreline Drive North Park
- Permanent and flexible uses around a mid-block oval plaza and laneways in Station Gateway West (Precinct D)
- New developed Recreation Centre along Gauthorpe Street between Marquet Street and Walker Street
- Community facility at the foreshore

(c) Promote visual connectivity along streets and through development sites to key public domain areas within Rhodes West, and to more distant water views through the following:

- Vehicle, pedestrian, and cyclist connections to align with key views and vistas
- Enhance east west view corridors along streets through greater building setbacks
- Pedestrian connections through Precinct B are to align with a diagonal vista from the elevated location of Walker Street to the extension of Marquet Street (west of Shoreline Drive)
- Terminate north and south views along Shoreline Drive with a tower building

(d) Create attractive streets for people to use through the following means:

- Provide non-residential uses including shops, commercial offices, cafes and restaurants, at activity nodes that activate street frontages where there are higher levels of pedestrian activity
- Planting street trees to provide shade and to soften the built form of adjoining developments
- Introducing building setbacks to provide for ground level front gardens of residential buildings
- Introduce a change in level between the public domain and a residential dwelling and front fencing to provide privacy and to allow surveillance of the public domain
- Create laneways through key peninsula blocks to introduce pedestrian dedicated outdoor areas to create connections and to provide variety in the public domain

(e) Demonstrate high quality architectural design of buildings through the following:

- Design building forms to address and define the public domain
- Reiterate the curved shape of Shoreline Drive in the associated built form to create a visually interesting street
- Cluster tower buildings between Shoreline Drive and Walker Street and close to the railway station. Tower buildings are to be setback from Walker Street and Shoreline Drive with some intervening development to maintain the effect of a street wall, however, without a continuous wall effect
- Stagger buildings to avoid a row of buildings along the ridgeline and vary the height of buildings from foreshore to the ridgeline
- Buildings that are slender and slimline in form and that are highly articulated in their built form and facade treatments are sought
- Tower buildings are to define key street frontages and urban corners

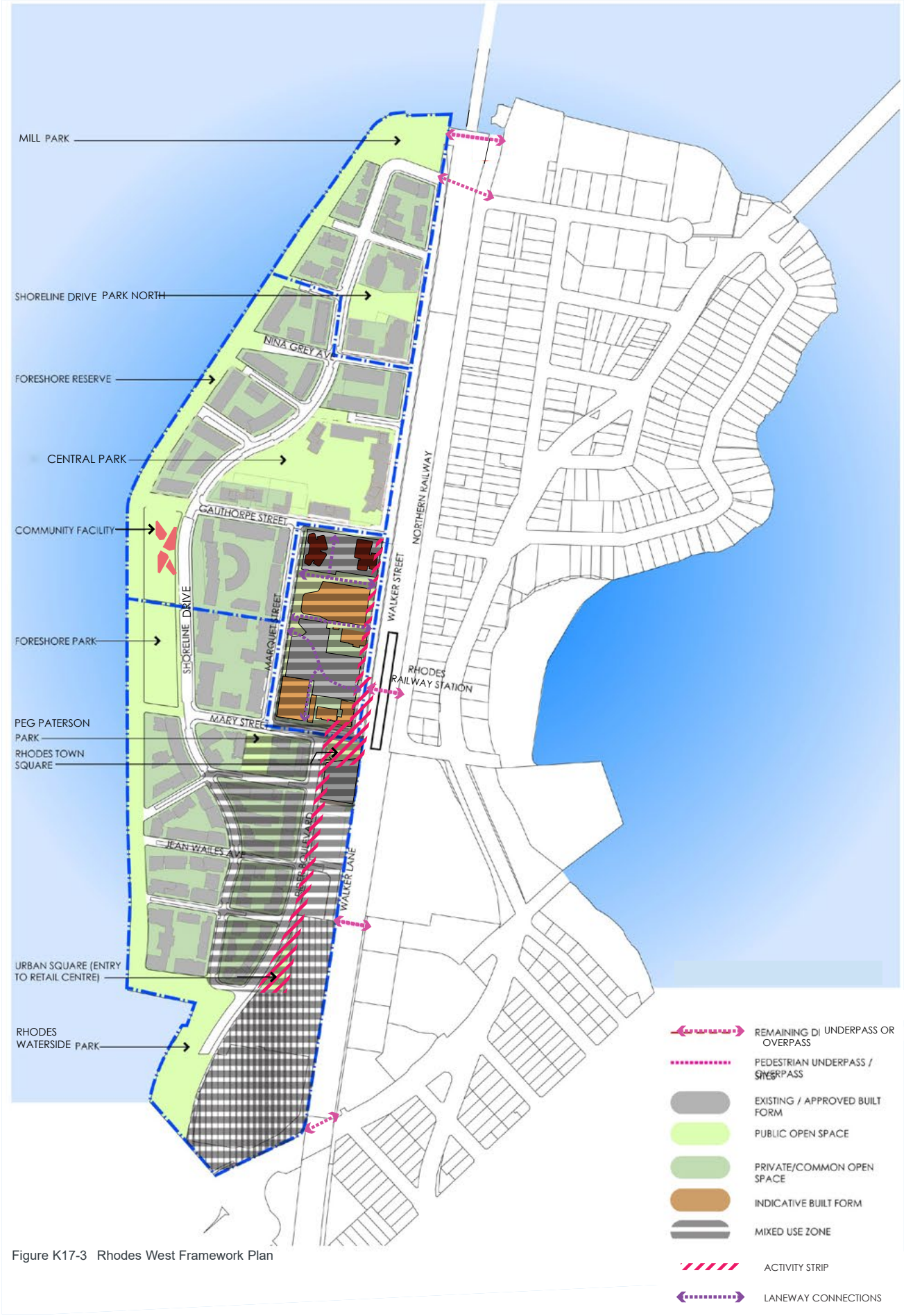


Figure K17-3 Rhodes West Framework Plan



Figure K17-4 Rhodes West Open Space Plan
Source: Rhodes Peninsula 'Frontdoor2Foreshore, Open Space Masterplan

K17.3 General controls

Introduction

This Section sets out the general planning objectives and controls that apply to Rhodes West. These controls are to be read and applied in conjunction with the precinct specific controls in *Section K17.4 Site-specific controls*.

Development Controls are provided for the:

- Public domain
- Private domain

A short description of the intent of the controls is provided and where relevant controls are illustrated with diagrams and images of built projects demonstrating good practice.

A. Public domain

A.1 Pedestrian network and amenity

Continuity - Promoting pedestrian access is central to creating a high quality public domain. Encouraging pedestrian access reduces car dependency, promotes equal access and increases opportunities for social exchange and community life. Continuous comfortable and safe pedestrian access should be provided throughout Rhodes West and should link all streets, parks, residences, shops, offices, public transport stops and major pedestrian routes in adjoining areas. Refer to Figure K17-5 Rhodes West Public Domain Plan.

Comfort, convenience and appearance - Pedestrian routes need to be as direct as possible and comfortable. Allowing appropriate levels of sunlight, and capturing breezes. Correct orientation and appropriate adjoining building height improves their quality, as does the provision of shade and weather protection. Pavement treatments that clearly define pedestrian areas and level of priority should be used, especially where pedestrian routes and vehicle routes crossover at driveways and pedestrian crossings. Well designed and well constructed pedestrian areas encourage their use. It is essential that all pedestrian areas are clearly identified as public areas.

Security - An integrated approach can improve actual and perceived personal security in pedestrian areas. Pedestrian routes should be continuous and without dead ends.

Preferably, pedestrian routes should be part of the general street system, with vehicular traffic providing a level of passive surveillance. They should be overlooked from adjoining buildings, have clear lines of sight and be without obstacles like shrubs and bulky street furniture that can provide hiding places. Pedestrian routes with high night time use should be well lit and directed along more trafficked streets that have busy adjoining uses.

Access - Pedestrian routes should be designed to be accessible to everyone, including people with mobility impairments. They should offer a continuous path of unimpeded travel where possible, or include areas without steps and steep grades.

Continuity

Controls	
C1.	Provide a continuous pedestrian network through the streets, parks and public rights of way as set out in the Framework Plan.
C2.	Connect to the regional pedestrian network by linking to the Bicentennial Park path system at the southern end of the peninsula, and to Blaxland Road to the north.
C3.	Supplement connections to the street system of the east side of Rhodes Peninsula, through links at Walker Street rail underpass, the retail area and Oulton Avenue.
C4.	Extend pedestrian access to the south of Walker Street to improve connections to Homebush Bay Drive, Liberty Grove, Concord West and residential areas to the east.
C5.	Provide links to Meadowbank Park and the ferry wharf via the pedestrian link across John Whitton Bridge.
C6.	Allow for the pedestrian/cycleway bridge to Homebush Bay West (Wentworth Point) that lands along the alignment of Gauthorpe Street at the Foreshore Park.
C7.	Provide pedestrian amenity lighting to meet Australian Standard.
C8.	Implement CCTV surveillance to promote security and safety.

Comfort

Controls	
C9.	Intersection and crossing design should favour pedestrian convenience and safety. Local pedestrian crossings should link major destinations and areas of intense pedestrian activity.
C10.	Provide a paved footpath to both sides of every street.
C11.	Separate pedestrian and vehicular traffic through use of a formed vertical kerb between the footpath and the carriageway.
C12.	Pavement width should allow for comfortable walking, unimpeded by obstacles. The placement of trees, street furniture and signage should provide for amenity without causing clutter.
C13.	Circulating pedestrian pathways is to be 3.0m wide.
C14.	Street furniture, trees and light poles are allowed within the zone provided minimum unobstructed width of 2.4m is maintained for pedestrian.

Appearance

Controls	
C15.	Avoid ambiguity in the design of public spaces and secondary streets, particularly at parks, entrances and areas with a strong built edge and residential presence.
C16.	Access to the foreshore must be open and unambiguous, particularly via the secondary streets and at the entrance / exit points to the foreshore linear park. Avoid the use of walls and gates at these entrances.

Security

Controls	
C17.	Minimise pedestrian areas with limited surveillance due to visual or physical access or distance from buildings and / or passing traffic.
C18.	Provide quality of lighting in areas of concentrated car parking, pedestrian/ vehicle laneways, and at the interface between buildings and streets in commercial and retail areas.
C19.	Identify safe night time pathways through good lighting, maximum casual surveillance and minimal concealment opportunities.
C20.	Front fences and walls along street frontages should use visually permeable materials and treatments. Where solid walls or fences are proposed, these should be limited to 1m in height.
C21.	Provide safety provision in accordance with CPTED - ‘Safer by Design’ principles. The safety requirements include provisions in relation to: • Lighting, CCTV, laneway vehicular access management, letterbox security, overbridge design, visual openness, basement car park planning, emergency service access and directional signage.

Equal Access

Controls	
C22.	Integrate design for equal access into the design of streets and open spaces. Design of the public domain should comply with the Commonwealth Disability Discrimination Act. It should incorporate requirements set out in AS 1428, as set out in the City of Canada Bay Council Development Control Plan 2013 – Appendix A: Access and the Canada Bay Standard Conditions of Consent.
C23.	Provide kerb ramps at all intersections, with pedestrian refuges at wide or busy streets.

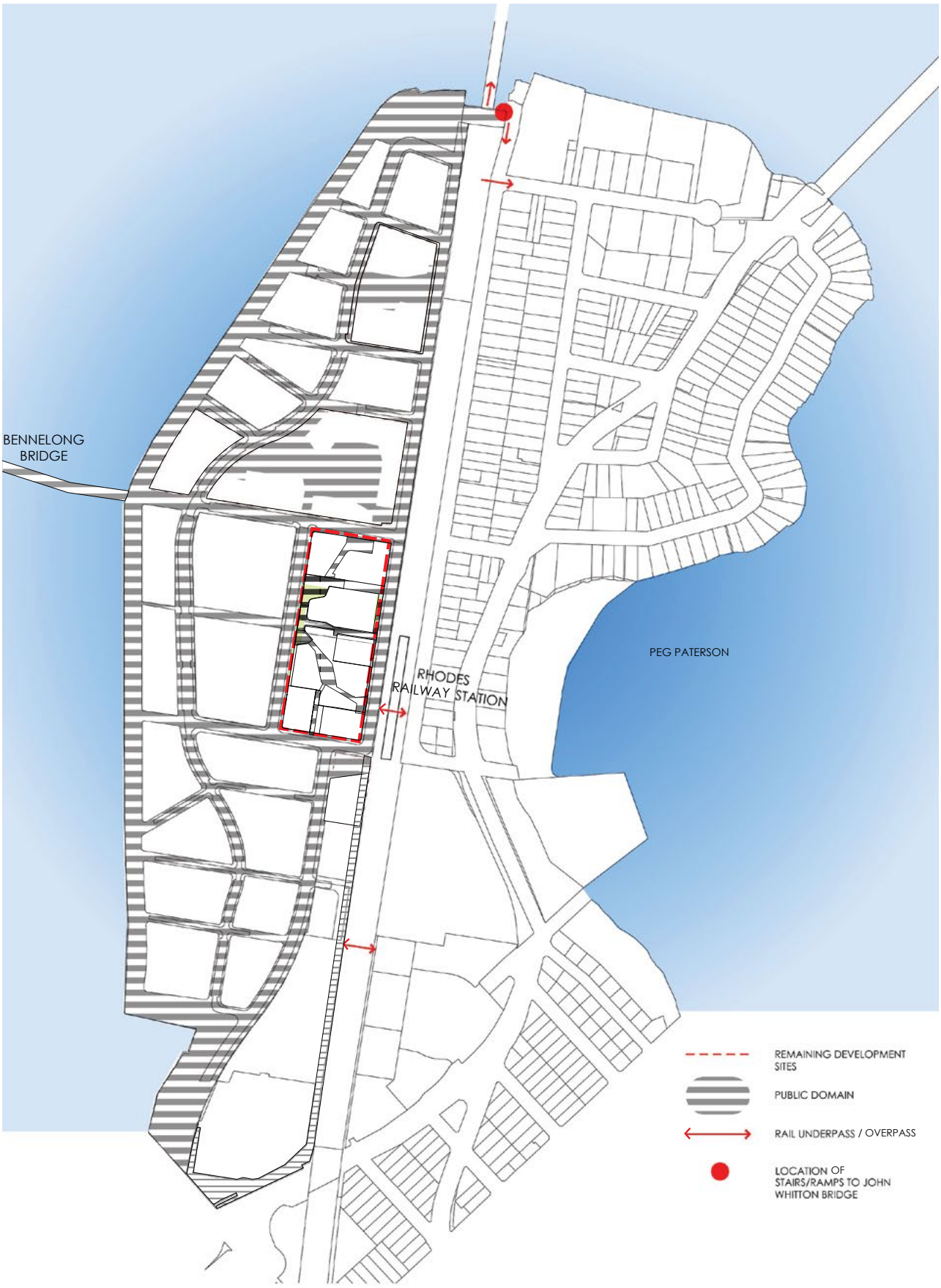


Figure K17-5 Rhodes West Public Domain Plan

A.2 Cycle strategy

A well designed cycle network provides recreational opportunities and reduces car dependency by providing alternative means of transport. All public streets and public rights of way should be designed to encourage cycle use. Dedicated cycle lanes are to be provided in two areas – where additional safety is required in the more heavily trafficked Walker Street, and as a predominantly recreational route along Foreshore Reserve. Both these routes provide connections to regional cycleways, and to major public recreation areas.

Safe and convenient cycle access is also dependent on provision of intersections and crossings that favour cyclists along the dedicated cycle routes, and the provision of cycle lockup facilities at common destinations such as stations, schools, retail areas, residences and work places.

Cycle routes that are illustrated in Figure K17-6 Rhodes West Cycle Strategy should be overlooked from adjoining buildings, have clear lines of sight and uninterrupted path of travel, be well lit, sign posted and protected from high winds. Recreational cycleways should be attractive and made interesting through appropriate location and detailed design.

Controls	
C1.	Provide a cycle network through the public streets and the foreshore park as set out in the Framework Plan.
C2.	Connect to the regional cycleway, and improve access to the pedestrian / cycleway at John Whitton Bridge and the new Homebush Bay Bridge.
C3.	Provide commuter cycle lanes along Walker Street, from Mary Street to the underpass at the northern end of the peninsula, at a minimum width of 1.4m.
C4.	Provide a recreational cycle path through the Foreshore Reserve, which also connects to the regional cycleway at both ends. The recreational cycleway continues under John Whitton Bridge to the stairs and ramps on the eastern side of the bridge. Refer to the Public Domain Technical Manual for standards.
C5.	Design intersections and crossings along dedicated cycle routes to favour cyclist's safety and convenience.
C6.	Provide lockable bicycle storage at Rhodes Station, the retail centre, and in publicly accessible facilities. Refer Photo K17-1.
C7.	Separate cycle and pedestrian routes through the Foreshore Reserve.
C8.	Design cycle paths, cycle parking and end of trip facilities at least to the minimum design standards set out by Austroads. Refer Photo K17-2.
C9.	Bicycle parking is to be provided at the station.



Photo K17-1 Rhodes Railway Station



Photo K17-2 Cycle Parking Facility

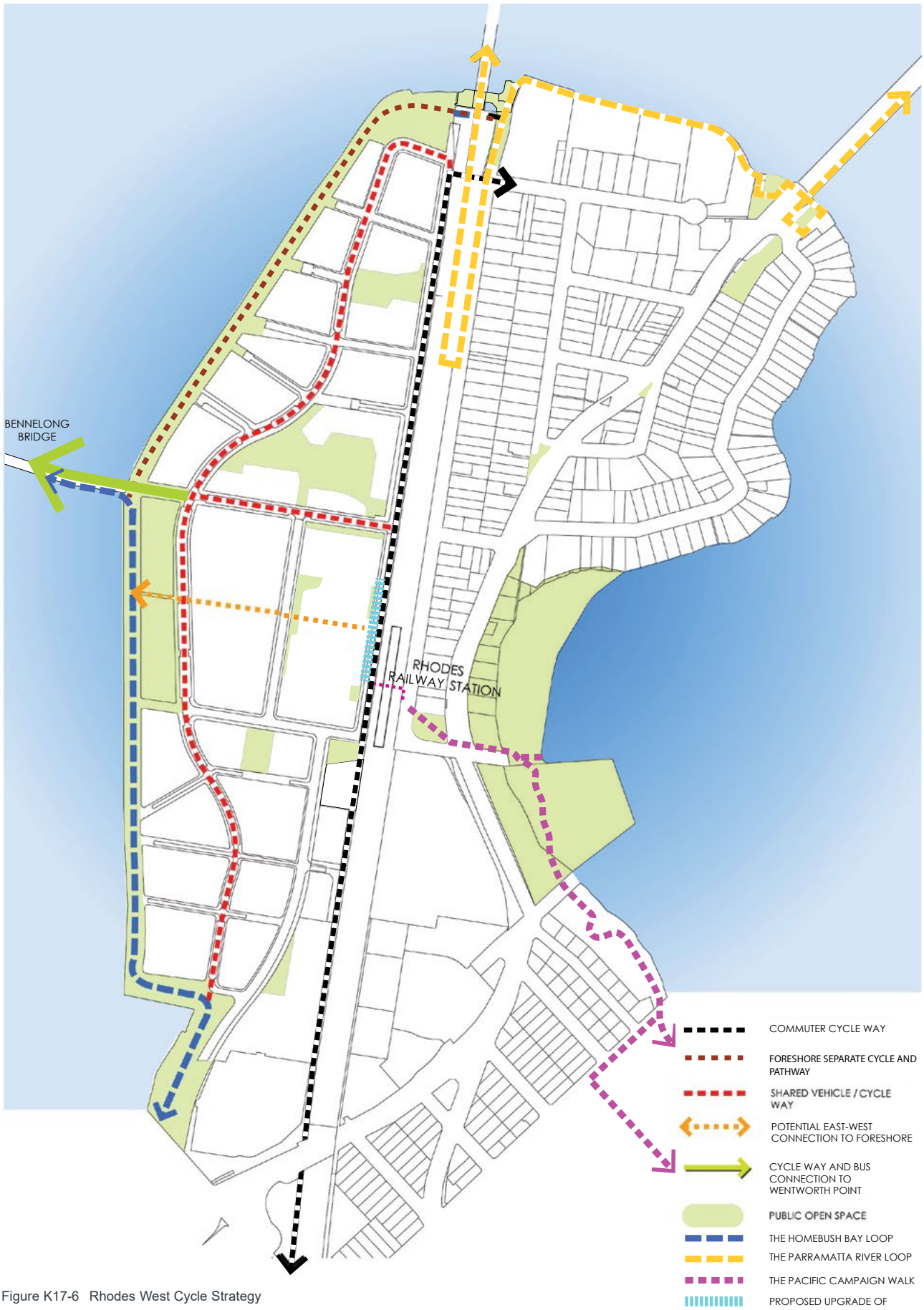


Figure K17-6 Rhodes West Cycle Strategy

A.3 Sustainable transport infrastructure

Rhodes Station provides the opportunity to design an integrated neighbourhood that promotes public transport use. Access to public transport decreases car dependency and provides a means of travel for people without car availability. A convenient and safe pedestrian network is central to encouraging public transport use. Access for less abled people, provision of commuter parking for cycles and vehicles, and good interchange between modes and also promotes higher levels of uptake. The rail and bus routes are illustrated in Figure K17-7 Rhodes West Public Transport Plan.

Controls	
C1.	Provide convenient pedestrian and cycle connections to Rhodes Station, bus stops on Concord Road, and Meadowbank Ferry Wharf.
C2.	Encourage interchange between public transport modes.
C3.	Promote ease of access to the station through a permeable street network.
C4.	Locate bus stops at activity nodes including the retail centre, and also close to publicly accessible facilities.
C5.	Bus stops and taxi ranks are to be provided with good lighting, shelters / seating and route / schedule information.
C6.	Public bicycle parking facilities are to be located at public open spaces, with convenient access to commuter and recreational cycleways throughout Rhodes West.

A.4 Vehicle circulation and parking

Vehicular routes should provide convenient access to and between peninsula developments. Vehicular access should be designed with consideration of road functional hierarchy, pedestrian activity patterns and safety. On-street parking is to be provided generally throughout, to add life to the streets. Parking controls should reflect the requirements of land uses fronting streets.

Controls	
C1.	Promote permeability for vehicles, pedestrians and cyclists and a spread of traffic throughout the peninsula by adopting the street layout shown in the Framework Plan.
C2.	Access to private vehicle parking in developments is restricted in the locations shown in Figure K17-12 Rhodes West Vehicle Access Restrictions.
C3.	To promote the shared use of private vehicles, to reduce parking demand and to minimise traffic generation, developments exceeding 200 dwellings are to allocate one car space in a convenient location on the street frontage for use by a car share company. One additional car share space is to be allocated for each additional 300 dwellings.
C4.	Applicants are to provide adequate signage on behalf of the car share company to clearly advertise the provision.
C5.	Liaison with TfNSW regarding the integration of bus services within the streetscape.
C6.	Bollards used as vehicle barriers shall meet relevant Australian standard to withstand the impact.



Figure K17-7 Rhodes West Public Transport Plan

A.5 Landscape

Landscape treatment can provide amenity, improve the legibility of the urban environment, reinforce the structure of the public domain, enhance a 'sense of place' and define different landscape characters. Tree planting in particular will affect the visual quality and amenity of the public domain, and create a sense of green 'fingers of landscape' extending from the river into the site.

A broad framework for the landscaping of streets and parks is proposed below. This will contribute to a consistency of character at Rhodes West. The strategy responds to:

- The strong tradition of street planting in the Canada Bay Local Government Area;
- Pre-existing indigenous landscapes, both ridge and riparian, to emphasise the relationship of the public domain framework to landform and landscape;
- Retention of existing trees wherever possible and where they provide particular amenity, or reinforce existing street patterns; and
- Provision of appropriate amenity, including sun and shade, along streets.

Controls	
C1.	Street tree selection for Rhodes West is to follow the current approvals for civil infrastructure works.
C2.	Retain, wherever possible, existing trees in the following areas: • Mary Street and the extension of Mary Street to the foreshore. • East west stand of trees near the mangroves. • Along the eastern edge of Walker Street and the extension of Walker Street to the south.
C3.	Ensure that appropriate species are selected to suit streetscape conditions including, street width, building height and setback, orientation and views.
C4.	Create conditions favourable to the planting and long term health of trees in the design and construction of streets.
C5.	Species and spacing should be consistent within blocks.
C6.	Establish a riparian zone along the foreshore, with appropriate tree, shrub and groundcover species.
C7.	Provide visual openness in accordance with CPTED - 'Safer by Design' principles considering the placement of landscaping.

A.6 Street furniture, paving and lighting

The design and construction of the public domain can reinforce important site characteristics and contribute to the Rhodes West identity. A number of public domain conditions will be established by the development requiring particular treatments. Each part of the public domain has an individual character and function that should be emphasised through design, however continuity throughout the entire area is paramount.

Controls	
C1.	Design and build the streets in accordance with the Canada Bay Engineering Requirements for Development.
C2.	Use the range of standards for furniture, lighting and signage set out in the Canada Bay Engineering Requirements for Development.
C3.	Provide safety provision in accordance with CPTED - 'Safer by Design' principles considering all implemented street furniture, paving and lighting.

Lighting

Controls	
C4.	Establish a hierarchy of lighting levels based on the civic significance of the street and the perceived threat of crime. Walker Street as a 'spine' created by the railway line should have the highest level of illumination, along with the civic and urban streets that link Walker Street with the retail centre and the foreshore.
C5.	Provide a level of lighting for streets and parks that enhances security and legibility, while minimising impact on residential dwellings.
C6.	Coordinate and standardise street lighting throughout the development.
C7.	In riparian and conservation areas additional care should be taken to ensure that light does not interfere with animal habitats.

Materials

Controls	
C8.	For parks establish a simple palette of materials that: • Reflects the streetscape palette in the Canada Bay Engineering Requirements for Development; • Unifies the range of spaces within the public domain; • Reinforces hierarchies and details within the spaces; and • Can be used in a variety of ways to allow for variation to suit local conditions.

Paving

Controls	
C9.	Generally paving is to provide a simple and subdued ground plane, that creates a background to buildings and streetscape elements. Accent paving should only be used on retail and commercial streets, in key public places and in parks.

Street Furniture

Controls	
C10.	Utilise simple, robust elements that are durable and fit for their purpose. The range of elements should be coordinated for streets and for parks, and relate to the character and function of these spaces.
C11.	Placement of furniture should provide an acceptable level of amenity, without creating clutter or obstruction.

Signage

Controls	
C12.	Locate street name signs at intersections, wall mounted on buildings where possible to reduce clutter.
C13.	Consolidate traffic signs as far as possible, to reduce clutter.
C14.	No private identification sign is permitted within the public right of way.
C15.	Public access rights are to be clearly indicated for public space and, where relevant, over publicly accessible private land.
C16.	Include signage from the Parramatta River Foreshore Signage Manual, as outlined in the Rhodes Peninsula Domain Manual.

A.7 Infrastructure and water management

A carefully planned system of services, integrated with streetscape design, can reduce maintenance time, damage and repair costs and contribute positively to the quality of the public domain. Measures for controlling and improving the quality of stormwater entering the Parramatta River should be integrated into the design of streets and parks, through engineering structures, and using best practice techniques.

Controls	
C1.	Integrate services design with the design of all new streets and parks with consideration of the following: • Retaining existing mature trees; • Creating optimum conditions for new planting; and • Allowing ease of access to service corridors. • Streetscaping /landscaping and furnishings should not obstruct driver sightlines to other road users, regulatory signposting, traffic signals etc. Particular care should be taken to ensure appropriate selection and placement of landscaping/furnishings adjacent to intersections, driveways and pedestrian crossing facilities.
C2.	Locate all new services underground, within a consolidated strip adjacent to the kerb line. Where possible, new services should occupy a single services corridor, accessible through a single access cover.
C3.	Power supply is to be installed in underground format. Street lights must be installed in the precinct to ensure that the precinct is adequately lit to the following standards; • Walker Street – P1 • Marquet street, Mary street and Gauthope street – P2 • Through site link – PX2
C4.	Multi-Function Poles shall be provided with optic fibre connections to facilitate future CCTV, WiFi and LiFi installations for the community where required.
C5.	Service access covers should relate to the geometry and materiality of paving design.
C6.	Utilise water sensitive urban design strategies and integrate stormwater design in the design of streets and parks.
C7.	Integrate systems to capture and filter low flow stormwater, to improve the quality of discharge to Homebush Bay and Parramatta River.
C8.	Provide litter and sediment traps for stormwater outlets. Engineering structures should be integrated into the design of parks, without the need for extensive screening.

A.8 Public art

Public art is an important cultural activity. It aids legibility of place, enlivens the public domain and can define and reveal a specific identity for Rhodes Peninsula. Public art ranges from the monumental to the temporal. Potential expressions of public art include:

- Free standing objects;
- Artist's involvement in the siting and layout of public spaces such as parks, squares and forecourts;
- Artist's involvement in creating site elements such as paving, street furniture, fountains and building modulation; and
- Festivals and other cultural events.

Themes relevant to the regional and local context of Rhodes include:

- Local geography, flora and fauna;
- Aboriginal heritage;
- Early European history;
- Harbour location; and
- Urban revitalisation.

Public art is encouraged throughout Rhodes West. It is especially appropriate for the parks, public squares and places that are to have layout, design and details that directly respond to location, function and site conditions. Refer Photo K17-3, Photo K17-4 and Photo K17-5.

Controls	
C1.	All public art should be relevant to Rhodes West, be of a scale appropriate to the public realm, and be specific to time and place.
C2.	Development proposals are to include a public art strategy that describes how proposed public art has been selected to suit the historic, environmental and social contexts of Rhodes West and contributes to a unique 'sense of place'.
C3.	Public art is required in Shoreline Park North, Shoreline Park South and Rhodes Town Square.
C4.	Public art is encouraged in other publicly accessible locations such as main entrances, lobbies, street frontages, gardens, walls and rooftops.
C5.	Consult with Council and community groups in the design and execution of public artworks.
C6.	Consider artworks that serve a dual role, as play equipment for children, or informal seating for example.



Photo K17-3 Veil of Trees - Janet Laurence, Sculpture Walk, Art Gallery Road, The Domain, Sydney



Photo K17-4 Tied to Tide - Jennifer Turpin, Pyrmont Point Park, Sydney



Photo K17-5 Public art reflecting industrial heritage, Jacksons Landing waterfront park, Sydney

B. Private domain

This section of the DCP contains general controls for built form within the private domain and generally adopts the controls from the Renewing Rhodes DCP 2000. Additional controls have been included in this DCP where refinements have been made to the Framework Plan.

B.1 Land use

Mixed use zone

Mixed use development can make a significant contribution to the local character, and provide street surveillance and after hours activity.

Controls	
C1.	Design for a mix of uses within buildings by encouraging: • Developments with retail and/ or commercial frontage at street level and commercial premises and / or housing at upper levels; • Flexible design of ground floor apartments to facilitate future change of use, incorporating individual street address, appropriate layout, and adequate floor to floor height; and, • Home based businesses with flexible layouts for business and residential use.
C2.	Create a commercial centre which links to the existing centre on the eastern side of Rhodes Station and to the Rhodes Waterside Shopping Centre by concentrating street level retail / commercial frontage in the following areas: • An activity strip along Walker Street; • Between the station entrance and Mary Street; and • Along the eastern side of Rider Boulevard.
C3.	To activate the residential zone, the preferred location for non-residential uses is nominated in key street frontages and corners, whilst managing environmental impacts on surrounding residents. Refer to Figure K17-8 Rhodes West Mixed Use Zone.
C4.	To achieve high quality living environments: • Ground floor level residential apartments are not permitted in the activity strip, although entrance lobbies to residential development above are encouraged. • Ground floor apartments opposite the activity strip should incorporate sills and balustrades located a minimum 0.5m above finished footpath level for privacy. • Residential development within 50m of Homebush Bay Drive is not permitted, unless measures to ameliorate adverse impacts of noise, pollution and loss of privacy are incorporated. Refer to SEPP (Infrastructure) 2007.

Mixed Use in Station Gateway West (Precinct D)

Controls	
C5.	To ensure development in Precinct D optimises its location close to Rhodes Station and is integrated with development of Rhodes West as a whole, it should incorporate the following provisions: • A 6-8m wide public pedestrian walkway connecting Walker Street, Marquet Street and Shoreline Drive must be created to provide direct access to the foreshore park. For detail refer to B.5-C4. • A honeycomb of publicly accessible through block connections especially to Marquet Street and Rider Boulevard is encouraged, to increase choice of routes, particularly to Rhodes Station and enrich the pedestrian environment. Through block connections include internal and external arcades, and double fronted commercial lobbies and shops. Through block connections achieve surveillance and provide public domain character, supplemented by outdoor areas such as courtyards. Their use should be optimised by providing a legally registered public right of way on the title of the land between the hours of 7am and 7pm daily, excluding public holidays, as a minimum. • Deep soil garden areas and permeable paving should be provided to courtyards within the block, to create a distinctive leafy character and optimise natural infiltration of stormwater. • An active pedestrian oriented environment with high pedestrian amenity should be created around Rhodes Station and surrounding streets. • New public squares and a network of through-site links that enhance access between the foreshore and Rhodes Station.
	• Mixed use buildings that provide high residential amenity complying with the building separation requirements of the LEP. • Active street frontages with non-residential uses including community uses, commercial, retail and cafes / restaurants.



Figure K17-8 Rhodes West Mixed Use Zone

B.2 Built form

The height distribution for buildings at Rhodes West generally follows the topography, ranging from lower buildings at the foreshore to taller buildings east of Shoreline Drive. This distribution maximises opportunities for view sharing, protects the amenity of the foreshore park and controls the impact of new development on the harbour.

The site-specific controls in *Section K17.4* provides detailed guidance on building height, massing and scale for the remaining development parcels at Rhodes West.

Controls	
C1.	The maximum height of development should comply with the Height Map contained in the Canada Bay Local Environment Plan 2013 (as amended) and the maximum heights shown in the site-specific controls of this DCP.
C2.	The maximum Floor Space Ratio (FSR) of development is to be consistent with the FSR map contained in the Canada Bay Local Environment Plan 2013 (as amended).
C3.	Developments are to be consistent with the maximum building envelope plans contained in the site-specific controls in this DCP.



Photo K17-6 Roof forms that are incorporated into the overall building design can add visual interest to the Rhodes West skyline

Internal floor levels

Controls	
C4.	To achieve quality living environments, maximise direct sunlight and allow future adaptability of uses, provide the following minimum heights: • Provide minimum ceiling heights for apartment and mixed use buildings: » Habitable rooms: 2.7m » Non-habitable room: 2.4m » 2 storey apartments: 2.7m for main living area floor and 2.4m for second floor, where its area does not exceed 50% of the apartment area » Attic spaces: 1.8m at edge of room, with a 300 minimum ceiling slope • In mixed use areas: Provide minimum 3.3m height for ground and first floor to promote future flexibility of use.

Architectural roof features

Controls	
C5.	To provide a visually interesting skyline, architectural roof features, as defined in the Canada Bay Local Environment Plan 2013 (as amended), may extend above the maximum building height limit provided they are of high architectural design quality integrated into the overall building design, and do not adversely impact on neighbouring properties in terms of overshadowing and loss of views. Architectural roof features may extend above the maximum height limit of the Height of Buildings Map within the Canada Bay Local Environment Plan 2013 (as amended). Refer Photo K17-6,

Thresholds heights between streets and private domain

Controls	
C6.	To optimise accessibility, provide floor levels to entrances of ground floor retail and commercial uses, that are contiguous with the adjoining footpath level, to the maximum extent practical.
C7.	To protect privacy, elevate ground floor level apartments above adjacent footpath levels – 500mm is suggested as a minimum and 1500mm is suggested as a maximum. This requirement needs to be balanced against the provision of access and adaptability for commercial and retail uses at ground level.

Maximum number of storeys/ height for buildings within parkland open space

Controls	
C8.	To minimise visual impact and optimise views from the private domain, the Community Facility building sited within the Foreshore Park in Precinct B must not be higher than 12m.



Photo K17-7 Variety in building types is required on large sites

B.3 Building bulk

Allow for a mix of building types from low-rise to mid-rise and tower buildings within the development cross section (Refer Photo K17-7). Improve the amenity of living and working environments, and directly promote sustainable practices by:

- Enabling habitable and service rooms to be naturally lit and ventilated;
- Reducing site cover, resulting in increased landscaped areas;
- Permitting views between buildings from the public domain;
- Permitting sunlight between buildings to public spaces;
- Minimising the impact of building bulk on adjoining areas; and
- Creating a silhouette of slender and slimline tower buildings against the sky which is visually consistent with the role of Rhodes as a Specialised Centre.

Retail/ commercial uses

Controls	
C1.	To avoid bulky towers the floor plate of commercial buildings above 4 storeys should not exceed 1,400m^2 including the core.
C2.	For retail and commercial uses in the mixed use zone only, deeper building footprints are permitted up to 4 storeys in height.
C3.	To optimise natural light to work spaces, no point on an office floor above 4 storeys should be more than 12m from a window, excluding the core.
C4.	To allow natural lighting and ventilation at ground and first floor level of deep buildings, courtyards and atria which are open to the sky, are encouraged. For buildings greater than 6 storeys, courtyards and atria should have a minimum width of 8m.

Residential use

Controls	
C5.	To achieve good cross ventilation and access to natural light, the depth of residential buildings up to 9 storeys in height should not exceed 18m from window face to window face.
C6.	The depth of residential buildings greater than 9 storeys should not exceed 18m from window face to window face, and 26m overall including balconies, terraces and the like.
C7.	Should a building exceed the maximum building depths from window face to window face, it needs to be demonstrated that the apartments can achieve acceptable access to natural light and cross ventilation.
C8.	To achieve natural ventilation and daylight, a minimum 60% of all residential apartments within a building should have openings in two or more external walls of different orientation. Single orientation apartments should predominantly face north, east or west.
C9.	A maximum of 15% of apartments in a building may have a single southern aspect (SW-SE).
C10.	To avoid long internal corridors, the number of apartments served by a common lobby should be no more than 8 per floor. Where this cannot be achieved, no more than 12 apartments should be provided off a circulation core on a single level. For buildings of 10 storeys or over, the maximum number of apartments sharing a single lift is 40.
C11.	To achieve high quality living environments, double loaded access corridors are to have outlook, access to sunlight and natural day lighting and preferably be naturally ventilated.



Photo K17-8 Well articulated facades including refinement in window and balcony design

B.4 Setbacks

Street setbacks establish the building line. They are needed to create:

- A territorial threshold between the public street and the private dwelling.
- A buffer to street activity.
- Security, where properly designed to avoid ambiguous public accessible small spaces.
- A landscaped setting for buildings.
- Privacy from the street.
- Environmental amenity to buildings such as access to sunlight and daylight.

Consistent ground level setbacks are needed to provide:

- Increased pedestrian amenity.
- Desirable view corridors and vistas.
- Strong street definition where they are continuous.

Controls	
C1.	Street setbacks should comply with *Section K17.4 Site-specific controls*
C2.	To create an urban character, provide strong street definition, enhance retail activity, and define prominent corners, build to the street edge along and opposite the activity strip in the mixed use zone, and on important corners as nominated in Figure K17-9 Rhodes West Setbacks Plan and as illustrated in Photo K17-9 and Photo K17-14. Non-compliance with these figures will be assessed on a case-by-case basis.
C3.	To create a residential character, comply with 3m street setbacks along north south streets, as nominated in Figure K17-9 Rhodes West Setbacks Plan.
C4.	To achieve adequate separation between buildings for solar access, and to create wide view corridors to the water, that can be landscaped as 'green fingers', a consistent 5m street setback is preferred along east west streets, as nominated in Figure K17-9 Rhodes West Setbacks Plan.
C5.	To minimise the impact of tower buildings on the public domain in terms of wind and to create a human scale at street level buildings greater than 9 storeys in height are to be setback a minimum 10m from the primary street boundaries, except within Station Gateway West (Precinct D), where a minimum of 3m setback is permitted.
C6.	A 2 to 4 storey street wall fronting Rider Boulevard is required to create urban character, to provide strong street definition, and achieve a built form that allows direct sun to streets and reduces the apparent scale of taller buildings. Development above the street wall level should be set back 5m from the street edge.
C7.	Buildings fronting the foreshore with a façade length of up to 18m are to achieve a minimum 3m setback along the reserve.
C8.	To achieve a varied built edge, buildings with a façade length of more than 18m fronting the Foreshore Reserve are to comply with the following controls: • The ends of buildings fronting the Foreshore Reserve (adjacent to east/west streets) are to have a building setback (including balconies) of not less than 10m from the Foreshore Reserve • The bays of the building extending forward of the 10m setback line may extend to no less than 7m from the Foreshore Reserve (not including balconies) • Balconies in the bays of the building extending up to 7m from the Foreshore Reserve shall not extend along the full length of the façade of each bay • The setback of the building fronting the Foreshore Reserve in between the setback described in dot point two above, may extend to no less than 8.8m from the Foreshore inclusive of balconies
C9.	Projecting balconies are permitted forward of the minimum building setback line for a maximum of 50% of the length of the building.



Figure K17-9 Rhodes West Setbacks Plan

B.5 Definition of streets and open spaces

The definition and character of streets is significantly influenced by:

- The proximity of a building to the street, or street setback;
- Consistency of the street setback;
- Continuity of the building frontage;
- Resultant landscape potential; and
- Building height.

The strategy promotes an urban design response specific to each street condition, while creating a coherent identity for the peninsula and also identifying where special amenity can be achieved through variable building setbacks. The definition of streets and open spaces should be read in conjunction with Figure K17-9 Rhodes West Setbacks Plan and *Section K17.4 Site-specific controls*.

Controls	
C1.	To allow buildings to address streets, lots resulting from the subdivision of large blocks, should have at least one frontage to a primary or secondary street.
C2.	To contribute to the hierarchy of different street types and functions, development is required to build to identified street and park setback lines as shown in Figure K17-9 Rhodes West Setbacks Plan.
C3.	To encourage surveillance of the street and communal gardens, orientate primary openings in living areas to the street and rear gardens.
C4.	To provide a public pedestrian walkway connecting Walker Street, Marquet Street and Shoreline Drive with a width of 6-8m subject to performance requirements to accommodate: • Sufficient space to accommodate sufficient clear width, swept path and height for emergency vehicle access as required by the NSW Fire Brigade and NSW Ambulances and other day-to-service vehicles required to maintain the central oval plaza and laneway public domain and as necessary to service businesses. • Planting of mature trees in the laneways and central oval plaza as illustrated in the Public Domain Concept Plan (Context Landscape Design 2014). • Provision of outdoor dining zones associated with cafe, bar and restaurant tenancies. • Projecting shop or other signage. • Laneway vehicular access management in liaison with NSW Police to restrict vehicular access.



Photo K17-9 Example of a building that strongly defines the street corner and street edge

B.6 Building articulation and address

Building articulation refers to the three dimensional modelling of a façade. Refer Photo K17-8, Photo K17-10, Photo K17-12 and Photo K17-13.

Building articulation establishes the:

- Relationship between the building and the street, through the use of entry porches, loggias, balconies, bay windows and the like;
- Environmental amenity, through the use of sun shading devices, noise barriers, privacy screens; and
- Degree of continuity between the interior rooms and outdoor spaces, through the location of balconies, terraces and verandahs.



Photo K17-10 Well articulated facade

Controls	
C1.	Comply with the building envelopes controls in *Section K17.4 Site-specific controls* including building articulation zones. The intention of the building articulation zone is to promote stepping in the general line of the building facades including the line of windows, and balconies to create visually interesting buildings.
C2.	Residential tower buildings greater than 9 storeys in height are to demonstrate a slender and slimline appearance to create a visually interesting skyline. The buildings in Photo K17-11 have a slender and slimline quality.
C3.	Residential tower buildings are to articulate the vertical proportions in their external appearance. Extensive horizontal articulation through the use of solid balustrades is to be avoided as this design strategy tends to result in overly bulky buildings which are neither slender nor slimline.
C4.	Tower buildings greater than 9 storeys, should demonstrate vertical proportions in the articulation of building facades. Photo K17-11 illustrates how vertical elements appropriately accentuate the vertical proportions of a tower building.
C5.	Provide a high degree of articulation. Do not rely on the excessive use of a single type of sun shading to articulate building facades. Louvre type sun shading can add excessively to building bulk when used over large facades areas.



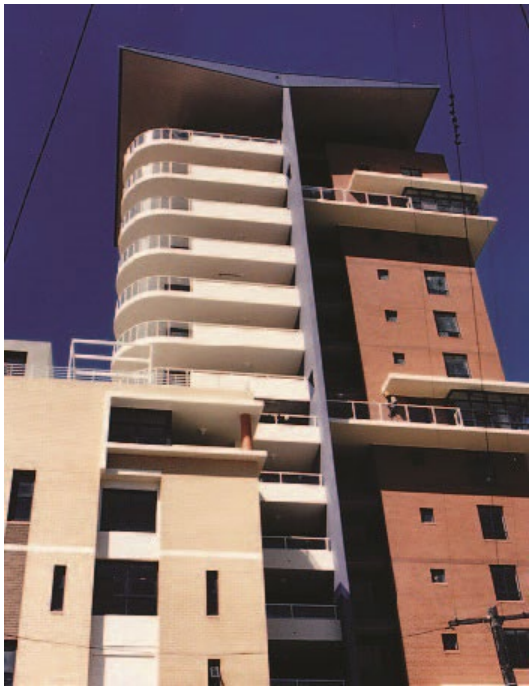


Photo K17-11 Residential tower buildings that have a slender and slimline quality with elements that accentuate vertical proportions



Photo K17-12 Mix of horizontal and vertical elements provides articulation

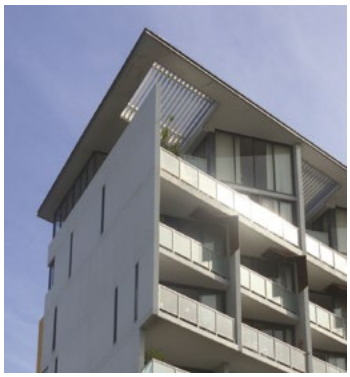


Photo K17-13 Roof form adds to building articulation



Photo K17-14 Principle of curved street geometry reflected in building form suitable for Shoreline Drive

B.7 Diversity of apartment types

A mix of apartment types and sizes is promoted to cater to a variety of socio-economic, age, ethnic and other circumstances. A range of dwelling sizes and types creates a housing mix that will cater to a diverse population and enrich the local character.

This DCP encourages a component of individual duplex, pair and row housing, but recognises that the apartment type is likely to be the predominant housing form on the Rhodes Peninsula.

Apartment typologies can be based on circulation and building section characteristics, which have a significant impact on the quality of air, light, solar access, privacy and outlook to dwellings.

Controls	
C1.	To achieve a mix of dwelling sizes, all residential and mixed-use development should provide a range of dwelling sizes in accordance with the requirements of the Canada Bay Local Environmental Plan.d
C2.	To achieve environmental amenity, all access corridors should have a component of daylight, either at the point of vertical circulation or at the ends of corridors and preferably be naturally ventilated.
C3.	To achieve high quality living environments, cross ventilated apartments are encouraged, including dual aspect apartments.
C4.	To achieve solar access in high density areas where it may be difficult to ensure direct sunlight to the ground floor in midwinter, two-storey apartments are encouraged at ground floor level. This control is not intended to conflict with the provision of accessible housing. Refer Photo K17-15.
C5.	To innovatively combine different apartment types, 'hybrid' buildings are encouraged.
C6.	To optimise liveability for all dwellings, internal and external living areas should be integrated. Noise attenuation for buildings facing the rail line and busy roads
C7.	A noise attenuation zone should be created between habitable rooms facing the noise source, particularly bedrooms, by; • Locating service areas such as circulation, kitchens, laundries, storage and bathrooms to create a noise buffer; • Locating screened balconies or wintergardens to create a noise buffer, and; • Selecting sound isolating materials, including acoustic glazing.
C8.	To protect local residential amenity, building articulation should be designed to minimise external noise reflectivity.
C9.	Buildings adjacent the Northern Railway Line are to consider the provisions of State Environmental Planning Policy (Infrastructure) 2007 and related guideline documents and seek appropriately qualified acoustic engineering advice in relation to the mitigation of rail-related impacts on development.



Photo K17-15 Two level maisonette apartments

B.8 Flexibility

Flexible building design is sensitive to the access requirements of people of all ages and abilities, and provides for a degree of future adjustment to accommodate:

- Changing access needs, such as for occupants with impaired mobility, including young children in prams and the elderly.
- Households of varying sizes, age groups and privacy needs.
- Housing that is easily modified for occupation and visitation by people with disabilities and progressive frailties.
- Home occupation.
- Future changes of use.

Flexible buildings are more functional in the long term because they are suitable for a wider range of inhabitants and can accommodate changing requirements.

Flexible building design improves the quality of the built environment and achieves sustainable practice, by encouraging development designed for durability, flexibility and low energy consumption.

Controls	
C1.	To cater for a wider range of occupants and avoid disability discrimination, the accessibility and adaptability of all buildings should be maximised in all residential and mixed use developments.
C2.	Adaptable housing units are to be designed and constructed to meet the performance requirements and provide the essential features required by AS4299 Adaptable Housing at the minimum rate of 15% of total dwellings. Where the total number of adaptable housing units to be provided is not a whole number, the number is to be rounded up to the next whole number. One accessible parking space is to be provided for each adaptable unit.
C3.	Housing design that provides for a degree of future adjustment of its configuration is encouraged. Consider accommodating: • Variable wall locations • Variable number of bedrooms • Home occupation • Multiple entry points • Adaptable housing • Liveable housing
C4.	To optimise flexibility for future changing uses, windows or skylights should be provided to all habitable rooms and to the maximum number of non-habitable rooms possible.
C5.	The design of commercial space that provides for a degree of future adjustment of its configuration is encouraged. Consider accommodating: • Variable lettable areas; • Multiple service cores; and • Residential uses including home-based business dwellings.

B.9 Visual privacy and building separation

Thoughtful design can ensure that views and outlook are maximised from all dwellings without compromising the visual privacy of the residents or their neighbours.

Privacy between dwellings and the public domain and non residential uses should also be fully considered.

Controls	
C1.	To achieve privacy to private internal and external spaces, consider: • Building separation distance • Appropriate internal room layout • Location and design of windows and balconies • Design of appropriate screening devices and landscaping. Refer Photo K17-26.
C2.	The use of tinted glazing as the sole means of achieving privacy is not permitted.
C3.	To achieve privacy to ground floor level apartments, without compromising surveillance of any adjoining public domain, generally elevate the ground level by a minimum of 0.5m and maximum 1.5m above the adjoining footpath level and provide suitable front walls or fences to front gardens.
C4.	To achieve privacy as well as to provide well spaced buildings for sunlight access and natural ventilation, the following minimum separation between openings of habitable and non-habitable rooms within dwellings must be provided for all buildings up to 20 storeys, in accordance with SEPP 65, Apartment Design Guide: *Up to four storeys/12m* • 12m between habitable rooms / balconies • 9m between habitable and non-habitable rooms • 6m between non-habitable rooms
C5.	Development consent must not be granted to development that results in a building being separated from another building by less than: • for a building higher than 14 storeys but not higher than 20 storeys—24 metres, and • for a building higher than 20 storeys—40 metres. This increased separation has been determined through the Master Planning process in order to exceed conventional standards and deliver best practice for a highly visible, high density site consistent with the Vision.

Refer additionally to SEPP 65, Apartment Design Guide:

- Section 2F Building separation, and
- Section 3F Visual privacy.

B.10 Acoustic privacy

The potential for unwanted noise sources increases in more densely developed areas where there are more people living more closely together. To achieve an appropriate acoustic environment, design consideration must be given to the following:

- Siting of building
- Building planning
- Internal room layout
- Location of private open space
- Location of windows
- Building materials

Controls	
C1.	To reduce the transmission of noise internally, sound insulation requirements between separating floors, ceilings and walls of adjoining dwellings should exceed the Building Code of Australia minimums.
C2.	The siting and design of buildings should minimise the transmission of noise externally, through careful consideration of the layout of internal rooms and external living spaces, design of openings, screens, blade walls, and the like, and choice of materials.
C3.	Design restaurants and cafes to minimise the impact of noise associated with late night operation on nearby residents by using measures such as double glazing, and providing outdoor eating areas under awnings to help contain noise to street level.
C4.	To enable occupants to control internal living environments, at least 25% of double glazed windows to dwellings should be openable.

Refer additionally to SEPP 65, Apartment Design Guide:

- Section 4H Acoustic privacy, and
- Section 4J Noise and pollution

B.11 Solar access and daylight

Solar access to internal and external areas is a major determinant of environmental comfort. Good passive solar design offers financial benefits, by reducing the need for artificial heating and cooling. Glass allows heat in the form of sunlight to enter buildings, yet is a poor insulator of heat. The design of windows and other glazed areas need to consider the environmental impact of heat gain, heat loss and glare, as well as issues of streetscape, privacy, architectural resolution and views.

To the public domain

Controls	
C1.	To create a useable open space network that can be enjoyed by local residents and workers, new development should retain solar access to a minimum of 50% of the area of neighbourhood parks and green spaces during lunchtime hours (noon to 2:00pm) during mid winter (22 June).
C2.	To protect the comfort and safety of pedestrians and motorists, new buildings and facades should minimise glare. Mirror glass is not to be used. A maximum of 20% reflectivity index is permitted for all external glazed elements. A Reflectivity Report that analyses the potential glare of any proposed new development, where building facades contain high proportion of glazing, is required to be submitted with the Development Application.

To the private domain

Controls	
C3.	To achieve high quality living environments, a minimum of 2 hours direct sunlight between 9:00am and 3:00pm should be provided to principal living rooms and private open spaces in at least 70% of dwellings within a residential development, on 22 June (Winter Solstice). A maximum of 15% of apartments in a building may receive no direct sunlight between 9am to 3pm in mid-winter (21 June).
C4.	To assist plant growth, maximise direct sunlight to communal open space as much possible within residential developments on 22 June.
C5.	To facilitate solar access to principal living rooms and private open spaces at first floor level, two storey and mezzanine ground floor apartments are encouraged.
C6.	To achieve high quality internal environments, appropriate sun protection should be provided to glazed areas facing north, west and east in residential and commercial developments. Refer Photo K17-16 and Photo K17-17. Avoid extensive areas of glazing unprotected from solar access during summer. Shading devices including eaves, awnings, colonnades, balconies, pergolas, external louvres and planting to control the penetration of sun, should be used to maximise solar access in winter, and minimise solar access in summer. On east and west facing facades subject to direct sunlight, external shading should be integrated into the design, or the area of glazing minimised. Avoid the excessive use of louvres of a single style, which can reduce building articulation and add to the bulk and scale of buildings. Refer to Photo K17-18.

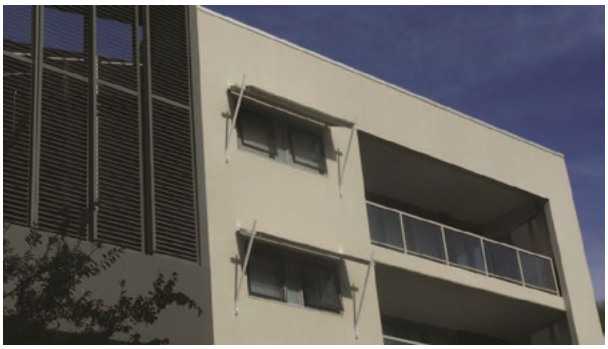


Photo K17-16 Horizontal sun shading over west facing windows protects from undesirable heat gain



Photo K17-17 Deep balconies and adjustable screens shade windows from undesirable heat gain

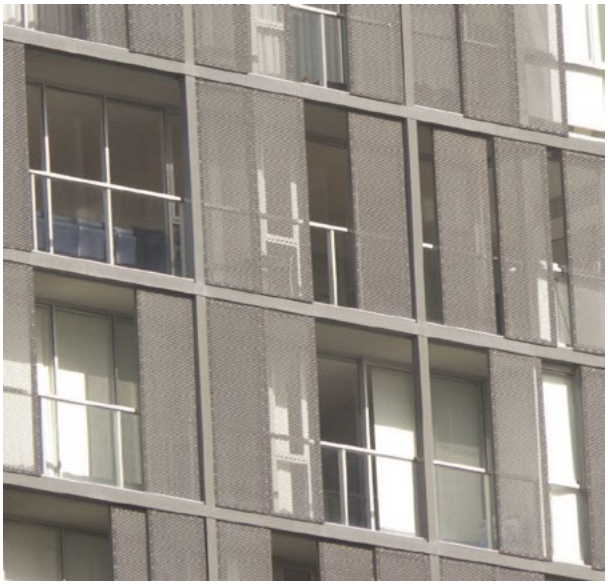


Photo K17-18 Using one type of sun shade over large areas can add to building bulk

B.12 Natural ventilation

Living, retail and work environments are to maximise natural lighting. Living and working environments which are not reliant on artificial cooling and daytime lighting during the daylight hours, will have reduced energy inputs over the long term. The provision of good natural ventilation and daylight facilitates builds-in future flexibility.

Controls	
C1.	To reduce energy inputs over the long term, buildings should be designed so that living and working environments are substantially naturally lit and ventilated, using ventilation by means such as thin cross section buildings.
C2.	To avoid reliance on mechanical ventilation or air conditioning and minimise use of artificial lighting, windows should be provided to all living and working environments. Do not rely on skylights to provide the sole source of daylight and ventilation to habitable rooms.
C3.	To achieve high quality living environments residential buildings up to a height of 9 storeys are to have a maximum depth of 18m window line to window line. Buildings greater than 9 storeys in height are to have a maximum depth of 23m.
C4.	A minimum of 60% of residential apartments should be naturally cross ventilated.
C5.	Developments which seek to vary from the maximum building depth and minimum percentage of naturally cross ventilated apartments must demonstrate how natural ventilation can be satisfactorily achieved, particularly in relation to habitable rooms.
C6.	To achieve natural ventilation, doors and openable windows should be located in two walls facing different or preferably opposite directions. The placement of small low windows on the predominantly windward side of the building, and larger higher windows on the leeward side, can encourage cross ventilation. The use of passive climate control in commercial buildings, through stack effect ventilation and the building's mass to ameliorate extreme temperature variations is encouraged.
C7.	To allow daylight into ground and first floor levels, buildings should be articulated using atria and courtyards.

Refer additionally to SEPP 65, Apartment Design Guide Part 4B Natural ventilation.

B.13 Building materials, finishes and colours

Building materials, finishes and colours used on external facades create a finer texture to streetscapes and city skylines and can contribute to the identity and 'sense of place' at Rhodes West.

Building materials can cause environmental impacts before they reach the building site, during their life in the building and in their eventual disposal. This DCP encourages building materials selected to suit each particular application and which provide the required performance with the least overall environmental impact.

Controls	
C1.	To optimise thermal comfort and minimise energy consumption, insulation must be provided in wall, ceiling and roof systems.
C2.	To minimise resource depletion, plantation timbers, Australian regrowth timbers and recycled timbers should be used. The use of Australian native rainforest timbers, imported rainforest timbers and timbers from old growth forest is not permitted.
C3.	To minimise environmental impacts, materials with the following characteristics are to be selected: • With low embodied energy; • That are durable; • That are recycled or able to be recycled; • That are sourced from renewable resources and materials; • That are non-polluting in manufacture, use and in disposal; and, • That are non toxic, do not "outgas".
C4.	Use colour to provide visual interest in building facades. Colour can be used to articulate vertical proportions of tower buildings, such as in Photo K17-11 or primary building entries such as in Photo K17-19.
C5.	Development Applications are required to include an assessment of the environmental sustainability of selected building materials. Selected materials are to display energy efficiency in production and their contribution to sustainable building design and construction.
C6.	A best practice sustainable approach to building materials and finishes should be taken, including: • Use of precast concrete walls; • Use of re-usable formwork for internal floors and core walls on site; • Reinforcing steel with a high recycled steel content; • Low VOC paints for all internal flat and low sheen areas; • Water based paints for all internal gloss and semigloss areas; and • No use of unsustainable rainforest timbers, specification of sustainably sourced timber and minimal use of MDF.

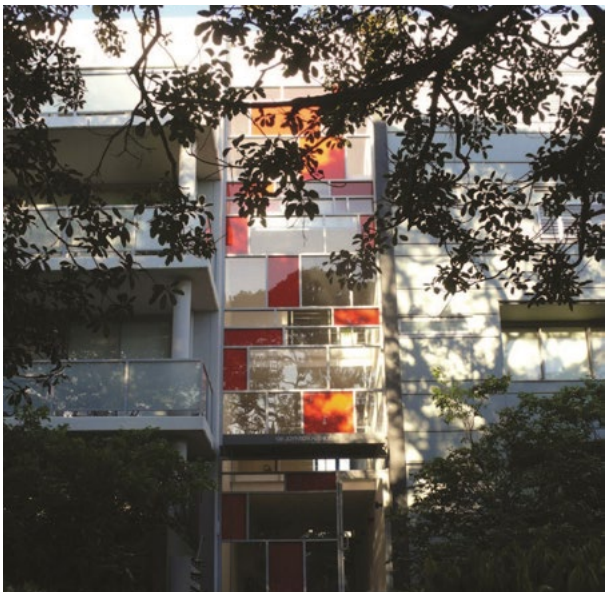


Photo K17-19 Building entries can be distinguished through the use of colour, as well as awnings that extend into the public domain

B.14 Public domain interface

Active street frontage

Active street frontages support a lively, interesting and safer public domain. Busy pedestrian areas and nonresidential uses such as shops, studios, offices, cafes, recreational and civic uses promote the most active frontages. Active frontages at ground level should be established along major pedestrian routes. Refer to Photo K17-20 and Photo K17-21.

In residential areas the interaction between the public and private domain can be strengthened by maximising the number of entrances and locating more public functions on the street side of the building. In mixed use areas, ground level retail and commercial frontage provides the benefit of public safety, commercial activity and street life. Active frontages should extend above street level with uses which provide transparency and visual contact with the street.

Due to the temperate climate, favourable orientation, and views to Olympic Park and Homebush Bay from the public domain, Rhodes West is a desirable location for outdoor dining. Outdoor dining has the potential to contribute to the liveliness of the streets and public open spaces.

Controls	
C1.	An active frontage is defined as one, or a combination of the following: • Shopfronts, if predominantly glazed and accompanied by an entry • Community use if accompanied by an entry • Commercial lobby if accompanied by an entry • Entrance to residential/ commercial use • Café or restaurant if accompanied by an entry and/ or outdoor seating • Any other use that in the opinion of the consent authority is consistent with the strategy
C2.	Minimise the number and width of vehicle footpath and cyclepath crossings, to optimise pedestrian and cyclist safety.



Photo K17-20 Built form that frames public open space with pedestrian link to surrounding street



Photo K17-21 Active street with restaurants and cafés with outdoor dining

B4 - Mixed use zone

C3.	To create a lively centre, active frontages must be established along the activity strip identified in Figure K17-9 Rhodes West Setbacks Plan, with ground level retail and commercial uses, and entrances to residential or commercial development above. Active ground floor frontage should also be maximised to all other streets, laneways and plazas in the mixed use zone, especially at street corners. Refer to Photo K17-23 and Photo K17-24.
C4.	To create an interesting pedestrian environment, predominantly clear glazing should be provided to the street frontage of retail and commercial windows at ground floor level.
C5.	To create a friendly pedestrian environment, roller shutters to ground floor retail street frontages are prohibited.
C6.	To create a lively centre, street level retail frontage for individual tenancies is limited to 20m, except on street corners where 30m frontages are permitted, and along Rider Boulevard and Oulton Avenue where bulky retailing may be accommodated.
C7.	To create a safe and lively retail complex, active frontages must be provided to the pedestrian spine of the retail centre. Ground level shops with frontage to both a public street and a pedestrian spine, should have public entrances on both frontages.
C8.	To enliven the street, laneways and plazas, outdoor eating areas should be located at ground floor and first floor level along street frontages and adjacent to parks, with minimal disturbance to pedestrian circulation and residential amenity.
C9.	To enliven the street, provide surveillance, accommodate home occupation, and facilitate potential future adaptation for mixed or commercial use, design every ground floor apartment fronting a primary street in the mixed use zone to incorporate a direct street entrance.
C10.	Complete existing connections and establish new pedestrian connections through the block, to create a fine-grained network of interconnected laneways and open spaces.

R4 - Residential zone

C11.	To achieve street surveillance, maximise the number of pedestrian entrances to residential buildings. Refer to building articulation and address controls.
C12.	To achieve amenity in local neighbourhoods, permissible non-residential uses such as publicly accessible facilities, local shops and cafes are preferred where they will be most accessible and visible, such as at street level, in the following locations: • Along Walker Street; • At the Gauthorpe Street extension in the Foreshore Park; and • Fronting parks at locations identified in Figure K17-9 Rhodes West Setbacks Plan.

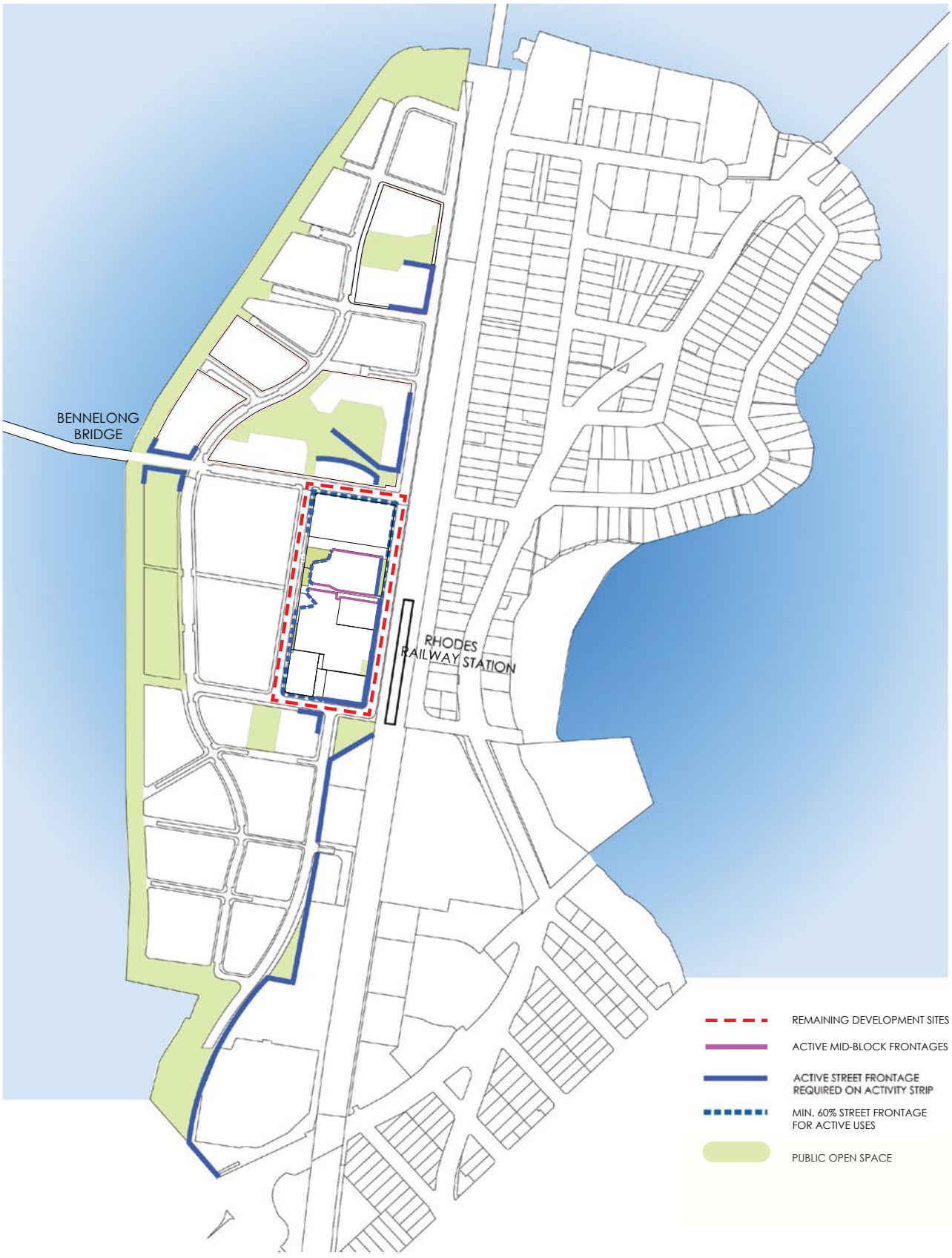


Figure K17-10 Rhodes West Active Street Frontages

B.15 Awnings and entrance canopies

In retail and mixed use streets awnings increase pedestrian amenity by providing wet weather protection and shade. Refer to Photo K17-22. For public and commercial buildings in residential streets discontinuous awnings and entrance canopies create a protected transition area between internal and external spaces at building entrances. Refer to Photo K17-25 and Figure K17-10 Rhodes West Active Street Frontages.

Awnings

Controls	
C1.	To achieve weather protection in the major pedestrian areas, continuous awnings must be provided to the activity strip and discontinuous awnings in transition areas opposite and adjoining the activity strip.
C2.	To provide adequate weather protection awning height is to be minimum 3.2m and maximum 4.5m and integrate with adjoining properties. The awning face should be horizontal. Steps for design articulation or to accommodate sloping streets are to be maximum of 0.75m. Awning width is to be a minimum 2m, setback 0.8m from the face of the kerb and to suit adjoining awnings. Where street trees are required the entire length of the awning is to be set back from the inside edge of the tree hole. Cut out segments are not acceptable. Awnings wider than 3.66m require approval from the Director General of Local Government.
C3.	To achieve protection from the sun, awnings should have no more than 50% of their area transparent.
C4.	To create a safe pedestrian environment at night and avoid visual clutter, under awning lighting should be provided and recessed into the soffit of the awning or wall mounted on the building.
C5.	To promote a safe and weather protected pedestrian connection, a continuous awning from Rhodes Station to the bus interchange should be provided.
C6.	To accommodate a design for any awning or overbridges on ground level and facing the roadway with an underpass of 4.3 meter clearance.

Canvas awnings

C7.	To assist sun shading generally, retractable or fixed canvas awnings or shade cloths are permitted.
C8.	To provide sun shading to east and west facades, vertical canvas blinds may be used along the outer edge of awnings. These blinds should not carry advertising or signage.

Entrance canopies

C9.	To provide weather protection canopies are required at the pedestrian entries of all buildings. Entrance canopies are permitted within building setbacks. Where there is no building setback, entrance canopies can extend 2m beyond the property line over the footpath or further to align with the width of any adjoining discontinuous awning.



Photo K17-22 Awning to active street frontage

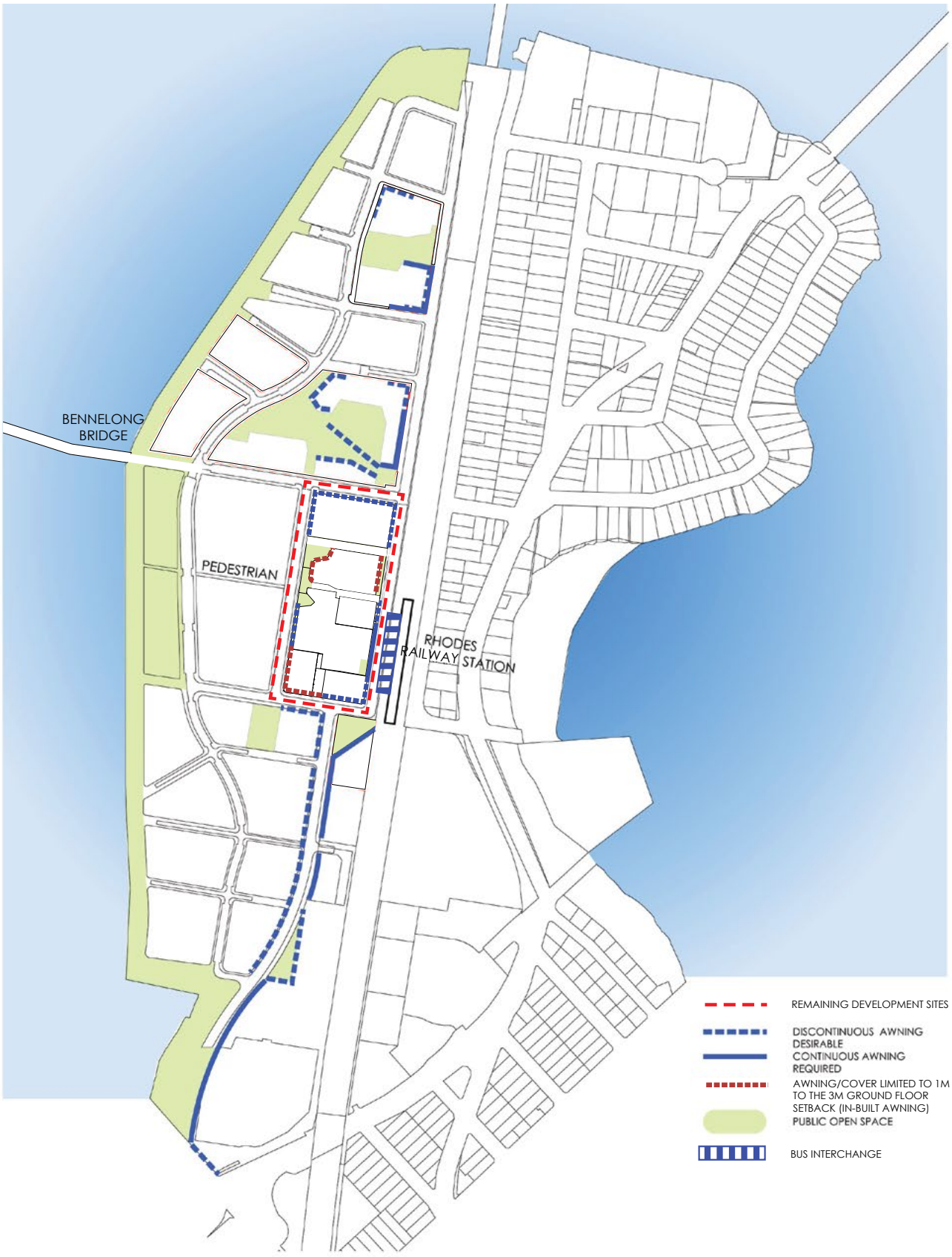


Figure K17-11 Rhodes West Location of Awnings



Photo K17-23 An example of a mid-block activated open space that is lively and attractive and that can accommodate different activities



Photo K17-24 Laneways can accommodate seating, planting and other street furniture to enhance amenity



Photo K17-25 Awning to residential entry



Photo K17-26 Side gardens achieve privacy with landscaping

B.16 Signage and advertising

Signage and advertising should communicate effectively and contribute in a positive way to the public domain. Signage and advertising structures should be unobtrusive, informative and compatible with an attractive shopping environment. Important factors to be considered are:

- Avoiding physical and visual clutter of the public domain;
- Avoiding conflict between advertising signs and nearby safety; public directions or traffic signs; and
- Protecting residential amenity

Controls	
C1.	Signage must be designed to avoid confusion with directional and traffic signs.
C2.	Signage should be designed to add character to the street and complement the architecture.
C3.	To minimise visual clutter, signage should be integrated with awnings. Suspended signage should be a minimum of 2.7m clear above finished footpath level.
C4.	Building identification is the only signage permitted above first floor level.
C5.	A single retail centre and major tenant pylon is permitted along Homebush Bay Drive.
C6.	To achieve durability, signage and advertising should be constructed of non-combustible materials and be resistant to vandalism.
C7.	To protect residential amenity, advertising signage is not permitted facing private residential streets, or on side walls abutting residential properties.
C8.	To minimise visual clutter, the source of light to illuminated signage should be concealed or integral with the sign. Electrical conduits to illuminated signs including neon signs should be concealed. The ability to adjust the light intensity is required. A curfew on illumination may be imposed to protect the residential amenity of nearby residential development.

B.17 Private and communal open space

Garden spaces

Dwellings should have access to private or communal garden spaces that are useable and comfortable. Internal landscape spaces should contribute to the character and environmental quality of the landscape of the peninsula. These spaces should have a balance of podium, or terrace space, and deep soil, planted garden spaces. Design of podium landscapes should create optimum conditions for establishment and long term viability of planted gardens. Refer to Photo K17-27.

Controls	
C1.	The area of communal open space required should be at least 25% of the site. Developments must achieve at least 50% direct sunlight to the principal useable part of the open space for a minimum of 2 hours between 9am to 3pm on 21 June (mid-winter).
C2.	Where communal open space cannot be totally provided at ground level, it should be provided on a podium or roof, communal roof or private open space. Where developments are unable to achieve the recommended communal open space, such as those in dense urban areas, they must demonstrate that residential amenity is provided in the form of increased private open space and/ or in a contribution to public open space.
C3.	To optimise natural infiltration and encourage substantial planting, deep soil landscape space should be provided wherever possible, and maximised.
C4.	Development sites in the residential zone are to contain landscaped areas in the form of private, common and public open space. Refer to *Section K17.4 Site-specific controls.*
C5.	To achieve a garden quality, half the area of communal open space should be unpaved and provide soft landscaping.
C6.	To achieve a leafy residential quality, a minimum of one large tree, with a spreading canopy, and mature height of 12m minimum, should be planted in soft landscaping zones for every 100m^2 of landscape space. Locally indigenous species are preferred.
C7.	Each apartment at ground level or on podiums or car parks, must have minimum private courtyard open space of 15m^2, with minimum depth for planting of 3m.
C8.	To assist stormwater management, landscape areas should provide some capacity for storage and infiltration of stormwater falling within the total landscape space.
C9.	To create optimum conditions for the establishment and long term viability of planted areas. Plantings are to achieve the following guidelines in deep soil zones: • Large trees (13-18m high with 16m diameter canopy at maturity) with: » Minimum soil volume: 80m3 » Minimum soil depth: 1.3m » Minimum soil area: 8m x 8m or equivalent • Medium trees (9-12m high with 8m diameter canopy at maturity) with: » Minimum soil volume: 35m3 » Minimum soil depth: 1m » Minimum soil area: 6m x 6m or equivalent • Small trees (6-8m high with 4m diameter canopy at maturity) with: » Minimum soil volume: 15m3 » Minimum soil depth: 800mm » Minimum soil area: 4.5m x 4.5m or equivalent

C10.	Deep soil zone are to be at least 7% of the site area and to meet the following minimum requirements: (ADG – Part 3E: Deep soil zones) • Site area: » 650-1,500m^2: 3m » Greater than 1,500m^2: 6m » Greater than 1,500m^2 with significant tree cover: 6m
C11.	For planting on top of built structures such as basement car parks, podiums or roofs, ensure that the minimum soil standards for the following plant types and sizes are complied with: • Large trees (12-18m high with up to 16m diameter canopy at maturity): » Minimum soil volume: 150m3 » Minimum soil depth: 1,200mm » Minimum soil area: 10m x 10m or equivalent • Medium trees (8-12m high with up to 8m diameter canopy at maturity): » Minimum soil volume: 35m3 » Minimum soil depth: 1,000mm » Minimum soil area: 6m x 6m or equivalent • Small trees (6-8m high with up to 4m diameter canopy at maturity): » Minimum soil volume: 9m3 » Minimum soil depth: 800mm » Minimum soil area: 3.5m x 3.5m or equivalent • Shrubs: » Minimum soil depth: 500-600mm • Ground cover: » Minimum soil depth: 300-450mm • Turf: » Minimum soil depth: 200mm
C12.	Variations may be considered to the above guidelines supported by advice from a qualified arborist.
C13.	Drainage and irrigation must be provided to all planters over structure.
C14.	All planters on podium levels must be accessible for maintenance.



Photo K17-27 Pedestrian connections between buildings to internal common open space

B.18 Front gardens

Well designed front gardens can retain existing landscape elements and supplement the stock of vegetation, particularly trees, in the public domain. Front gardens contribute to street character and amenity, enhance definition of the public and private domains, and can provide a positive setting for the building.

Front gardens

Controls	
C1.	Garden structures such as gazebos, play equipment, swimming pools and spa baths are not permitted in front gardens.
C2.	To minimise the visibility of car parking, garages and parking structures are not permitted forward of the building alignment to public streets;
C3.	To minimise the impact of driveways in front gardens, appropriate design, materials selection and screen planting is encouraged.
C4.	To minimise impact on the root zone of street trees, driveways, kerb crossings, parking, paved areas and external structures should be located appropriately.
C5.	Front gardens should generally be wide enough to be useable, and should have adequate continuous access to allow maintenance.
C6.	To achieve safety, lighting at both pedestrian and vehicular street entry points should be provided to each residential building.
C7.	To provide a pleasant streetscape and privacy of ground level private gardens a minimum of 1 small tree in front gardens of ground floor dwellings is required.

Front fences

C8.	The maximum height of front fences is 1.2m from the finished footpath level of the adjoining street. Front fences may be sloping or stepped along sloping streets.
C9.	Fences should be integrated with the building and landscape design through the use of common materials and detailing and be part of a suite of fences in the street. Refer Photo K17-28.
C10.	Fences should highlight building entrances, to allow for outlook and street surveillance
C11.	Fences must be partially transparent. Solid fencing or fencing with frosted or obscure glazing is not permitted





Photo K17-28 Front fences have some transparent quality to allow for surveillance of the adjoining public domain, we well as privacy for occupants

B.19 Above ground open space

Every dwelling should have access to private open space to extend the liveable area and take advantage of the temperate climate.

Private open space should be designed to allow privacy, security and solar access. Where private gardens are not possible, well designed balconies and terraces have the potential to improve amenity and lifestyle of apartment residents. Some useable communal open space at ground level should also be provided where there is no access to private gardens.

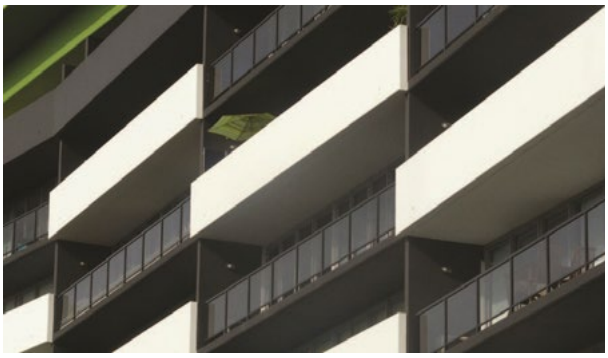


Photo K17-29 Building articulation in balustrade design

Controls	
C1.	To achieve residential amenity, at least one balcony, terrace, verandah, loggia, or deck must be provided to each dwelling where direct access to ground level private open space is not available. Refer Photo K17-29.
C2.	All apartments are required to have primary balconies as follows: • Studio apartments: » Minimum area: 4m^2 » Minimum depth of balcony: no requirement • 1 bedroom apartments: » Minimum area: 8m^2 » Minimum depth of balcony: 2m • 2 bedroom apartments: » Minimum area: 10m^2 » Minimum depth of balcony: 2m • 3+ bedroom apartments: » Minimum area: 12m^2 » Minimum depth of balcony: 2.4m • For apartment balconies with the following circumstances: » At 10 storeys or above, subject to consistently high wind speeds; » In close proximity to road, rail or other noise sources; and » Exposure to significant levels of aircraft noise. In these situations, the use of other forms of balconies (e.g. wintergardens, bay windows or juliet balconies) are appropriate, with natural ventilation demonstrated.
C3.	To achieve high quality living environments, smaller secondary above ground open space elements are also encouraged, such as balconies adjacent bedrooms, screened external clothes drying balconies adjacent laundries and bathrooms. Such spaces may have screens to a height of 1.4m. The preferred depth of secondary open space is 1.2m and the minimum permissible depth is 0.9m.
C4.	Above ground open space must be designed to provide security and protect the privacy of neighbours.
C5.	Lightweight pergolas, sunscreens, privacy screens and planters are permitted on roof terraces, provided they do not increase the bulk of the building. These elements should not significantly affect the views available from adjoining properties, the immediate vicinity or from the nearby ridges.
C6.	To optimise useability, the primary above ground space element should include a potable water tap and barbeque gas outlet where possible.

Refer additionally to SEPP65, Apartment Design Guide Part 4E Private open space and balconies.

B.20 Services

Low energy services

The consumption of electricity generated by the burning of fossil fuels contributes to CO2 production, the 'greenhouse effect' and global warming. The construction and use of buildings, accounts for a high proportion of overall energy consumption and consequently presents opportunities for energy savings and reductions in CO2 emissions. Applicants are required to satisfy the requirements of SEPP (BASIX).

Controls	
C1.	Install energy efficient building services, including but not limited to, low energy heating and cooling systems and timer switches. The use of green power and solar cells is encouraged.
C2.	Passive solar design principles should be provided in building design to avoid the need for additional heating and cooling.
C3.	Building designs should be energy efficient by isolating and selecting spaces to be heated or provide individual room controls if using a centralised system; select low energy lighting such as compact fluorescent light fittings, and low energy appliances (minimum 3-star rating).
C4.	To minimise energy consumption incorporate clothes lines that are screened from public view, in preference to dryers. Locate clothes lines for sun and breeze wherever possible.
C5.	To maximise safety and minimise visual clutter all new services should be located underground. Building services such as drainage and sewerage pipe work should not be exposed.
C6.	Appliances with a low energy rating are to be used when provided as part of a development.
C7.	Minimum energy requirements, include: • Building Management Tools like motion sensors, time based controllers, irrigation control systems and air quality control systems for carparks to minimise water and energy use • An average thermal comfort star rating of 5 or better (BERSPro, AcuuRate or FirstRate5) • Double Glazed, low-e glass to all apartment windows achieving summer/ winter (glass only) U-values of 1.7 or less • R2.5 insulation to all non-glazed external walls • R3.0 plus foil insulation to the underside of all roofs and roof terraces over apartments • Energy efficient variable speed fans for mechanical exhaust system • Energy efficient light fittings • Energy efficient VVVF lifts

B.21 Water conservation

Water conservation is an important element of an integrated ESD strategy. Measures can be implemented to match water quality with its intended use, to reduce water demand and use water more efficiently.

Applicants are required to satisfy the requirements of SEPP (BASIX) and Water Sensitive Urban Design Strategies.

Controls	
C1.	Water saving devices such as dual flush toilets, tap aerators, low water use dishwashers and washing machines must be provided to all new developments.
C2.	Spring return taps must be used for all public amenities.
C3.	Appliances and plumbing hardware should have a “AAA” Australian Standards Conservation Rating.
C4.	Implement fit for purpose substitution by matching water quality with its intended use. Roofwater should be retained on site for use externally, such as garden watering, cleaning and irrigation. The collection and storage of rainwater for toilet flushing should be considered. The recycling of grey water for toilet flushing or external use should also be considered.
C5.	The installation of insinkerators is not permitted.
C6.	Water conserving landscape practices, such as use of mulch, irrigation zoning, limited turf areas and flow regulators on hoses should be incorporated into design and management arrangements.
C7.	Minimum water requirements, include: • Drip irrigation to all planters/ on slab landscaping, except turf areas • Water efficient taps • Non-potable (recycle) water reticulation to all apartment WC’s and laundries (washing machine supply), the irrigation of gardens and the supply of carwash bays • Recycling of water from the fire pump testing system

B.24 Site facilities

Site facilities include loading areas, waste areas, mail boxes, external stores, end of cycle trip facilities laundries and clothes drying areas. Development should provide appropriate site facilities for retail, commercial and residential uses, and locate and design them to minimise their impact on the streetscape.

Controls	
C1.	Loading facilities must be provided via a rear lane or side street where such access is available.
C2.	Adequate waste and recycling areas must be provided to all developments. These areas are to be visually integrated to minimise their visibility from the street. Such facilities must be located away from openable windows to habitable rooms to avoid amenity problems associated with smell and noise.
C3.	To achieve amenity, provide either communal or individual laundry facilities to every dwelling, and at least one external clothes drying area. The public visibility of this area should be minimised. Clothes drying is only permitted on balconies that are permanently screened from public view.
C4.	To avoid visual clutter, all apartments are to have a balcony that has portion of the balustrade which has a minimum height of 1.4 metres and minimum width of 1.5 metres wide to screen drying clothes.
C5.	To optimise convenience, lockable mail boxes should be provided close to the street, integrated with front fences or building entries. Safety requirements need to be assessed in accordance with NSW Police regulations set-out in CPTED 'Safer by Design' principles.
C6.	To minimise the negative impact of smells on occupants on upper levels ducted vents must be provided to commercial kitchens.
C7.	To facilitate the maintenance of communal open space, garden maintenance storage including connections to water and drainage should be provided.
C8.	In addition to storage in kitchens, bathrooms and bedrooms, provide the following storage to each apartment: • Studio: $4m^3$ • 1 bedroom: $6m^3$ • 2 bedroom: $8m^3$ • 3 + bedrooms: $10m^3$ With: • At least 50% of the required storage to be located within the apartment; and • Storage is to be accessible from circulation spaces, living areas or laundry.
C9.	To encourage sustainable transport options provide change rooms, showers and lockers for people walking, running or cycling to work on all employment generating development. Locate these facilities close to secure bicycle parking.
C10.	To provide a safe public environment CCTV surveillance is to be provided in liaison with NSW Police.

Refer additionally to SEPP 65, Apartment Design Guide Part 4G Storage

B.25 Pedestrian access, parking and servicing

Pedestrian access and mobility

Most people experience some form of mobility impairment at some stage during their lives which may be caused by a variety of factors including ageing as well as injury and disease. It is important that access to the facilities of the Rhodes Peninsula is made easy for a wide variety of people.

The creation of a barrier free environment in all public spaces, premises and associated spaces will ensure that all people who live, work, or visit Rhodes Peninsula are able to access and use all spaces, services and facilities, and participate in community life at Rhodes.

Controls	
C1.	To cater for mobility impairment, provide at least one main entry with convenient, barrier-free access in all buildings. Access should be direct and without unnecessary barriers. Obstructions which cause difficulties should be avoided. These include: • Uneven and slippery surfaces • Steep stairs and ramps • Narrow doorways, paths and corridors • Devices such as door handles which require two hands to operate, or revolving doors
C2.	To cater for mobility impairment, appropriately designed and convenient seating and ablutions should be provided.
C3.	To cater for drivers with mobility impairment, adequate parking should be provided for people with mobility disabilities, and safe, easy and convenient access to the building.
C4.	To cater for visitors with mobility impairment, the proportion of visitable dwellings should be maximised.
C5.	An assessment of the accessibility of developments is to accompany all development applications for new buildings and substantial alterations to existing buildings involving changes to pedestrian access.

B.26 Vehicular access

Vehicle access to developments should minimise conflicts between pedestrians and vehicles, visual intrusion, and disruption of streetscape continuity. The location and design of vehicle entrances needs to be carefully considered to avoid disrupting pedestrian and cycle movement and promote pedestrian and cycle safety. Minimising the size and quantity of vehicle crossings will retain streetscape continuity and reinforce a high quality public domain.

Controls	
C1.	Provide access to parking from rear or side lanes or secondary streets wherever possible. Where practical, buildings are to share vehicle access points, and internal on-site signal equipment is to be used if necessary. Vehicular access is to be avoided in locations identified in Figure K17-11 Rhodes West Location of Awnings.
C2.	To optimise pedestrian safety, pedestrian and vehicle access should be clearly differentiated.
C3.	Provide a minimum 6m distance between a vehicle and pedestrian entries to avoid conflicts and maintain safety.
C4.	To optimise pedestrian amenity, driveways should be consolidated within blocks, particularly those in single body corporate ownership.
C5.	Vehicle access and pathway layouts should be designed to satisfy Australian Standards.
C6.	To optimise pedestrian access and safety, vehicular access ramps parallel to the street frontage are not permitted.
C7.	Where a port cochere is proposed, it is to be located so as not to interrupted pedestrian access to a building or along a street frontage. Pedestrian access is to be maintained along street footpaths.
C8.	The maximum permitted width of driveway crossings to detached, row and pair housing is 2.5m. The maximum permitted width of driveway crossings to all other lots is 6m generally, and 12m for the entrance to the retail centre near Homebush Bay. Dependent on the number of vehicles, 3m is the preferred width of driveway crossings, and car park and service entries.
C9.	In commercial, retail and light industrial developments, minimise the width of driveway crossings by consolidating car access, docks and servicing, and waste disposal. Avoid conflicts with pedestrian access and the impact of any such access on residential amenity.
C10.	Visual intrusion of vehicle access points must be minimised in accordance with NSW Police regulations set-out in CPTED ‘Safer by Design’ principles.

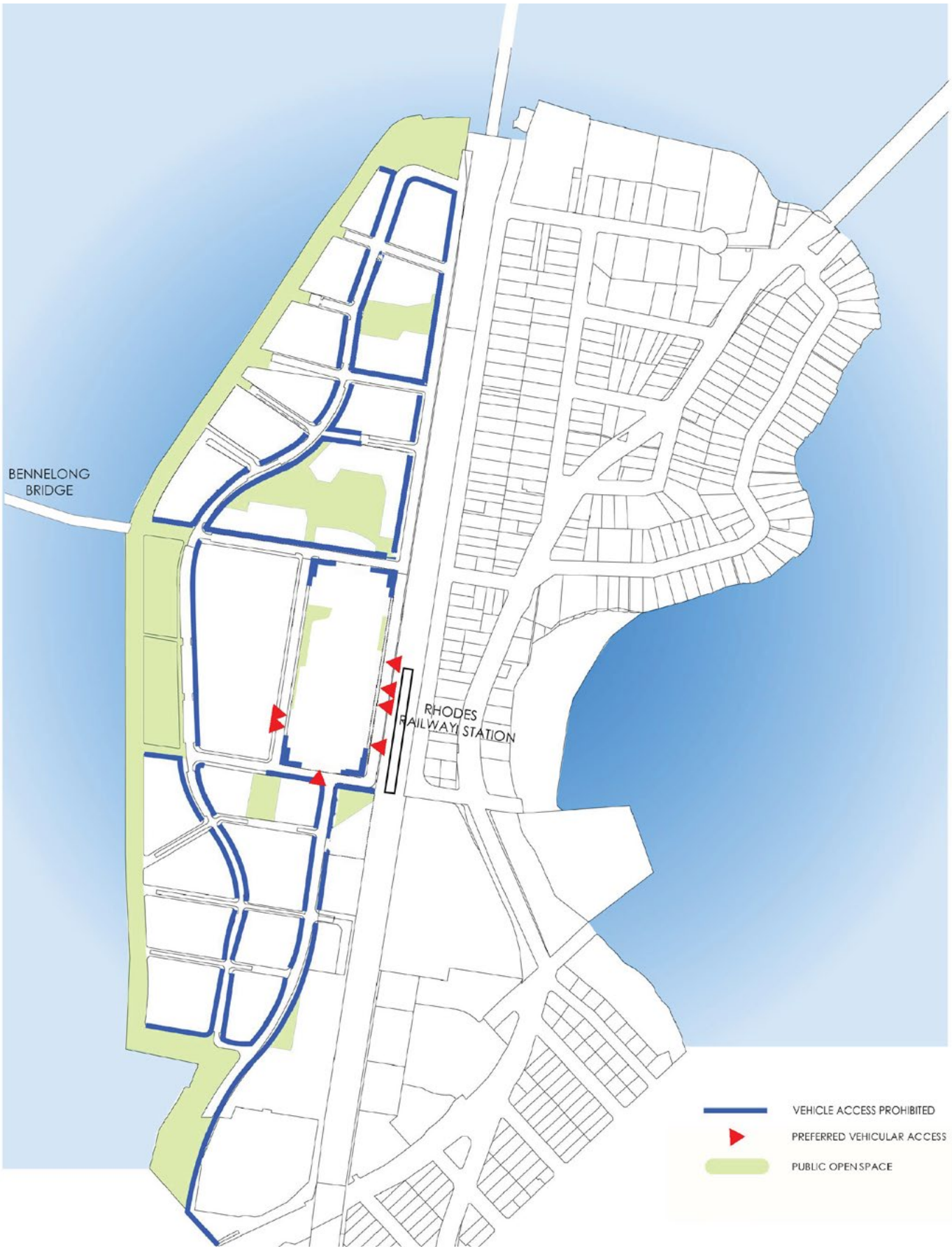


Figure K17-12 Rhodes West Vehicle Access Restrictions

B.27 On-site parking

The higher residential density and mixed use envisaged for the Rhodes Peninsula will enhance public transport use and viability, and reduce travel demand. This DCP promotes public transport use by minimising car parking requirements whilst providing for on-site service vehicle parking. Underground and semi-underground parking minimises the visual impact of car parks and is an efficient use of the site creating an opportunity for increased private, common and private open space.

Provision

Controls	
C1.	Parking provision shall be in accordance with Table K17-1 Private vehicle parking rates.

General

C2.	Stack parking is not permitted for residential development except where two spaces are provided for one apartment.
C3.	Car share, electric vehicle charging station and motorcycle parking rates are to be as per Table K17-3
C4.	One accessible parking space is to be provided for each adaptable unit.
C5.	Parking and service areas are to satisfy AS2890.1 and AS2890.2.

Basement and semi-basement car parking

C6.	To maximise the area for soft landscaping consolidated parking areas should be concentrated under building footprints wherever possible.
C7.	To accommodate a relatively safe environment in accordance with CPTED 'Safer by Design' principles.

At grade car parking

C8.	To achieve a high quality public domain, at grade car parking is only permitted to the rear of shops, restaurants and the like, and to detached, pair and row housing. It must be located behind the building line and screened from the public domain unless accessed via a lane or private street.

Above ground car parking

C9.	To achieve a high quality public domain, internal car parking which protrudes more than 1.2m above ground level of the adjacent public domain must be located behind the building alignment and be screened from the public domain in a manner that is an integral part of the external design of the building.
C10.	Parking structures should be designed to minimise reliance on artificial ventilation of car exhaust.

Bicycle parking

C11.	To encourage cycling provide the following bicycle parking in accordance with Table K17-2 Bicycle parking rates.
C12.	To encourage cycling, ensure resident and employee bicycle parking is secure.
C13.	To encourage cycling, provide end of cycle trip facilities in retail/ commercial developments.
C14.	Secure bike parking facilities are to be provided in accordance with the following: a) Class 1 bike lockers for occupants of residential buildings; b) Class 2 bike facilities for staff/employees of any land use; and c) Class 3 bike rails for visitors of any land use
C15.	Where bike parking for residents is provided in a basement, it is to be located: a) on the uppermost level of the basement; b) close to entry/exit points; and c) subject to security camera surveillance where such security systems exist.
C16.	A safe path of travel from bike parking areas to entry/exit points is to be marked.
C17.	Bike parking for visitors is to be provided in an accessible on-grade location near a major public entrance to the development and is to be signposted.

Table K17-1 Private vehicle parking rates

Residential	All dwelling types	Per dwelling Car Parking Rates for all apartments, multi dwellings and mixed use development: • studio dwelling—0.1 car spaces • 1 bedroom dwelling—0.3 car spaces • 2 bedroom dwelling—0.7 car spaces • 3 or more bedroom dwelling—1 car space Car Share schemes, carpark decoupling and the like shoudl be utilised wherever possible to reduce the amount of on-site carparking.
	Visitors	max 1 space per 20 apartments
	Service vehicles	max 1 space per 50 apartments for first 200 apartments plus 1
Commercial	Commercial offices	max 1 space per 40m^2 Gross Floor Area
	Service vehicles	1 space per 4,000m^2 GFA for first 20,000m^2 GFA and a space per 8,000m^2 GFA thereafter
	Retail	1 space per 40m^2 Gross Floor Area
	Service vehicles	1 space per 500m^2 for first 2,000m^2 and 1 space per 1,000m^2 thereafter (50% of spaces for trucks)

Table K17-2 Bicycle parking rates

Residential	Residential	• 2 per dwelling (resident) • 2 per 10 dwellings (visitor)
	Visitors	min 1 space per 12 apartments
Commercial	Employees	• 2 per 150m^2 GFA (employee) • 2 per 400m^2 GFA (visitor)
Retail	Visitor	min 1 space per 750m^2 GFA
	Retail complex/ shops	• 2per 250m2 GFA (resident) • 4+2 per 100m2 GFA (visitor)
	Cafes	min 1 space per 25m^2 public area for employees min 2 spaces for clientele

Table K17-3 Car share rates, electric vehicle charging stations and motorcycle rates

Land Use	Rates
Residential, Commercial, Retail	• Refer to Canada Bay DCP General Controls

K17.4 Site-specific controls

Introduction

Design controls and objectives have been prepared for each development site to ensure that the urban design and built form objectives and principals of the Canada Bay Local Environment Plan 2013 (as amended) and this Development Control Plan are achieved.

Considerable input from Council's Urban Design Consultant has guided the preferred framework for each site with urban design and place making principles. This input has guided the delivery of high quality living and working environments that are well designed and set a high standard for Rhodes as a recognisable Specialised Centre in Sydney.

These controls provide certainty to the community, Council and landowners as the to general position of the buildings on each site having regard to street setbacks, maximum building depths, building separation distances, and building heights in metres and maximum relative levels (RLs), as well as the size and general configuration of public open spaces. The building envelope controls also nominate the preferred location for non-residential uses to activate the public domain.

The design controls have been prepared on a precinct by precinct basis, however, do not undertake a detailed design of individual buildings. This flexibility in the development control allows the potential for a creative Architectural approach within set parameters, and is subject to refinement as detailed design proceeds. The building envelopes are not intended to prescribe the exact location of buildings footprints or the final location for vehicle and pedestrian access points.

Car parking is generally provided below the buildings and in certain locations extends beyond the building envelope under roads and public open spaces. These arrangements will be subject to detailed discussions at the DA stage for the various buildings and open spaces.

Building envelopes

Under the Canada Bay Local Environment Plan 2013 (as amended) Height of Building and Floor Space Ratio development standards have been established for all remaining development lots at Rhodes West.

The building envelopes described in this section allow some flexibility on the design of buildings, however the envelopes have been carefully developed in consultation with Council's Urban Design Consultant to maximise public benefit.

The envelopes have been tailored to each site, taking into consideration its particular characteristics and place making potential. These characteristics are described for each of the remaining sites in each precinct in terms of the following:

- The relationship of the building to the public domain, including street and public open space frontages;
- The desired character of parks and streets;
- The optimum development potential; and
- The environmental impact.

Building envelopes describe the building setbacks and separation distances, maximum building depths, minimum dimensions of public spaces around buildings and maximum building height.

The Urban Design Framework defines the physical outcome for the remaining development sites, whilst encouraging architectural innovation within the building envelopes indicated. The site-specific building envelope controls should be read in conjunction with the general controls for the private and public domain in *Section K17.3* of this DCP.

The building envelope controls illustrated in this section allow some latitude for the detailed architectural design of buildings. This development control is intended to promote highly articulated buildings with generous balconies, recesses and steps in facades to ameliorate a sense of excessive bulk.

Figure K17-32 Indicative Development Concept of this DCP shows the indicative development concept for all development sites combined, based on developments which comply with the development standards of the Canada Bay Local Environment Plan 2013 (as amended) and this DCP.

The Precincts

The Precincts, as defined in the Canada Bay Local Environment Plan 2013 (as amended) and the remaining development sites have been adopted from the previous planning framework (SREP 29: Rhodes Peninsula) and are as follows:

- Precinct A – Site A
- Precinct B – Site 2A, 3A, 3B, 3C and 3D
- Precinct C – Site A
- Precinct D – Station Gateway West

Figure K17-13 Rhodes West Precincts, Sites and Lots identifies the precincts, sites and lots, the subject to the site-specific design provisions of this DCP.

For each of the sites, an urban design framework is provided to illustrate the following controls:

- Building Envelope Plan and Sections
- Minimum building setbacks
- Maximum building depth
- Maximum building height
- Building articulation zone
- Location of public and private open space
- Preferred location for vehicle and pedestrian access



Figure K17-13 Rhodes West Precincts, Sites and Lots

Precinct A (Site A)

Located at the southern end of Rhodes, Precinct A has a mix of retail, commercial and residential uses. Retail uses are contained in the Rhodes Shopping Centre and at the ground floor level of some of the commercial and residential buildings fronting Rider Boulevard.

The key development controls illustrated in Figure K17-14 Precinct A Building Envelope Plan, Figure K17-15 Precinct A Building Envelope Section A-A and Figure K17-16 Precinct A Building Envelope Section B-B are as follows:

Controls	
C1.	Maximum building height ranging up to 25 storeys including a 4 storey podium.
C2.	Maximum FSR of 2.4:1 (Refer to Canada Bay Local Environment Plan 2013 (as amended)).
C3.	An area of 1,375m^2 of public open space as a town square located at the northern side of the site.
C4.	Vehicle access located off laneway between commercial building to the south and proposed building on Site A.
C5.	Preferred location for non-residential uses at ground floor to activate Rider Boulevard and new public open space.
C6.	Preferred separate entries for residential and nonresidential uses.
C7.	The edge building is to be designed to address the Town Square. The façade of the edge building must be a minimum of three storeys in height and not exceed 4 storeys before setbacks.
C8.	A minimum building setback for the tower building of 5m to Rider Boulevard and 5m from the podium alignment to the Rhodes Town Square.
C9.	The edge building should incorporate a continuous colonnade along its length and along the Rider Boulevard frontage to accommodate the significant diagonal pedestrian flows traversing the site generated by Rhodes Station.
C10.	Consideration should also be given to incorporating an arcade linking the Town Square to the footpath cycleway.
C11.	The ground floor of the edge building fronting the Town Square must have active uses such as retail, cafes and taverns.
C12.	The tower building form and design is to reinforce and not detract from the civic quality of the Town Square. Generally, this is to be achieved by observing a 5m minimum setback above the 3-4 storey street wall.
C13.	Vistas into the site from Walker Street and Servier Avenue must be acknowledged in the overall design of the project and given architectural recognition in the composition of the building façade. The vista from Mary Street, Walker Street and Rider Boulevard into the Town Square also require consideration.

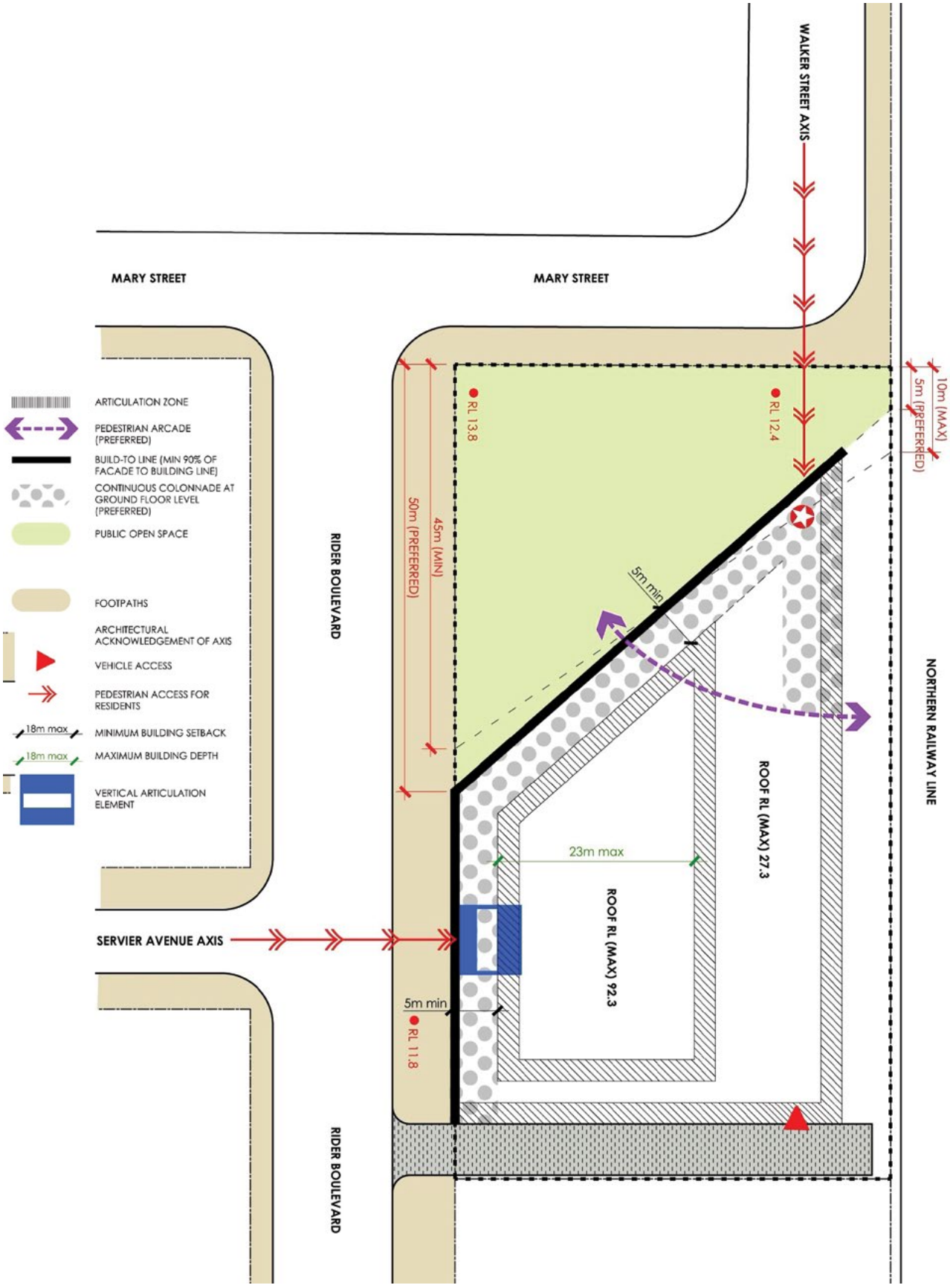


Figure K17-14 Precinct A Building Envelope Plan

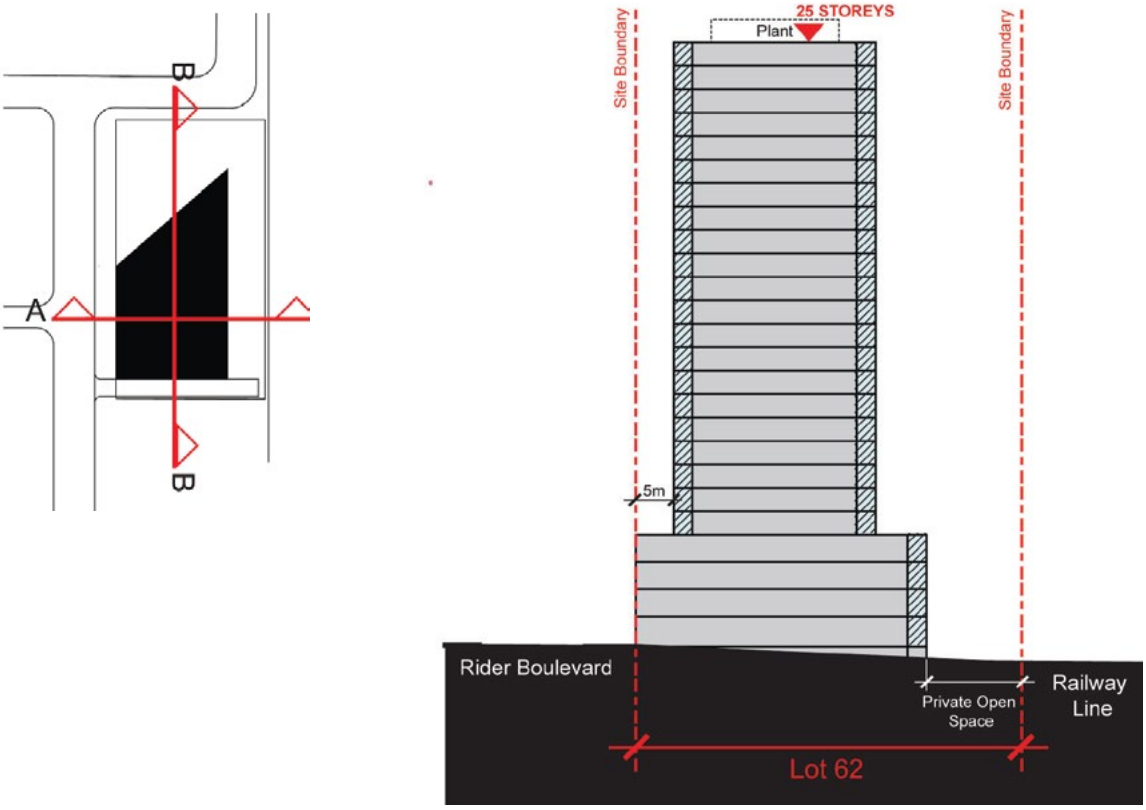


Figure K17-15 Precinct A Building Envelope Section A-A

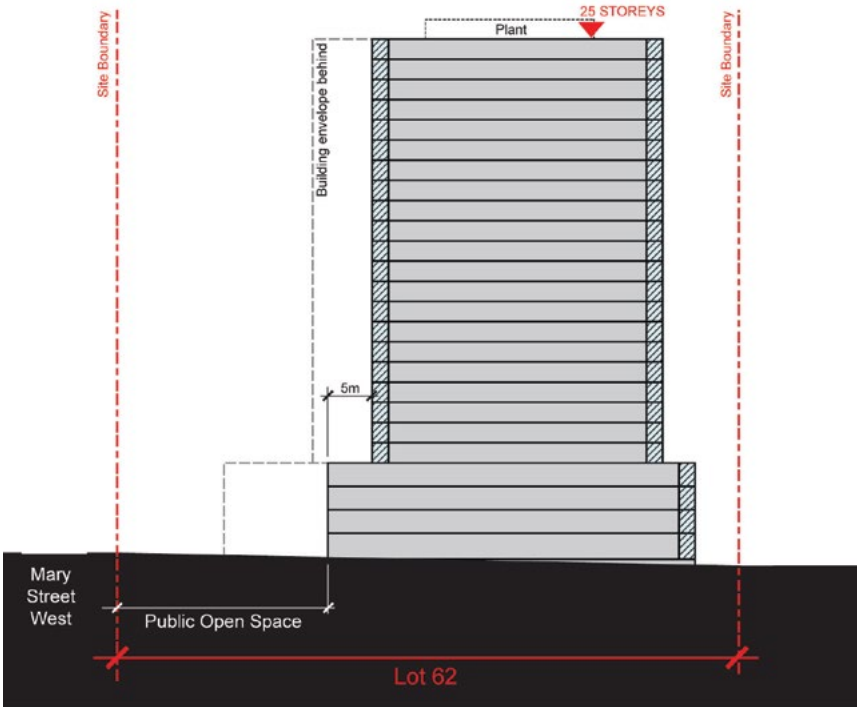


Figure K17-16 Precinct A Building Envelope Section B-B

Precinct B

Precinct B is centrally located within Rhodes West. The Precinct is 10.16 hectares in area and is planned as predominantly residential with local non-residential uses such as neighbourhood shops and cafes.

There are five remaining development sites and surrounding public domain to be developed following site remediation processes. The remaining development parcels are known as Sites 2A, 3A, 3B, 3C and 3D.

Precinct B comprises a large new local park which straddles these two land ownerships. As such the overall precinct has been considered as one Precinct Plan as illustrated in Figure K17-17 to Figure K17-20. For the purpose of describing the development controls, the separate landownership have been used.

Sites 2A + 3A

Sites 2A and 3A have a frontage to Walker Street of approximately 140m. The sites are located between Timbrol Avenue, a no-through road for vehicles and Gauthorpe Street, which provide public access from Walker Street directly to the foreshore and the planned community facilities. With the consolidation of these lots with the secondary road known as Peake Street, the provision of publicly accessible open space between tower and podium buildings is achieved.

Controls	
C1.	Building heights ranging from low-rise buildings of 4-5 storeys which frame the public open space to tower buildings in the north east corner (25 storeys), south east corner (25 storeys) and north west corner (20 storeys).
C2.	The maximum Floor Space Ratio is 2.8:1.
C3.	Car park entry is from Timbrol Avenue.
C4.	Combined with Site 3B a minimum of 16,000m^2 of public open space is required.
C5.	One level of basement car parking and one level of partially above ground car parking.
C6.	Above ground parking screened behind the street front building line to all streets and open spaces.
C7.	Preferred location for non-residential uses fronting Walker Street and the through site link open space.
C8.	Minimum building setbacks as illustrated in Figure K17-17 Precinct B Building Envelope Plan.
C9.	Separate pedestrian entries and lobbies for residential and non-residential uses.
C10.	The preferred location for non-residential uses including retail and commercial uses is along the Walker Street frontage and fronting onto the diagonal pedestrian plaza from the south east corner of the site.
C11.	The indicative alignment of non-residential frontages on the northern and southern sides of the pedestrian plaza are indicated on the building envelope plan. To avoid a ‘gun-barrel’ effect it is recommended that the alignment is to be staggered with stepping and recesses to provide pedestrian interest.
C12.	To maintain a view corridor along the diagonal alignment of Marquet Street by providing an undercroft space with a minimum height of 15m beneath the tower building in the south west corner of the site. Exposed columns are to have a high architectural design quality with a slender form and quality materials and integrated into the overall architectural design of the building.
C13.	To enhance the forecourt space at the Timbrol Avenue / Walker Street provide an undercroft space over two levels of the tower building.

Sites 3B, 3C and 3D

Sites 3B is located on the eastern side of Shoreline Drive and forms part of the new Central Park in Precinct B. This site has long frontages to both Shoreline Drive to the west and Gauthorpe Street to the south.

The new park front is to the north of Site 3B. Built form is to be located in the southern part of the site with the contribution to the new park forming the northern part of the site. Sites 3C and 3D are located on the western side of Shoreline Drive and also have a frontage to the Foreshore Reserve. These sites are divided by Peake Street, a secondary street, which provides vehicle access to basement parking on both sites. The key development controls for each of the three remaining development parcels are summarised below:

Site 3B

Controls	
C14.	A maximum height of 18 storeys above a single level podium stepping down to 15 storeys above a two level podium fronting Shoreline Drive is required.
C15.	Break up the bulk and length of the building; provide a recess in the façade of a minimum 4m in depth and length, in the location where the step in height occurs, as illustrated in the building envelope plan. Design the building as two linked buildings.
C16.	The car park entry is to be from Gauthorpe Street.
C17.	Combined with Sites 2A + 3A provide a minimum of 16,000m^2 of public open space.
C18.	One level of basement car parking and one level of above ground car parking.
C19.	Above ground parking screened behind the street front building line to all streets and open spaces.
C20.	The preferred location for the primary pedestrian entry is from Gauthorpe Street.

Site 3C

C21.	Building height ranging from 4 storeys fronting the Foreshore Reserve up to 9 storeys fronting Shoreline Drive.
C22.	Maximum floor space ratio of 2.2:1.
C23.	Car park entry from Peake Street.
C24.	Two levels of basement car parking.
C25.	All buildings with an address to a street frontage.
C26.	The design of the building fronting Shoreline Drive is to accentuate the curvilinear alignment of the street through building setbacks, façade articulation, and balcony and balustrade forms.

Site 3D

C27.	Building height ranging from 3 storeys fronting the Foreshore Reserve up to 9 storeys fronting Shoreline Drive.
C28.	A maximum floor space ratio of 2.3:1.
C29.	Car park entry from Peake Street.
C30.	Two levels of basement car parking.
C31.	Preferred location for non-residential uses fronting the community facility lot to the south.
C32.	The building on the southern boundary is to align with the Gauthorpe Street view corridor.
C33.	The building on the northern boundary is to align with the Peake Street view corridor.
C34.	Separate pedestrian entries and lobbies for residential and non-residential uses are required.
C35.	The design of the building fronting Shoreline Drive is to accentuate the curvilinear alignment of Shoreline Drive through building setbacks, façade articulation, and balcony and balustrade forms.
C36.	The central private courtyard is to provide the main pedestrian access to the parallel building fronting the Foreshore Reserve.

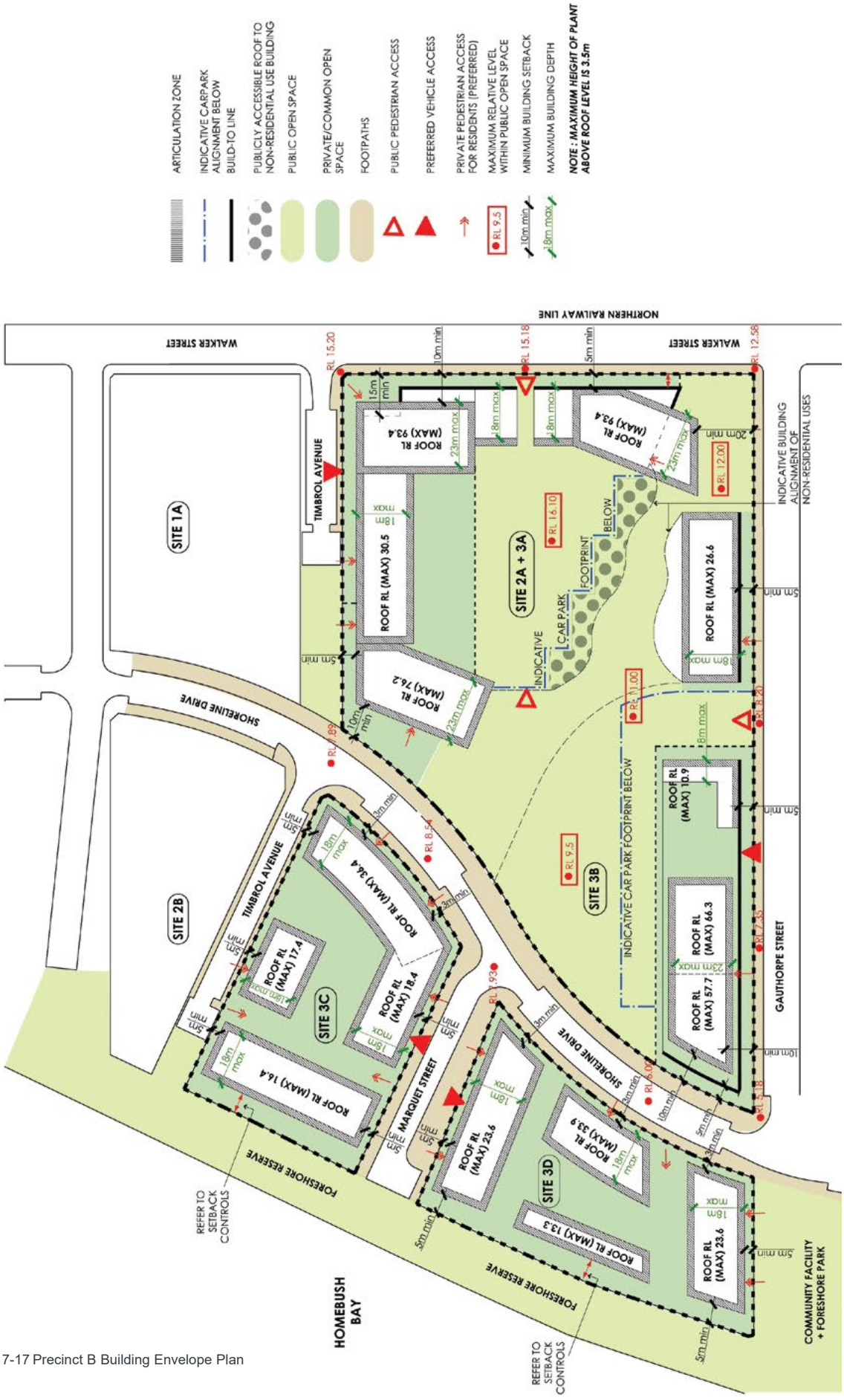


Figure K17-17 Precinct B Building Envelope Plan

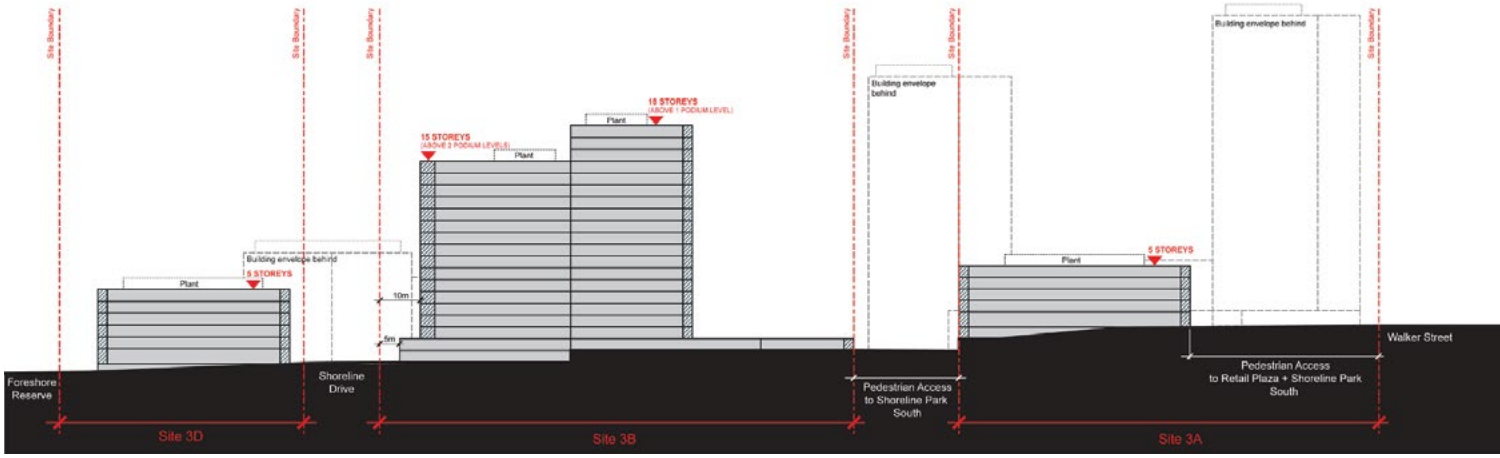


Figure K17-18 Precinct B Building Envelope Section A-A

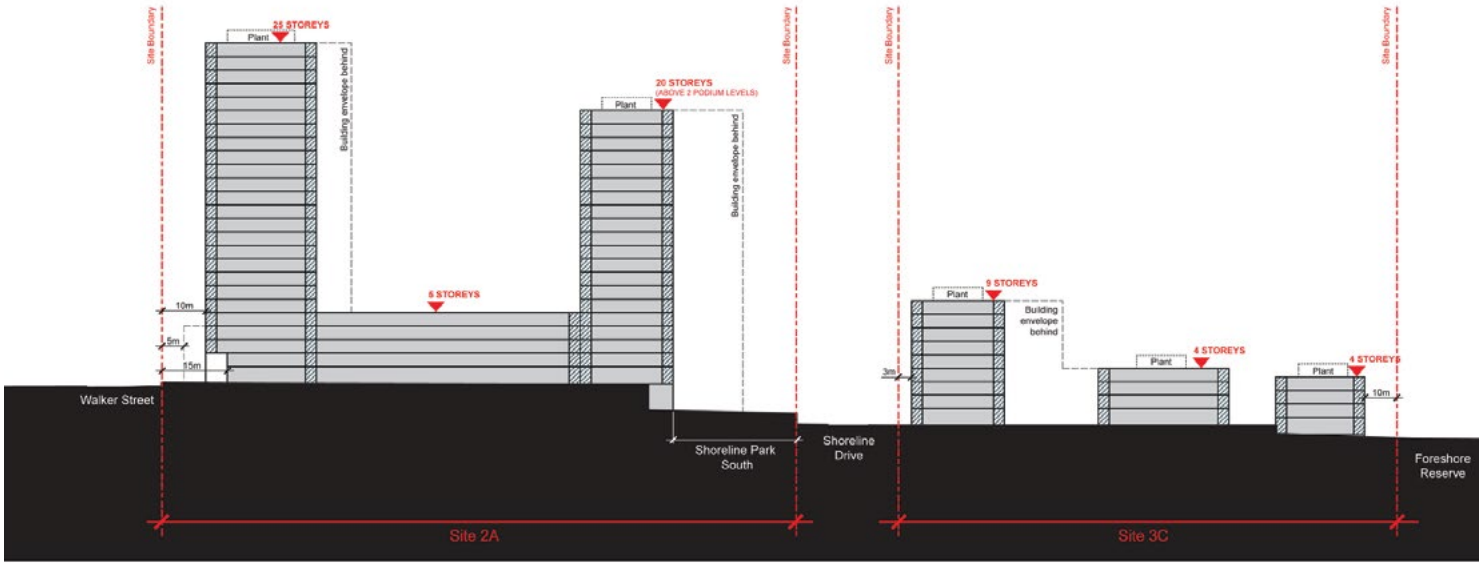
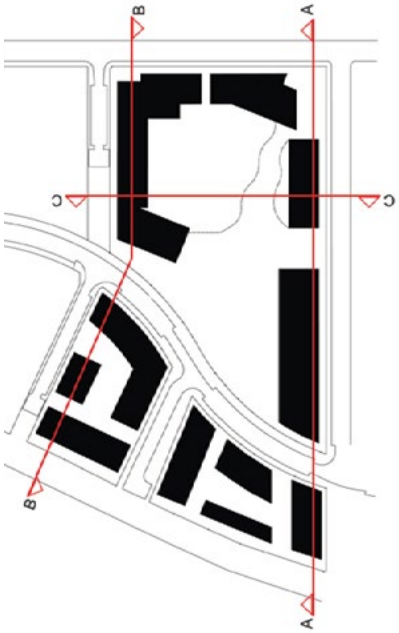


Figure K17-19 Precinct B Building Envelope Section B-B



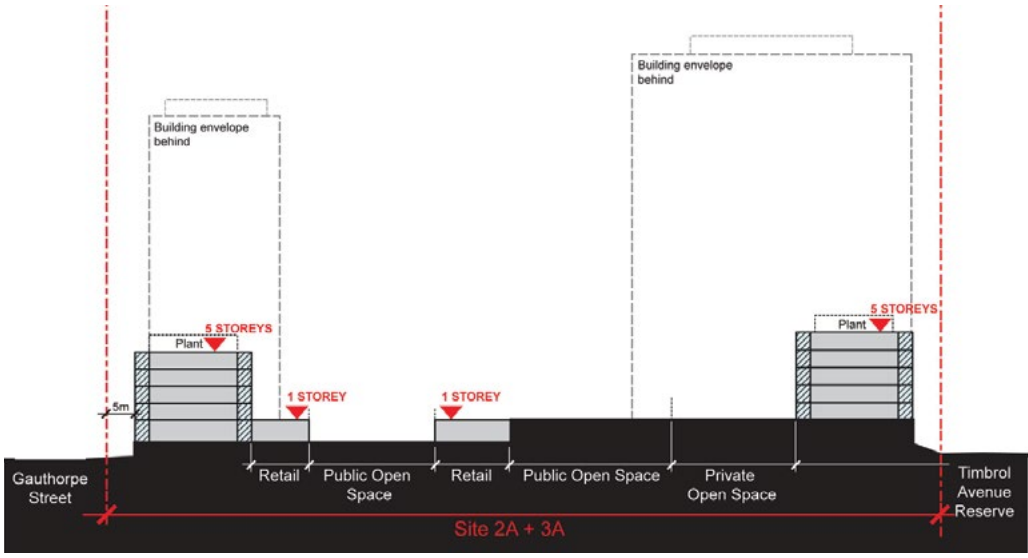


Figure K17-20 Precinct B Building Envelope Section C-C

Precinct C (Site A)

Precinct C is located at the northern end of Rhodes West. The area is predominantly a residential precinct. Two development parcels remain which are known as Site A.

The development provides an opportunity to create additional publicly accessible open space by amalgamating the lots. The open space is to be centrally located with a wide pedestrian accessible link between Walker Street and Shoreline Drive.

The development controls for the parcels are summarised below:

Controls	
C1.	Tower building in the south west corner of Site A of 25 storeys.
C2.	Tower building in the north western corner of Site A of 25 storeys.
C3.	Lower-rise buildings of 6 and 7 storeys fronting Shoreline Drive and Walker Street.
C4.	Single storey building on the corner of Walker Street and Nina Grey Avenue as a podium to the tower building above.
C5.	Building setback controls as illustrated in Figure K17-21 Precinct C Building Envelope Plan, Figure K17-22 Precinct C Building Envelope Section A-A and Figure K17-23 Precinct C Building Envelope Section B-B including: • Tower buildings are setback 10m from Walker Street and Shoreline Drive street frontages • Lower rise buildings are to align with the street frontages with a minimum of 5m setback to provide adequate space for ground level garden courtyards fronting the street
C6.	Vehicle access is to be provided from Nina Grey Avenue.
C7.	A minimum of 4,600m^2 of public open space to be provided in a linear alignment between Walker Street and Shoreline Drive.
C8.	The preferred location for non-residential uses including local shops to be provided fronting onto the public open space with a northern aspect with good sunlight access, close to Walker Street.

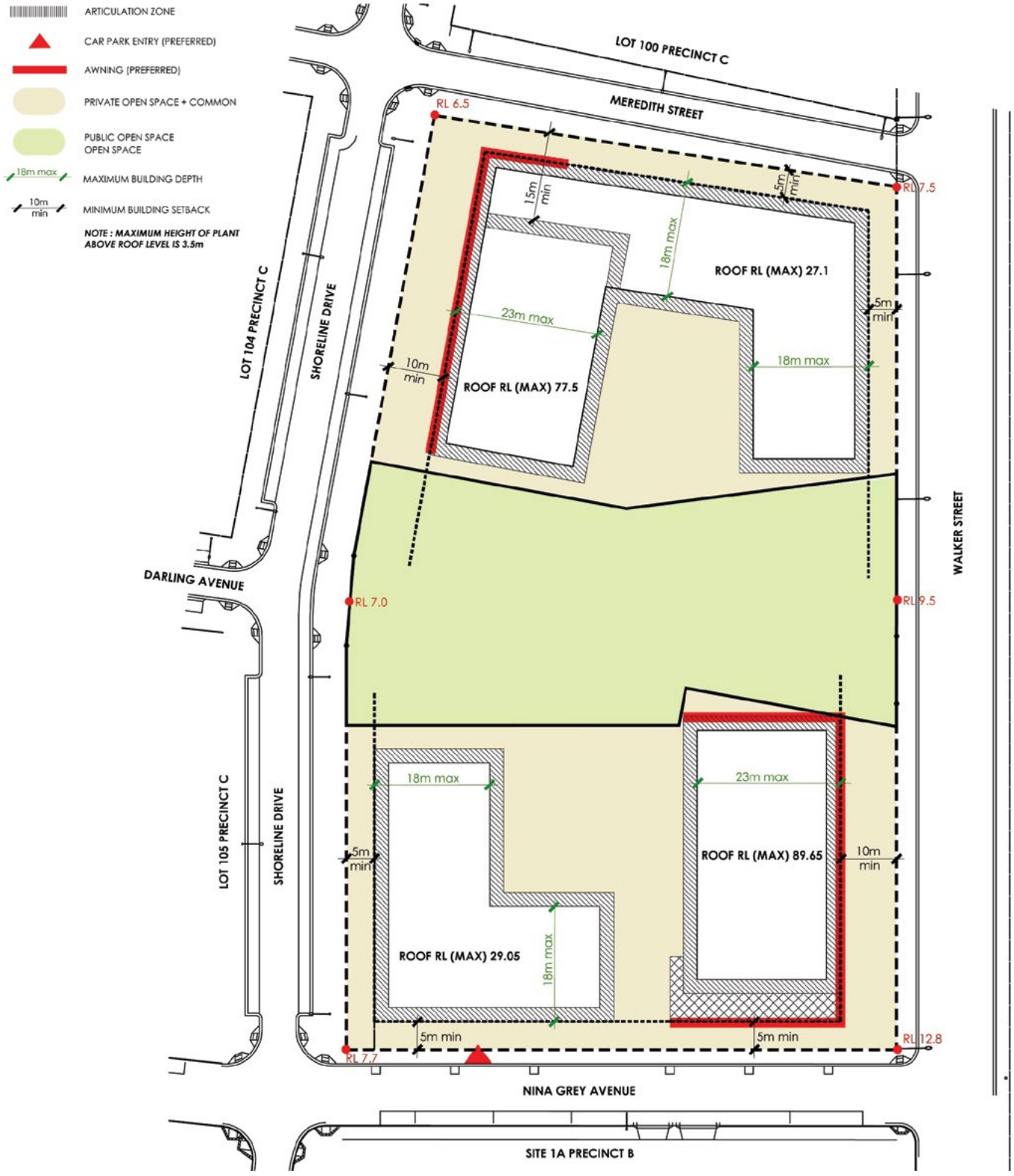


Figure K17-21 Precinct C Building Envelope Plan

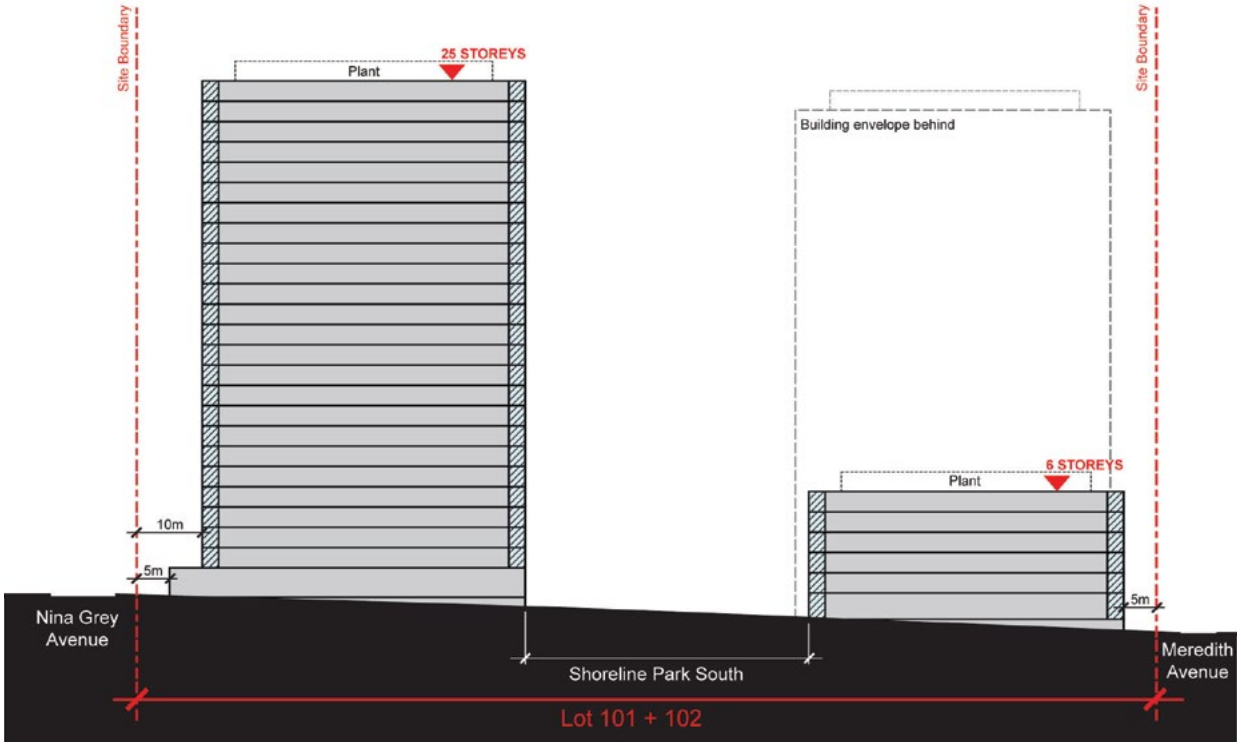


Figure K17-22 Precinct C Building Envelope Section A-A

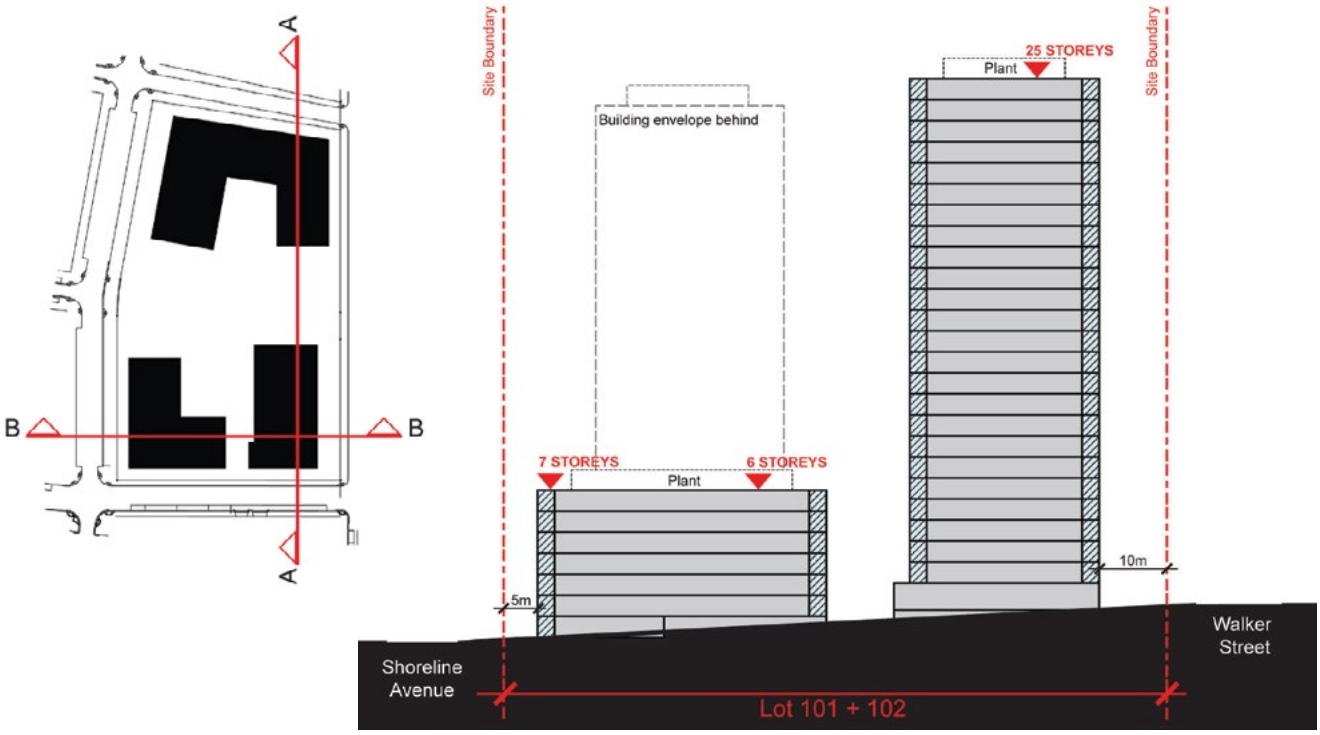


Figure K17-23 Precinct C Building Envelope Section B-B

Precinct D (Station Gateway West)

The Station Gateway West Masterplan (CM+, November 2014) was prepared to inform the planning framework for the Station Precinct and is supported, and superseded in some cases, by the Station Gateway West Master Plan (Hatch Roberts Day, August 2021). Precinct D, known as Station Gateway West, is located next to Rhodes Station, and is bounded by Walker Street, Marquet Street, Mary Street West and Gauthorpe Street. Refer "Figure K17-25-28".

Rhodes West has the potential to grow as a true Transit Oriented Development, adjacent to the waterfront, connected to surrounding communities and metropolitan Sydney. A mixed use precinct that includes residential, commercial and social places.

Station Gateway West will be completed as a place- led urban destination, reflective of and, building upon the original Master Plan intent. The delivery of additional public benefit and amenity to support the urban context and transit importance of the Precinct has driven the design process. The development capacity, height and form of development at Station Gateway West respects the ground plane amenity and demonstrates realisation of the best practice criteria.

Fine grain podium and tower building typologies will activate a connected public space network of forecourts, transit plazas and pedestrian laneways. The podiums will contribute to pedestrian comfort, provide greening opportunities and define a legible ground plane guiding residents and visitors to and from key destinations.

The shape, variety and siting of buildings will contribute to the gateway character of Station Gateway West whilst providing a visually interesting skyline with visible sky from important vistas across the Peninsula.

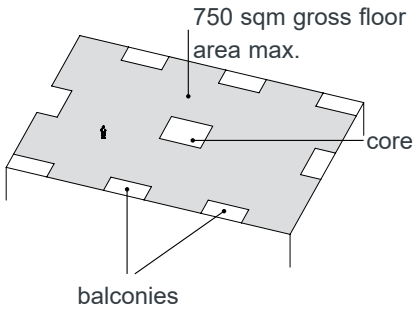
Critically, the Station Gateway West Master Plan future-proofs:

- the site itself for optimum connectivity, urban open space and residential amenity, and
- the surrounding area, with a particular focus on not compromising existing public spaces and facilitating embellishment and improvement of the public realm and infrastructure.

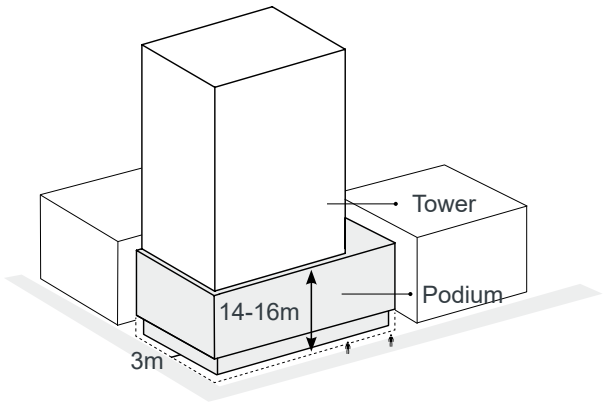
The architectural expression, is envisaged to be contemporary, exhibiting a sophistication, lightness and transparency in detailing. The public domain paving, lighting, furniture, signage, materials and finishes, and landscaping will be a seamless continuation of the public domain of the surrounding streets and squares. A highlight of the public domain will be the incorporation of engaging, relevant and place specific public artwork and installations, drawing themes from the history of the place, and from cultural cues, as well as looking to the future.

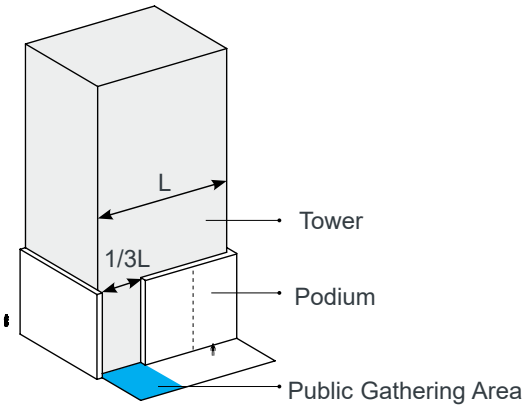
Controls	
C1.	The maximum permissible building height on the subject sites are defined in the Canada Bay Local Environment Plan. Building height reaches 159 metres (equivalent to 45 storeys) adjacent to Rhodes Station and steps down to the west and south. Refer to Figure K17-25 Precinct D (Station Gateway West) Master Plan and the building envelope sections in Figures Figure K17-26 to Figure K17-31.
C2.	The maximum Floor Space Ratio (FSR) is defined in the Canada Bay Local Environment Plan 2013.
C3.	The mid-block is to provide a fine grained network of plaza's and laneways, creating a permeable city block.
C4.	Pedestrian connections, through a series of new urban places and plazas between Rhodes Station, to Marquet Street, Mary Street and Annie Leggett Promenade to the waterfront are required. Additional north-south retail laneway connections between Town Square and the new Recreation Centre are also required. Refer to Figure K17-25 Precinct D (Station Gateway West) Master Plan.

C5.	Consistent with the Objectives and supplementing SEPP 65, building-to building setbacks within the Precinct are to achieve the following separation controls: 15 - 20 storeys - 24m Above 20 storeys - 40m
C6.	Towers above 20 storeys are to provide a 4 storey differential in building height.
C7.	Residential towers above podium level shall have a maximum gross floor area of 750 square metres as per diagram opposite. The two towers at 34 Walker Street can be developed following the existing/approved floor plate, subject to demonstration design quality in accordance with the requirements of the Apartment Design Guide and this DCP.
C8.	A minimum podium height of approximately 14-16m building height is required.
C9.	A tower and podium building typology is required, subject to the following outcomes: a) A ground floor setback of 3m is to be provided. b) A Podium to Tower setback of 4m is to be provided. c) Maximum 1/3 of a tower frontage along a street or public space can be extended down to the ground. Public gathering areas must be associated with the 2/3 of the façade that is grounded by a podium.



(Above) Maximum gross floor area of 750 square metres



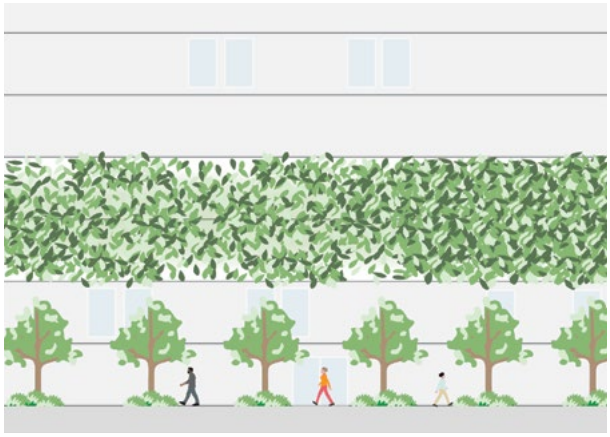


C10.	The street wall has a maximum continuous frontage of 45m. Facades longer than 45m are to have a recess of a minimum of 3 x 3 meter and provide other means in the visual composition to break up overly bulky buildings. The composition and detailing of a facade is important to the appearance of the building and influences its perceived scale. Well designed facades reflect the use, internal layout and structure of an apartment building.
C11.	A minimum of 60% street frontage is dedicated to active retail uses. All building fronting a street will have 15-20 doorways per 100m of a façade.
C12.	A tower Setback Line applies to all new property frontages and is a minimum of 4m.
C13.	A Build-to-line with a zero setback is required for the mid-block laneways and plaza. Laneway width is 8-12m and minimum plaza width is 20m. Laneway width is subject to performance requirements to accommodate: • Sufficient space to accommodate sufficient clear width, swept path and height for emergency vehicle access as required by the NSW Fire Brigade and NSW Ambulances and other day-to-day service vehicles required to maintain the central oval plaza and laneway public domain and as necessary to service businesses • Planting of mature trees in the laneways and central oval plaza as illustrated in the Public Domain Concept Plan (Context Landscape Design 2014) • Provision of outdoor dining zones associated with cafe, bar and restaurant tenancies • Projecting shop or other signage
C14.	Through site links and laneways are to have clear line-of-sight from Precinct D to Annie Leggett Promenade, with buildings setback to the same distance as buildings fronting Annie Leggett Promenade.
C15.	Union Square must not receive any additional overshadowing from new development between 9.00am and 2.00pm on the Winter Solstice. Peg Patterson Park must not receive any additional overshadowing from new development between 12.00pm and 2.00pm on the Winter Solstice. Mcilwaine Park must not receive any additional overshadowing from new development between 8.30pm and 12.30pm on the Winter Solstice. Turfed area within Mcilwaine Park must not receive any additional overshadowing from new development between 8.00am - 2.00pm on the Winter Solstice.
C16.	Provide a taxi rank, kiss-and-ride drop-off and pickup bay and disabled parking spaces in proximity of the Rhodes Station on Walker Street.
C17.	Bus bays relocated and expanded along eastern and western edges of Walker Street to accommodate the projected increase in patronage.
C18.	Maximise pedestrian amenity by providing bus shelters and building awnings for weather protection from Rhodes Station to the bus interchange.

C19.	Buildings are designed to minimise wind impacts to new areas of open space without the need for roofs or canopy structures. Any proposed development must demonstrate that a sufficient level of 'Wind Comfort Standard for Sitting in Parks' (in accordance with Lawson Wind Comfort Criteria) is achievable without the need for any open space cover or mitigation measures other than the design of the building itself. Maximum awnings coverage consistent with the Station Gateway West Master Plan (Hatch Roberts Day, August 2021) and Figure K17-11.
C20.	A single overhead connection from the development to the Station Concourse with a pedestrian bridge over Walker Street is permitted subject to a high level of urban design and architectural quality being achieved. A pedestrian bridge should appear light and slender in design and maximise Walker Street openness and vistas. The proposed pedestrian bridge over Walker Street is to meet the following requirements: • TfNSW and Sydney Trains specifications for access to a station (including design for growth and 24/7 access for the public) • Disability Standards for Accessible Public Transport 2002 • Vertical transport and commuter access to buses on both sides of the roads and station • In accordance to safety regulations set by NSW Police and their CPTED 'Safer by Design' principles
C21.	Proponents are to address the provision of cycle routes, crossings and parking facilities in relation to Station Gateway West, including at Rhodes Station and at key precinct destinations. Refer to section A.2 Cycle Strategy and to Figure K17-6 Rhodes West Cycle Strategy.
C22.	Restrict vehicular and servicing access to the midblock to ensure for a safe, pedestrian prioritised network of mid-block laneways and plazas to thrive.
C23.	Major truck and service vehicle access to Station Gateway West basements is preferably from Walker Street and Marquet Street at the preferred locations identified in Figure K17-12.
C24.	Consolidate wherever possible, vehicular entry points to Station Gateway West development and ensure good sight lines at pedestrian cross-overs.
C25.	Maintain fire and emergency vehicle access via one or more laneways, as required by emergency service authorities.
C26.	A minimum of 4,000 sqm of publicly accessible open space to be provided within the Precinct. The open space allocation shall be distributed as per Figure K17-4. New publicly accessible open spaces on Marquet St and Walker St must achieve 2h of solar access on 50% of its area between 9.00am and 3.00pm on the Winter Solstice.
C27.	Public plazas are required to be open to the sky and unobstructed, except for certain permitted obstructions such as planting, seating, and other plaza amenities.
C28.	The street interface of a public plaza is required to have a minimum 50% of its area free of obstructions. Plazas that front on a street intersection are required to maintain a clear area within 5m of the intersection. The remaining 50% of the sidewalk frontage may contain obstructions such as fixed and movable seating, plantings and trees, light poles, public space signage, litter bins or other design elements that are permitted within public plazas.

C29.	Marquet Street Forecourt must be designed to have: • A minimum width of 10m for the entire street frontage, • An average length of 20m, • A minimum clear usable space of 20 x 20m (the major portion) • 2hrs of sun over 50% of the space (9am-3pm) • Awning/ cover limited to 1m in addition to the 3m ground floor setback (establishing an in-built awning) on new building podiums. • The main portion of the space is termed the “major portion” of the public space and must account for at least 75% of the public area. The smaller areas are then considered to be “minor portions” and are limited to no more than 25% of the public area. Refer to Figure K17-25 for spatial explanation.
C30.	Walker Street Transit Plaza must be designed to have: • A minimum width of 6.5m for the entire street frontage, • Clear and direct link to the Gateway West Pedestrian Laneways • 2hrs of sun over 50% of the space (9am-3pm) • No additional awning/ cover to that of the 3m ground floor setback (establishing an in-built awning) on new building podiums Refer to Figure K17-25 for spatial explanation.
C31.	On site landscape replacement must be provided as the equivalent or more of the total site area. Landscape replacement can be provided through the following: - Vertical and facade greening. - Rooftop greening and greening of communal podium spaces. - Public open space, through site links within the site boundary.

C32.	All development must contribute to and demonstrate a 25% Green View Index using the methodology outlined in Figure K17-24 and described below. The Green View Index (GVI) is a numerical value given to the amount of green canopy and landscape perceived by an individual at street level. Tree canopies, understorey vegetation, and facade greening are the three primary contributors to the GVI. The GVI target for Station Gateway West (Precinct D) is 25%. To achieve this, the design of streets and new developments must include an objective assessment of the GVI value achieved, using the following method: • Where tree canopies and understorey vegetation do not achieve the GVI target, facade greening is required to the extent necessary to achieve the minimum requirement.
C33.	• NOTE: for the purposes for the purposes of calculation GVI at street level, a standard height of 14m above ground level has been set, consistent with the podium height. • A mix of small (<7m canopy), medium (7-15m canopy), and large (15m + canopy) trees is required, appropriate to the scale of spaces and building interfaces.



- Small full canopy trees, spaced at 5m centres
- Understorey planting at base of tree (understorey planting at 0.6m high)
- Extensive facade greening



- Medium trees spaced at 8m centres
- Understorey planting at base of tree (understorey planting at 0.6m high)
- Medium facade greening



- Large Tree spaced at 10m centres
- Understorey planting at base of tree (understorey planting at 0.6m high)



- Medium foreground trees spaced at 8m centres.
- Understorey planting at base of tree (understorey planting at 0.6m high)
- Possible where there is widened verge or open space to the streetscape



- Medium foreground trees spaced at 3-5 m centres for plazas and parks.

Figure K17-24 Tree Canopy Strategy

Public domain

The urban and landscape design of Station Gateway West is guided by the following Public Domain Principles:

C34.	Provide a raised threshold pedestrian crossing to Rhodes Station, across Walker Street, that: • Encompasses and connects the future bus interchanges on either side of Walker Street, • Has the same materiality and treatment as the future Walker Street Transit Plaza and is flush (no kerbs), • Integrates a cycleway along the eastern side of Walker Street connecting north and to the Station. Provide a raised threshold pedestrian mid-point, across Marquet Street, to Annie Leggett Promenade.
C35.	Provide generous through-site pedestrian links (as shown in Figure K17-25 Precinct D (Station Gateway West) Master Plan) with tree planting arranged to maximise views into the mid-block, and taking into account of access and safety considerations.
C36.	Wherever possible provide active edges along all pedestrian passageways and around the proposed plaza.
C37.	Central Oval Plaza – this is an opportunity for a flexible, simple and uncluttered space, with minimal and carefully chosen landscape, furniture, lighting and artwork. The plaza and laneways are a focus for cafes, small daytime events, community activities and temporary markets.
C38.	There is an opportunity to integrate a water feature within the Station Gateway West plaza.
C39.	Provide new street trees in surrounding streets – Gauthorpe, Marquet, Mary and Walker Streets.
C40.	Celebrate the Walker Street and Marquet Street entry plazas to the precinct with groves of distinctive palm trees.
C41.	Integrate Walker Street public domain generally in accordance with Council's Public Domain Concept Plan.
C42.	Integrate public art and feature lighting into the public domain – opportunities include embedded artwork in the paving or sculptural installations, as a focus in the entry plazas, and in the central oval plaza – to entice pedestrians to the 'heart' of the precinct.
C43.	Integrate sustainability and WSUD initiatives in the designated public domain.
C44.	Integrate the Station Gateway West paving, furniture, lighting and materials and finishes, seamlessly with the adjoining Rhodes Peninsula public domain.
C45.	Through-site links are crucial to creating a continuous pedestrian and green network within Gateway Rhodes West. The proposed through-site links must: • Provide uninterrupted views through the links between Marquet and Walker Street. • Allow for continuous 3m wide (minimum) pedestrian through zone within the minimum laneway width established within the Master Plan and this DCP. • Outside of the 3m pedestrian zone, provide trees along the length of link, spaced to achieve a continuous canopy of shade when mature. • Provide public furniture integrated into the space, co-located with building entries and key nodes where appropriate.

C46.	Assure CPTED principles are implemented to ensure reduced opportunities for crime. Public spaces: • should be designed to support natural surveillance Through-site links: • Must have uninterrupted views between Marquet St and Walker Street • Must provide direct visual connection to Annie Leggett Promenade • Must be provided as part of the public domain • Must provide visible, unobstructed and easily distinguished entries to buildings
C47.	All public space design must adhere to the Australian Standard Design for Access and Mobility (AS1428). • Public plazas should generally be located at the same level of adjoining public domain. Minor changes in elevation, not to exceed 0.6m above the level of the adjacent area, are permitted • Plazas should generally not be sunken below street level • Step risers must be no less than 100mm, and no greater than 150mm (exception can be made for vanishing steps) • Seating steps shall be in the range of 150mm-500mm
C48.	Circulation paths must be designed to ensure ease of access to and within public space. For optimal outcomes: • Circulation paths must be a minimum of 2.4m in width and extend to a minimum of 80% of the depth of the space • Trees planted flush-to-grade, light poles, public space signage, and litter bins are permitted within circulation paths, However, 1.8m of continuous path must remain clear of fixed furniture elements at all times • Circulation paths must have a cross-fall no greater than 2.5%
	• Garage entrances, driveways, parking spaces, loading berths, exhaust vents, mechanical equipment, and building bin storage facilities are prohibited within all public plazas • Any such elements located adjacent to a public plaza are required to be screened or concealed from view. Vents and mechanical equipment are prohibited on any adjacent building walls within 5m of the level of the public plaza. Air intake vents and intake shafts, are permitted within public plazas if they are incorporated into plaza design features and do not impair visibility within the plaza
C49.	Union Square must not receive any additional overshadowing from new development between 9.00am and 2.00pm on the Winter Solstice. Peg Patterson Park must not receive any additional overshadowing from new development between 12.00pm and 2.00pm on the Winter Solstice.

C50.	The configuration, location and diversity of seating available should be considered to ensure social interactions can be undertaken in a safe and comfortable manner. Seating requirements: • At least 1 linear metre of seating must be provided for every 30m^2 of plaza space. • Movable seating for cafes may constitute up to 50% of the seating requirement, and may be stored outside of trading hours • Up to 50% of seating may be informal (e.g. low walls/bleacher steps). To create an active street edge a portion of the required seating must be provided within 5m of the street boundary. A minimum 1 lineal meter of seating for every 2 lineal meters of street frontage is required. To ensure that this seating is comfortable and engages the public by being oriented toward the street, 50% of such seating is required to have backs, and 50% of the seats with backs are required to face the street. To provide variety, the public plazas are required to provide at least 3 different seating types, with moveable seating one of the three required seating types. A substantial proportion of seats in a plaza should have backs to facilitate comfort and usability by people of all ages and abilities. To ensure sufficient variety in seating types in the public plaza, seating steps and walls are limited to no more than 15% of the total required seating in the public plaza. Seating must be minimum 450mm depth, and in the height range of 400mm to 500mm. To allow for generous plantings, seating provided on planter ledges are required to be at least 550mm deep.
C51.	Spikes, rails, or deliberately uncomfortable materials or shapes, placed on any surfaces that would otherwise be suitable for seating are prohibited within public plazas. Devices incorporated into seating that are intended to prevent damage caused by skateboards are generally permitted. Such deterrents are required to be spaced at least 1.5m apart from one another, be constructed of high-quality materials that are integrated with the seating design, and should not inhibit seating.
C52.	Bollards should only be included where it is necessary to discourage vehicle movement. They must not be perceived as a pedestrian barrier. They should only be used as an element of access control. Bollards are recommended where trafficable areas adjoin flush with public spaces (e.g. plazas). In alignment with best practice, a variety of bollards can be used. This includes bollards that contain planting, removable bollards, fixed bollards and bollards as seating elements.
C53.	Requirements for general waste and recycling bins are to be as directed by Council. All waste facilities are to be located within 15m of seating and gathering spaces. Visual appearance and impacts of smell should be carefully considered when locating waste facilities.
C54.	All signage in public space must be visible and legible. Signage design (i.e. font, colour and shape) should be aligned with the greater public domain elements palette. Where required by Council, wayfinding and signage are to integrate digital technologies.

C55.	Public art can serve an important role turning spaces into places, giving people reason to stop and engage with the public domain. It can also celebrate cultural and environmental diversity and instill a sense of belonging. A site specific Public Arts Plan is to be prepared by an arts and cultural planner and will be required to address the following: • Identify opportunities for the integration of public art in the proposed development • Identify themes for public art • Durability, robustness and longevity of the public art • Demonstrate how public art is incorporated in the site and built form design • Demonstrating that the scale of the public art is appropriate and proportionate to the development and thoughtfully sited & integrated with the building to create a point of interest and define the location of area • The proposal should also provide a program for installation and integration with the construction program for the development Public art must be delivered in accordance with City of Canada Bay's Public Art Plan.
C56.	To ensure a vibrant and visually appealing public space consideration must be given to the treatment of adjoining walls and facades. • Any building entry must be clear and legible. The entries must be unobstructed within 5m of entry • Walls required for planters or to mitigate changes in grade must not be visually or spatially intrusive on the space, and most be designed to a comfortable seating height wherever possible • Blank building walls or facades facing onto public space must be treated with public art or screened with vertical planting to a minimum height of 5m above the ground
C57.	Large plazas can are to accommodate a more varied palette of design features. Potential additional amenities include water features, such as fountains or reflecting pools; children's play areas; game tables; and food service, such as open air cafés, kiosks, or food service in adjacent retail spaces. The design must consider incorporating at least 2 of these elements at a scale and location appropriate to each plaza space. Any proposals must take into consideration existing amenities in the surrounding area.
C58.	To encourage greater landscaping variety and to prevent plazas from being excessively hard-surfaced, public plazas are required to be comprised of at least 20% planted areas, in the form of planting beds, ground cover or accessible lawns. To ensure visibility throughout the space, bounding walls for planters or planting beds cannot exceed 450mm in height.
C59.	At least 50% of required trees should be planted either flush-to-grade or within at-grade planting beds. When planted flush-to-grade, the trees must be surrounded by a porous surface at least 1.5m in width that allows water to penetrate to the tree roots while at the same time accommodating pedestrian circulation. Trees provided in planting beds are required to have a minimum of 1.5m square of porous area, such as mulch or planted area to allow for water penetration. Trees must be located in deep soil areas wherever possible. If on structure, trees must be provided soil depth and volumes in accordance with the NSW Department of Planning Apartment Design Guide. Designs should consider the use of deciduous trees where appropriate for solar access in the cooler months.
C60.	All public open spaces should seek to integrate Water Sensitive Urban Design (WSUD) and other sustainability initiatives.

Additional Referral Requirement

C61.	Requirement for a Development Approval is subject to a Sydney Airport 'Operate Equipment' Approval. Information required by Sydney Airport prior to any approval is to include: • The location of any temporary structure or equipment, i.e. construction cranes, planned to be used during construction relative to Mapping Grid of Australia 1994 (MGA94); • The swing circle of any temporary structure/ equipment used during construction; • The maximum height, relative to Australian Height Datum (AHD), of any temporary structure or equipment i.e. construction cranes, intended to be used in the erection of the proposed structure/ activity; and • The period of the proposed operation (i.e. construction cranes) and desired operating hours for any temporary structures.

This page was intentionally left blank

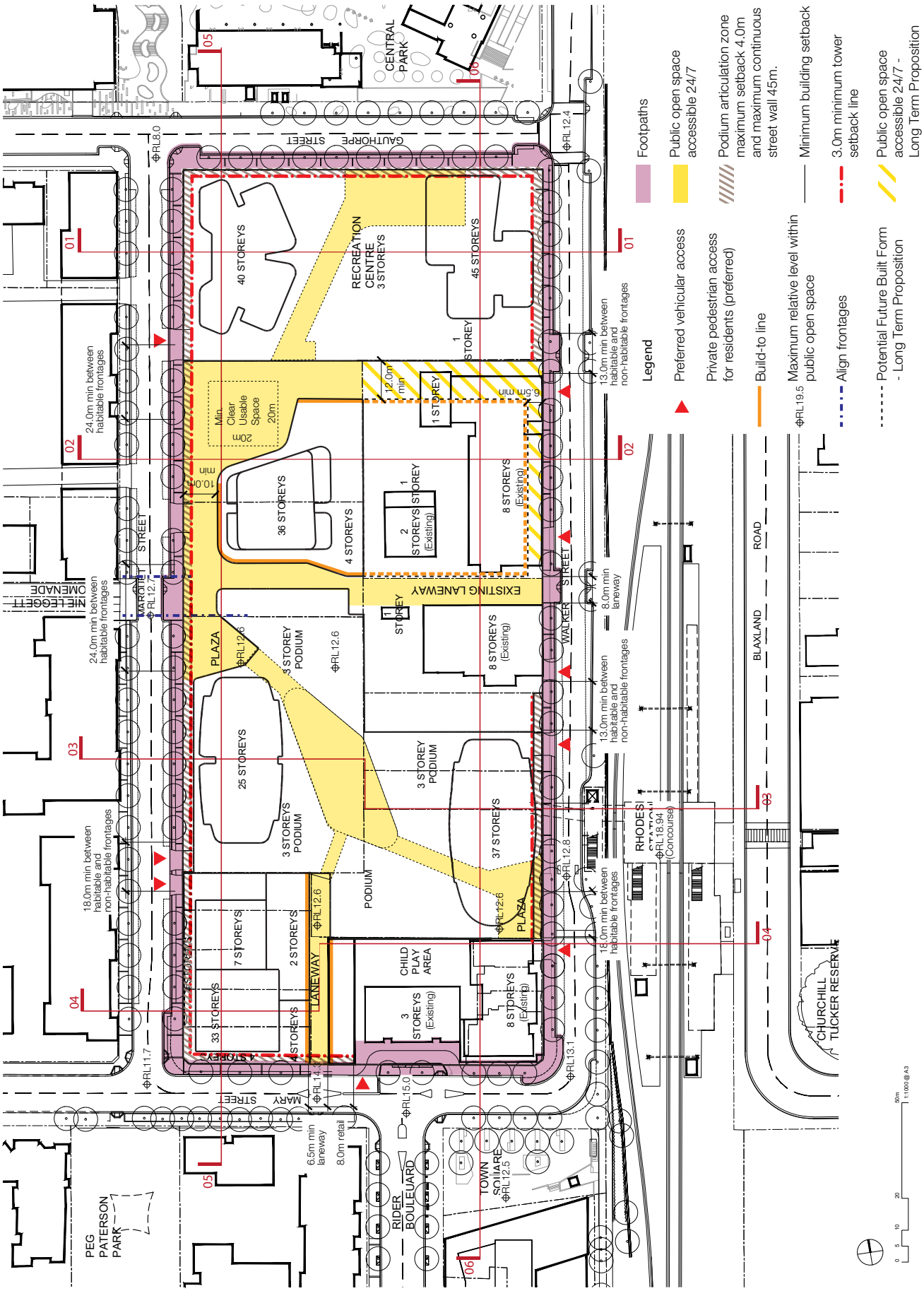


Figure K17-25 Precinct D (Station Gateway West) Master Plan

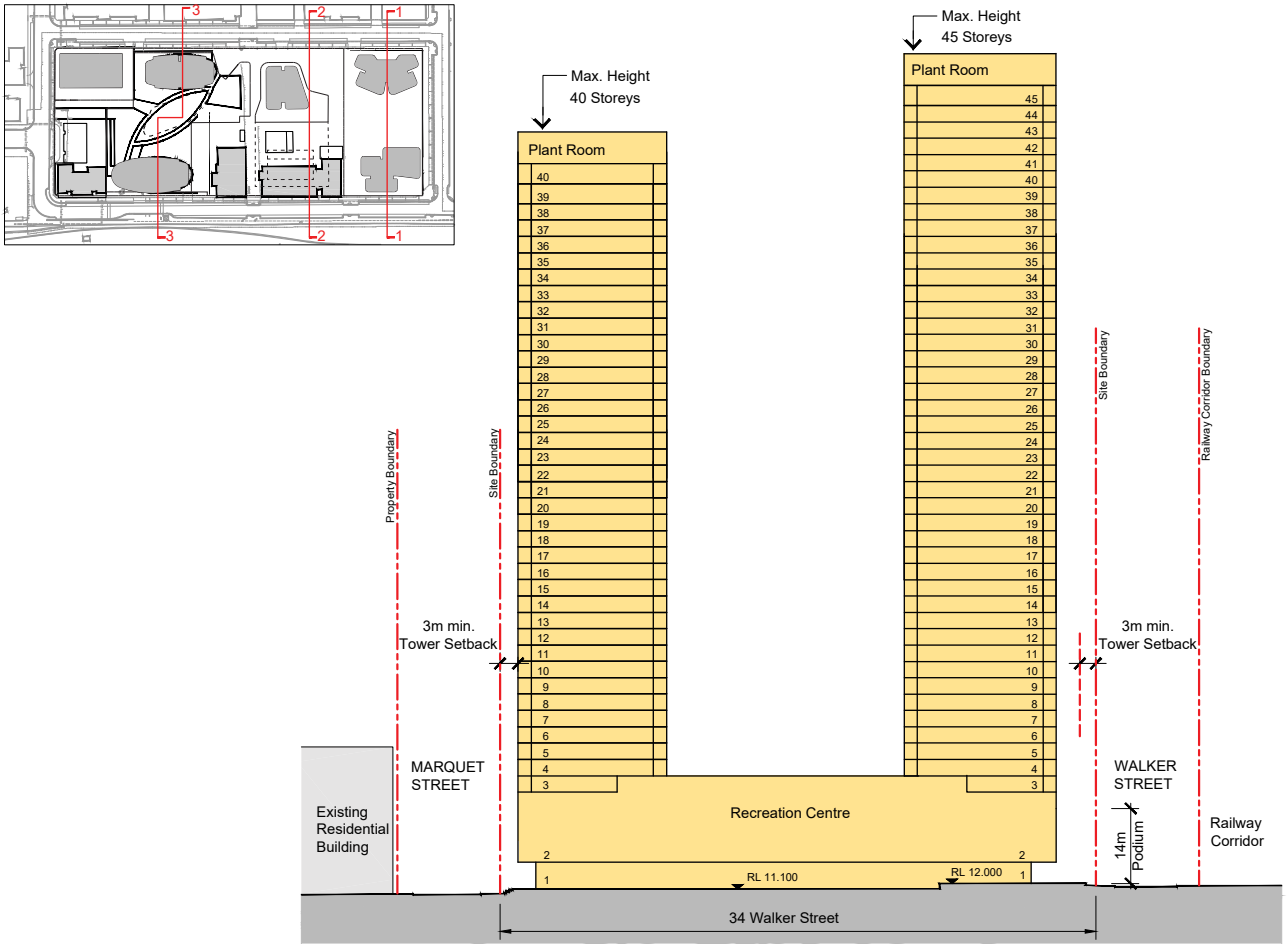


Figure K17-26 Precinct D - Section 1-1

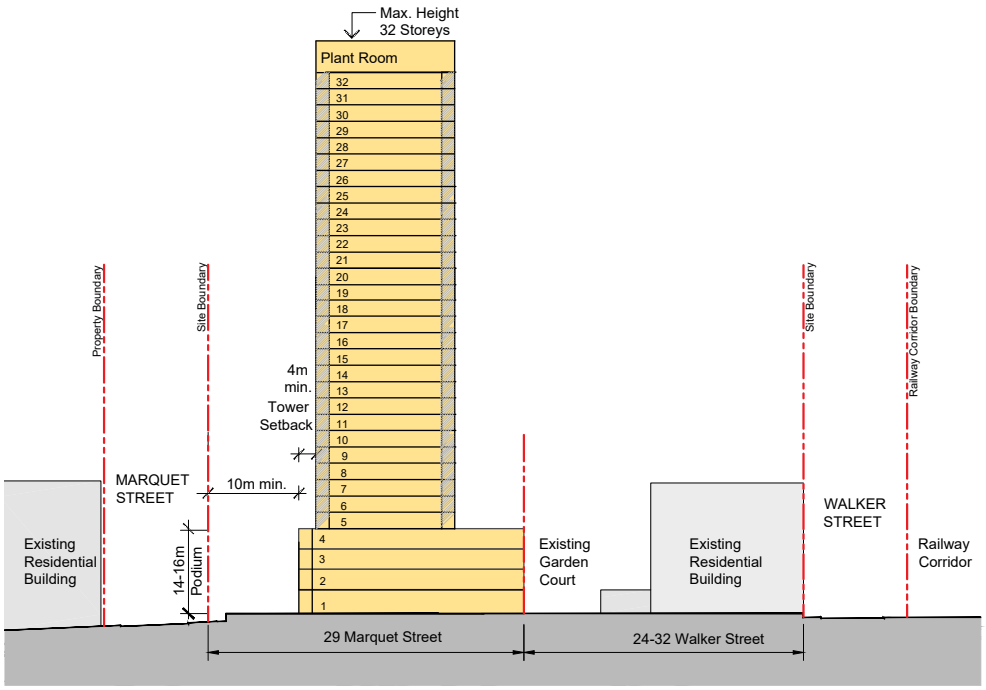
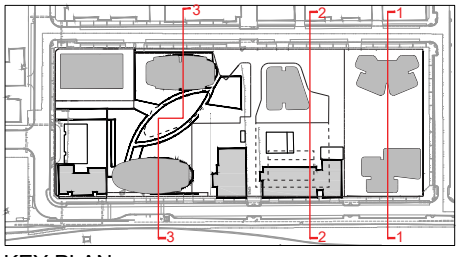


Figure K17-27 Precinct D - Section 2-2



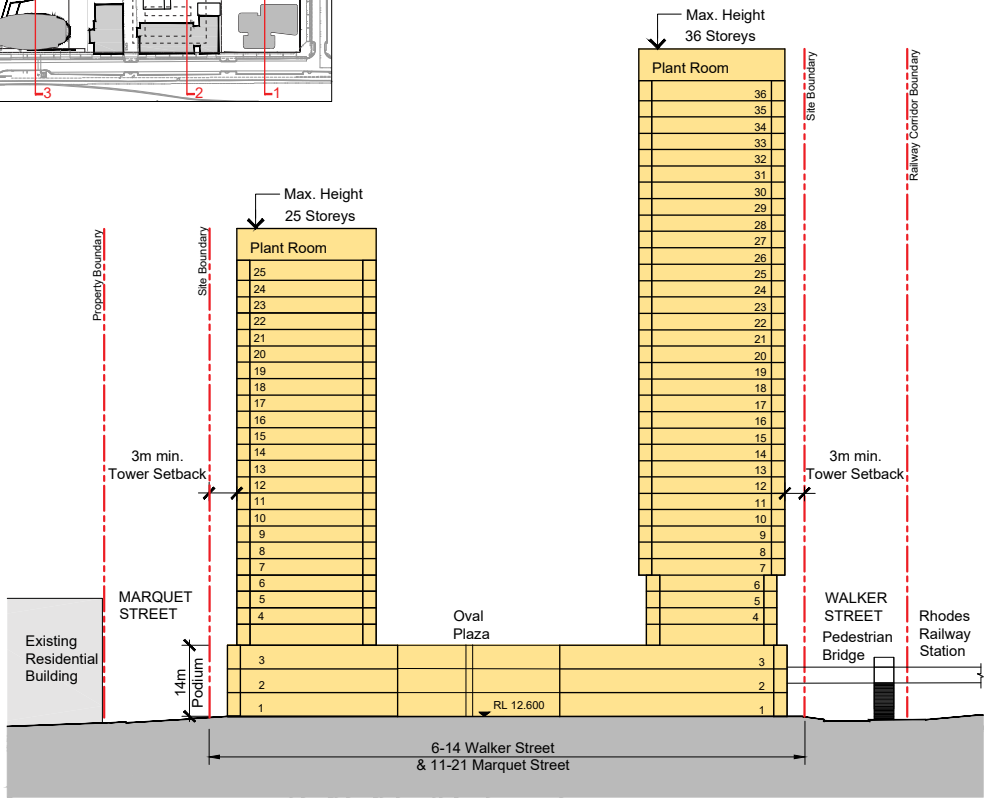


Figure K17-28 Precinct D - Section 3-3

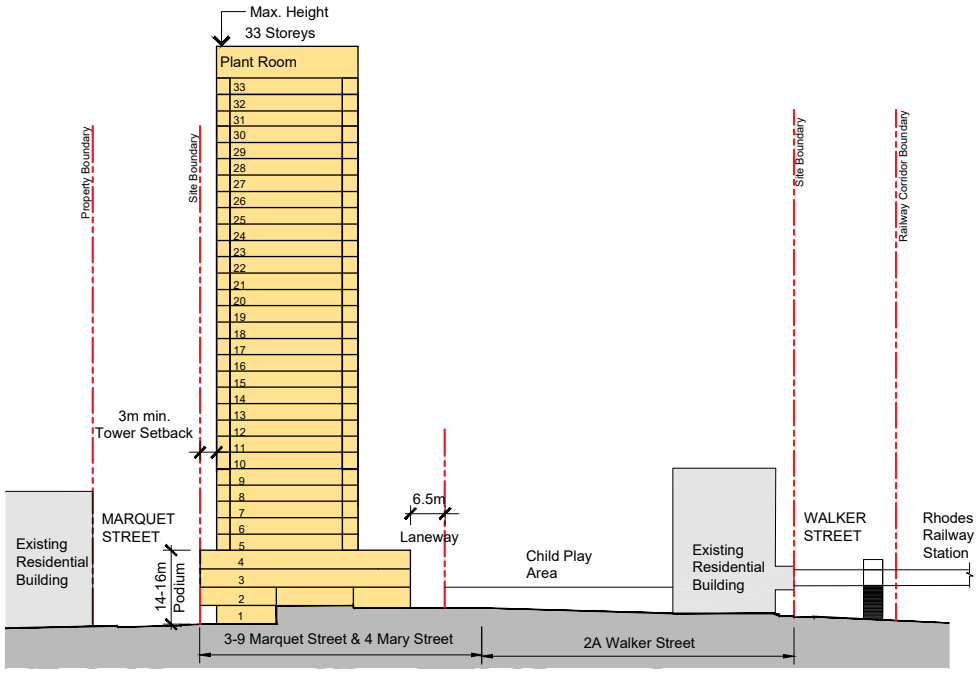


Figure K17-29 Precinct D - Section 4-4

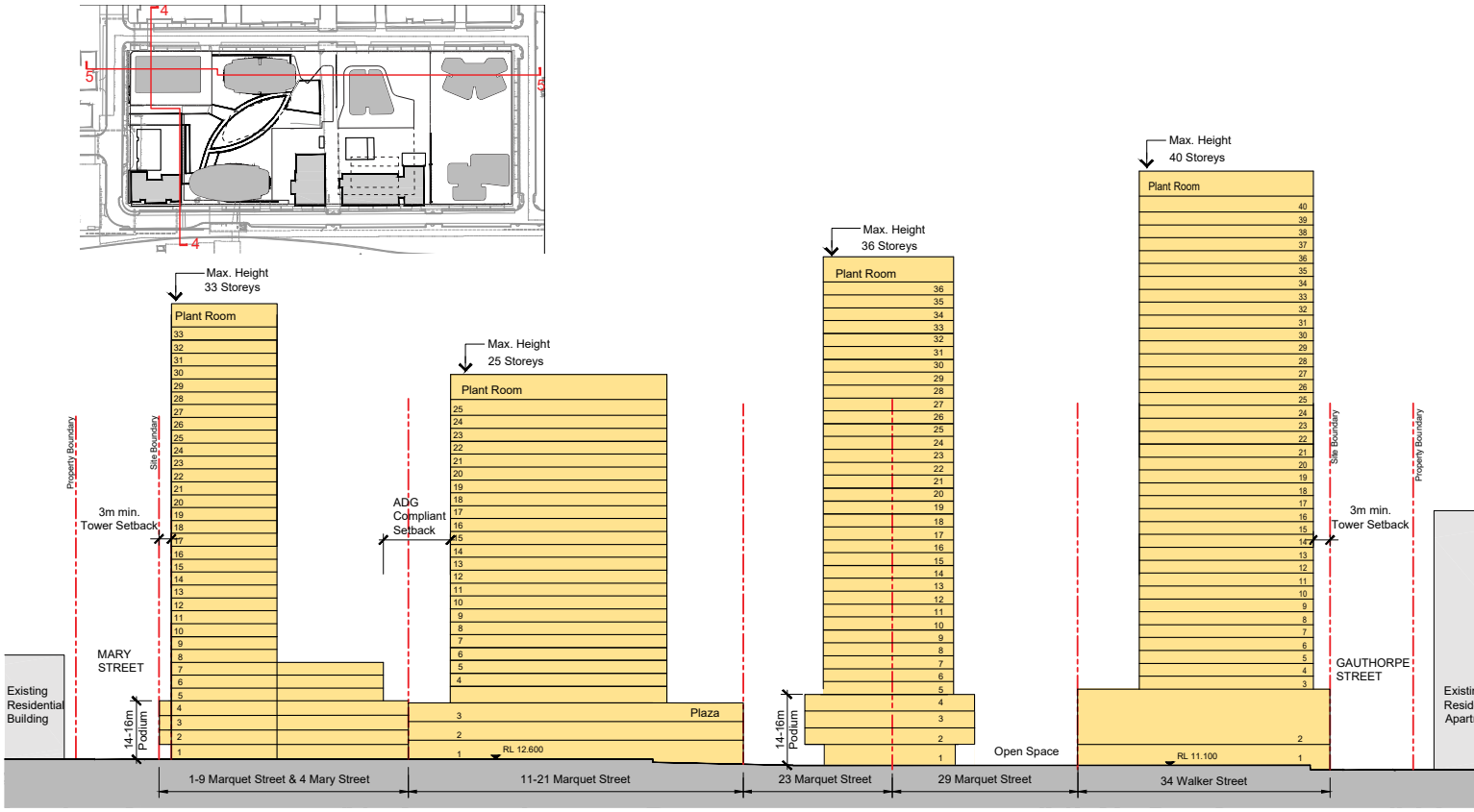


Figure K17-30 Precinct D - Section 5-5

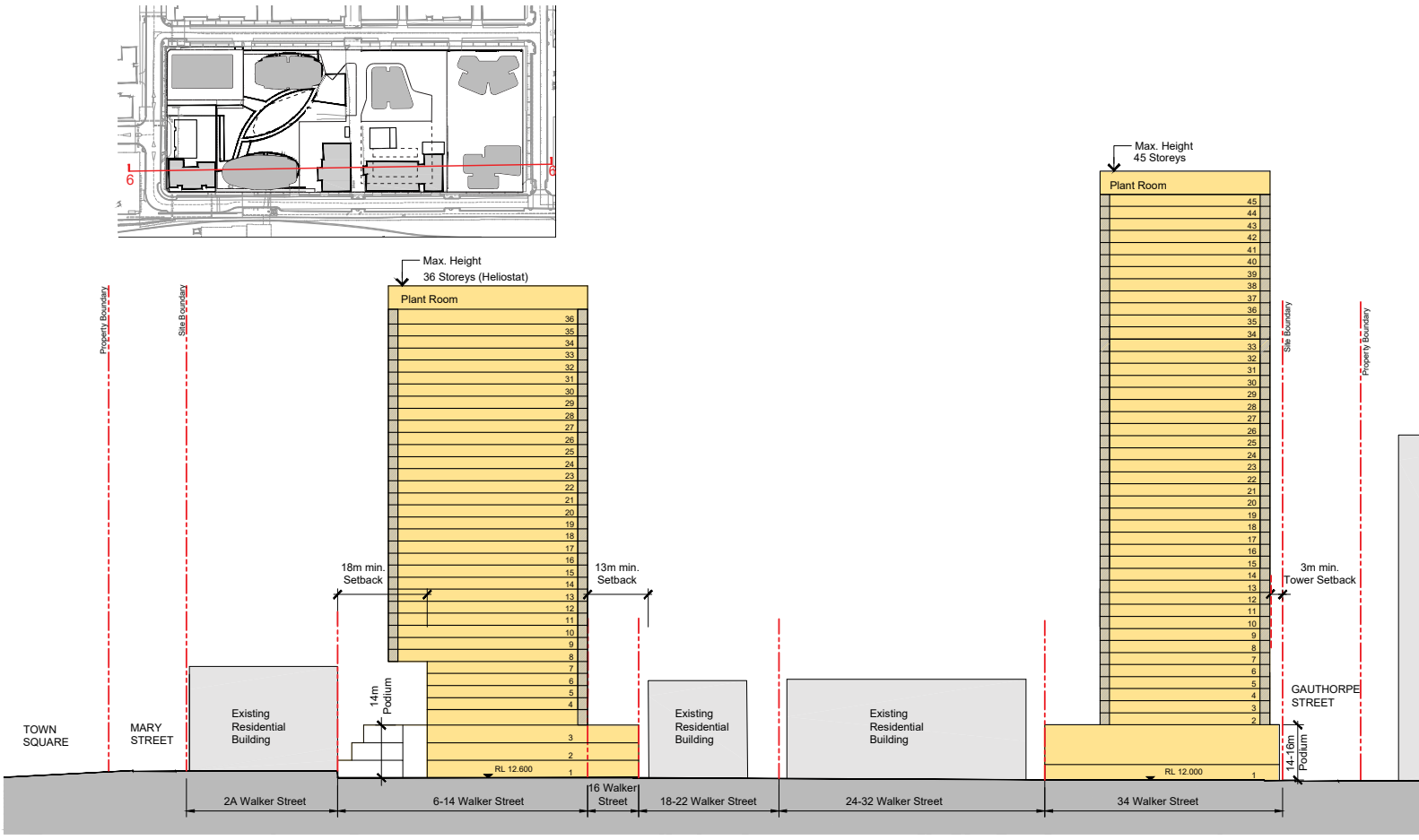


Figure K17-31 Precinct D - Section 6-6

Indicative development concept

This Indicative Development Concept reflects the principles embodied in this DCP and illustrates building footprints that can be achieved by developments that comply with the Station Gateway West Masterplan and the development controls of this DCP. Illustrated is the desired future character of development which complies with this DCP.

It is not the intention of the Indicative Development Concept plan to identify the exact form and design of future development proposals, however, it does illustrate the desired character of the built form and public open spaces. Developments must generally comply with the building envelope controls provided earlier in this section of the DCP.



Figure K17-32 Indicative Development Concept
Not to scale. The diagram illustrates the indicative concepts for built form and public domain



K18 Sydney Wire Mill site, Chiswick



Figure K18-1 Aerial photo (source: nearmap.com)

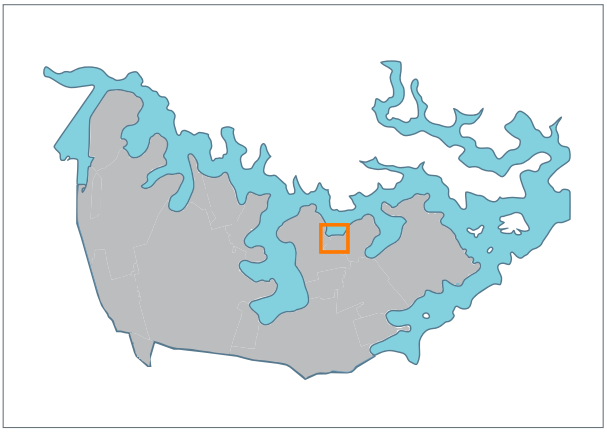


Figure K18-2 Council area map



Figure K18-3 Sydney Wire Mill, Chiswick - Location Plan

K18.1 General objectives

O1. To encourage and facilitate development on the site which, in terms of scale, bulk, form and character, reflects the physical context of the site, is sympathetic to surrounding development, particularly residential development, and does not dominate the landscape;

O2. To retain and incorporate, where possible, significant buildings, trees, natural and man made landforms and any other site features identified as having heritage values, to create a sense of place which respects and enhances those values;

O3. To minimise the impact of development in terms of overlooking, loss of view and loss of sunlight on adjoining and neighbouring properties;

O4. To provide unrestricted public access to the foreshore of Abbotsford Bay, linked to adjoining foreshore access systems and to existing parks;

O5. To provide for the active and passive recreational needs of the residents of the development; and

O6. To provide a publicly accessible street and pedestrian network as an extension of the existing street network.

K18.2 Specific provisions

Design Scale and Bulk

Objectives

O7. To ensure the scale and bulk of proposed buildings responds in a sympathetic and harmonious manner to the site and its context, including the waterway and the surrounding residential neighbourhood; and

O8. To provide a high standard of amenity and environmental quality for future residents.

Controls	
C1.	A four storey maximum height limit applies to most of the site with a two storey height limit on land located opposite existing residential development. The height of buildings, including any car parking levels, must not exceed the height limits specified for the precincts illustrated in Figure K18-5 Maximum Heights and Setbacks.
C2.	Buildings shall not occupy more than 30% of the total site area.
C3.	A 4.5m building line applies to that part of the site fronting Blackwall Point Road which faces existing residential development (see Figure K18-5 Maximum Heights and Setbacks).
C4.	Buildings adjacent to the central spine of public open space and Melrose Crescent shall be set back from this public open space or road reserve boundary as shown on the building envelope control included as Figure K18-4 Indicative 45° Building Envelope Control based on 2.7m wall height.
C5.	Buildings adjacent to the public foreshore open space boundary shall be setback from this public open space as shown on the building envelope control included as Figure K18-5 Maximum Heights and Setbacks.

C6.	Buildings elsewhere on the site should be setback progressively as wall heights increase to reduce bulk and overshadowing.
C7.	Visually the impact of the development of the site should make a positive contribution to 'the landscape and special scenic qualities of the Parramatta River'.
C8.	A gradation of building heights is desirable (see Figure K18-4 Indicative 45° Building Envelope Control based on 2.7m wall height).
C9.	Buildings are to be articulated and are not to present long unrelieved structures that dominate the landscape;
C10.	Buildings shall not be located so as to directly abut any public open space and must be setback as shown on Figure K18-4 Indicative 45° Building Envelope Control based on 2.7m wall height and Figure K18-5 Maximum Heights and Setbacks.
C11.	Buildings shall have a formal presentation to their street frontages, and where appropriate, to Abbotsford Bay and the waterway generally.
C12.	Development shall recognise the contours and natural and man-made landforms of the site and compliment surrounding areas.
C13.	Architectural elements, materials and colour schemes should blend with existing landscape forms and colours.
C14.	The preferable roof form for the bulk of development on the site should be pitched, providing the opportunity for innovative uses of roof spaces.

Open Space

Objectives

O9. To provide public and private open space that meets the needs of residents and the local community having regard for existing land forms, including historic modifications, and visual and functional links with adjoining open space.

O10. To produce a low maintenance landscaped outcome and a management plan for its future maintenance requirements.

Controls	
C15.	In addition to areas zoned RE1 Public Recreation, smaller, more intimate public, community and private landscaped open spaces shall be provided throughout the site, linked by and forming part of the pedestrian and cycle movement system.
C16.	Landscaped areas should generally be designed in plan to be dominated by vegetation rather than by masonry elements. Hard paved areas should be kept to a minimum, consistent with meeting standards for parking, disabled access and site drainage.
C17.	Private open space for each dwelling at ground level must have: a minimum dimension of 3m; direct access from a living area; a maximum gradient of 1 in 10; and screening where necessary to ensure privacy.
C18.	Private open space for each dwelling above ground in the form of a balcony or roof terrace should have: convenient access from the main living area; a minimum area of 10m²; and a minimum dimension of 2m.

Impacts on adjoining and nearby residential properties

Objective

O11. To provide safe, attractive streetscapes which link with and enhance the amenity of neighbouring development.

Controls	
C19.	The street reserves together with the buildings and landscaping defining them should be designed to create an attractive streetscape and establish a clear identity or 'sense of place' to the street, place or precinct.
C20.	Setbacks of buildings from their street frontage should be appropriate to the desired streetscape character and respond to features of the site in terms of views, vistas and existing natural features, including vegetation.

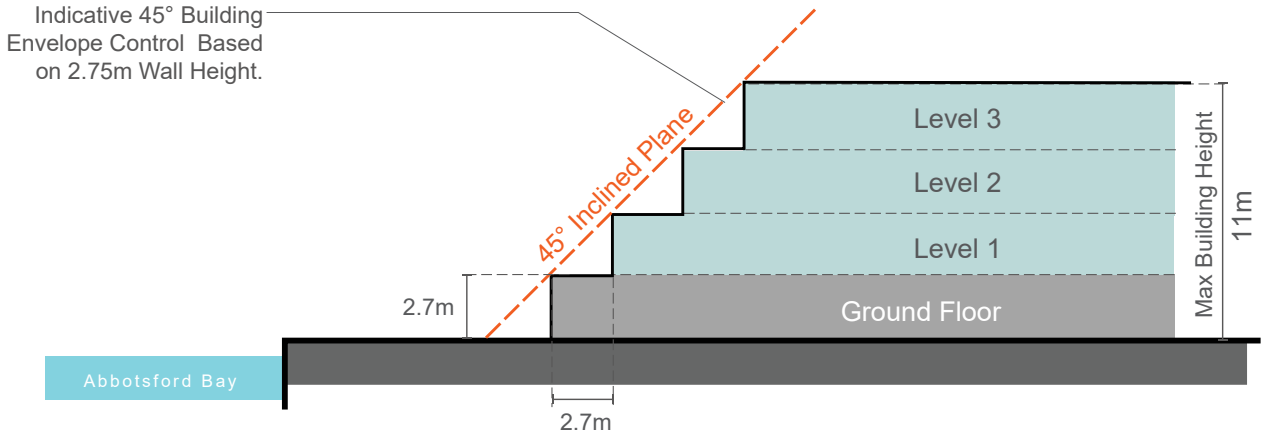


Figure K18-4 Indicative 45° Building Envelope Control based on 2.7m wall height

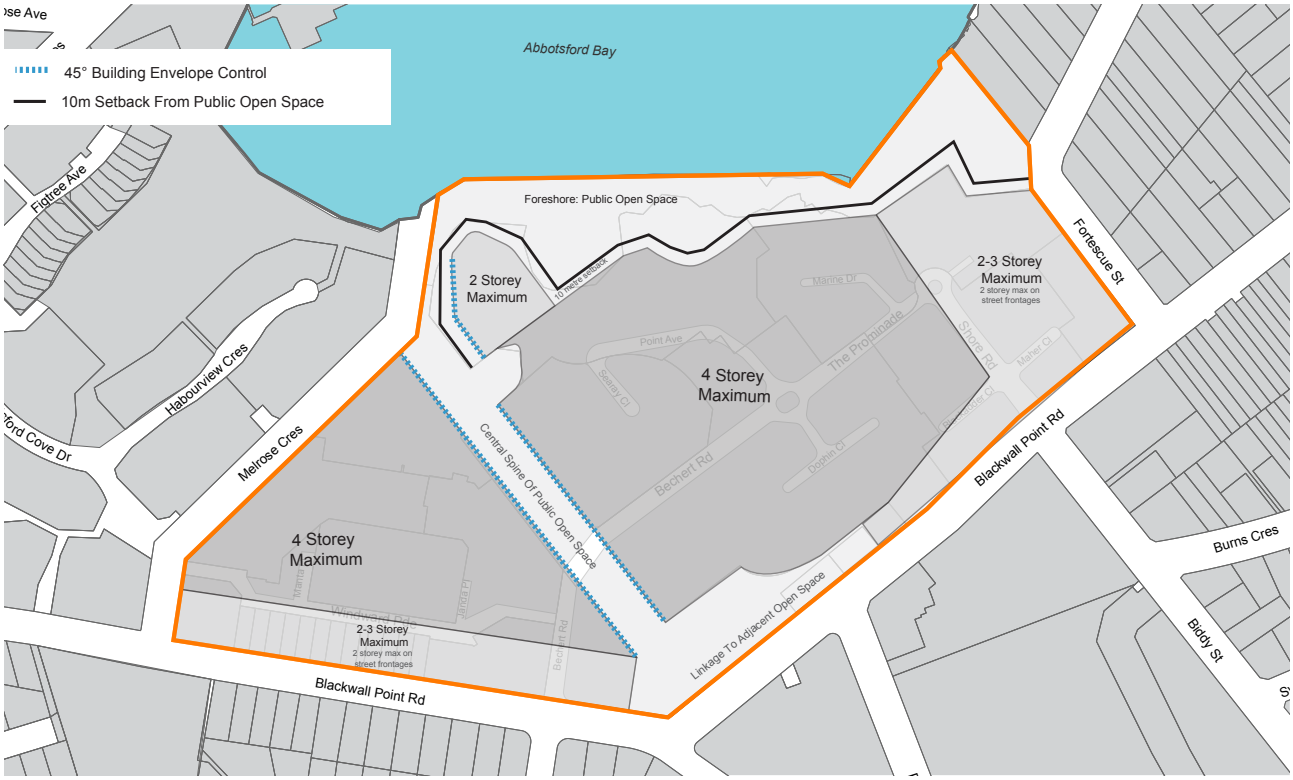


Figure K18-5 Maximum Heights and Setbacks

0 50 100 N



Figure K18-6 Indicative Access Plan

0 50 100 N

K19 Tuscany Court



Figure K19-1 Aerial photo (source: nearmap.com)

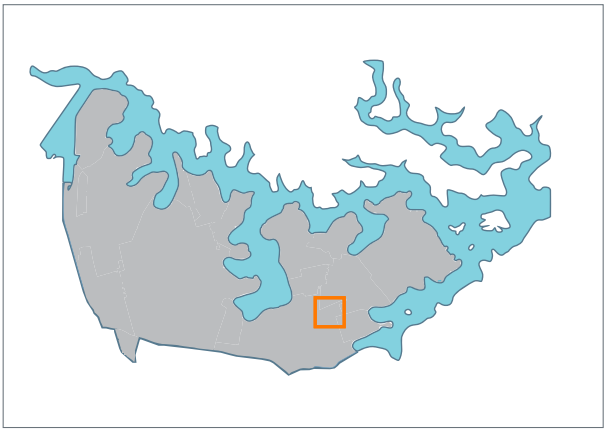


Figure K19-2 Council area map



Figure K19-3 Tuscany Court - Location Plan

K19.1 General objectives

O1 To encourage and facilitate development on the site which, in terms of scale, bulk, form and character reflects the physical context of the site and is sympathetic to surrounding residential development;

O2 To minimise the impact of the development in terms of overlooking and loss of sunlight from adjoining and neighbouring properties;

O3 To provide for the active and passive recreation needs of residents of the development and incorporate recreation facilities such as a swimming pool and tennis courts;

O4 To identify and retain any significant trees on the site; and

O5 To provide for safe access to and from the site.

K19.2 Specific provisions

Density, Design, Scale and Bulk

Objective

O6 To achieve a development outcome which, in terms of its density, design, scale and bulk, responds in a sympathetic and harmonious manner to the site and surrounding residential development.

Height

Controls	
C1.	The height of buildings, including any car parking, should comply with the height limits for the three precincts specified in Figure K19-4 Maximum Height.
C2.	Buildings should be sited within the building envelope from the eastern and western boundaries of the site as illustrated in Figure K19-6 Indicative 45° Building Envelope Control. This includes a minimum setback of 10m from the eastern and western boundaries with the upper two levels to be setback within a 45° plane to minimise overshadowing and overlooking of adjoining properties.

Setbacks

Controls	
C3.	Buildings located on the eastern and western boundaries of the site and the northern boundary adjoining 355 Lyons Road are to be located no closer than 10 metres at any point, from these boundaries (see Figure K19-4 Maximum Height and Figure K19-6 Indicative 45° Building Envelope Control).
C4.	The location of any building near a tree nominated in Figure K19-5 Significant Trees must take account of the drip lines and root systems of the tree.

Design and Form

Controls	
C5.	Buildings are to be articulated and are not to present long, unrelieved structures that dominate the landscape.
C6.	A diversity of accommodation is to be provided, including townhouses and small, medium and large units.
C7.	A pitched roof form is preferable for all development on the site as it provides the opportunity for innovative use of roof space.

Site coverage

Controls	
C8.	Buildings, excluding any community facilities should occupy less than 40% of the site area.

Landscaped and Open Space

Objective

O7 To provide for private open space that meets resident requirements for recreational and social activities and for landscaping;

O8 To ensure all significant trees are retained or relocated on the site; and

O9 To assist on-site drainage by the provision of at ground landscaped open space.

Controls	
C9.	To ensure adequate provision of open space the maximum permissible site coverage is 40%.
C10.	Landscaped open spaces should be provided to accommodate a range of communal and individual needs. There should be a primary open space area containing a recreation facility such as a pool/spa or similar, and this facility is to be easily accessible to all residents on site. Smaller, more intimate landscaped areas should be provided throughout the site and be accessible via a pathway system.
C11.	Landscaping on the eastern and western boundaries is to ensure the privacy of adjoining residential development.
C12.	In accordance with Figure K19-5 Significant Trees trees identified as “must be retained” should be retained on the site. Other trees nominated should be retained or relocated on-site where practicable. Buildings in the vicinity of these nominated trees must be setback from the drip line and root systems of these trees.
C13.	Landscaped areas should generally be dominated by vegetation and not masonry elements. Hard paved areas should, where possible, be kept to a minimum in order to reduce stormwater runoff, although wheelchair access and remediation requirements must be considered.

Access

Objective

O10 Adequate provisions should be made for access to and from the site.

Vehicular Access

Controls	
C14.	Access to the site is not to be provided by a ‘gatehouse’ security system which limits public access to the site.
C15.	Vehicular access is to be maintained to 347 Lyons Road.
C16.	The primary two-way access is to be from Barnstaple Road.
C17.	A secondary access is to be provided from Lyons Road with an island on Lyons Road installed to prohibit entry to the site from the west and exit from the site to the east.

Pedestrian Access

Controls	
C18.	Pedestrian access is to be maintained from Lyons Rd to Dalmeny Ave.

Streetscape

Objective

O11 To provide attractive streetscapes which enhance the amenity of neighbouring development.

Controls	
C19.	The street reserve together with the dwelling fronts and gardens are to create an attractive streetscape and establish a clear character and identity for the street or precinct.
C20.	The setback of buildings from the street frontages to be appropriate to the streetscape character.



Figure K19-4 Maximum Height



Figure K19-5 Significant Trees

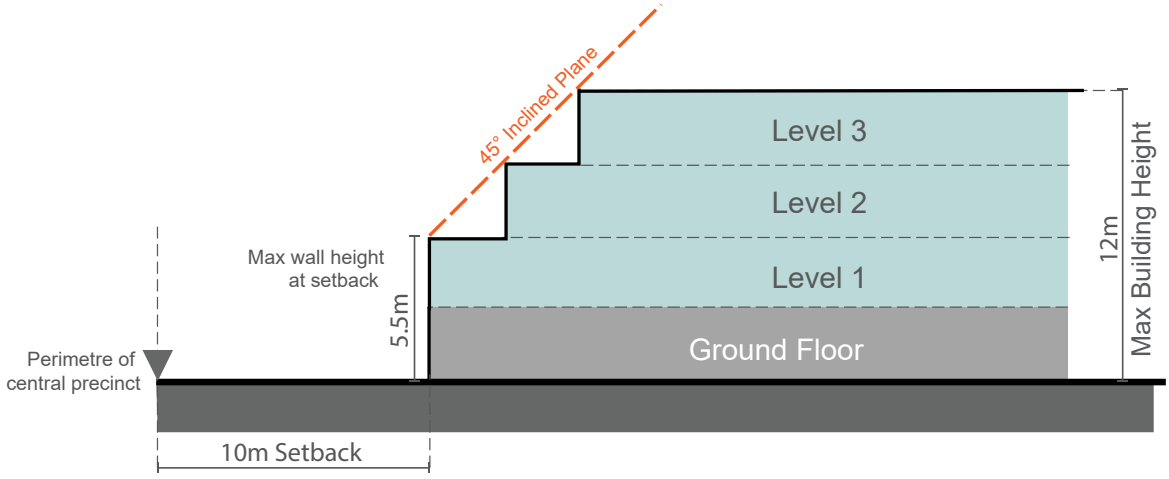


Figure K19-6 Indicative 45° Building Envelope Control

This page was intentionally left blank

L







PART L - DEFINITIONS

Definitions

Note: For additional definitions please refer to the Canada Bay Local Environmental Plan.

Acid sulfate soils

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Advanced tree

An advanced tree is one with a root ball of 90 litres (or larger), which is at least 2 metres in height and 2 years of age. Trees with a 25 litre root ball will be accepted in lieu of trees with a root ball of 90 litres, when local native trees are selected.

Annual exceedance probability (AEP)

The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage.

Arborist report

A report (including photographic evidence) prepared by a suitably qualified arborist to ascertain the Safe Useful Life Expectancy (SULE) of the tree and/or whether the tree presents an unacceptable level of risk that pruning will not resolve.

Articulation zone

Articulation zone means an area of a lot forward of the building line within which building elements are permitted to be located, being an area measured from:

a) one side boundary of the lot to the opposite side boundary of the lot, or
b) if the lot is a corner lot—the secondary road boundary of the lot to the boundary opposite the secondary road boundary.

Attic

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Basement

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Bicycle Parking Facility

Bicycle parking facility - is an area reserved or designed for short term parking of one or more bicycles. It includes a device to which the bicycle frame and wheels can be locked. It is mostly used by visitors to the development at which it is provided.

Bicycle Storage Facility

Bicycle storage facility - is an area reserved or designed for long term parking of one or more bicycles. It is usually enclosed to provide security. It is mostly used by employees or residents of the development at which it is provided.

Building Envelope

Building envelope - means the three-dimensional space within which a building is to be confined.

Building Footprint

Building footprint - means the area of land measured at finished ground level which is enclosed by the external walls of a building

Building Height (or height of building)

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Building height plane

Building height plane - means a plane projected at an angle of 45° over the actual land to be built upon from a vertical distance of 5.0 metres above ground level at the side boundaries of the site.

Building identification signs

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Building line or setback

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Business identification sign

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Canopy

The uppermost branches of a tree, forming a more or less continuous layer of foliage.

Canopy cover

The proportion of land area occupied by the tree's canopy when visualised from directly above.

Canopy Spread

The diameter of a tree's canopy.

Canopy tree

A tree that is capable of forming a canopy that contributes to the urban forest and total canopy cover of an area. A canopy tree can be categorised as follows:

a) Small: 6-8 metres high
b) Medium: 8-12 metres high
c) Large: at least 12 + metres high

Ceiling Height

Ceiling height - in relation to buildings means the greatest distance measured vertically from the ceiling of the upper most habitable room, or in the case of raked or cathedral ceilings a line projected from associated ceilings, to the existing ground level, or the lowest habitable floor immediately below that point, whether or not at natural ground level, excluding chimneys, attic rooms, and non-habitable rooms which are entirely below natural ground level and have no visible external elevation whatsoever.

Child Care Centre

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Co-located facilities

Co-located facilities – means one or more facilities on or within an original facility or a public utility structure.

Co-Siting

Co-siting – means the siting of a number of telecommunication facilities, often owned by different carriers, in one location.

Collection Area

Collection area - is the location where garbage or recyclable material is transferred from a building's storage containers to a collection vehicle for removal from the site.

Communal Open Space

Communal open space - means useable shared open space for the recreation and relaxation of residents of a housing development and which is under the control of a body corporate or equivalent.

Conservation Plan

Conservation plan - means a document establishing the significance of a heritage item and recommending an appropriate policy to enable that significance to be retained.

Cumulative impact

Cumulative impact – in relation to Telecommunications and Radiocommunications infrastructure - means the impact of radiation from various sources or over time.

Council

Council - means the City of Canada Bay Council or any officer or delegated authority authorised to act on behalf of Council.

Deep soil zones

Deep soil zones are areas of soil that do not contain buildings or structures. They exclude basement car parks, services, swimming pools, tennis courts, rainwater tanks, on site detention tanks, and impervious surfaces including car parks, driveways and roof areas.

Development Control Plan (DCP)

A plan made to provide more detailed provisions than those included in a local environmental plan.

Domestic driveway

A vehicular path within a property comprising three or less domestic units where a single or shared driveway is provided.

Dormer Window

Dormer window - means a construction containing a vertical window framed into and projecting through a steeply sloping roof. It can be a window or a group of windows forming a bay or recess in a room projecting outward from the general line of the wall.

Dual Occupancy

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Dwelling House

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Ecologically sustainable development

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Electromagnetic radiation (EMR)

Electromagnetic radiation (EMR) – means the radiation in the microwave and radiofrequency band of the electromagnetic spectrum.

Flood planning area (FPA)

The area of land below the flood planning level (FPL) and thus subject to flood related development controls.

(Source: Department of Infrastructure, Planning and Natural Resources (2005) Floodplain Development Manual: the management of flood liable land).

Flood planning levels (FPL)

The combinations of flood levels (derived from significant historical flood events or floods of specific annual exceedance probability (AEP) and freeboards selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans

(Source: Department of Infrastructure, Planning and Natural Resources (2005) Floodplain Development Manual: the management of flood liable land).

Floor Space Ratio

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Freeboard

Freeboard represents a nominated additional height above a flood level to provide a safety factor against inundation. It is used to set minimum floor levels.

Frontage

Frontage - means the alignment at the public road reserve at the front of a lot and in the case of a lot that abuts two or more streets, the boundary of which, when chosen, would enable the lot to comply with the DCP provisions.

Garbage and Recycling Room

Garbage and Recycling Room - means a room where garbage and recycling receptacles are stored, awaiting reuse or removal from the premises.

Gross Floor Area

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Gross Leaseable Floor Area

Gross Leaseable Floor Area – the sum of the areas of each floor of a building that is taken to be the area within the internal faces of the walls, excluding stairs, amenities, lifts, corridors and other public areas but including stock storage area.

Ground Level (existing)

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Habitable Room

Habitable room - is a bedroom, living room or kitchen, dining room, study, play room and sun room.

but excludes:

a bathroom, laundry, water closet, food storage pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, ancillary storage or parking area and other spaces of a specialised nature occupied neither frequently nor for extended periods.

Heritage tree

Any tree that is identified individually or contained within a property identified in the Canada Bay Local Environmental Plan in Schedule 5 or shown on a Heritage Map.

High Flood Risk Precinct

An area of land that under 1%AEP conditions is either subject to a high hydraulic hazard or presents significant evacuation difficulties.

Injuring

Injuring - includes the administration to any part of a tree of any chemical or compound or substance which has the potential to harm the tree, irrespective of whether it actually harms the tree; “injuring” also includes altering the ground level in the near vicinity of the tree; “injuring” also includes changing the level of the water table so as to adversely affect the tree.

Internal lot

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Landscaped Area

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Lane

A public road, with a width greater than 3m but less than 7m, that is used primarily for access to the rear of premises, and includes a nightsoil lane.

Local Environmental Plan (LEP)

An LEP is a legal document and generally provides the land use zones, Council Objectives and development standards for different types of development.

Low Flood Risk Precinct

An the area above the 100 year flood and includes all area up to and including the 'Probable Maximum Flood (PMF)'.

Low Impact Facility (LIF)

Low impact facility (LIF) - a facility that is exempted from state and council local planning under the Telecommunications (Low-impact Facilities) Determination 1997.

Medium Flood Risk Precinct

An area of land that under 1%AEP conditions is not subject to a high hydraulic hazard and presents less than significant evacuation difficulties.

Multi Dwelling Housing

Note: Refer to the Canada Bay Local Environmental Plan for definition.

NatHERS or equivalent

NatHERS or equivalent - NatHERS (Nationwide House Energy Rating System) is a computer simulation tool developed by the CSIRO for rating the thermal performance of houses across Australia. The Energy Management Task Force is responsible for delivering a NatHERS compliance protocol. Any software or paper checklist which passes under this protocol is deemed “NatHERS or equivalent” (SEDA 1997).

North Facing

North facing - means the orientation within 20 degrees east and 30 degrees west of true north.

Outbuilding

Outbuilding - means a detached building or structure used for purposes ancillary to the main dwelling on an allotment and includes cabanas, gazebos, garden sheds, greenhouses, garages, carports and the like.

Parent lot

In relation to subdivision, means the lot that is being subdivided.

Private Open Space

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Protected tree

A protected tree is:

a) any tree with a height equal to or greater than 5 metres above ground level (existing); or
b) any tree that is under 5 metres in height that has a trunk diameter of more than 300mm at ground level (existing); or
c) has a canopy spread of over 4m; or
d) a native palm, cycad or mangrove, irrespective of its dimensions.

Radiocommunications facility

Radiocommunications facility – means a base station or radio communications link, satellite-based facility or radio communications transmitter.

Recycable

Recyclable - means capable of being reprocessed into useable material or re-used.

Removal and Cutting down

Removal and cutting down - means the cutting down of a tree so that the tree, including its branches, foliage, trunk, stump and root system will not regrow. This includes the poisoning of the stump and/or roots and/or removal or grinding out of its remains to prevent regrowth. “Transplanting” is “Removal” when a tree is relocated from one property to another.

Residential Flat Builidng

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Semi-Detached Dwelling

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Site Coverage

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Solar Access

Solar access - means the amount of direct access to sunlight enjoyed by a building, room or open space.

Statement of Heritage Impact (SOHI)

Statement of Heritage Impact (SOHI) - means a statement prepared in accordance with the requirements of the Heritage Manual that addresses the significance of the place or item; adequately describes the existing features of the item or place; describes the proposed works and its contribution to the significance of the item; and justifies any proposed works.

Streetscape

Refers to the view from the public domain, including but not limited to a street, road, laneway, public reserve, or the like.

Structural engineers report (tree removal)

A report (including photographic evidence) prepared by a suitably qualified structural engineer that demonstrates that the subject tree is causing damage to buildings, structures or underground services.

Special Waste

Special waste - means a waste that posed or is likely to pose an immediate or long-term risk to human health or the environment. This includes hazardous waste, clinical waste and contaminated waste. Special arrangements need to be made for the management of these wastes.

Storey

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Telecommunications facility

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Telecommunications Network

Note: Refer to the Canada Bay Local Environmental Plan for definition.

Tree

A perennial plant with at least one self-supporting woody or fibrous stem.

Urban forest

All trees and vegetation growing within urban areas on public and privately owned lands and includes the organisms for which they provide habitat.

Wall Height

Wall height - means the greatest distance measured vertically from the topmost point on an external wall of a building, other than a gable wall or the wall of a dormer window, to existing ground level immediately below that point.

Waste

Waste – means any substance that is no longer able to be used for the purpose for which it was originally intended, and defined under the Waste Minimisation and Management Act, 1995, as:

a) Any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume or manner as to cause an alteration in the environment; or
b) any discarded, rejected, unwanted, surplus or abandoned substance; or
c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or recycling, reprocessing, recovery or purification by a separate operation from that which produced the substance; or
d) any substance prescribed by the regulation to be waste under the Waste Minimisation and Management Regulation.

For the purpose of the DCP, a substance is not precluded from being waste merely because it can be re-processed, re-used or recycled.

Waste Management Plan

Waste Management Plan – means a checklist showing the volume and type of waste to be generated, stored and treated on site, and how the residual is to be disposed, re-processed, re-used or recycled.

Waste Storage and Recycling Area

Waste storage and recycling area – means a designated area or a combination of designated areas on the site of a building for the housing of approved containers to store all waste material (including recyclable material) likely to be generated by the occupants of the building.

This page was intentionally left blank

A1







APPENDIX 1 - CONSERVATION AREAS

Statements of significance A1-2

CA.1 Birkenhead and Dawson Estates Conservation Area A1-2
CA.2 Bourketown Conservation Area A1-7
CA.3 Creewood Street Conservation Area A1-15
CA.4 Drummoyne Avenue East Conservation Area A1-17
CA.5 Drummoyne Avenue West Conservation Area A1-20
CA.6 Drummoyne Park Conservation Area A1-22
CA.7 Gale Street Inter-War Californian Bungalow Group A1-25
CA.8 Gale Street Victorian Housing Group A1-27
CA.9 Gears Avenue Conservation Area A1-29
CA.10 Gipps Street Conservation Area A1-31
CA.11 Hampden Road Conservation Area A1-33
CA.12 Lindfield Avenue Conservation Area A1-36
CA.13 Majors Bay Road Conservation Area A1-38
CA.14 Marlborough and Tavistock Streets Conservation Area A1-40
CA.15 Mons Street and Boronia Avenue Conservation Area A1-43
CA.16 Moore Street Conservation Area A1-45
CA.17 Mortlake Workers' Housing Group A1-47
CA.18 Park Avenue Conservation Area A1-49
CA.19 Parklands Estate Conservation Area A1-51
CA.20 Powell's Estate Conservation Area A1-53
CA.21 Sailsbury Street Housing Group A1-55
CA.22 Thompson Street Conservation Area A1-57
CA.23 Victoria Road Retail Conservation Area A1-59
CA.24 Yaralla Estate Conservation Area A1-61

Statements of significance

CA.1 Birkenhead and Dawson Estates Conservation Area

History

This conservation area includes the subdivisions of two major estates. The first was the 1882 Birkenhead Estate subdivision that included the land bounded by Lyons Road, Victoria Road, Ferry Lane, Ferry Road, and Iron Cove Bay. That was followed in 1901 by two subdivisions of the Dawson Estate that included most of the land to the east of Ferry Lane. A third subdivision of the Dawson Estate in 1908 included the land between Albert Street, Alexander Street and Queen Victoria Road.

Development in this Conservation Area followed the subdivisions and houses from the Victorian period survive in Renwick Street and on Park Avenue, Thornley Street and Day Street. Most of the remaining development is from the Federation period, reflecting the continued development of the Birkenhead Estate and the rapid development of the Dawson Estate subdivisions.

Description

This area contains some of the earliest surviving buildings in Drummoyne with an interesting collection of buildings from the late Victorian period including a number of stone houses in Renwick Street. The area is also of historical interest with the very high retention rate of items of heritage significance in Renwick Street due to its long term road widening affectation which effectively prevented any development for over 20 years. This has resulted in this group of properties surviving as the most intact early and modest housing streetscape in the Municipality.

The styles of housing in the Conservation Area reflects the various subdivisions. Renwick Street was developed early in the development of Drummoyne, along with other streets close to Victoria Road. In contrast the adjoining streets released for development at a later period are more typical of the strong Federation character of Drummoyne.

The scale of building is modest with a large number of simple timber cottages, stone cottages and generally unpretentious buildings. This is particularly seen in Alexandra Street and Day Street.

The area falls into three distinct characters:

- Renwick Street with its late Victorian through to inter-war housing
- Alexandra, Albert and Day Streets which have a predominantly Federation character and
- Thornley Street and Park Avenue which have a mix of Edwardian, Federation and several late Victorian buildings.

The generally narrow allotments (15-16m frontages) has resulted in tightly packed development. Access to the rear of allotments on Alexandra Street and Renwick Street has allowed garages and carports to be built away from the main streetscape.

Statement of Significance

The Birkenhead and Dawson Estates Conservation Area is of high heritage significance for the very intact and complete streetscapes reflecting the intense development of Drummoyne in the late nineteenth and early twentieth century. The styles of housing clearly reflect the pattern of subdivision of the area.

This Conservation Area includes extensive groups of Federation and Edwardian housing interspersed with Victorian cottages and some larger two storey homes. The narrow allotments and generally consistent scale of development create a cohesive and interesting streetscape.

Analysis - Setting

This conservation area has narrow allotments. Setbacks are generally smaller closer to Victoria Road. Street trees are important in contributing to the character of much of this area. The angled junction of Ferry Lane and Thornley Streets gives additional interest to the streetscape in that part of the Conservation Area.

Scale

Most of the housing has single storey frontages to the street, consistent with the narrow allotments. Two storey housing is scattered through the area. Some semi-detached housing utilising double allotments is included in the area and gives the impression of larger scaled housing.

Form

Some of the earlier development has simple rectangular massing with simple hipped roofs and verandahs running across the full width of the houses. The dominant Federation period housing breaks up the overall massing with projecting wings and more complex roof forms. Gables are used either as decorative features or as the main roof form. The two storey housing on the smaller allotments generally has quite simple massing with the main bulk of the building set behind a verandah to help reduce the overall bulk in the streetscape.

Facades usually include verandahs and elements that step forward of the main part of the building. This often adds interest to the roof form as well as the street front of the house. Simple verandahs across the street facades help to soften the impact of the higher two storey facades on the streetscape.

Materials and Colours

Face brickwork is the most common original material. Sandstone and render is found on the earlier Victorian housing. Roofs of the Federation and Edwardian housing are usually terracotta or slate shingled. Some cottages have galvanised corrugated steel roofs.

Doors and Windows

Doors and windows are usually vertically proportioned. Larger openings, when they occur, are divided vertically.

Carparking

Parking is generally at the rear of the property, in some cases taking advantage of rear street access. On steeply sloping sites, some garages have been built into the retaining walls on the street front.

Fencing

A mixture of fencing is used and depends to some extent on the nature of the site and the character of the house.

Masonry retaining walls of face brick or stone are used on sloping sites. Low masonry fences of either face brick or stone are common on the early twentieth century development. On some late Federation and Inter-War housing, the brick piers are linked by a pipe rail. Timber picket fences are usually modern reproductions and are not original to the streetscape.

Garden Elements including Paving and Driveways

Hedges are often used where increased privacy is desired. Driveways are often a pair of concrete strips parallel to the side boundary of the house. Terraces provide a setting on steeply sloping sites where houses are located on the high point to maximise views.

Refer to Figure App1.1 to Figure App1.3



Figure App1.1 Birkenhead and Dawson Estates Conservation Area - Overview



Figure App1.2 Birkenhead and Dawson Estates Conservation Area - Sheet 1



Figure App1.3 Birkenhead and Dawson Estates Conservation Area - Sheet 2

CA.2 Bourketown Conservation Area

History

Bourketown was initially established in the 1840 period making it one of the first planned developments in the area along with Gipps Town at Five Dock. The subdivision had Bourke Square at its centre and was first offered for sale in 1841.

Although some land was taken up little development took place until the area was linked by the Iron Cove Bridge to the city in 1882. The new bridge resulted in further sales and was the start of the development that currently typifies the area. There appear to be no structures remaining from the pre-1880 period of development.

The area between Formosa Street and South Street was re-subdivided in 1883 as the Tranmere Estate. Further re-subdivision of larger blocks continued into the Inter-War period and is reflected in the housing styles.

The most intensive phase of development in the Bourketown area was the Federation period. Speculative developments of semi-detached houses are concentrated closer to Victoria Road and free-standing Federation period houses dominate other parts of the conservation area. A small number of late Victorian houses survive, primarily in the area closer to Bourketown Square. The dominant Federation phase of development is reinforced with a good range of Inter-War housing.

Statement of Significance

The Bourketown Conservation Area is of high value in reflecting the principal late Victorian and Federation period of development of the Drummoyne Area. The street layout survives from the original Bourketown subdivision, one of the earliest subdivisions of the area. The focal point of Bourketown is Bourke Square and it is in this vicinity that some of the finest individual buildings and groups of buildings are located, along with a small group of commercial buildings and the Drummoyne Public School.

Bourketown is important for its remaining Victorian housing, particularly in the vicinity of Bourke Square, which includes substantial houses on generous allotments as well as a scattering of worker's homes. This development is surrounded by the Federation housing that dominates the streetscapes and, importantly, includes a range of housing from semi-detached speculative development closer to Victoria Road, through to smaller freestanding houses, to large houses of high individual value. These are representative of most styles of residential development from the Federation period and include housing for a variety of social classes.

The conservation area includes a number of important urban buildings including four churches, a public school, commercial buildings and a major water reservoir all relating to the early twentieth century development of the precinct and all of high value both individually and for understanding the development of the area.

Future Character

The future character for this large and mixed area is principally to retain the strong overall heritage urban character of the streets with their mix of one and two storey houses on lots of mixed size.

Existing building stock is predominantly Victorian and Edwardian with some Inter-war pockets of housing and these characters should be retained. Buildings built prior to the Second World War should not be demolished and new buildings should retain the scale and overall character of the immediate area as it relates to bulk, form and use of materials. Given the large lot sizes for much of the area, additions and new buildings can be in a range of forms including good contemporary design with the emphasis on 'fit' into the setting. Garages and carports should not be added in front of the building line.

Analysis - Setting

The area falls into a number of separate zones or precincts that are related to groups of streets.

Firstly the major north-south streets linking to Lyons Road: Gipps; Thompson; Tranmere and College Streets. These streets are wide, have long vistas, established street plantings and strong heritage value. They have a strong suburban character with a sense of spaciousness that relates to the scale of houses. The central street, Thompson Street, contains Bourketown Square which is a major public space of high heritage value that represents the first development of the Drummoyne area and forms a focal point in the area. The location of important civic buildings of high heritage value, such as churches and public utilities on these streets adds to their importance in the townscape.

The secondary north-south streets are narrower and have a smaller scale of housing development, greater use of semi-detached forms and a tighter urban fabric. These streets are: Ullathorne, Henley, and Formosa Streets and South Street (for its northern section). Formosa Street in particular is noted for its fine streetscape of semi-detached Federation housing.

The east-west streets have a completely different character. They are narrow (except for Day Street and sections of Plunket and Broughton Streets which are of varying widths) and contain a much tighter sub-division pattern with generally small blocks and far less pretentious houses. This is particularly seen in Bowman and Polding Streets. The western blocks of Polding and Bowman Streets and Plunkett Street contain the largest scattering of Victorian cottages and houses outside Thompson Street.

The major houses are not confined to one location within Bourketown, but the major groupings are in Thompson Street, the south end of Tranmere and South Streets and Lyons Road. The precinct in Thompson Street from Broughton Street to Bowman Street contains the most substantial and significant group of buildings, but this does not devalue the smaller scale buildings around it.

Another distinctive area of the Bourketown Conservation Area is the Lyons Road frontage from Formosa Street to Thompson Street. This frontage, which effectively forms part of the main road frontage rather than the residential character of the rest of the precinct, contains:

- commercial buildings at both the Drummoyne shopping centre, Tranmere Street and Thompson Street corners, several of which are individually important and intact examples of Inter-war retail buildings
- Drummoyne Fire Station
- Drummoyne Presbyterian Church at a key visual location
- blocks of Inter-war apartments of very fine proportion and detailing set amongst a series of substantial Federation and later homes which indicate the predominant early character of this road frontage.

Scale

The buildings fall into a range of groups. The predominant form for Thompson Street, South Street and Tranmere Street is single residences of significant scale. Most of Formosa Street and its side streets have single storey semi-detached housing built as speculative development. Other streets have small single fronted cottages or large groups of semi-detached dwellings generally speculatively built as seen for much of the length of Formosa and Edwin Streets and part of Day Street and Bowman Street.

Single storey housing is dominant with two storeys housing usually only confined to freestanding homes on larger allotments or for buildings originally incorporating shops.

Form

The dominant Federation period housing in the Bourketown Conservation Area is noted for the use of interesting roof forms with decorative gables providing interest and rhythm to the streetscape.

Siting

The siting of buildings in Bourketown is related to the scale of the building and the size of the site. The closely spaced semi-detached groups have small setbacks. Setbacks generally increase on larger allotments.

Materials and colours

Red face brickwork is the dominant material in the Bourketown Conservation Area. A few surviving Victorian buildings are rendered but this is the exception and these contrast to the general streetscape. The red tones continue in the terracotta roof tiles used either as a main roof material or as a highlight to the grey slate roofs.

Timber is generally used for verandah framing and joinery elements.

Colours were selected from a limited palette and complement the natural tones and textures of the materials.

Doors and Windows

Windows on contributory buildings are almost exclusively timber framed. The dominant Federation period housing has either casement or double hung windows. Larger openings are created by grouping two or three sashes together or by using French doors.

Fencing

The small number of Victorian houses in the area had transparent fencing of either iron pickets between masonry posts or timber pickets. The iron picket fencing could be up to 1.8m high on larger blocks, but clear documentation of physical evidence of this would be needed before reproduction of fencing of that height was approved. Most picket fencing would be a maximum of 1.2m high.

The dominant Federation period housing usually had low masonry fencing with panels of timber pickets or wrought steel up to a maximum of 900mm high.

Inter-war period housing in the Bourketown Conservation area usually had face brick fencing with brick piers separated by low brick panels with horizontal steel pipe rails.

Subdivision

The late nineteenth and early twentieth century subdivision patterns are typically small allotments. Larger allotments are generally only found with surviving free standing houses or are the sites of churches, schools and other public buildings. The subdivision patterns in the Bourketown Conservation Area are closely related to the rhythm of the streetscape.

Refer to Figure App1.4 to Figure App1.8



Figure App1.4 Bourketown Conservation Area - Overview

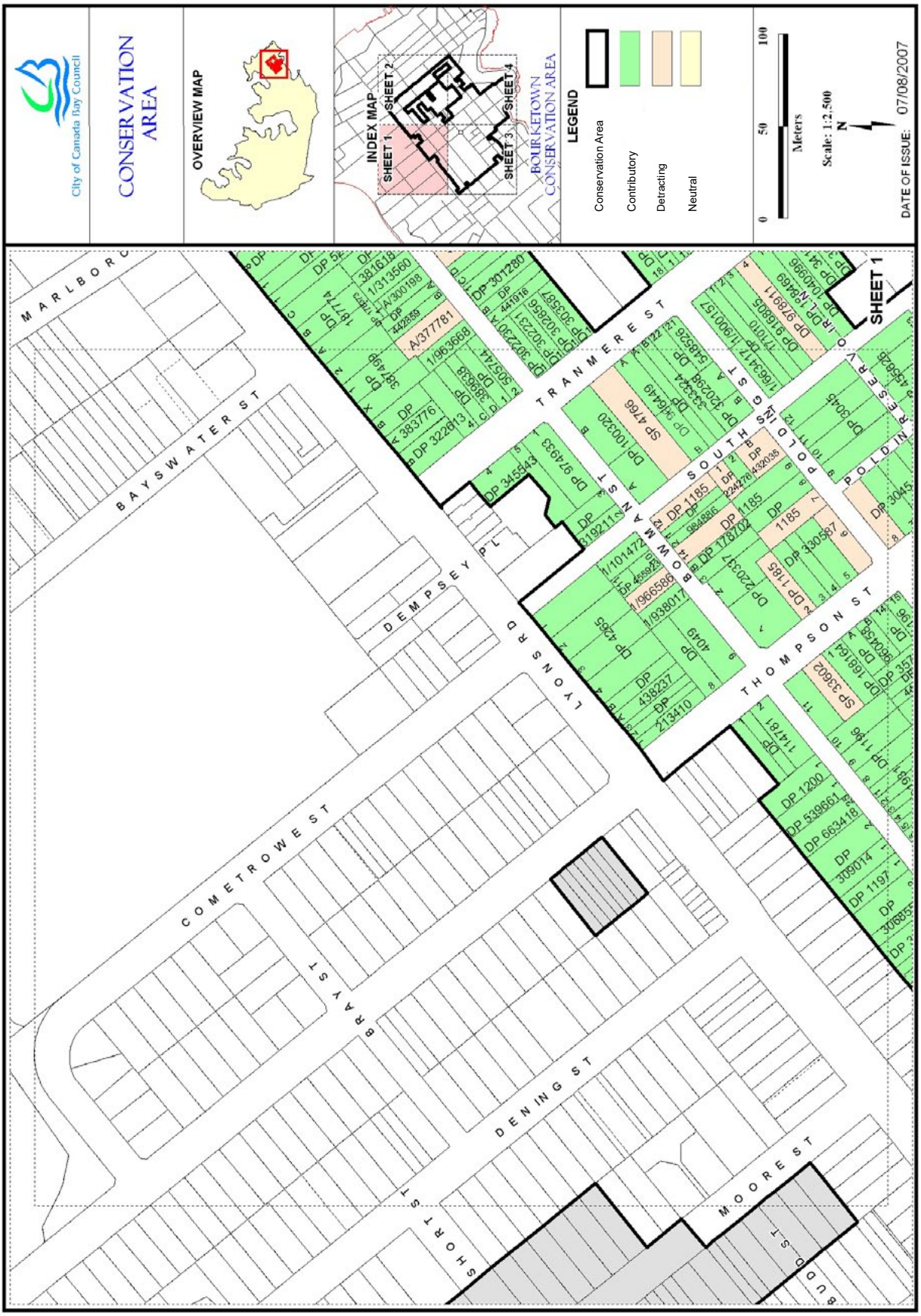


Figure App1.5 Bourketown Conservation Area - Sheet 1



Figure App1.6 Bourketown Conservation Area - Sheet 2



Figure App1.7 Bourketown Conservation Area - Sheet 3

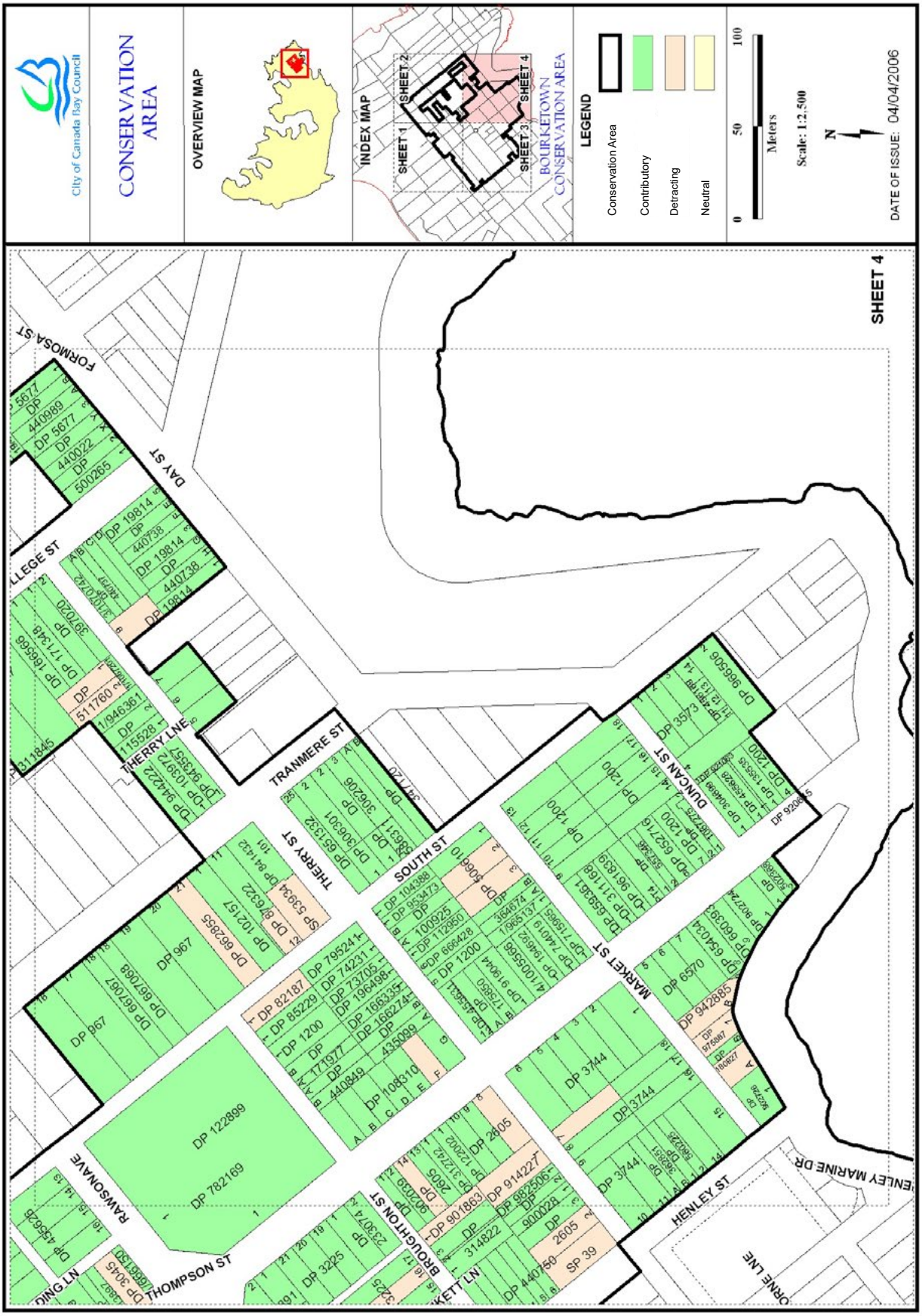


Figure App1.8 Bourketown Conservation Area - Sheet 4

CA.3 Creewood Street Conservation Area

History

Creewood was a prominent house facing Concord Road. The land to the east of the house was developed in two subdivisions creating Creewood Street. The southern and eastern sections were subdivided in 1926 with the northern part of the street subdivided in 1927. Development of Inter-War housing appears to have rapidly followed the subdivision.

Description

The development in this short street is characterised by intact Inter-War California bungalows. The houses feature multiple gables facing the street, verandahs across part of the front elevation, dark face brick walling and tiled roofs. The houses retain their landscaped setting with low brick fences with metal railing complementing the low horizontal lines of the housing. The turn in the street adds to the visual amenity of Creewood Street.

Statement of Significance

Developed in a short period from 1926, Creewood Street is one of the areas finest streetscapes of Inter-War bungalows. The streetscape is remarkable for the integrity of the landscaping and street fencing.

Analysis - Setting

Developed as a cul-de-sac, Creewood Street is a contained streetscape. The bend in the street contributes to the visual quality of the street. Intact fencing, contemporary with the houses is important to the setting of the houses.

Scale

Apart from infill development, the housing in Creewood Avenue is all single storey.

Form

The houses in Creewood Street are exemplars of Inter-War bungalows, incorporating strong horizontal lines created by the low-medium pitched gables, deep verandahs with simple brick balustrades and heavy verandah piers. Verandahs are always incorporated into the front elevation of the houses, giving depth to the façade.

Siting

Setbacks from the front boundary are consistent. Side setbacks include a generous setback on one side to allow driveway access.

Doors and Windows

Window openings are usually divided into sets of casement sashes, sometimes with a flat awning and a decorative brick sill. Doors may be multi-paned glazed leafs, sometimes with pairs of doors opening to the verandah.

Materials and Colours

Face brick walls of liver or redbrick with commons to side and rear walls. Roofs are usually of terracotta roof tile. The gables are often trimmed with shingles or weatherboards. Verandahs are trimmed with bands of cement render and stub columns.

Carparking

Garages and carports are set well behind the building line.

Fencing

Fencing has brick piers between panels of brickwork matching the houses. Pipe rails or wrought metal panels join the piers.

Refer to Figure App1.9

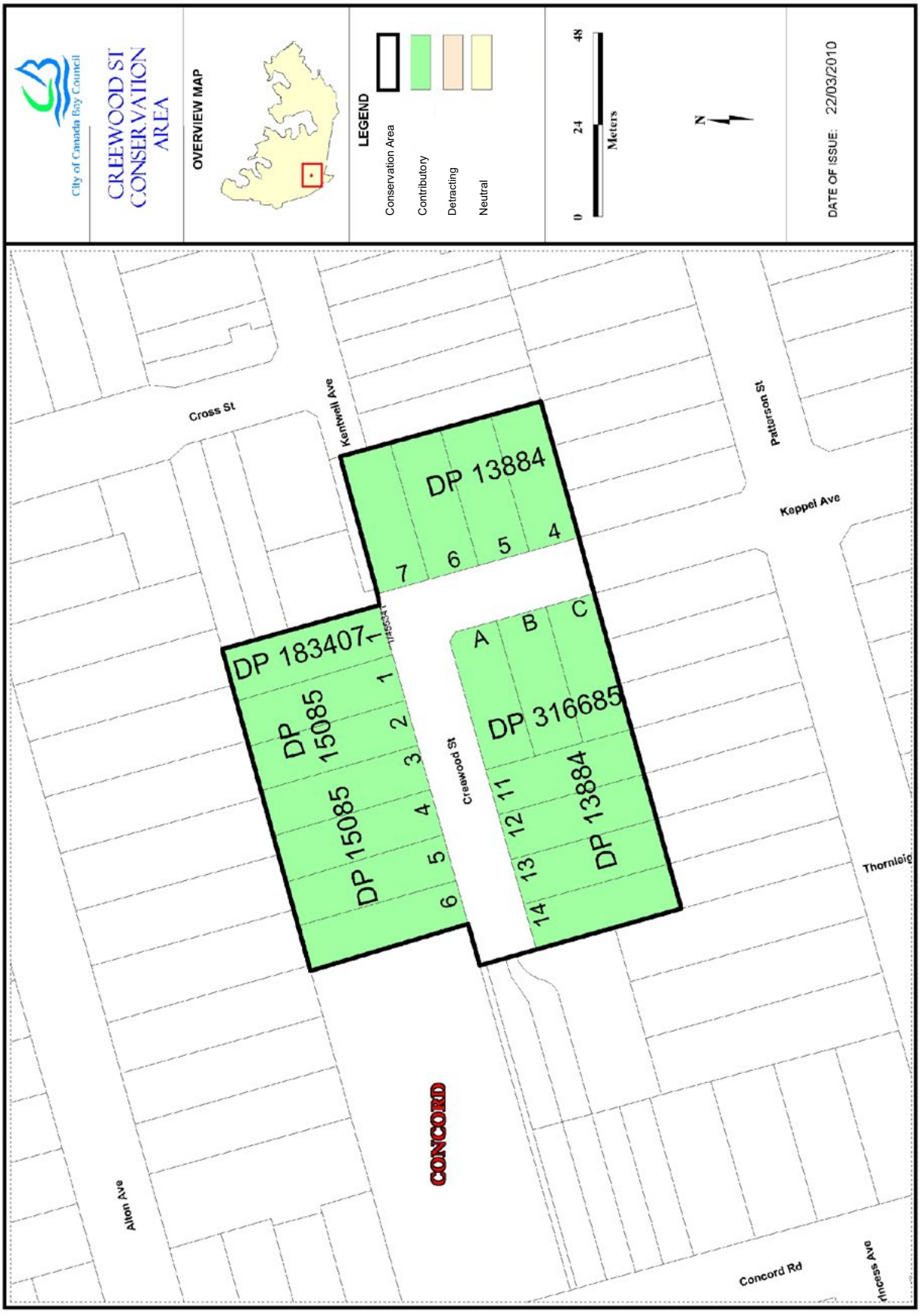


Figure App1.9 Creewood Street Conservation Area

CA.4 Drummoyne Avenue East Conservation Area

History

The subdivision of Drummoyne House in 1894 created suburban allotments at Wrights Point. The proximity to Parramatta River attracted purchasers who could afford to build fine homes, most of which were oriented to the water. This Conservation Area includes some of the finest waterfront houses to survive in Drummoyne. It also includes the house on the southwest corner of Wrights Road and Drummoyne Avenue that, due to its corner location and elevated position, provides a visual link to this group and to the Drummoyne Avenue West Conservation Area.

5 Drummoyne Avenue is the earliest house of the group, probably built soon after the subdivision in 1894. Other houses, with the exception of 8A Drummoyne Avenue, followed in the next 10-15 years.

Description

This Conservation Area includes some of the more significant waterfront houses to survive in the Drummoyne Area. They retain their setting with their major orientation to the water. Most of the group are large and notable examples of the Federation Queen Anne style.

Many of the houses retain important elements of their original gardens. Boatsheds and sea walls also contribute to the setting of the houses.

Statement of Significance

Drummoyne Avenue East Conservation Area forms one of the last intact groups of waterfront residences on the Parramatta River and has high regional as well as local value. They are indicative of the major development form along the eastern Drummoyne waterfront which has been almost completely obliterated by State Government Planning policies since the 1970's period. This is the last major waterfront group in the Canada Bay Council area and a key group of buildings at the entrance to Parramatta River.

Analysis - Setting

The houses in Drummoyne Avenue East Conservation Area respond to their proximity to the water with frontages to Parramatta River as well as to Drummoyne Avenue. Gardens are important to the setting of the houses. Large setbacks from Drummoyne Avenue are used to take advantage of water frontages.

Scale

These are generally large houses of one to two storeys located on large allotments that allowed appropriate setbacks from side boundaries.

Form

Generally interesting roof forms incorporating hipped and gabled forms. The larger houses also include tower and turret elements

These houses use elements such as bay windows, projecting gabled fronts and verandahs to break down the overall mass of the building.

Siting

The houses in this group are sited well back from the street frontage taking advantage of the site depth and river frontage.

Materials and Colours

Roofs are either slate or terracotta tiles or a combination of the two. Walls are generally face brickwork, originally unpainted.

Doors and Windows

A variety of window forms are often used in any one of the Federation houses in this group. Groups of casement windows, usually with toplights, are dominant and might be contrasted with bullseye or keyhole windows. French doors are also used to provide access to balconies.

Carparking

Garages for houses with river frontages have generally been located on the street to minimise impact on the garden setting. For other sites, garages are set back as far as possible from the street boundary.

Garages and carports may be allowed in front of the building line subject to the merit of the design. However they should be located where they will have minimal impact on original or early garden layouts and should avoid blocking important views of the houses from the street.

Garages should not be allowed where they occupy more than 40% of the street boundary.

Fencing

Fencing on the street boundary should generally be not more than 900mm high. Where higher fencing is used, it should be of a transparent design such as simple iron or timber pickets between brick piers.

Landscape Elements Including Paving and Driveways

The gardens are important to the setting of the house and incorporate curved paths, mature trees and areas of lawn. The paths often incorporate a focal element such as a fountain or urn.

Pools are generally located between the houses and the river.

Outbuildings

Outbuildings should be carefully located to avoid impacting on important views of houses from the street or the water. Where outbuildings are visible in important views, they should be designed to relate to the original house.

Small boatsheds are acceptable subject to design merit and approval of the relevant authority (N.S.W. Roads & Maritime Services).

Refer to Figure App1.10

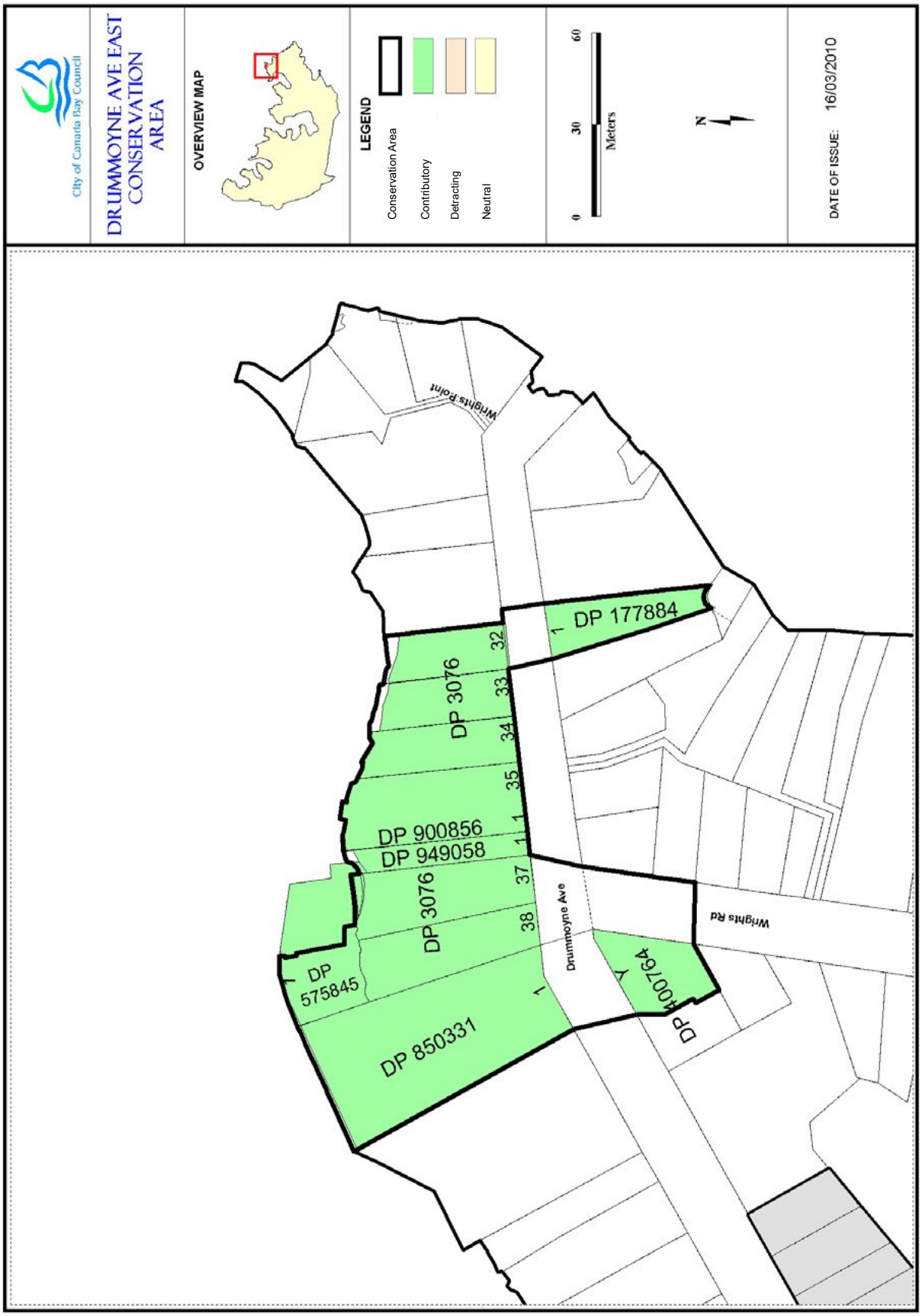


Figure App1.10 Drummoyne Avenue East Conservation Area

CA.5 Drummoyne Avenue West Conservation Area

History

The subdivision of Drummoyne House in 1894 created suburban allotments at Wrights Point. The land around and including Drummoyne House was re-subdivided in 1907 and housing was built facing the water and with its back to Drummoyne House. The present housing at 15-27 Drummoyne Avenue is an intact part of that prestigious sub-division. It is an important element in the streetscape and the continuous character of Drummoyne Avenue.

Description

This group of housing is from the Federation and Inter-War periods. The group has single storey fronts with high sub-floor spaces taking advantage of the slope of the sites. The four properties at the west end of this group date from the 1907 subdivision. The next house is Post World War II and the last two houses are very fine Inter-war houses with high quality detailing.

Statement of Significance

This group demonstrates the sub-division of one of the major Drummoyne estates and is representative of the prevalent form of housing built in east Drummoyne reflecting the importance of the area. This is a remnant of the once contiguous Federation character of the area.

Objectives

Retain the Federation and Inter-War character of this group and their garden settings.

Additions should be controlled to conserve the streetscape contribution of the group.

Analysis - Setting

The setting of these houses is elevated from Drummoyne Avenue. Low masonry retaining walls on the street boundary provide grassed terraces between the street and the house.

Scale

These houses are single storey with high sub-floor areas facing the street. First floor additions are possible subject to merit. These should generally incorporate the existing roof form facing the street.

Form

Overall bulk is generally broken up with projecting wings either under a gabled or hipped roof. Roofs of houses in this conservation area have medium pitches. Hipped and gabled forms are used on the earlier houses with more simple hipped forms on later houses.

Siting

Houses are set back from Drummoyne Avenue to take advantage of the elevated part of the site.

Materials and Colours

Roofs are either terracotta or glazed roof tiles or slate. Walls are generally face brickwork in red or dark colours. The sub-floor is usually of sandstone or brick.

Doors and Windows

Generally timber framed with pairs or groups of casement and double hung sashes.

Carparking

Garages in this conservation area were originally located to the rear of the site and this pattern continues for the majority of sites in this conservation area.

Fencing

Low masonry retaining walls on the street boundary

Garden Elements including Paving and Driveways

Grassed terraces between the street boundary and the house with low shrubs. Mature trees are placed to minimise interference with the views. Driveways are usually single width running past the house.

Refer to Figure App1.11



Figure App1.11 Drummoyne Avenue East Conservation Area

CA.6 Drummoyne Park Conservation Area

History

The land on the eastern side of the present Victoria Road, north of Lyons Road, was subdivided in 1881-2 as Drummoyne Park Estate. Subsequent development included a number of substantial and well detailed Victorian Italianate houses followed by large Federation Arts and Crafts and Federation Queen Anne style housing. Much of the earlier housing was located on sites where elevated land provided good views of the harbour. This late nineteenth century development was reinforced by smaller Federation and Inter-War housing both on the original allotments of the Drummoyne Park Estate and on the subsequent subdivisions of the larger landholdings in the area.

Statement of Significance

The Drummoyne Park Estate Conservation Area, developed from 1881, includes substantial late nineteenth century homes in prestigious locations, such as nos. 2, 8 and 45 Wrights Road and 5-11 and 23 Collingwood Street, interspersed among smaller early twentieth century housing. The smaller scale of the early twentieth century housing gives the Conservation Area an underlying consistency of scale, materials and form that highlights the larger houses of the late nineteenth century in the streetscape. Apart from the heritage items within the area most of the buildings and features within this precinct are of high local heritage value and a combination of representative and rare examples of their period and style in the Drummoyne context.

Analysis - Setting

Larger late nineteenth century houses have prominence in the streetscape. The surrounding streetscape is dominated by smaller scaled Federation period housing.

Scale

Two to three storey houses occupy larger sites and usually have a garden setting. On smaller sites, single storey houses dominate. Some semi-detached housing utilising double allotments is included in the area and gives the impression of larger scaled housing.

Form

Most of the housing that contributes to the heritage character of this Conservation Areas has prominent roof forms with terracotta being the dominant material followed by slate shingles. Facades usually include verandahs and elements that step forward of the main part of the building. This often adds interest to the roof form as well as the street front of the house. Many of the late Victorian houses incorporate bay windows.

Siting

Most groups of houses in this conservation area have regular setbacks from the front and side boundaries. Deeper setbacks on one side of many allotments has allowed for side driveways and provides space between houses. The earlier houses in the Drummoyne Park Estate sometimes have deeper setbacks relating to the larger scale of the buildings and the larger sites.

Materials and Colours

The majority of housing in the Conservation Area has face brick walling with render or cement sheeting used as a contrast. Rendered walls are restricted to the large Victorian homes in this Conservation Area.

Doors and Windows

Doors and windows are usually vertically proportioned. Wider openings, when they occur, are divided vertically.

Carparking

Parking is generally at the rear of the property, in some cases taking advantage of rear street access. On steeply sloping sites some garages have been built into the retaining walls on the street front.

Fencing

A mixture of fencing is used and depends to some extent on the nature of the site and the character of the house. Masonry retaining walls of face brick or stone are used on sloping sites. Low masonry fences of either face brick or stone are common on the early twentieth century development. On larger houses this might support a higher wrought steel fence. On many late Federation and Inter-War houses, the brick piers are linked by a pipe rail.

Landscape Elements including Paving and Driveways

Terraced gardens provide a setting on steeply sloping sites where houses are located on the high point to maximise views. Hedges are often used where increased privacy is desired. Driveways are often a pair of concrete strips parallel to the side boundary of the house.

Refer to Figure App1.12 and Figure App1.13



Figure App1.12 Drummoyne Park Conservation Area

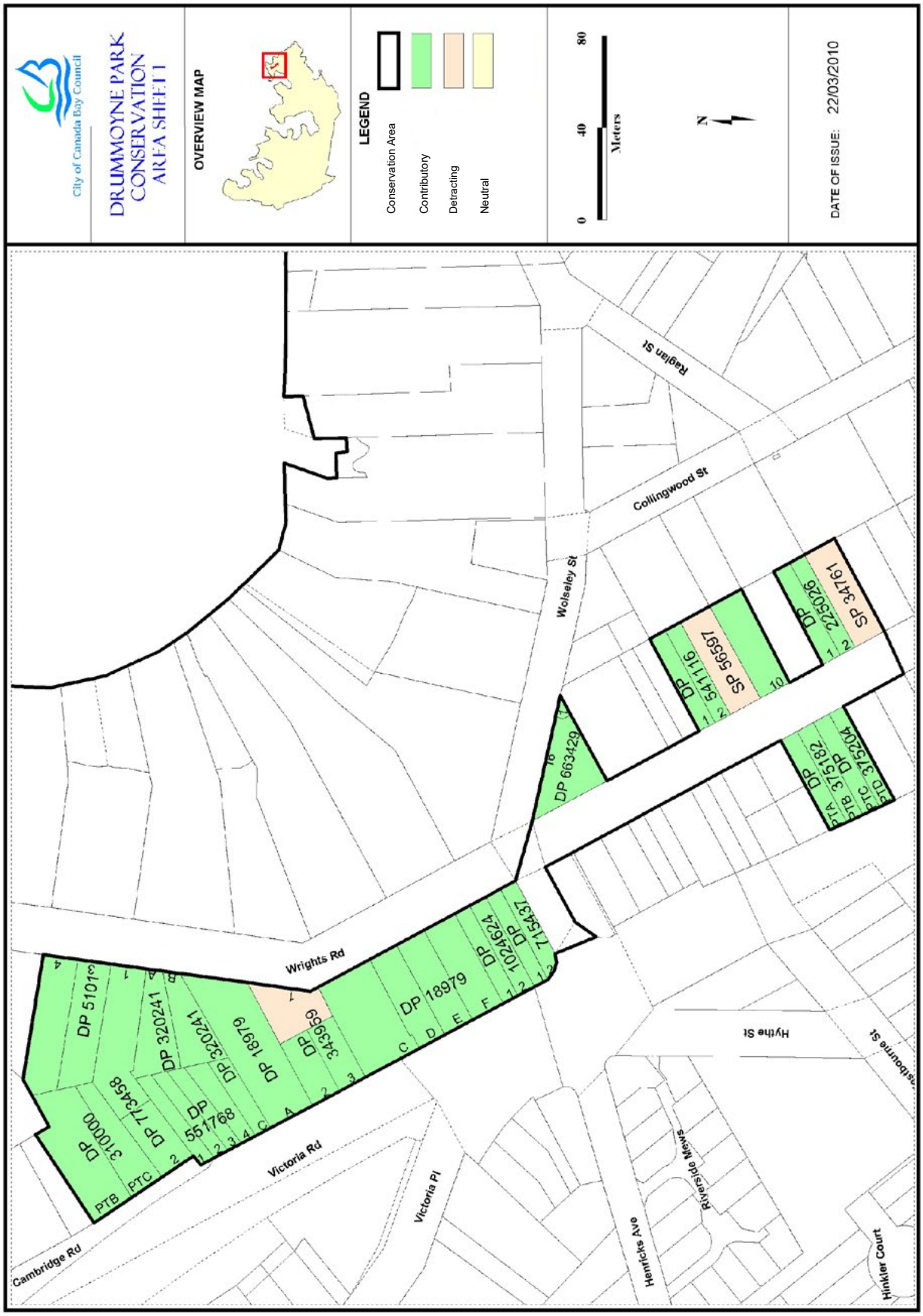


Figure App1.13 Drummoyne Park Conservation Area - Sheet 1

CA.7 Gale Street Inter-War Californian Bungalow Group

History

Mortlake township began with the establishment of the Australian Gas Light Company's works at Mortlake in 1886. Subdivision of the township took place in the following two years. The group of houses at 36-44 Gale Street were built in the 1920's and appear to have been a speculative development.

Description

The Gale Street Conservation area is a group of five Inter War Californian bungalows all designed to the same pattern with double gable to the front and an inset verandah. The houses have gardens to the front with low brick walls to the street. Most have been altered to some extent.

Statement of Significance

The Gale Street Conservation area is a good example row of five Inter-War Californian style bungalows that form an important group in the streetscape and that have historical associations with the AGL gasworks and the development of the Mortlake Township.

Analysis - Setting

The group is set on identical blocks along a tree lined street with rear lane access to garages and carports. The adjoining scale is predominantly single storey with a mix of Victorian and Federation cottages with some later infill development.

Scale

All the houses in the group are single storey with no second floor additions. There is some later two storey development close by.

Form

The group is in the classic Californian bungalow style in dark face brick with double gables, low pitched roofs and low, brick verandahs to the front.

Siting

The front setbacks are the same with a small garden to the front. The setback of adjoining houses varies.

Materials and Colours

The houses are predominantly in red face brick with terracotta tile roofs and painted timber casement windows. Some of the verandahs have been infilled and external walls rendered.

Car Parking

The rear lanes provide car access to garages and carports.

Fencing

The front fencing is not consistent, with a mix of low masonry walls, timber pickets of various styles and metal palisade fencing.

Landscape Elements including Paving and Driveways

Front gardens are dominated by lawns with perimeter shrub planting with some hedging. There are some street trees with Paperbarks predominant.

Refer to Figure App1.14

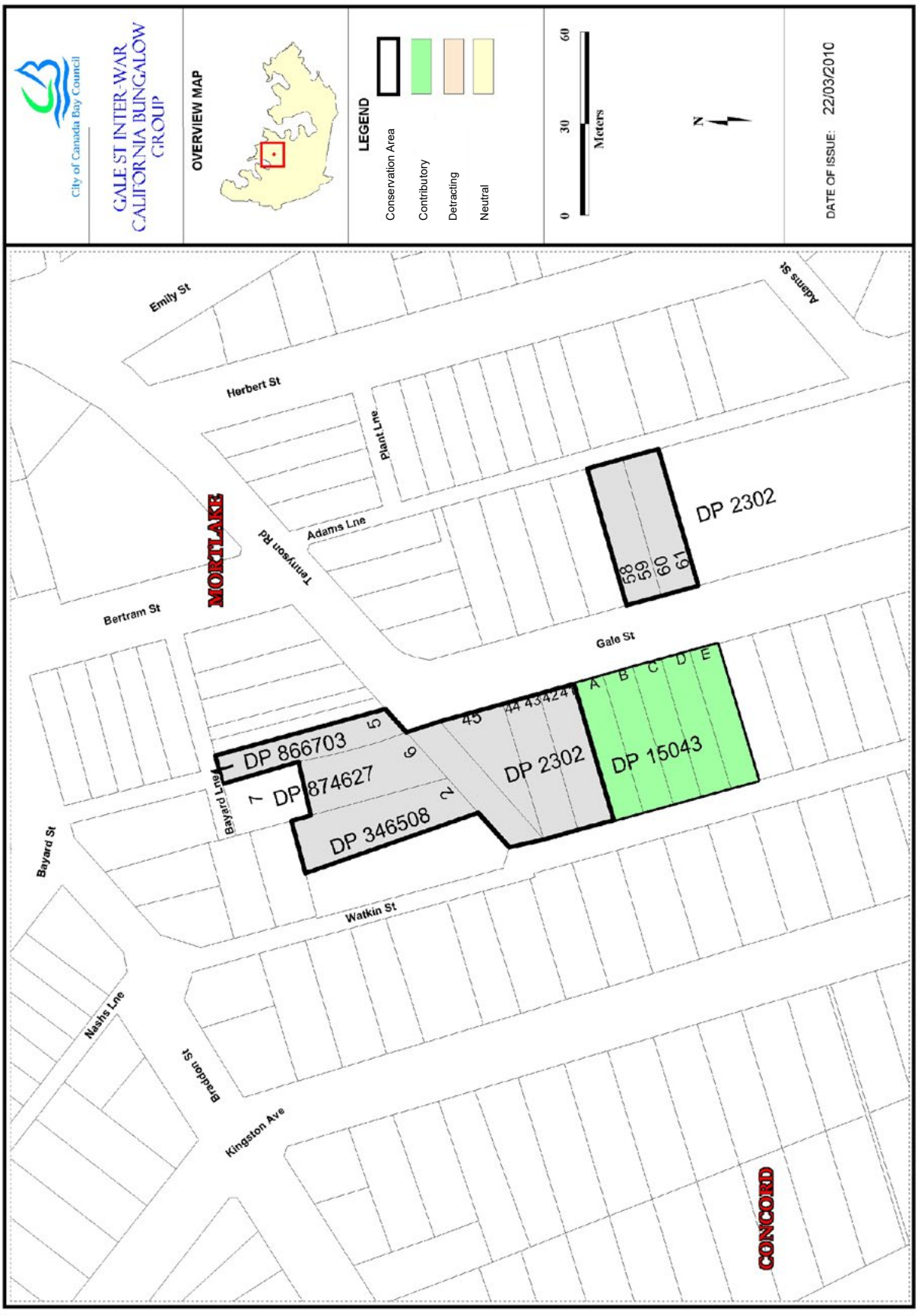


Figure App1.14 Gale Street Inter-War Californian Bungalow Group

CA.8 Gale Street Victorian Housing Group

History

Mortlake township began with the establishment of the Australian Gas Light Company's works at Mortlake in 1886. Subdivision of the township took place in the following 2 years. The houses at 37-39 Gale Street were built soon after the subdivision of the township.

Description

The Gale Street Conservation area is a group of two, single storey, Victorian cottages with symmetrical front verandahs.

Statement of Significance

The Gale Street Conservation area is a good example of two Victorian cottages that form an important group in the streetscape that have historical associations with the AGL gasworks and the subdivision of the Mortlake Township.

Analysis - Setting

The group is set on similar blocks along a tree lined street with rear lane access to garages and carports. The adjoining scale is predominantly single storey with a mix of Victorian and Federation cottages with some later infill development.

Scale

The houses are single storey with no second floor additions. There is some later two storey development close by.

Form

The group is in the Victorian cottage form style with double fronted elevations and front verandahs

Siting

The front setbacks are the same with a small garden to the front. The setback of adjoining houses varies.

Materials and Colours

The houses are in different materials. 37 Gale Street is in painted brick with high gables to the side and has a bullnosed verandah with a corrugated metal roof. 39 Gale Street is in weatherboard with a concrete tile roof.

Car Parking

The rear lane provides car access to rear garages and carports.

Fencing

The front fencing varies with a metal tube and wire fence to 39 Gale Street and no fence to 37 Gale Street.

Landscape Elements including Paving and Driveways

The small front gardens are laid to lawn with some shrub planting.

Refer to Figure App1.15

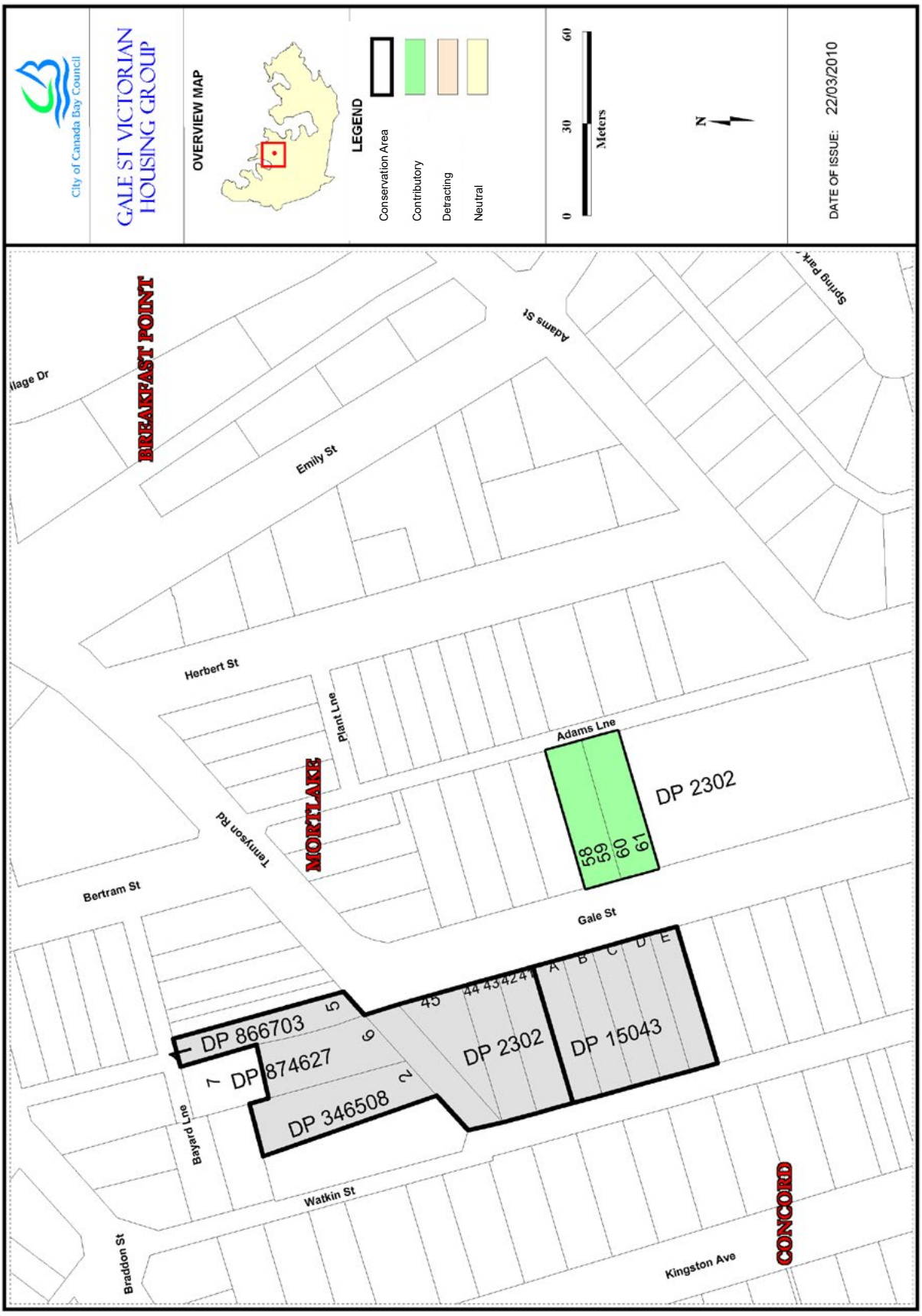


Figure App1.15 Gale Street Victorian Housing Group

CA.9 Gears Avenue Conservation Area

History

Gears Garden Estate was subdivided in 1924 creating lots generally with 50 foot frontages to Gears Avenue. The present 17-35 Gears Avenue were re-subdivided in 1926 to create allotments with 40 foot frontages. The housing in the Gears Avenue Conservation Area all appear to have been built in a short period following the subdivisions.

Description

This group of Inter-war houses is an intact group of predominantly bungalow influenced houses with one very good example of the Californian Bungalow style set high up on the rise and well above the street.

Statement of Significance

The Gears Avenue, Drummoyne Conservation Area is a very good example of housing from the Inter-War period and has survived intact with setting, fences and detailing. The vista down the hill towards the water typifies the development of Drummoyne with Lyons Road on the ridge and streets falling towards the water. The regular division of the allotments, consistency of materials and scale of the housing combines with the slope of the land to create an attractive streetscape.

Objectives

Original details of houses should be retained with fencing and garden settings to enhance the character of the street. Additions should reflect the character of the existing buildings in order to retain the streetscape and heritage value of the streetscape. Garages and carports should not be added in front of the building line.

Analysis - Setting

Housing has a consistent setback behind low street fencing and gardens. One side of each allotment has a greater setback to allow a driveway to go to the rear yard.

Scale

The housing in Gears Avenue is mainly single storey facing the street.

Form

The front of the houses are generally broken down with a verandah section and a projecting room with a gabled or hipped roof. The repetition of gables and hipped forms is an important part of the streetscape. The verandahs have low horizontal proportions with heavy masonry piers.

Siting

The houses in this group have regular setbacks from the street boundary. A deeper setback on one side boundary of most houses provides space between houses and vehicular access to the rear of the site.

Materials and Colours

Walls are generally of face brickwork with use of battened fibro on gables as a contrasting element. The roofs are typically glazed tiles.

Doors and Windows

Timber casements in pairs or groups of three or double hung windows in pairs.

Carparking

Single driveways with garages or carports located well behind the building line.

Fencing

Many original fences have survived in this conservation area. They are typically low street fences with brick piers and panels sometimes using pipe rails between piers.

Landscape Elements including Paving and Driveways

Single driveways with concrete driving strips typically run along the side boundary past the house. Gardens to these houses often include a curved path to the front door and hedge type plants behind the front fence.

Subdivision

This conservation area has a regular subdivision pattern of 40 and 50 feet frontages (12.192m and 15.25m).

Refer to Figure App1.16

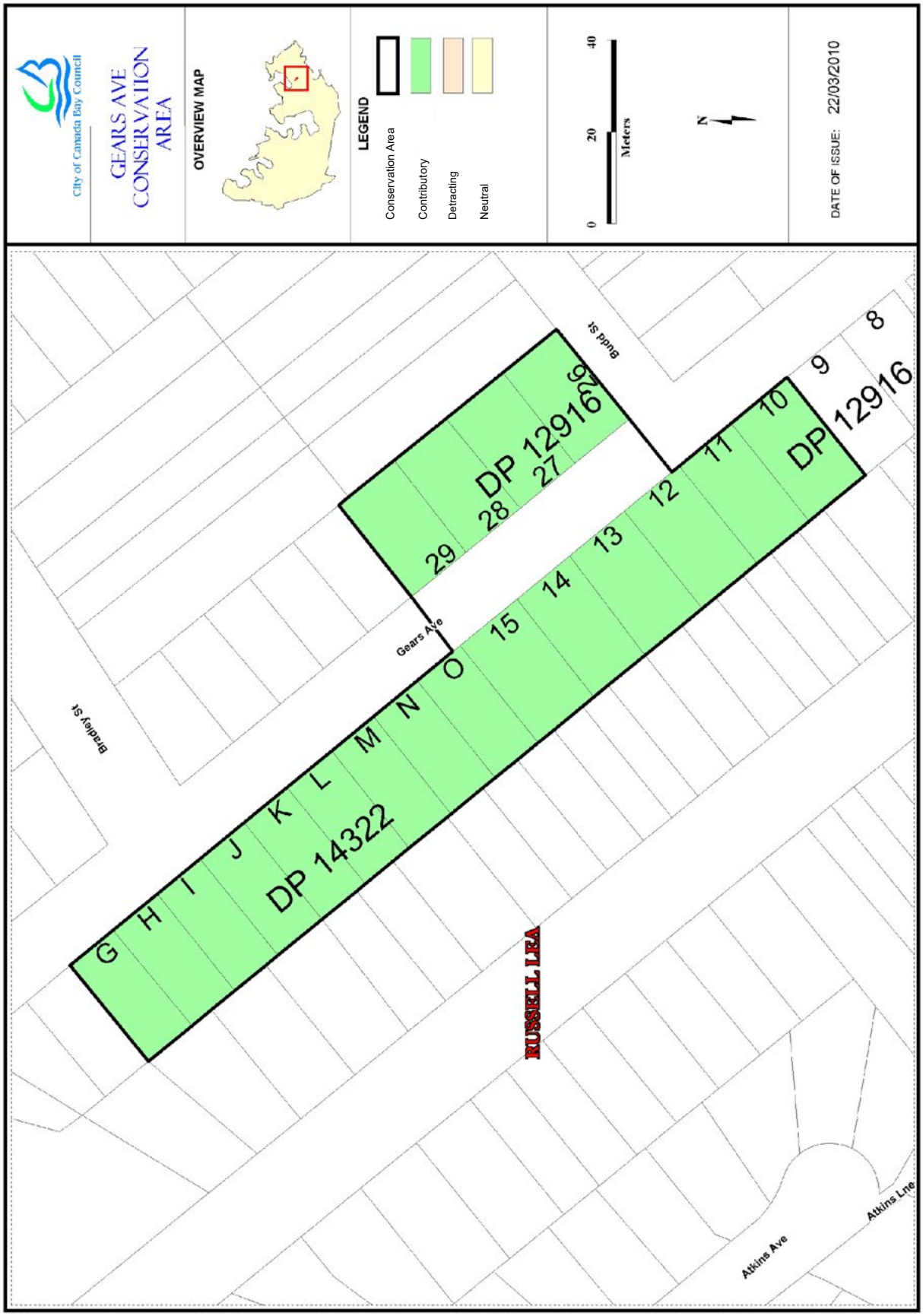


Figure App1.16 Gears Avenue Conservation Area

CA.10 Gipps Street Conservation Area

History

Of this small group of buildings, Euroka, at 9 Gipps Street, Drummoyne is the earliest, existing, with its tennis court, on the site in 1912 when the block bounded by Gipps, Therry, Miller and Market Streets was subdivided. The remaining houses in the group appear to have been built soon after the subdivision.

Description

This is a small group of very fine timber and brick dwellings that formed part of the major subdivision around Bourketown but which are now separated from the main conservation area by altered and unsympathetic development.

Statement of Significance

This group forms a fine group stepping down the slope towards the water, each sited with good views towards the city and set up from the road to maximise their setting. They form a complete block which adds to their integrity. They demonstrate the dominant form of the architectural style of Drummoyne and make a very fine contribution to the streetscape and the important views down Gipps Street to the water.

Objectives

All of the buildings in this small group should be retained in their predominant early twentieth century form. Additions should respect the character of the buildings and first floor additions should be controlled to retain the heritage value of the buildings. Garages and carports should not be constructed in front of the building line.

Analysis - Setting

The slope of Gipps Street towards Iron Cove Bay contributes to the setting of these houses. Euroka at 9 Gipps Street, as the house that preceded the subdivision, was the dominant building in the group until 2005.

Scale

The houses in this conservation area include one and two storey houses with the height relative to the size of the allotment.

Form

These are free standing houses with hipped roofs over the main rectangular block of the house. The hipped roofs are relieved in most of the houses by a projecting gabled wing facing the street. For all but one of the houses the roof forms incorporate hipped and gabled forms. Slate with terracotta tile trim is the dominant original roof material, although this has been replaced on some roofs. Glazed tiling to the roofs is not original and could in due course be replaced with more appropriate roofing materials. Verandahs are incorporated into the front elevation, usually offset by a gabled wing.

Materials and Colours

Face brickwork walls dominate, trimmed with battened fibro to the gables. Original roofs surviving in the group are slate with terracotta trim. Verandahs are framed with timber incorporating decorative fretwork and balanced by decorative timberwork to the gables.

Doors and Windows

Various forms of windows and doors are used but are not all combined in a single dwelling. The proportion of wall space to fenestrations is important, as is the vertical proportions of most of the openings.

Carparking

Carparking is set well behind the front building alignment. Driveways utilise side streets where possible, otherwise are restricted to single width.

Fencing

Original fencing is reasonably low and usually incorporates a masonry base of either face brick or sandstone. Transparent panels of either metal or timber pickets are used between piers.

Subdivision

Apart from Euroka at 9 Gipps Street that preceded the subdivision, the allotments of this Conservation Area were of regular size with 40-44 foot frontages.

Landscape Elements including Paving and Driveways

Front gardens are dominated by lawn with plantings of low shrubs.

Refer to Figure App1.17

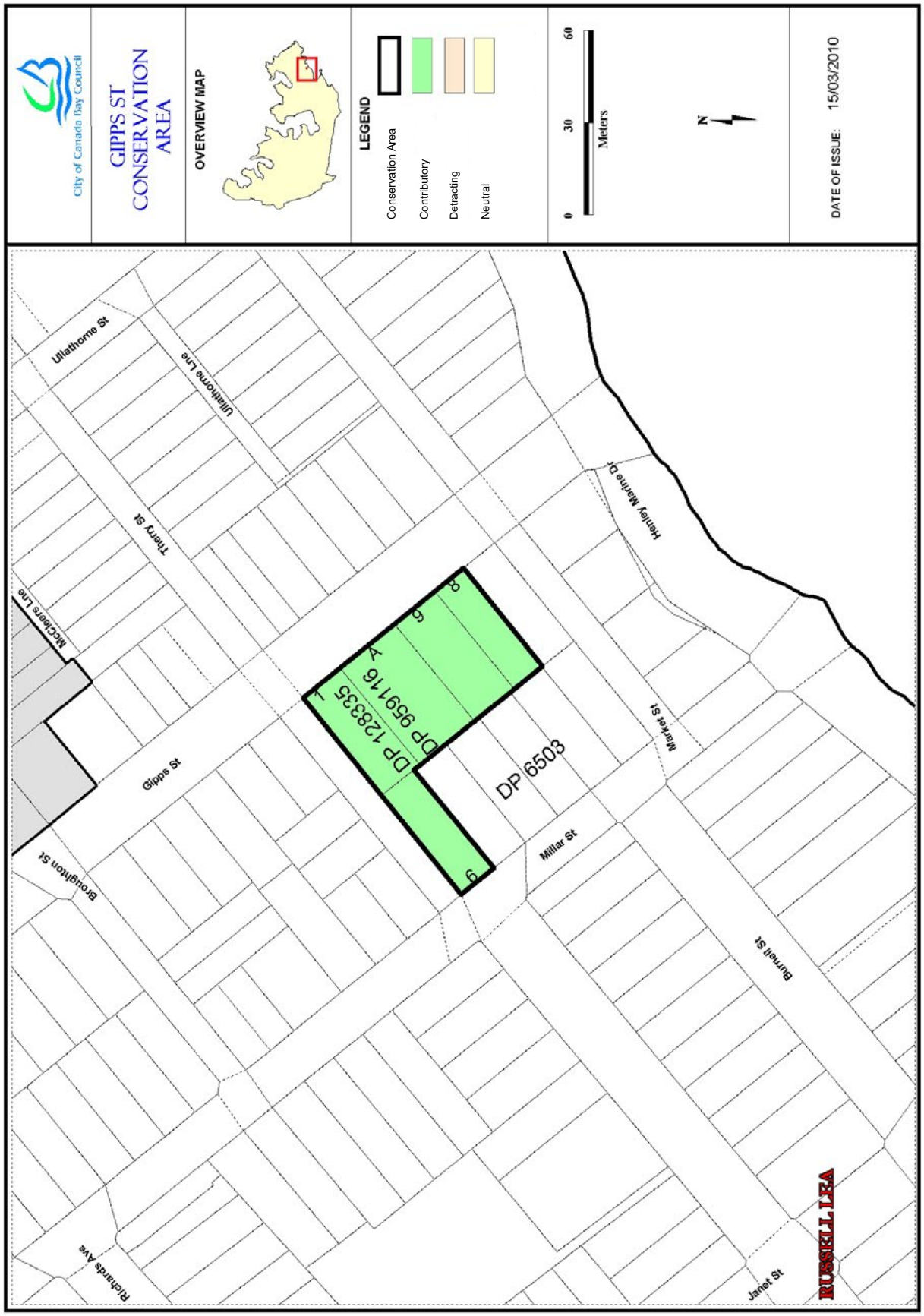


Figure App1.17 Gipps Street Conservation Area

CA.11 Hampden Road Conservation Area

History

The north and south sides of Hampden Road were subdivided in two separate subdivisions in 1915. The north side of the road was part of the Five Dock Estate subdivision and the south side was part of the Liryclea subdivision. Apart from the Victorian house Faleofa, facing Lyons Road, that preceded the 1915 subdivisions, most of the development of this conservation area followed soon after the subdivisions. Faleofa was further subdivided in 1928 prior to the construction of shops on the corner of Lyons and Hampden Roads.

Description

This is a predominantly residential group with largely intact houses from the late Federation and Inter-War periods as well as the Victorian house Feleofa and some Inter-War shops on the corner of Lyons Road.

The houses include a very fine group of c1915 houses of matching style with terracotta shingle roofs, well set back from the road in garden settings. The group represents the mix of development that took place in the Edwardian period with houses ranging from modest but well detailed semi-detached residences to more impressive two storey houses through to idiosyncratic arts and crafts cottages. The shops on Lyons Road are typical of the Inter-War period. As a substantial Victorian house, Faleofa provides a contrast to the group.

Statement of Significance

The Hampden Road, Drummoyne Conservation area is one of the rare surviving streetscapes on a main road in the municipality. Located on the main road through Drummoyne and Five Dock this group is of high visual value. The group also includes a substantial and attractive Victorian residence, Faleofa, illustrating the earlier development of the area. The commercial building on the corner of Lyons Road and Hampden Road demonstrates the importance of these roads in the local transport network.

Future Character

The Federation to Inter-war housing should be retained without demolition and in its historic form to the street with retention of facade materials and details. Additions should reflect the character of the existing buildings to retain the streetscape and the heritage value. Garages and carports should not be added in front of the building line.

Analysis - Setting

The houses in this group have reasonably deep setbacks from the street. Street trees and the slope of Hampden Road contribute to the setting of this group.

Scale

This conservation area has a consistent single storey scale to Hampden Road with the larger two storey residence Faleofa on a larger site fronting Lyons Road.

Form

The front of the houses are generally broken down with a verandah section and a projecting room with a gabled or hipped roof. Roofs include low to medium pitched hipped and gabled forms, most clad with terracotta tiles or slate. The commercial building contrasts with a solid parapeted form.

The facades typically incorporate verandahs with heavy masonry piers. Awnings are also used to provide interest in the street facades.

Siting

Houses fronting Hampden Road have regular front and side setbacks. The commercial building at the corner of Lyons Road contrasts with these and with Faleofa by having no street setback.

Materials and Colours

Dark face brickwork is almost exclusively used in this conservation area. This blends well with the terracotta and slate roofs.

Doors and Windows

Windows are usually timber casements in pairs or groups of three or double hung windows in groups.

Carparking

Single driveways with garages or carports located well behind the building line.

Fencing

Surviving original fencing is generally low brick or sandstone fencing.

Landscape Elements including Paving and Driveways

Most houses in the group have established gardens with trees and shrubs in the front garden.

Subdivision

The houses in this group fronting Hampden Road have a reasonably regular allotment size.

Refer to Figure App1.18

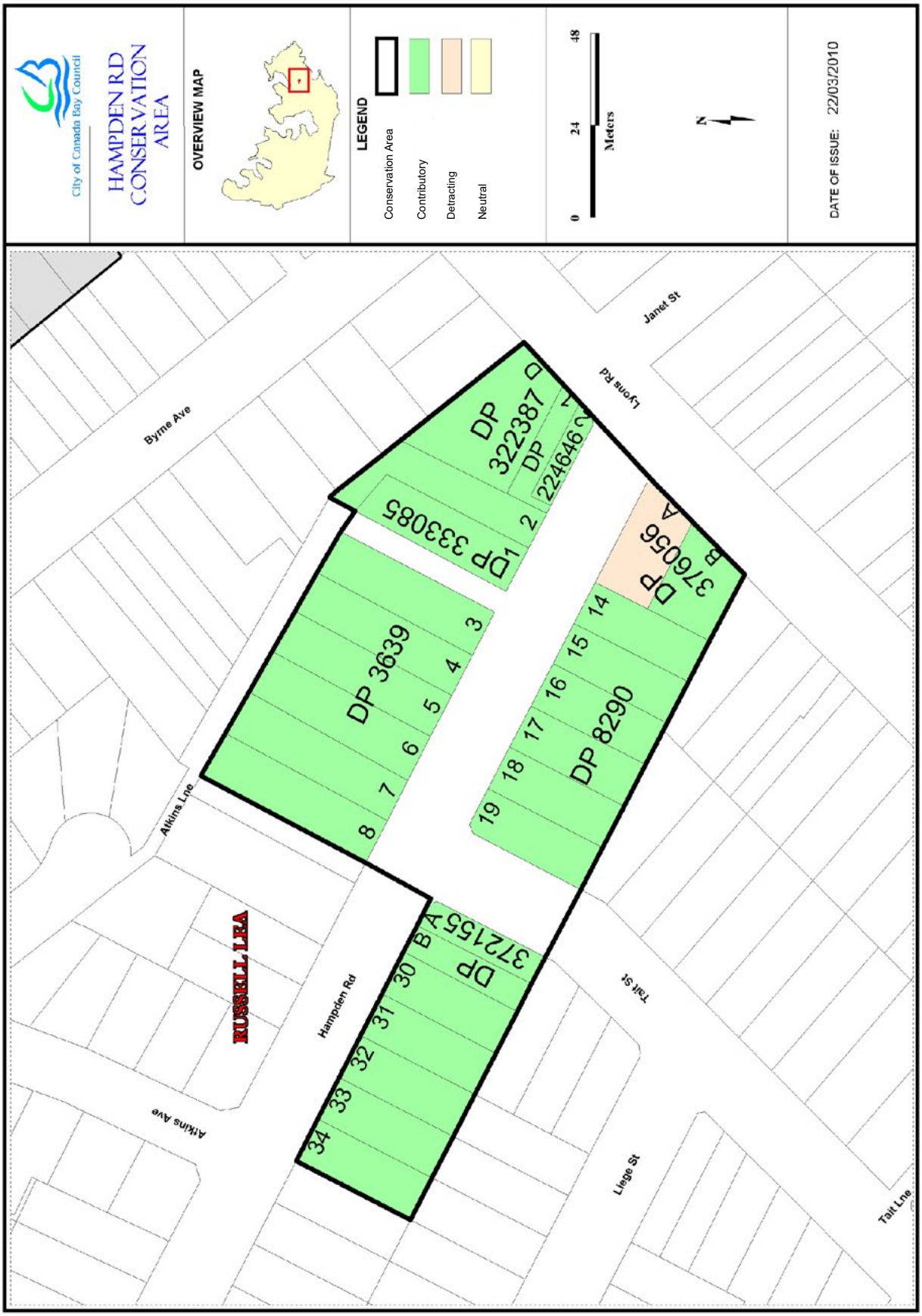


Figure App1.18 Hampden Road Conservation Area

CA.12 Lindfield Avenue Conservation Area

History

Lindfield Avenue was created by a 1928 subdivision and was originally called Ardath Avenue. The Inter-War California Bungalows that line this street were built soon after.

Description

Lindfield Avenue is a short cul-de-sac featuring facing rows of consistent Inter-War California Bungalows, set in period gardens. The buildings display a high degree of integrity, with one notable exception. The street facades of the buildings are remarkably intact, as are fences and period garden features.

Statement of Significance

The Lindfield Avenue Conservation Area is an excellent local example of an Inter-War subdivision, in an area noted for its 1920s and 1930s streetscapes. It is also considered one of the best examples in the Sydney region of a streetscape of Inter-War California Bungalows. The high consistency of design suggests development within a very short time span. The street facades of the buildings are remarkably intact, as are fences and period garden features. The subdivision consists of a street and is unusual locally for its cul-de-sac design.

Analysis - Setting

Designed as a cul-de-sac, Lindfield Avenue is an enclosed streetscape. Street plantings are mixed with some clipped hedges and more recent plantings of native plants.

Scale

Apart from one rear addition, this is a street of single storey houses.

Form

The Inter-War California Bungalow form is exclusively used in this area. It features low to medium pitched gables facing the street with a front verandah an important part of the main elevation of the house.

Siting

The houses have regular setbacks from the street. A deeper setback from one side allows vehicular access to the rear of the allotments.

Materials and Colours

Houses that have not been altered have face brick trimmed with render to lintels and battened fibro to the gables complemented by terracotta tiled roofs.

Doors and Windows

Windows are usually timber casements sashes in groups of two or three, often with horizontal sun hoods. Later houses have groups of double hung windows, sometimes in a chamfered bay. Doors are often glazed and sometimes are paired.

Carparking

Garages and carports are usually set well back from the front building alignment.

Fencing

Original fencing is usually low brick panels between brick piers. Metal rails or wrought metal panels are sometimes used between piers.

Landscape Elements including Paving and Driveways

Street trees are important in this conservation area. Front gardens are usually dominated by lawn with low plantings of shrubs to provide interest.

Refer to Figure App1.19

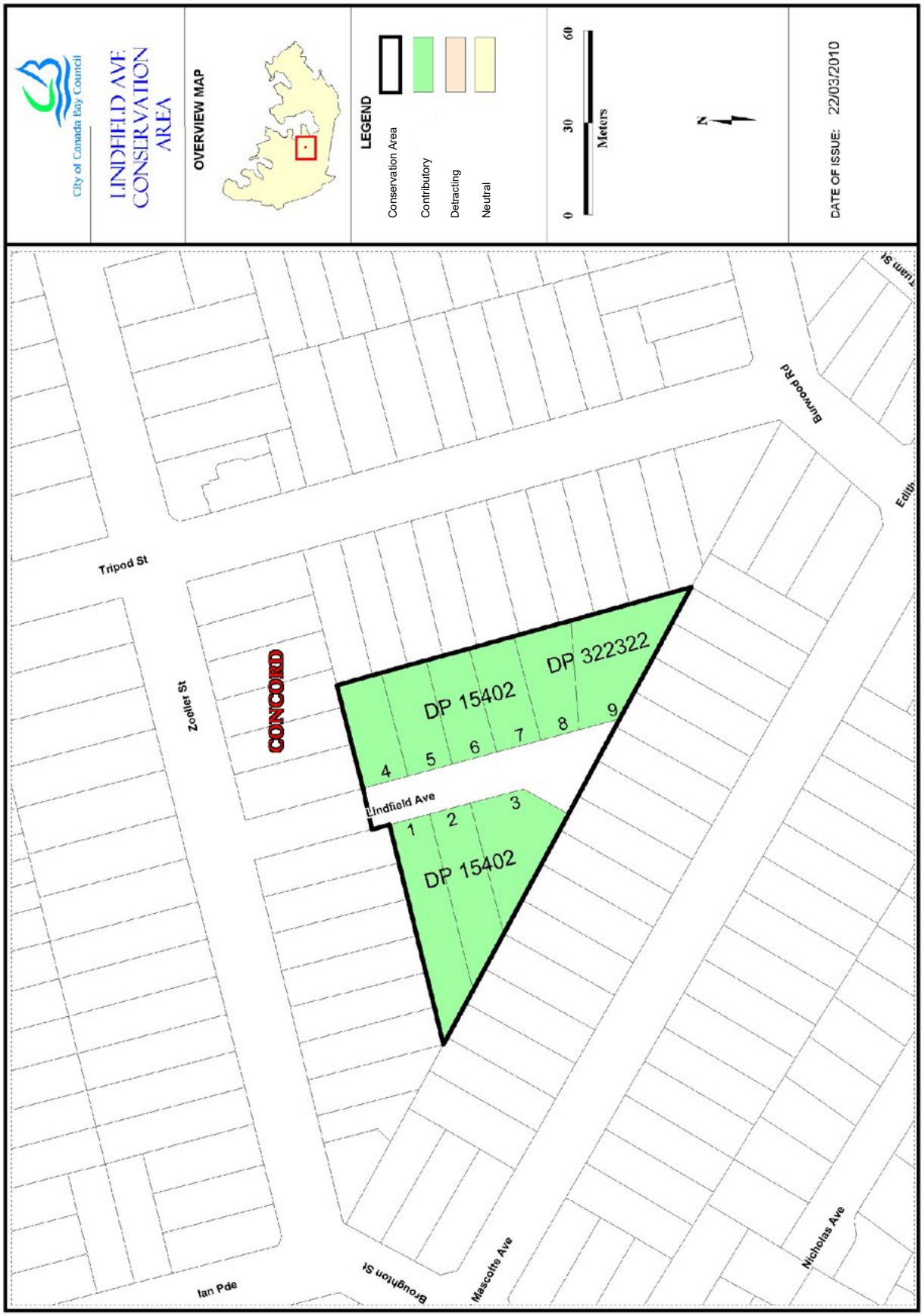


Figure App1.19 Lindfield Avenue Conservation Area

CA.13 Majors Bay Road Conservation Area

History

Commercial development in the early twentieth century tended to be in ribbons lining major transport routes. The development along Majors Bay Road followed this pattern, taking advantage of the importance of the road in connecting Queens Road to the industrial areas at Mortlake. It also relied on the importance of Wellbank Street to provide a direct link to North Strathfield Railway Station.

On the east side of Majors Bay Road between Wellbank Street and Jones Street the Terrabona Estate subdivision of 1915 appears to have provided the impetus for commercial development along Majors Bay Road. The precinct was planned as a commercial boulevard to complement the Inter-War housing boom in Concord.

Description

The commercial precinct of Majors Bay Road between 48-114 Majors Bay Road on the west side and 23-95 Majors Bay Road on the east side is dominated by Inter-War commercial development. The buildings are generally two storey with retail premises on the ground floor and offices or flats on the upper floor. Parapet walls front the street on most buildings and the floors are divided on the facades by cantilevered awnings. Some residential buildings survive on the west side of Majors Bay Road.

Statement of Significance

This commercial precinct reflects the importance of Majors Bay Road and Wellbank Street in providing connections from the main transport links of Queens Road to the south and Strathfield North Railway station to the west with the industrial area of Mortlake and with the growing residential development of Cabarita from the Inter-War period to the late twentieth century.

The Majors Bay Road commercial precinct is a good quality streetscape dominated by Inter-War commercial buildings. The consistent scale and rhythm of facades, and use of materials contributes to an attractive streetscape.

The Majors Bay Road commercial precinct provides a focal point for the local community and continues to function as a popular meeting place.

Analysis - Setting

This conservation area derives its importance from its location at the junction of two important local roads.

Scale

Two storey development is dominant with ground floor used for retailing and the upper floor for office or residential use. A few single storey shops and houses are scattered through the group.

Form

These are two storey buildings usually with no setback from the street or side boundaries creating a continuous wall to the street. The buildings are usually parapeted. Roofs are usually tiled. The buildings have engaged piers at regular intervals reflecting traditional structural spans.

Recessed verandahs were incorporated into the upper floor of many of the commercial buildings, some of these have been filled in. The lower floors of the earlier buildings in the group generally have commercial shopfronts.

The freestanding buildings in the conservation area are more residential in form with hipped and gabled roofs and usually with front verandahs.

Siting

Most buildings in this group have no setbacks from the front and side boundaries.

Materials and Colours

Masonry is used for most buildings. Face brickwork trimmed with rendered or decorative details was the most common wall treatment. Rendered panels in the parapet provide space for signs. Other buildings have rendered facades with decorative rendered details.

Doors and Windows

Windows to the upper floors are often in square or arched openings, infilling the original open verandahs. Some buildings retain the French doors opening to the upper verandahs.

Refer to Figure App1.20



Figure App1.20 Majors Bay Road Conservation Area

CA.14 Marlborough and Tavistock Streets Conservation Area

History

The South Hythe subdivision of the 1870s included all the land west of Lyons Road, between the present Victoria Road and Bayswater Road. It included Tavistock, Marlborough and Westbourne Streets, establishing the general street layout that survives to the present day. Many of the initial purchases were for a number of allotments. Speculative development and subsequent subdivision in the Federation and Inter-War periods created rows of housing of similar scale, form and materials.

The housing on the southeast side of Tavistock Street and from 21 to 39 Westbourne Street appear to have been groups of speculative development built in the Federation period. Groups of semi-detached houses have since been subdivided to allow individual ownership. 43 Marlborough Street also dates from this period.

The houses at 4-8 Tavistock Street were probably built soon after a re-subdivision of land fronting the present Victoria Road in 1915. Those at 10-12 Tavistock Street along with 26-28 Marlborough Street are also part of one development comprising detached and semi-detached houses.

Description

The character of the Marlborough and Tavistock Streets Conservation Area is defined by:

- a consistent row of speculative semi-detached Federation houses in Westbourne Street,
- consistent Federation housing, both semi-detached and free standing, on the southeastern side of Tavistock Street including a very good group of speculative semi-detached Edwardian houses towards Victoria Road.
- a group of Inter-War bungalows on the northwest side of Tavistock Street between Victoria Road and Marlborough Street, extending along Marlborough Street.
- consistent Federation housing on the northeast side of Marlborough Street.

The housing in the Conservation Area is predominantly of c.1910 to 1930 construction. It has a consistent character dominated by single storey housing of dark face brick, terracotta and slate roofing, hipped and gabled roof forms and front verandahs.

Statement of Significance

The Marlborough and Tavistock Streets, Drummoyne Conservation Area is of significance for its largely intact early twentieth century residential development. The group has an overall homogeneity due to consistent use of materials, scale, setbacks and forms. Groups of speculative development also contribute to the regular rhythms in the streetscape.

Objectives

To retain the high level of integrity and homogenous character of the group.

To ensure new development does not detract from established rhythms in the streetscape created by the group.

Analysis - Setting

Groups of houses within each block have regular setbacks. The setbacks of the groups of semi-detached houses are usually less than for the free standing houses.

Plantings of street trees as well as trees in front gardens adds to the amenity of this conservation area.

Scale

This conservation area has a dominant single storey scale facing the street.

Form

The groups of houses within this conservation area have regular form and massing. Front verandahs are an important element of the front of the houses. Gabled elements are used in most of the roofs as either a complement to the main hipped roof or as the main roof form facing the street.

Materials and Colours

Terracotta and/or slate are the dominant materials for roofs and are complemented by face brick walls with some rendered and/or battened fibro sheet for contrast. Verandahs have face brick piers and balustrades with timber posts. Driveways are formed with concrete strips.

Doors and Windows

Casement windows are common with some use of double hung sashes. French doors are also used to provide access to verandahs. Front doors usually have toplights and, where space permits, might have sidelights.

Carparking

Some freestanding houses have space for parking at the rear of the allotment. Many of the semi-detached houses have no space for on-site parking that does not intrude on the front garden.

Fencing

Original fencing is usually low allowing good views from the footpath to the houses. Fencing often incorporates masonry elements including sandstone and low face brick walls, often with pipe rails. More recent fencing has a variety of picket fencing.

Landscape Elements including Paving and Driveways

Street trees are important to the character of this area and are reinforced with mature trees in front gardens. Front gardens should incorporate low shrubs and lawn areas.

Refer to Figure App1.21

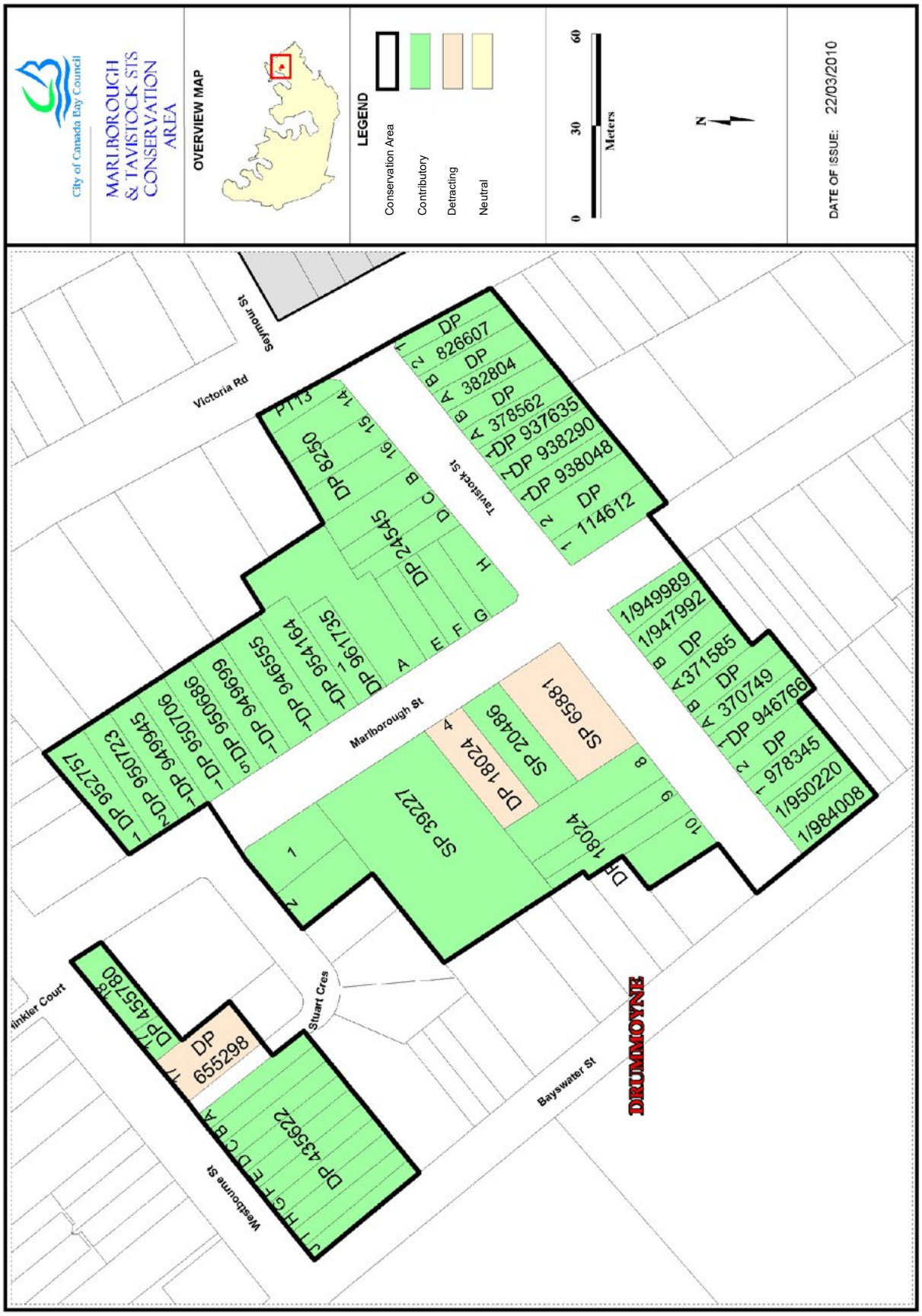


Figure App1.21 Marlborough and Tavistock Streets Conservation Area

CA.15 Mons Street and Boronia Avenue Conservation Area

History

This conservation area comprised two subdivisions; the Sunlight Estate subdivision of 1926 creating Mons Road and the Boronia Avenue subdivision of 1927.

Description

The Mons Street and Boronia Avenue Conservation Area is dominated by Inter-War California Bungalow style housing creating a regular rhythm of gables in the streetscape. Street plantings of box hedge in Mons Street have been pruned ensuring the houses have a close relationship to the street.

Statement of Significance

The Mons St and Boronia Avenue Conservation Area contains a very intact group of Inter-war houses representing the major sub-division of the Municipality that took place during this period. The group is one of a small number of excellent groups in the Five Dock/ Russell Lea area that demonstrate the pattern of sub-division of the Municipality and which contain a very fine representative group of houses from one period, mostly with intact settings and detailing. Most houses in the area have not been substantially altered.

Objectives

The high level of integrity of this group is a key feature, which should be retained. With only one or two significant alterations to significant properties there should be no demolition of existing early housing, controls on first floor additions to retain the character of housing and retention of façade details such as windows and wall treatments. Garages and carports should not be added in front of the building line.

Analysis - Setting

The houses in this conservation area have regular setbacks from front boundaries. Side setbacks are wider on one side to allow vehicular access.

Street trees are restricted to clipped box hedges.

Scale

The housing in this conservation area was originally single storey development, consistent with the low horizontal character of the Inter-War California Bungalow style.

Form

The Inter-War California Bungalow style that dominates this Conservation Area has strong low-medium pitched gabled roof forms facing the street. Verandahs are incorporated into the front elevations and emphasise the low horizontal lines of the houses.

Materials and Colours

Face brick walls trimmed with rendered lintels and battened fibro gables. Original roofs are of terracotta tiles.

Doors and Windows

Windows facing the street are grouped sets of casement sashes, often with horizontal sunhoods. Front doors are simple glazed doors, sometimes in pairs.

Carparking

Carparking is provided well behind the building line of most houses.

Fencing

Original surviving fencing is low face brick fencing of piers and panels. The low brick panels usually had a metal pipe or panel above.

Landscape Elements including Paving and Driveways

Single driveways to the side of the house. Front gardens are dominated by lawns with low shrubs providing interest. Street plantings are restricted to clipped hedges.

Refer to Figure App1.22

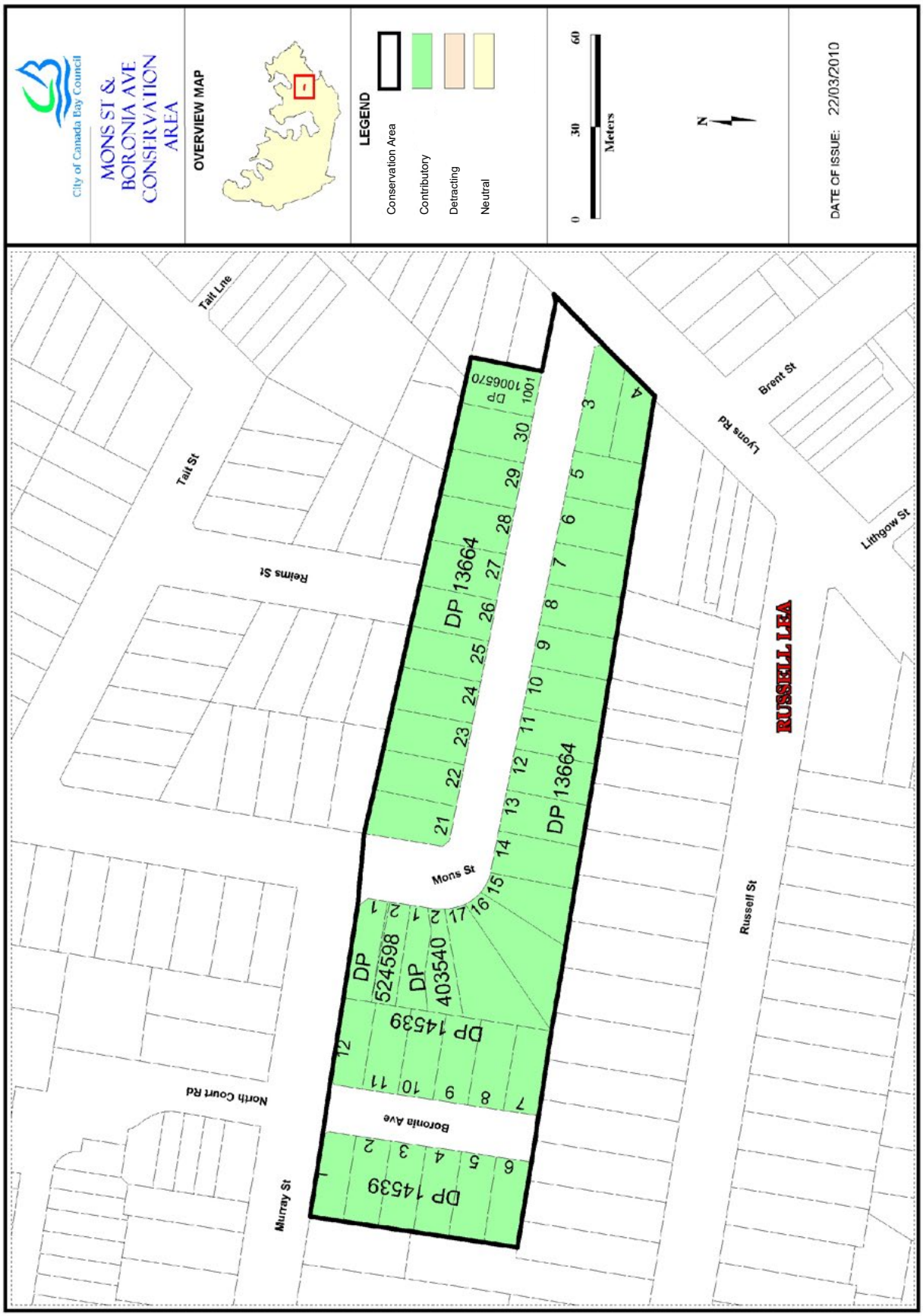


Figure App1.22 Mons Street and Boronia Avenue Conservation Area

CA.16 Moore Street Conservation Area

History

The Lyonsville subdivision of the 1880s created Moore Street and Short Street. Development of small cottages followed through to the Inter-War period.

Description

The Moore Street Conservation area encompasses a range of building styles and periods of construction, typifying the pattern of development of the central areas of Drummoyne. The earlier development relates to waterfront activity and extends from late nineteenth century through to the Inter-War period with several fine bungalow influenced cottages and semi-detached buildings. The street also contains a very good range of timber buildings from the first decade of the twentieth century or possibly earlier. On the corner of Short Street is a two storey store and commercial building that provides a focal point in the streetscape.

Statement of Significance

The Moore Street Conservation Area includes a variety of houses that, while modest, display fine detailing and varied forms that are not generally seen in Drummoyne. Buildings of particular interest in this conservation area are the large timber house at no 40, the two storey corner store and residence, one of three very good examples in the municipality, the fine timber houses, and several very modest timber and fibro cottages. Together, these buildings represent the early development of the street and its lower status than the south side of Lyons Rd.

Analysis - Setting

Moore Street has a gradual slope down from Lyons Road. Groups of cottages have fairly regular setbacks from the street. The two storey shop at the corner of Short Street provides contrast with no setback from the street frontages. Street trees also contribute to the amenity of the street.

Scale

Single storey scale is dominant in this conservation area.

Form

Most houses have simple rectangular forms with hipped roof forms relieved by gabled elements. Verandahs provide depth to the front elevations of the houses.

Materials and Colours

Weatherboard and face brick are the common wall materials in this group. Roofs were originally either corrugated steel or terracotta tiles.

Doors and Windows

Windows are usually in vertically proportioned openings. Double hung windows are most common with sets of casement windows used in some later houses. Front doorcases usually incorporate toplights and, on larger houses, sidelights.

Carparking

Where space allows, car parking has been set behind the building line. Few carports and garages have been located in front of the main building line in this conservation area.

Fencing

Original surviving fencing includes low masonry fencing of either sandstone or face brick. Some reproduction picket fencing has been introduced.

Landscaping Elements including Paving and Driveways

Front gardens are usually dominated by lawn with low plantings of shrubs to provide interest.

Refer to Figure App1.23



Figure App1.23 Moore Street Conservation Area

CA.17 Mortlake Workers' Housing Group

History

Mortlake township began with the establishment of the Australian Gas Light Company's works at Mortlake in 1886. Subdivision of the township took place in the following 2 years. The houses at 46-50 Gale Street were built soon after the subdivision of the township closely followed by the houses at 4-8 Tennyson Road.

Description

A group of single storey houses from the late Victorian and Federation periods.

Statement of Significance

The Tennyson Road conservation area is an interesting group of workers' housing from the late Victorian and Federation period directly relating to the development of the AGL gasworks and the establishment of the Mortlake township. The group makes an important contribution to the streetscape and forms a precinct of great charm and character.

Analysis - Setting

The group is set on various size blocks at the corner of the two streets with rear lane access to garages and carports. The adjoining scale is predominantly single storey with a mix of Victorian and Federation cottages with some later infill development.

Scale

The houses are single storey with no second floor additions. There is some later, two storey development close by.

Form

The group is in the Victorian and Federation cottage form style with double fronted elevations and front verandahs or gables.

Siting

The front setbacks vary due to the angled nature of the lots with small gardens to the front.

Materials and Colours

The houses are in a variety of materials with timber weatherboards, rendered masonry and stone. Roofs are in tile and corrugated metal. 8 Tennyson Street is unusual in being in timber with the boards cut to appear as stone. 48 Gale Street is in sandstone with an Italianate style verandah with decorative lacework.

Car parking

The rear lanes provide car access to rear garages and carports.

Fencing

The front fencing varies with masonry walls, picket and timber fences or with the garden open to the footpath.

Landscape Elements including Paving and Driveways

Small front gardens generally laid to lawn with some shrub planting

Refer to Figure App1.24

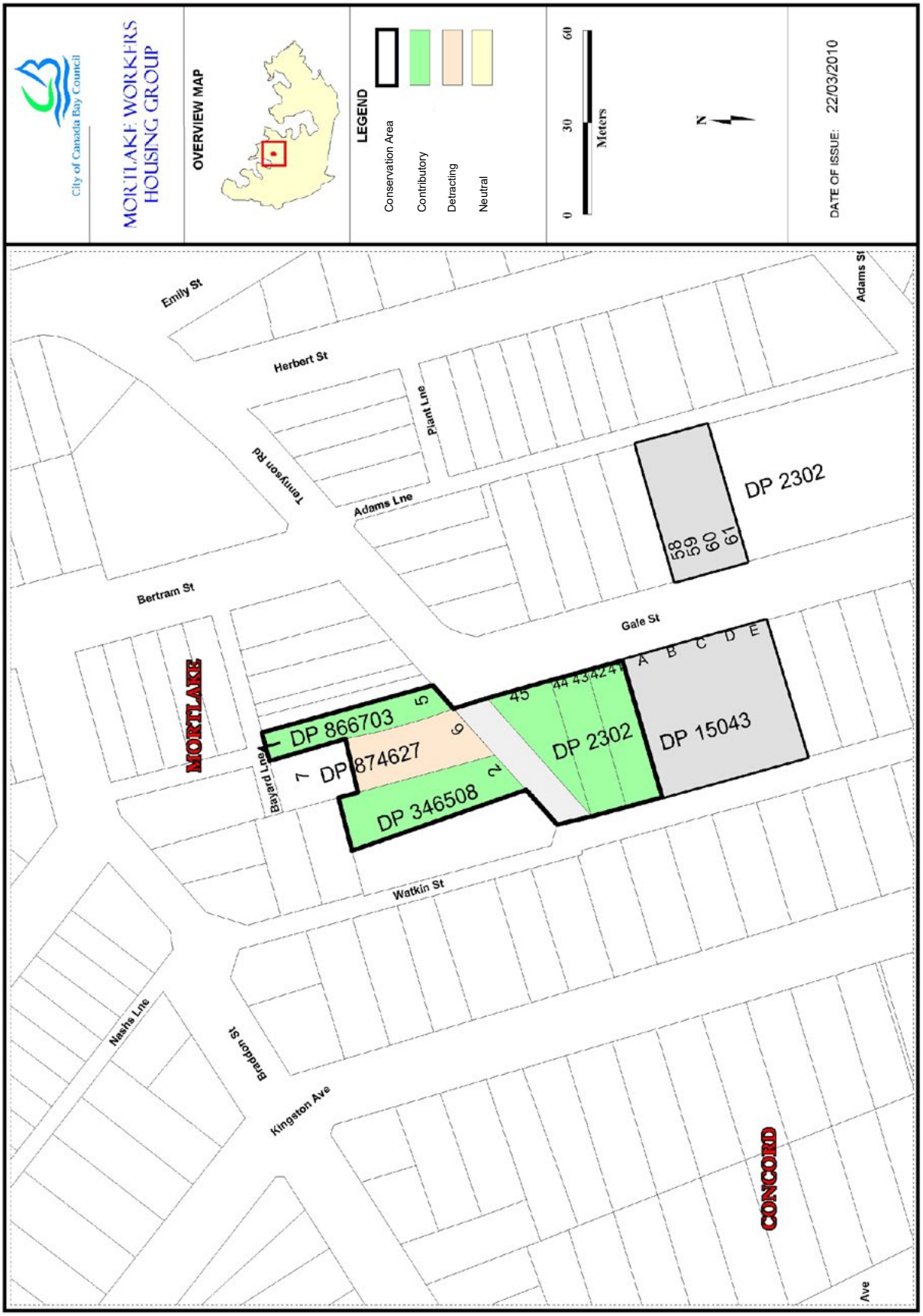


Figure App1.24 Mortlake Workers' Housing Group

CA.18 Park Avenue Conservation Area

History

Longbottom Stockade was established in the eighteenth century as an overnight detention centre for convicts on their journey between Sydney and Parramatta. From 1840 to 1842 it was used to house 58 French speaking Canadian rebels. A ramshackle settlement gradually grew around the stockade that was gradually falling into disrepair. In 1843 the Village of Longbottom was laid out to formalise the settlement and included the south side of the present Park Avenue. The large allotments from this settlement generally survive on the south side of Park Avenue, although the west end was re-subdivided in 1927.

Description

A grouping of early homes on large allotments, generally well set back from the street. The group includes a number of Victorian villas, all enjoying an outlook over the park opposite.

Statement of Significance

Park Avenue, Concord is a notable group of heritage homes on large allotments, enjoying an outlook over public parkland. It includes a number of outstanding Victorian villas with large front gardens, rare for Concord. The large lots and deep setbacks are unique in the Council area. The group has considerable aesthetic and historical significance.

Analysis - Setting

Goddard Park on the north side of Park Avenue provides a setting for this conservation area. Street plantings and large front gardens reinforce the amenity provided by the park.

Scale

Park Avenue includes larger one and two storey houses, usually on large allotments.

Form

The houses in this conservation area have a variety of forms. Most of the original houses in the group were built with generous verandahs on the front of the house taking advantage of the northerly aspect and view of Goddard Park.

Siting

Most of the contributory houses in this group have generous setbacks from the front boundaries.

Materials and Colours

Masonry is the dominant wall material with render used on some of the earlier homes. Roofs are either slate or tiled.

Doors and Windows

Vertically proportioned double hung windows are most common in this conservation area. Front doorcases incorporate toplights and sidelights. French doors are also used with verandahs.

Carparking

Garages and carports have usually been set behind the front building line of contributory houses.

Fencing

Only one original fence survives in this group, an iron palisade fence with sandstone gateposts at 2 Park Avenue.

Landscape Elements including Paving and Driveways

Street trees add to the amenity of the area. Gardens are usually generous and incorporate lawns with mature trees and shrubs.

Refer to Figure App1.25

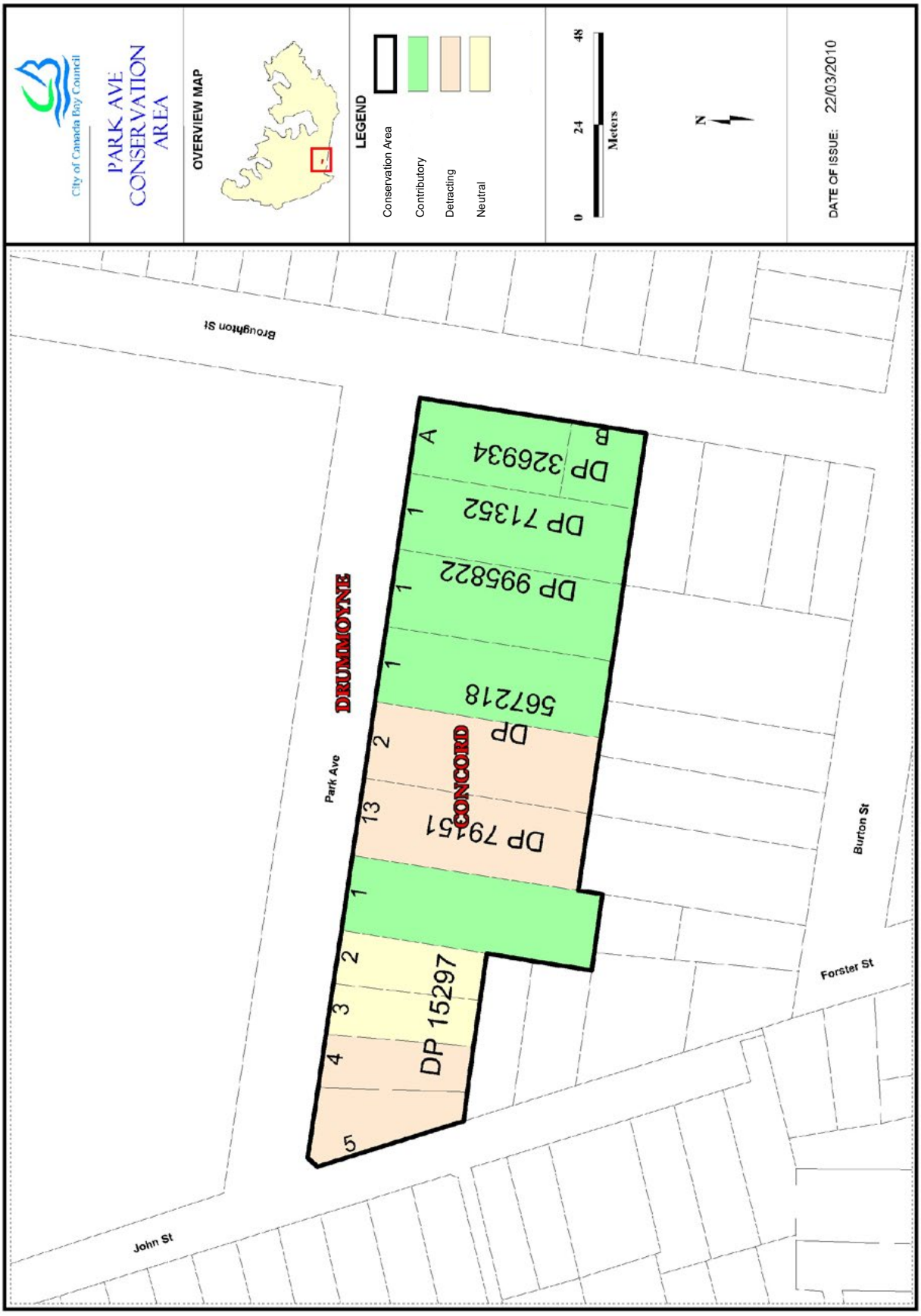


Figure App1.25 Park Avenue Conservation Area

CA.19 Parklands Estate Conservation Area

History

Parklands Estate, between Lyons Road and Barnstaple Road, was subdivided in 1927 creating Bennett Avenue and a cul-de-sac, Mitchell Street. This small group of houses were developed between 1927 and the late 1930s.

Description

The buildings stylistically are predominantly derivatives of Californian Bungalows with several later houses from the immediate post World War Two period at the end of the cul-de-sac which add to the group. All are fine if modest examples of the style and reflect the pattern of further sub-division that took place as larger estates were gradually broken up.

Statement of Significance

Developed in a short period from 1927, Parklands Estate has high heritage value locally as an intact group within an intact streetscape setting reflecting an excellent range of Inter-war housing types. The group is complemented by street planting, fencing and gardens.

Future Character

The high level of integrity of this group is a key feature which should be retained. With only one or two significant alterations to significant properties there should be no demolition of existing Inter-war housing, controls on first floor additions to retain the character of housing and retention of facade details such as windows and wall treatments. The important street planting should be retained. Garages and carports should not be added in front of the building line.

Analysis - Setting

The Parklands Estate has a relatively enclosed streetscape dominated by mature street trees.

Scale

Single storey scale is dominant, consistent with the low horizontal emphasis of the Inter-war housing styles in this estate.

Form

The houses in the Parklands Estate usually have multiple gables and include a deep verandah to offset a projecting room on one side of the street front.

Low-medium pitched roofs of terracotta tiles with multiple gables provide rhythm to the streetscape. Houses in the group from the later part of the Inter-war period have simple hipped roofs with glazed tiles.

Siting

Development in the Parklands Estate has a regular street setback. Side setbacks include a wider setback on one side to allow for vehicular access.

Doors and Windows

Windows are usually arranged in groups with bungalows having sets of casement windows. Later houses in the Parklands Estate have grouped double hung sash windows.

Materials and Colours

Terracotta roof tiles and dark face brick walls with light coloured rendered trim are typical of this streetscape. Windows are generally timber framed.

Carparking

Garages are usually located well behind the building line so that they are not visible in the streetscape.

Fencing

Many houses have reproduction picket fencing which, while not authentic to the Inter-war character of the houses, provides cohesion to the streetscape.

Landscape Elements including Paving and Driveways

Front gardens incorporate large areas of lawn with some planting of shrubs. Driveways are single width usually located to the side of the allotments.

Subdivision

The regularity of the original subdivision is important in establishing the rhythm of the streetscape.

Refer to Figure App1.26

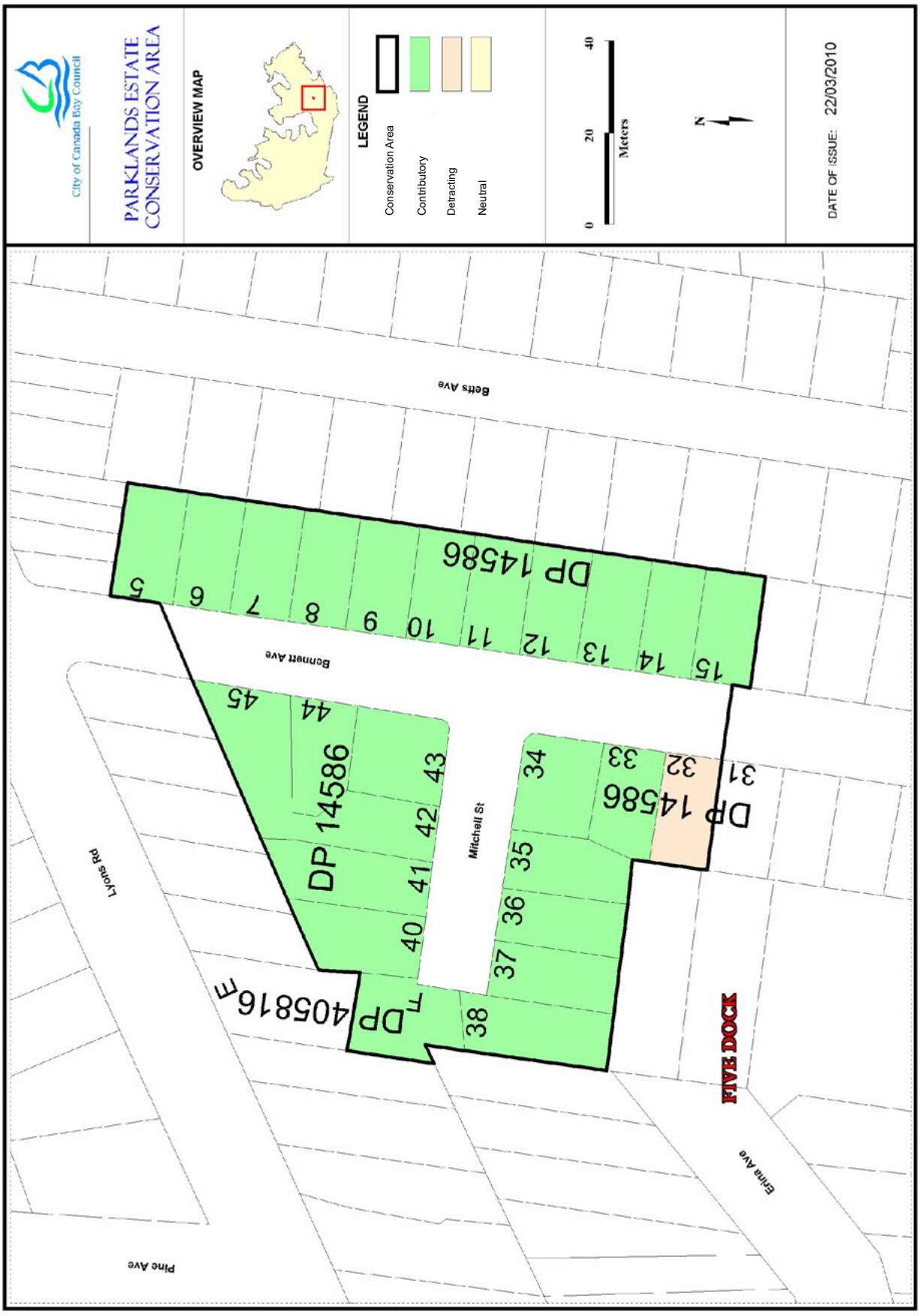


Figure App1.26 Parklands Estate Conservation Area

CA.20 Powell's Estate Conservation Area

History

Powell's Estate was subdivided in 1886 and included housing allotments with regular frontages. The allotments were wider further away from Parramatta Road. Rear lanes were incorporated into the subdivision, originally providing access for night soil collection. Due to the narrow allotment width (20 feet), many houses were built on double allotments. The main period of development of the estate continued through the late Victorian and Federation period. Much of this housing has survived through to the twenty-first century, except where removed to make way for the development of the M4.

Description

Powell's Estate is an area of late Victorian housing interspersed with Federation and Inter-War period housing on small allotments. The development includes a mixture of large individual homes and semi-detached housing. Street plantings add to the amenity of the area.

Statement of Significance

The Powell's Estate Conservation Area is a rare local example of Victorian period development. A number of the original Victorian homes survive, including some fine villas. The area retains considerable historical significance.

Analysis - Setting

The Powell's Estate has regular sized allotments on a rectilinear street layout. Street trees provide amenity to the area. Lanes now allow vehicular access to the rear of the allotments.

Scale

Single storey housing is dominant. A few one and a half and two storey houses are located on double allotments. A notable one and a half storey group faces Concord Road.

Form

The houses in this conservation area include free standing and semi-detached forms. Most have a simple rectilinear footprint to the main front wing and incorporate a verandah in the street elevation. Roofs are usually hipped, sometimes incorporating a gable as a feature.

Siting

Front setbacks are reasonably uniform along each street. Some larger houses have greater setbacks. Side setbacks are small, possibly as a result of the small allotments.

Materials and Colours

Rendered masonry is used for most of the Victorian houses and is complemented by slate roofs (where the original roofing survives). Later houses are face brick with tiled roofs. There are a small number of weatherboard houses with corrugated steel roofs.

Doors and Windows

Windows are vertically proportioned usually with timber double hung sashes. Some of the Victorian houses incorporate bay window elements. A few later homes have sets of timber casement sashes. Front doors usually incorporate a toplight and, in larger homes, sidelights.

Carparking

The rear lanes provide access for parking at the rear of the properties.

Fencing

Few original fences survive. Iron palisades might be expected for some of the larger Victorian houses. Smaller cottages could be expected to have timber picket fences. Later houses appear to have used brick fencing with low brick panels between brick piers.

Landscape Elements including Paving and Driveways

Front gardens are dominated by lawns with plantings of low shrubs.

Refer to Figure App1.27



Figure App1.27 Powell's Estate Conservation Area

CA.21 Sailsbury Street Housing Group

History

This group of houses is located on the 1886 Beaconsfield Square subdivision. They include cottages built soon after the subdivision through to the Inter-War period.

Description

This is a group of single storey verandahed cottages from the 1880s to the Inter-War period. The narrow setback from the street and the consistent scale and simple forms of these houses creates a cohesive streetscape.

Statement of Significance

This is a cohesive streetscape of cottages built soon after the 1886 Beaconsfield Square subdivision. They include cottages built soon after the subdivision through to the Inter-War period.

Analysis - Setting

The group is set on similar blocks with narrow setbacks from the street. The group contrasts with the open space and larger scale building of the public school on the opposite side of the street.

Scale

The houses are originally single storey, with one now having a first floor addition. This is consistent with the narrow width of the street

Form

The group have a range of cottage forms. All are based on simple rectangular cottages with hipped roofs and a front verandah. The later examples have a gabled element on the front elevation to provide interest.

Siting

The front setbacks are quite narrow. Some have a wider setback on one side to allow vehicular access.

Materials and Colours

The houses are in different materials. Traditional materials of weatherboard or face brick is used for walls and, originally, corrugated steel or terracotta tiles for the roof.

Car parking

Some of the cottages have sufficient side setbacks to provide access for rear garages. The narrow street setbacks limit parking in front of the houses.

Fencing

No original fencing survives. Fencing is low to medium height.

Landscape Elements including Paving and Driveways

The small front gardens are laid to lawn with some shrub planting.

Refer to Figure App1.28

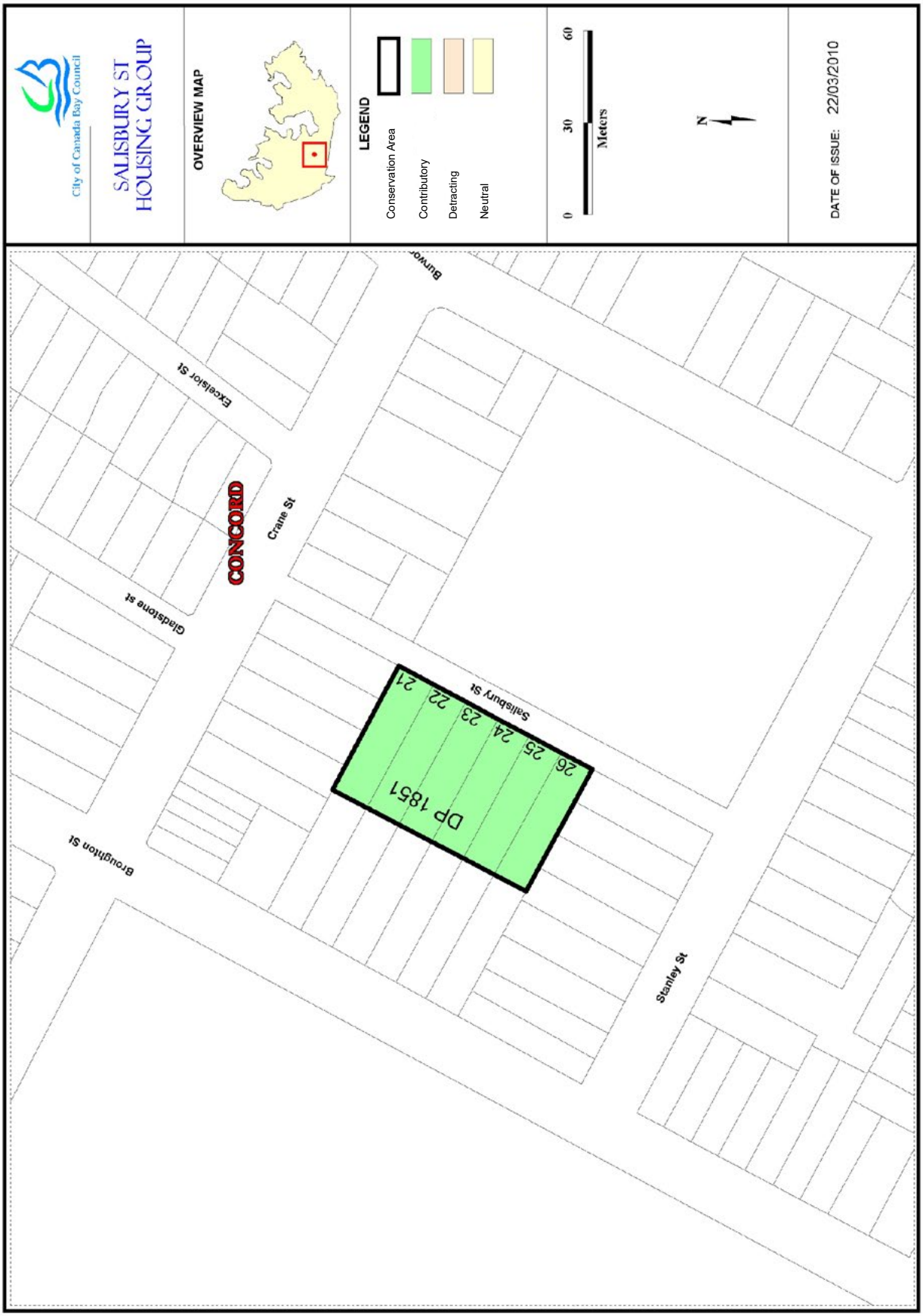


Figure App1.28 Salisbury Street Housing Group

CA.22 Thompson Street Conservation Area

History

This terrace of seven houses was built on the 1904 subdivision of the Cometrowe Estate. The terrace remained under one title until 1958 when it was subdivided into individual allotments for each house.

Description

This small group comprises a row of single level terrace style housing with narrow frontages and matching facades. They have a strong Federation Queen Anne character.

Statement of Significance

The terrace of seven houses in Thompson Street is a very rare building form in Drummoyne. This is the only significant terrace in the Canada Bay Council area and is a strong form in the Thompson Street streetscape and illustrates one of the major stages of Drummoyne's development.

Objectives

The integrity of this row is to be retained without any alterations to the street elevations. No further painting of face brick walls should take place and timber joinery details should be retained.

Analysis - Setting

This terrace has a narrow setback from the street. The slope of Thompson Street away from Lyons Road adds interest to the group.

Scale

This is a single storey group.

Form

The houses have a repetitive pattern of verandahs and gabled fronts in front of a main roof slope.

The terracotta tiled roof is a regular gabled form parallel to the street with individual houses separated by parapet walls. Transverse gables are used on the projecting bays.

Siting

This terrace has a small setback from Thompson Street.

Materials and Colours

The face brick walls of this group have been painted. The roof is of terracotta tiles with crenellated ridging and rams horn finials.

Windows

Double hung windows are used in the projecting gabled fronts.

Carparking

No off-street car parking is provided with these houses.

Fencing

The street boundaries are marked by consistent low reproduction picket fencing.

Landscape Elements including Paving and Driveways

The houses have small front gardens sometimes incorporating shrubs and hedges. Paving is restricted to pedestrian paths.

Subdivision

The subdivision pattern of this group related directly to the individual houses.

Refer to Figure App1.29

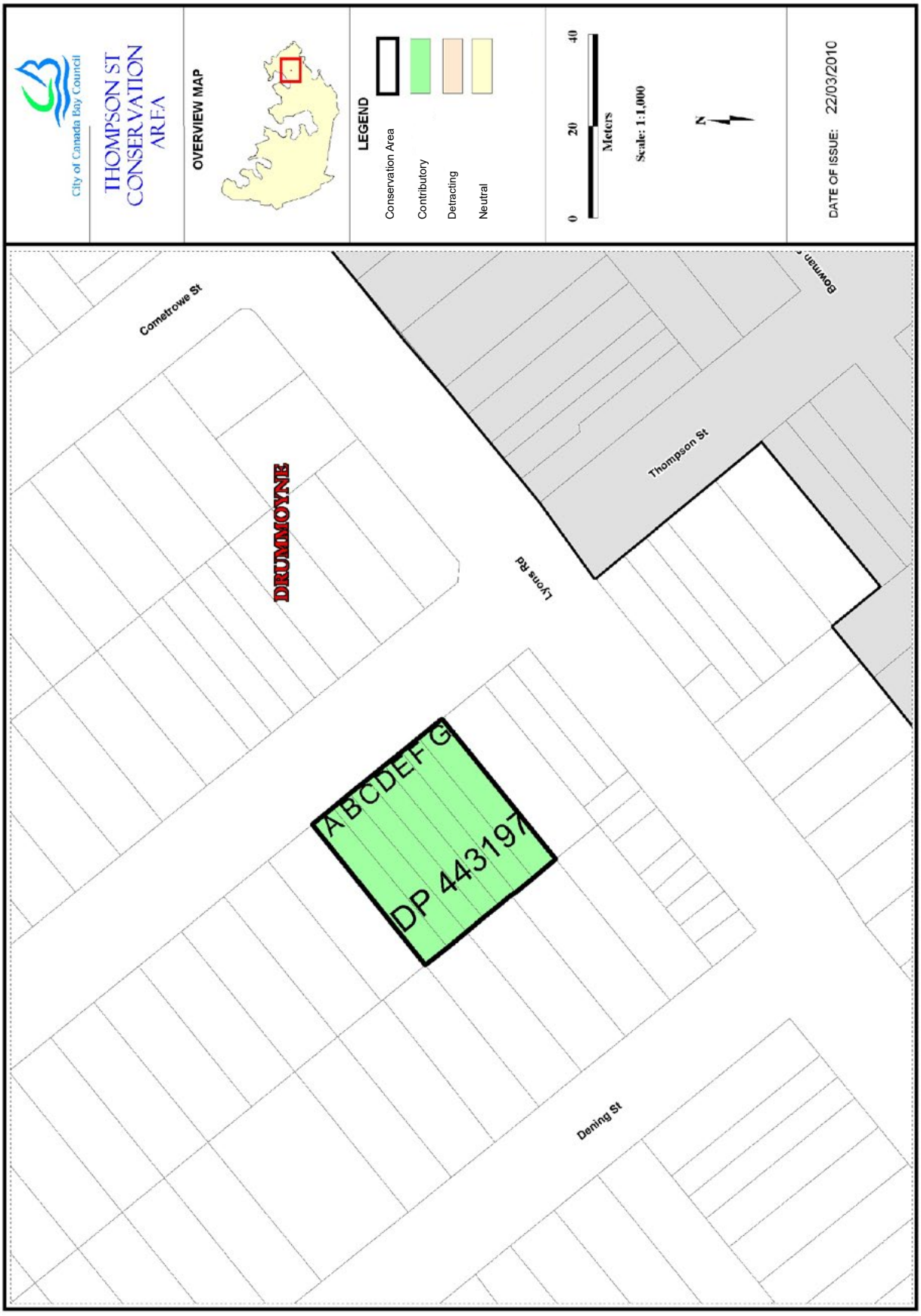


Figure App1.29 Thompson Street Conservation Area

CA.23 Victoria Road Retail Conservation Area

History

Victoria Road can be clearly seen with its two phases of development; the earlier eastern side from the early years of the twentieth century and the western side which is predominantly post World War II development except where buildings were set well back from the street alignment. The eastern side of Victoria Road is of particular interest as it has survived the numerous road widenings that have removed much of the building stock on the opposite side of the road.

Description

This small group of retail buildings are a very fine example of Edwardian shopping centre development and form an almost intact streetscape across the crown of the hill. The buildings vary in style but the predominant form is the two storey building with shopfront below and residence over. A number of these have cantilevered balconies to the street of design interest and rarity. The other buildings are the post office, several well detailed buildings originally used for banks and the Inter-War commercial building on the northwestern corner of Lyons Road.

Statement of Significance

This Victoria Road, Drummoyne Retail Conservation area is a very good example of early twentieth century retail development, incorporating Edwardian, Classical Revival and Art Deco designs. With the Sutton Place shopping centre and the hotel on the opposite corner, these buildings create a significant townscape at this very busy and prominent corner. All of these buildings form a gateway to Drummoyne and establish a strong and key character. The survival of cantilevered verandahs on a number of the buildings adds particular interest to the group.

Objectives

The strong Federation to Inter-war character of these retail buildings should be retained with their masonry facades, often intact shopfronts, upper floor verandahs, parapet forms and overall consistent and intact streetscape setting. Original shopfronts should be retained. Infill buildings should respect the overall scale of the street development.

Analysis - Setting

This is an urban group with buildings abutting or separated by narrow walkways. They have visual prominence due to the location at the crest of a hill and the absence of a setback from the street alignment.

Scale

Generally two storey buildings, usually divided horizontally by an awning.

Form

Continuous street facades are modulated by cantilevered and recessed verandahs, regularly spaced shopfronts, fenestration patterns, use of piers to divide first floor façade and articulation of the parapet walls. Cantilevered balcony roofs are generally corrugated steel and use a skillion form. The main roofs are generally concealed behind parapet walls. This group is distinctive for the incorporation of cantilevered balconies to a number of the buildings. The first floor façade is generally articulated with engaged piers and a shaped parapet.

Siting

These commercial buildings usually have no setback from the street boundary and little or no setback from the side boundaries, forming a continuous wall to Victoria Road.

Materials and Colours

Walls of masonry contrasting with render. Some Inter-War buildings are finished with render incorporating decorative details. Face brick is important to the character of the Edwardian buildings.

Doors and Windows

A range of window openings are used, generally with a vertical emphasis. Larger window openings are avoided ensuring a regular proportion of wall and windows in the facades. Ground floor shopfronts are generally modern, although a few buildings in the conservation area are notable for being designed as a cohesive façade over both floors, undivided by an awning or balcony.

Carparking

Where available, car parking is at the rear of the site.

Refer to Figure App1.30



Figure App1.30 Victoria Road Retail Conservation Area

CA.24 Yaralla Estate Conservation Area

History

The Yaralla Estate conservation Area comprises a major part of the 1920 release of the Yaralla Park Estate. This was the largest single release of land for urban subdivision in the former Concord Municipality's history. It included the main entrance driveway to the old Walker Estate, retained on its original alignment as The Drive. The rapid development of the subdivision, closely associated with the Main Northern Railway, produced highly consistent Inter-War streetscapes.

The 1920 subdivision extended from Colane Street to the northern side of Wilga Street. The southern side of Wilga Street was developed shortly afterwards.

Description

This is an area of regular subdivision and generally uniform Inter-War housing. The repetition of the gabled roof forms of Inter-War bungalows create a strong rhythm in the streetscape and is reinforced by consistent use of dark brick and tiled roofs. Iandra Street at the north of the Conservation Area and Wilga Street at the south of the Conservation Area include groups of Inter-War cottages.

It includes significant street planting, most notably along The Drive. The area's original 1920s townscape character survives essentially unaltered. Subtle bends in the parallel street system add visual interest. The area includes a small neighbourhood shopping centre on Concord Road.

Statement of Significance

This 1920s precinct is representative of Concord's major developmental period. It is one of the best preserved examples of Inter-War streetscapes in the Council area and includes some of the Sydney region's best examples and some outstanding rows of typical 1920s bungalows, for which Concord is noted. The Drive has special significance as the alignment of the original entry to the Walker family's Yaralla estate.

The inclusion of subtle bends in the streetscape and of street planting adds to the distinctive qualities of this Conservation Area.

Analysis - Setting

The Yaralla Estate Conservation Area has long streetscapes of wide streets with subtle bends. Street plantings add to the amenity of the residential streets.

Scale

Single storey housing dominates the residential development in this conservation area. Two storey commercial development and flats facing Concord Road reflect the importance of that road as a main traffic route.

Form

The Inter-War California Bungalow style with its strong gabled form dominates this conservation area. Verandahs on the front of the house provide depth to the street facades. Later housing has a similar scale with verandahs incorporated below hipped roof forms.

Siting

Housing in the Yaralla Conservation Area has regular front setbacks from the streets. Most houses include a wide setback to one side to allow for vehicular access. This provides space between houses and helps reinforce the rhythm in the streetscape.

Materials and Colours

Face brickwork trimmed with render below terracotta or slate roofs is almost uniform in the Yaralla Conservation Area.

Doors and Windows

Windows are usually timber casement sashes in groups of two or three, often with horizontal sun hoods. Later houses have groups of double hung windows, sometimes in a chamfered bay. Doors are often glazed and sometimes are paired.

Carparking

Garages and carports are usually set well back from the front building alignment.

Fencing

Original fencing is usually low brick panels between brick piers. Metal rails or wrought metal panels are sometimes used between piers.

Landscape Elements including Paving and Driveways

Street trees are important in this conservation area. Front gardens are usually dominated by lawn with low plantings of shrubs to provide interest.

Refer to Figure App1.31 to Figure App1.33



Figure App1.31 Yaralla Estate Conservation Area - Overview

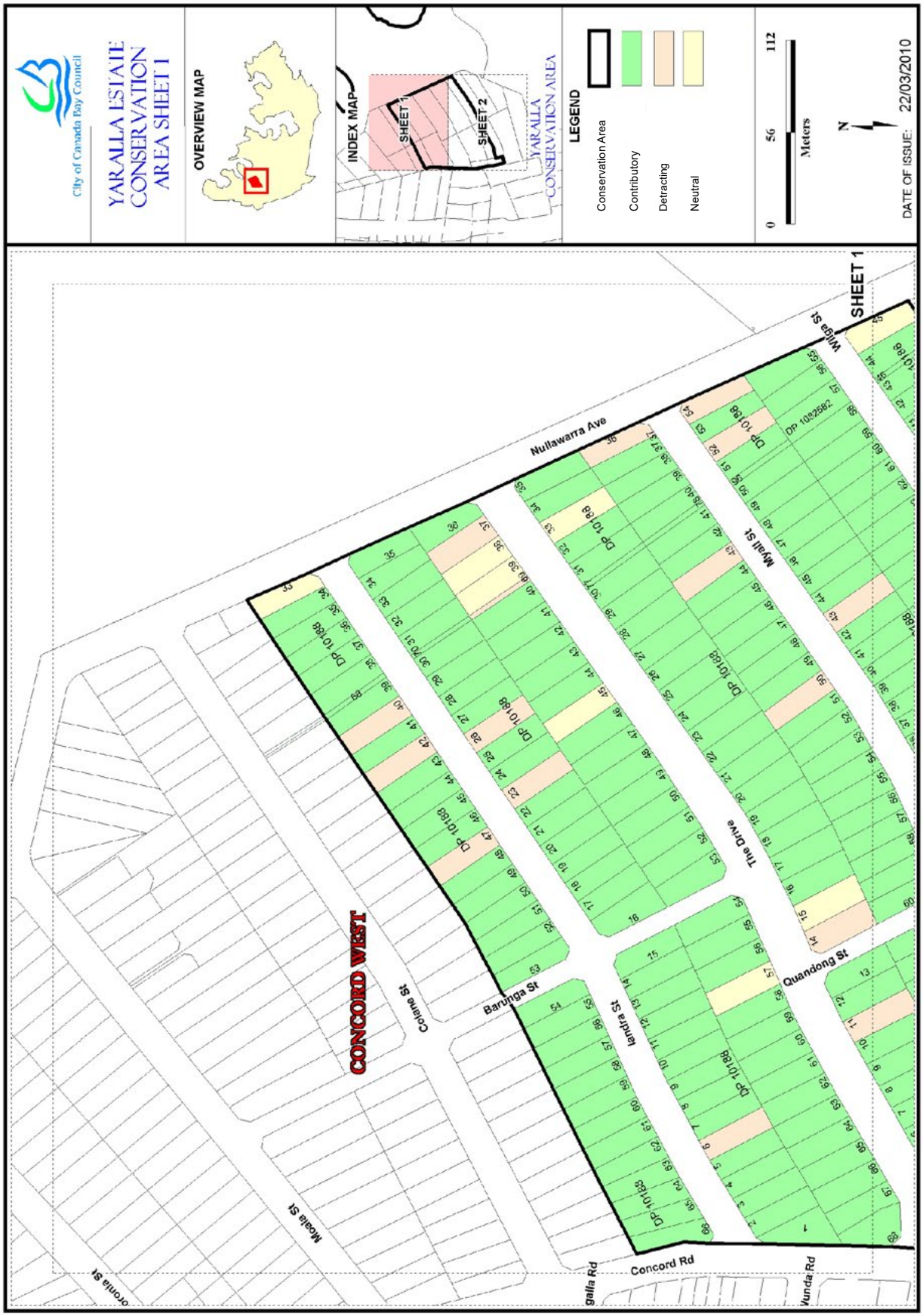


Figure App1.32 Yaralla Estate Conservation Area - Sheet 1

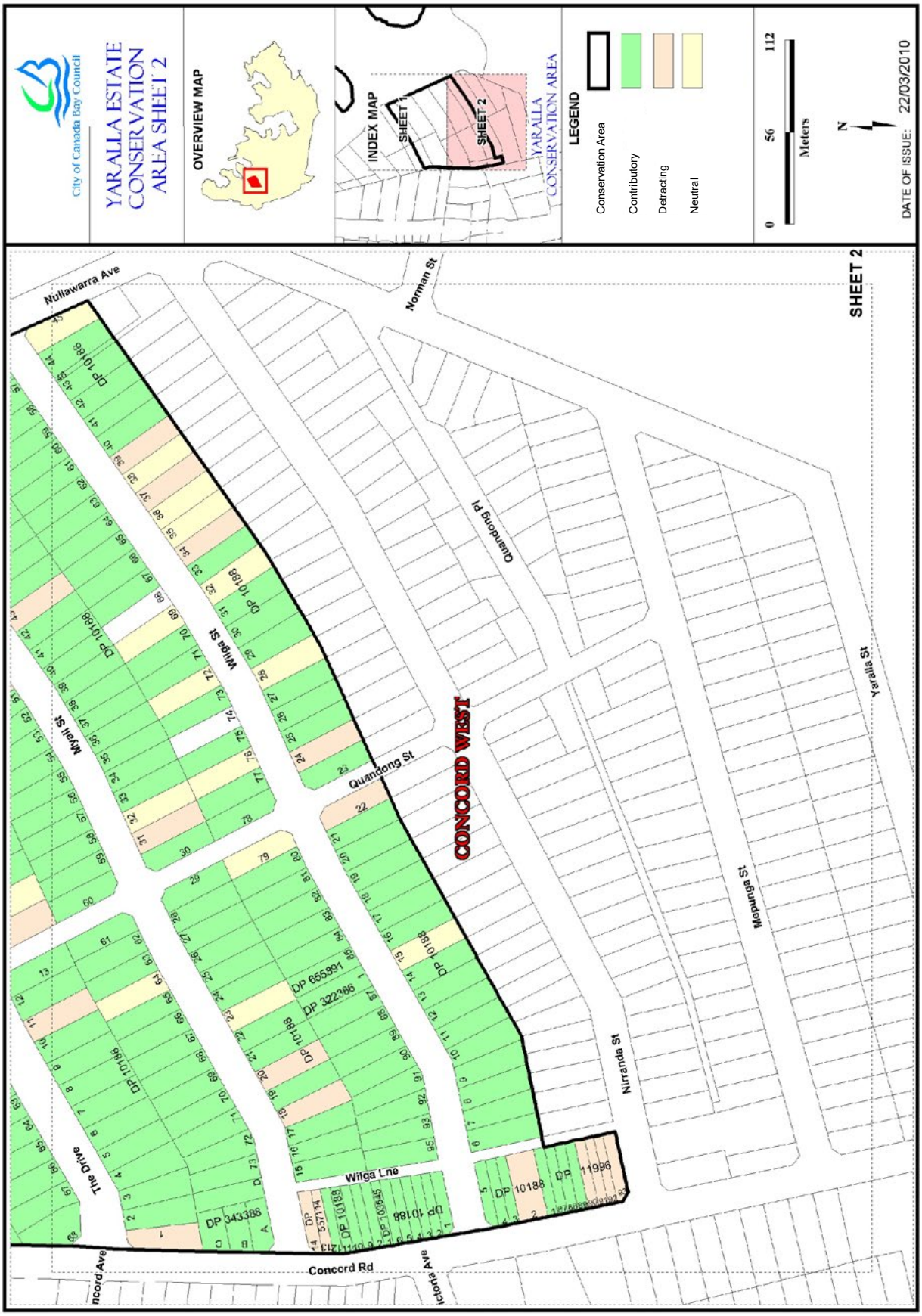


Figure App1.33 Yaralla Estate Conservation Area - Sheet 2

This page was intentionally left blank

A2







APPENDIX 2 - ENGINEERING SPECIFICATIONS

ES1 Road and Footpath Works A2-2

Footway A2-3

Footpath A2-5

Kerb and Gutter A2-7

Road Carriageway A2-8

Ancillaries A2-9

ES2 Vehicular Access A2-12

Statutory and Design Requirements A2-12

ES3 Stormwater Management A2-21

On-site Stormwater Detention Systems A2-24

On-site Stormwater Absorption Systems A2-33

Charged Systems A2-34

Mechanical Pump-out Systems A2-36

Scouring, Erosion and Water Quality Control A2-38

Rainwater Re-use A2-40

Stormwater Drainage Design A2-41

Stormwater Pollution and Erosion Control A2-54

Water Sensitive Urban Design A2-55

Document Submission A2-56

ES4 Appendices A2-60

Terms of Positive Covenant A2-60

Restriction on the Use of Land A2-62

Generic Letter for Seeking Easement on Adjoining Land A2-64

Intensity-Frequency-Duration Charts A2-65

Rhodes Peninsula Site Specific Requirements A2-69

Strathfield Triangle Site Specific Requirements A2-72

Flow Charts Rainwater Reuse A2-100

Stormwater Management Type 2 Developments A2-101

Stormwater Management Type 3 to 9 Developments A2-102

Driveway and Ancillary Works A2-103

Standard Engineering Drawings A2-104

ES1 Road and Footpath Works

Objectives

O1 Engineering Standards - To provide adequate engineering standards for public domain areas, public road reserves and private access roads.

O2 Uniformity - To ensure that there is a benefit to the public resulting from developments and the result is that the public is catered for by uniform infrastructure. Such infrastructure includes the road carriageway, footway, footpath, pavement, kerb and gutter, street trees, utility services, ancillaries and the like.

Definitions

D1 Components - The road reserve is defined by the following components:

- Footway - the section of land between the kerb face and the property boundary
- Footpath - the section of pavement within the footway dedicated for pedestrian and/or bicycle access
- Kerb and gutter - the separation or interface between the footway and vehicular (road) carriageway
- Road carriageway - the section of land dedicated for vehicular traffic
- Ancillary items - any stormwater drainage asset, road/street furniture, edging, lighting, poles, services, signage etc., that forms part of the road reserve

D2 Significant Developments - Major commercial and industrial developments, developments which occupy more than three sites across a street frontage, three or more allotment sub-divisions would be considered as "significant developments".

Controls

C1 Requirements - All development involving demolition and/or construction will be required to satisfy the requirements of this Engineering Specification.

C2 Footway Area Minimum Standards - The footway area shall be reconstructed to satisfy the following minimum standards.

Development	Requirement
1. Demolition only	Repair/ reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report
2. Alterations and additions	Repair/ reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report
3. New dwelling with existing footpath along frontage	Repair/ reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report
4. New dwelling with no existing footpath	Repair/reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report. Construct new footpath
4a. Dual Occupancy (duplexes, town homes, etc.) with no existing footpath	Repair/ reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report. Construct new footpath
5. Residential Flat Building, commercial and mixed developments	Repair/ reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report. Construct new footpath
6. Development under SEPP Housing for Seniors or People with a Disability	Repair/reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report. Construct new or reconstruct existing footpath from site to nearest transport facility to ***AS1428.1*** compliance
7. Significant Development other than those listed herewith	Construct new footway, footpath, road carriageway and ancillaries
8. Subdivision of one into two allotments	Repair/ reinstate damaged areas not reported in the Damage Report Form or Dilapidation Report. Construct new footpath, ancillaries and access road/s
9. 'Greenfields' site, subdivision of more than two allotments	Construct new footway, footpath, road carriageway and ancillaries. Construct access road/s. For Rhodes Peninsular Developments refer to Appendix 5F for additional requirements

Footway

Re-grading the grassed verge within Footway

FW1 Footway Re-grading - The grassed verge within the footway is to be re-graded across the entire property frontage, for development types 7, 8, and 9, and in the following circumstances regardless of the development type:

- Grassed verge has cross-fall of more than 5% (1 vertical: 20 horizontal).
- Matching in with constructed and existing driveway/s.
- Existing grassed verge is difficult (undulating) for pedestrians to negotiate.
- The construction of a vehicular crossing into the site results in unreasonable undulations in the footway or steep level changes.
- The construction of a footpath pavement and/or re-alignment of the road carriageway require the footway to be raised or lowered to match.
- Access difficulties for both pedestrian and vehicular traffic would occur without adjustment of the verge.
- Walls and fences within the property boundary must match in with the new levels.

Minimum Footway Design Requirements

FW2 Constraints - When adjusting footway levels, factors such as the levels of adjoining properties, the degree of pedestrian usage, existing trees, rock outcrops and other physical features and the alignment of existing road, must be taken into consideration.

FW3 Minimum Design Criteria - The minimum design criteria are set out as follows:

- The longitudinal gradient of new footways shall not exceed 10%.
- The longitudinal change in gradient along footways shall not be greater than 1 in 10 with a minimum ease of 4.0 metres.
- A concrete footpath shall be constructed along the entire section of new footways.
- Where it is necessary to raise or lower the section of footway at the front of properties, the adjoining sections shall be re-graded to provide a smooth transition to the new levels.
- The construction of steps is generally not permitted unless the footway transition will extend more than 5.0 metres beyond the property frontage along the footway in order to achieve smooth transition.
- Where a footpath is to be installed and its longitudinal gradient exceeds 10%, over a distance of not less than 5.0 metres, steps may be installed subject to Council's approval.
- Grassed footway cross-fall shall be graded at 10% adjacent to the property boundary, where there is no formal or concrete footpath. The grassed verge near the kerb side shall not have a cross fall exceeding 5%. The absolute minimum footway cross-fall shall be at 1.0% (for grassed surfaces only). A footpath shall be constructed at all times. The footway shall be graded such that there will be no localised depressions which may cause water to pond or to allow the concentration of stormwater or directing stormwater into private property/s or creates a step or height difference which makes it difficult for the 85th percentile vehicle (B85) to open its doors on the verge side.
- Where access to properties is affected by re-grading of the footway, all work necessary must be done to ensure that satisfactory pedestrian and vehicular access is provided. This may necessitate transitions within the development. Where works are required on adjoining property/s, such as driveway adjustments, written consent from the property owner/s must be obtained.

Footway Material

FW4 Material - Material to be used for filling of the footway shall be of clean fill consisting of granular material of not less than 70%, free of vegetation, stumps, roots, rubbish, construction waste and other deleterious material.

FW5 Rock Excavation - Where excavation is in rock, the rock shall be removed to a depth of 300mm below the finished surface level and replaced with clean fill.

FW6 Topsoil - Minimum 100mm thick layer of topsoil shall be placed over the footway. Topsoil shall not contain more than 40% clay content. Clods in the topsoil shall not be greater than 50mm in diameter.

FW7 Ground Cover - The footway shall be protected with couch, kikuyu or buffalo or other types of ground cover to match the existing surface type which provides good protection from surface erosion.

FW8 Ground Cover Maintenance - The ground cover shall be maintained by the Developer for a minimum two (2) months after placement or laying.

FW9 Developer Responsibilities - The Developer shall be responsible, at his expense, for the replacement of dead ground cover during the first two (2) month period after placement.

FW10 Footway Acceptability - The footway will not be considered satisfactory if:

- The finished level of the footway adjacent to the kerb is below the top of the kerb or edging.
- There is a step-down or uneven transition from any foot paving or driveway crossing to the finished level of the footway.
- There are localised depressions in the footway which would cause the ponding of water or the concentration of stormwater runoff.
- There are areas of eroded or dead ground cover.

Footway within Private Property

FW11 Requirements of Footways - Generally footways for private access roads are not required unless access into the property/s, for example, as part of land subdivision including community title subdivision, requires the construction of an access road where its length exceeds 30 metres and no other safe access is made available for pedestrian thoroughfare.

FW12 Width of Footways - Where a footway is required, the width of the footway shall not be less than 1.2 metres with service corridor/s located within the footway area, where possible.

Footpath

Where Footpaths Required

FP1 New Concrete Footpath - Full concrete footpath construction is required across the entire property frontage for development types 4, 5, 6, 7, 8, and 9 and beyond the development frontage for development type 6.

FP2 Footpath Reconstruction - Full sections of footpath are to be reconstructed for development types 1, 2 and 3, replacing broken pavements to ensure safety for pedestrian thoroughfare.

Footpath Minimum Widths

FP3 Minimum Widths - Minimum footpath pavement widths are given in the following table.

Development type	Minimum Width (metres)
1, 2 and 3	Width to match existing but not less than 1.2m unless constrained by site conditions such as footway width being less than 1.2m
4	1.5
5, 6, 7, 8 and 9	2.0
Regardless of above development type, the footpath is a shared route	Width as per Aust Roads Guidelines

Footpath Design Requirements

FP4 Construction Material - All footpath pavements are to be constructed in plain full concrete. Pavers, bitumen, patterned concrete, coloured concrete, any other form of cosmetic treatment of concrete pavement or a combination of pavement types is not acceptable unless it has been approved as part of the streetscape planning of the area or the pavement is a replacement of an existing slab of similar material, pattern or colour.

FP5 Footpath Cross fall - Footpath pavement cross-fall shall be a minimum of 0.5% and a maximum of 2.5% (1 in 40 for disabled access) or absolute maximum 5.0% (where disabled access is not required).

FP6 Grading of Footpaths - Footpath cross-falls shall be graded away from the property boundary, towards the kerb and gutter or to an approved drainage system. Cross-fall must not be graded into private property/s.

FP7 Concrete Minimum Strength - The minimum concrete strength shall be 25 MPa at 28 days and 80mm slump in accordance with ***AS3600 – 1994, Concrete Structures Code.***

FP8 Concrete Thicknesses - Concrete shall be installed at the minimum uniform thicknesses as given in the table below (except where footpath is across driveways, in which case, it shall be the same thickness as the driveway slab). Concrete footpath shall be laid on a minimum 100mm thick road base (compacted to minimum 98% maximum dry density) or 50mm thick and well compacted sand (compacted to a density index of not less than 65%).

Footpath Width (metres)	Slab Thickness (mm)
1.2 to 1.5	75
2.0	100
2.5	130
> 2.5	150

FP9 Sub-Grade - The sub-grade shall be compacted and checked for uniformity and all irregularities made good prior to the pouring of concrete.

FP10 Finish - The concrete shall be broom or coving trowel finished. All edges shall be rounded with a 75mm edging tool, with a 5mm radius.

FP11 Joint Material - Contraction/expansion or construction joints shall be formed from 10mm thick compressible bituminous cork filler board (mastic jointing material).

FP12 Joint Installation - Contraction/expansion joints shall be installed at the full depth of the slab at each side of vehicular crossing slabs, against concrete structures and at intervals given in table below.

Width of Slab (metres)	Distance C/E Joints (metres)
1.5	6.0
2.0	8.0
3.0	12.0
3.5	14.0

FP13 Weakened Plane Joints - Weakened plane joints shall be 3mm wide and formed at intervals as given in the table below except for integral kerbs where they are to match joint locations in the slab.

Width of Slab (metres)	Distance WP Joints (metres)
1.5	1.5
2.0	2.0
3.0	3.0
3.5	3.5

FP14 Concrete Curing - Concrete shall be cured for at least seven (7) days. Any damage or unsatisfactory finish of the slab shall be replaced at the Developer's expense.
The footpath slab up to 75mm in thickness and 1.5 metres in width will not require any reinforcement. The footpath thickness between 75mm and 100mm and more than 1.5 metres in width will require SL62 reinforcement and the footpath slab between 100mm and 150mm and more than 1.5 metres in width will require SL72 reinforcement. Reinforcement shall be placed centrally in the slab.

Location of Footpaths within the Footway

FP15 Footpath Location - New footpaths shall be abutted against the property boundary or in the same alignment or continuation of the existing footpath or as deemed appropriate by Council's Asset Engineer, where no existing footpath is present. For reconstruction of existing footpaths, the same location as the adjoining footpath.

FP16 Extension of Footpath - If the installation of a footpath results in the grassed verge to be less than 600mm in width, then the footpath shall be extended for the full width of the footway, that is, the concrete footpath shall be constructed from the edge of the property boundary to the back of kerb.

Signage

FP17 Signage - Where footpath is to be used for both pedestrians and cyclists, adequate signage shall be installed at the commencement of the footpath indicating that the footpath is for shared pedestrian and bicycle usage.

FP18 Signage Location - Signage shall be provided both on stems and painted onto the pavement at the appropriate locations, in accordance with the RTA ***Aust Roads Bicycle Design Guidelines.***

FP19 Signage Clearance - Signage stems shall have at least 600mm clearance from the face of kerb.

Kerb and Gutter

Where Kerb and Gutter is Required

KG1 Kerb and Gutter Requirement - Regardless of the development type, kerb and gutter shall be constructed in the following circumstances:

- The proposed works includes the reconstruction or construction of an existing road or new road for access.
- Kerb and gutter along an existing paved carriageway servicing the development is in an unsatisfactory condition or at unacceptable or non-standard level. For example, kerb height is more than 150mm or less than 150mm.
- Kerb and gutter along an existing paved carriageway servicing the development does not exist.
- Kerb and gutter along the property frontage is in an unsatisfactory condition or at unacceptable or non-standard levels.
- Kerb and gutter along the property frontage does not exist.
- The construction of kerb and gutter provides protection to the property/s from the inflow of stormwater off a public road or reserve.
- The construction of kerb and gutter would prevent the likely erosion of the road shoulder as a result of vehicular and/or pedestrian traffic outside the proposed development.
- Kerb and gutter is to be reconstructed as part of the footway and/or carriageway reconstruction.

Minimum Design Standards

KG2 Minimum Design Criteria - Kerb and gutter shall be constructed to the following criteria:

- The minimum longitudinal gradient along the gutter shall be at 1%, where practical.
- Cross fall from the centreline of the road to the invert of the gutter shall be at 3%.
- The road maximum cross fall from the centre line of the road to the shoulder shall not exceed 5%.
- The proposed kerb and gutter shall match in with existing kerb and gutter.
- A section of not less than 1.0 metre of the existing kerb and gutter need to be reconstructed to ensure that there is a smooth transition between new and old works.
- Existing crossovers and drainage outlets affected by the proposed works shall be replaced and extended to the new kerb face.
- Kerb and gutter refers to standard 150mm high concrete kerb with integral gutter.
- Other types of edge treatment such as rolled kerb and gutter, mountable kerb and gutter, dish crossing, sandstone blocks or brick kerbs may be used if it has been approved as part of the streetscape planning of the area or the edging type is a replacement of an existing material, pattern or colour.
- Kerb only is not to be used where the cross fall of the road diverts stormwater to the kerb.

Road Carriageway

General

R1 Reference - The road carriageway refers to the section of the road reserve dedicated for vehicular traffic flow. This includes any private access roads (e.g. right-of-ways).

When road carriageway is to be reconstructed

R2 Carriageway Construction - The road carriageway is to be reconstructed in the following situations:

- Half road reconstruction for development type 7 and full road construction for development types 8 and 9.
- Regardless of the development type, a Damage or Dilapidation Report confirms that the road has been significantly damaged as part of the development or is in very poor condition or failure at the time of construction/development, half road reconstruction will be required.
- Regardless of the development type, the existing road carriageway outside the property frontage is at a cross fall which results in the scraping of vehicles when a vehicular crossing has been installed for the property.
- Full road slab construction will be required for local road concrete pavements or as per specification form the Roads and Maritime Services (RMS) where it is an RMS controlled roads, unless noted otherwise.

Road carriageway construction

R3 Cross-fall - Construction of the road carriageway is to have the following cross-falls:

- Cross-fall to be graded from the centre or crown of the carriageway to the gutter.
- One-way cross-falls may only be permitted for narrow roads and one-way trafficked carriageways of less than 5.0 metres in width.
- Offset crowns are not acceptable.
- Super-elevation is not normally provided but shall be a maximum of 6% at bends.
- The minimum cross-fall for asphaltic concrete carriageway pavement shall be 2.5% to 3% (with absolute maximum of 5%).

R4 Longitudinal Gradient - Longitudinal gradient of the road carriageway shall be as follows:

- For bitumen pavements, the minimum longitudinal gradient of the road carriageway shall be 1%.
- For concrete pavements, an absolute minimum fall of 0.5% is allowed, construction accuracy permitting.
- For all pavement types, the general maximum longitudinal gradient shall be 12.5% for residential (local) roads. For other road classification, in accordance with the RTA's ***Aust Roads Pavement Design Manual***.
- For all pavement types, the general maximum longitudinal gradient shall be 8.5% for local distributor roads.
- An absolute maximum longitudinal gradient of 16% may be permitted depending on adequate sight distance of vertical curves.

R5 Matching in with Existing - The proposed road pavement shall match in with the existing pavement with regard to adequate vertical eases and horizontal transitions. This may require the reconstruction of a portion of the existing road pavement to match in smoothly with the new works.

R6 Pavement Design - Pavement design shall be as follows:

- All roads shall be designed based on traffic classification counts and traffic loading as specified in AUSTROADS Guide to Pavement Technology Part 2: Pavement Structural Design AGPT02-12 or Roads and Maritime Services Form 76 – Supplement to the Austroads Guide to the Structural Design of Road Pavements or ARRB Structural Design Guide for residential street pavements as applicable, except where specified elsewhere in this document.
- Road pavement constructed in concrete shall be minimum 50MPa compressive strength at 230mm uniform thickness with two layers of reinforcement fabric (SL81) top and bottom 50mm cover over a 150mm lean mix slurry of 5MPa compressive strength.
- Road pavement shall be designed for a traffic loading of not less than 2.5 x 10^6 ESA for all roads except roads with bus routes which shall be designed for minimum 1.23 x 10^7 ESA and in accordance with the ***Aust Roads Pavement Design Guidelines***.
- Verification of sub-grade suitability shall require submission of a geotechnical report with relevant core sampling tested and reported.
- Collector, local distributor, commercial and industrial pavements shall be designed by a qualified Geotechnical Engineer in accordance with the ***Aust Roads Pavement Design Manual***.

Ancillaries

Pedestrian Crossing Ramps

A1 Location - Pedestrian crossing ramps shall be constructed at each kerb return opposite the extension of the main footpath and in the kerb opposite the extension of a public pathway.

A2 Design and Installation - Pedestrian crossing ramps shall be designed and installed as per ***AS1428.2***.

A3 Raised Tactile Pavers - Raised tactile pavers shall be installed on pedestrian ramps and positioned as per ***AS1428.2***.

A4 Tactile Paver Material and Colour - Raised tactile pavers shall be of grey coloured concrete or black coloured polyurethane type material or as specified as part of the streetscape planning for the area or the tactile paver is a replacement of an existing paving of similar material, pattern or colour.

Vehicle Crossings and Laybacks

A5 Minimum Standards - The minimum standards for the construction of driveways and laybacks across the footway are provided in Section ***Vehicular Access***.

Stormwater drainage

A6 Installation of Piped Drainage - For development types 7, 8, and 9, piped stormwater drainage must be installed to cater for at least the minor system flows as described in Section ***Stormwater Management***.

A7 Minimum Standard - The minimum standards for stormwater drainage system design are given in Section ***Stormwater Management***.

Traffic Calming Devices

A8 Minimum Standards - Traffic calming devices such as thresholds, slow points, speed humps, chicanes, and the like are to be designed in accordance with ***Aust Roads Guide to Traffic Engineering Practice, Part 10, Local Area Traffic Management***.

Steps

A9 When Steps Required - Steps should be avoided whenever possible. However where necessary, they shall be installed along all pedestrian-only footpaths where the longitudinal gradient of the pathway is sufficiently steep to warrant its installation or that the installation of a transition ramp cannot be extended adequately to achieve a smooth transition due to site constraints. "Steepness" is measured in accordance with the Building Code of Australia requirements or as determined by Council's Asset Engineer, where BCA requirements cannot be met.

Steps are also to be installed where the longitudinal gradient of the footpath exceeds 1 in 4, over a distance of not less than 5.0 metres.

A10 Material - Steps shall be constructed in reinforced concrete, pre-cast units or prefabricated metal and supported on-ground and are to be painted in highly visible paint to delineate change in height. Suspended types are not preferred.

A11 Preference of Ramps over Steps - Ramps are favoured over steps whenever possible. To permit access for disabled persons, steps are considered as a last resort and only when ramps cannot be installed to comply with the disabled access code due to physical constraints.

A12 Handrails - Where the level change between the steps and/or footpath and the adjoining surface level, at a distance of 1.5 metres or less, exceeds 500mm, handrails are to be installed. Handrails are to be designed in accordance with ***AS1428.2***.

Utility services

A13 Satisfactory Provision of Services - Satisfactory arrangements for sewer, water, gas, electricity and telecommunication services must be provided for all developments including "greenfield" sites and land subdivisions.

A14 Approval - Approval will not be granted unless satisfactory service provisions can be provided.

A Section 73 Certificate under the Sydney Water Act 1994 must be obtained for "greenfield" sites and new land subdivisions. This Certificate must be provided prior to the release of the Subdivision or Occupation Certificate.

A15 Provision of Electricity Services - Direct access to electricity supply must be provided for all "greenfield" sites and new land subdivisions. New electrical sub-stations, generators, kiosks, and turrets servicing the development must be located wholly within the property boundary. New electrical sub-stations, generators, kiosks and turrets must not be located on public land.

A16 Undergrounding of Electrical Services - Development types 7, 8 and 9 including "greenfield" sites and new land subdivisions must have electricity supply provided underground. Including public domain areas, existing overhead power lines are to be re-installed as underground cables.

A17 New Light Poles and Power Poles - New light poles and power poles are to be provided for development types 7, 8 and 9. These shall be installed at a minimum offset distance of 300mm between the face of the kerb to the face of the pole, unless specified otherwise. The minimum spacing between light poles will be based on the required luminance for the area.

A18 Gas Services - Reticulated gas supply, where available, must be provided for all "greenfield" sites and new land subdivisions.

A19 Certification - A Compliance Certificate from each utility service authority must be provided certifying that its requirements for the satisfactory provision of the service have been met before release of Subdivision or Occupation Certificate.

A20 Dedicated Service Corridor - For "greenfield" sites and new land subdivisions, a dedicated service corridor, conduit and easement shall be provided to service each allotment created.

A21 Relocation of Services - If, as part of the proposed development, mains, services and poles need to be relocated, it shall be carried out at the Applicant's expense to the satisfaction of Council and the relevant utility authority, as required.

A22 Developers' Responsibility - It is the responsibility of the Developer to ensure that all care has been exercised to prevent damage to any public utility, e.g. gas, water, sewerage, electricity and telecommunication. The Applicant will be responsible for any damage caused by him or his agents, either directly or indirectly.

A23 House Service Alterations - Alterations to house services shall be carried out only by qualified tradesperson.

A24 Location of Utility Services -The locations and depths of utility services under a road reserve shall be installed in accordance with the ***New South Wales Streets Opening Conference 1997*** resolution.

A25 Liaising with Relevant Utility Service Authorities - In particular relation to "greenfield" sites, new land subdivisions, and where a new or existing public road is to be reconstructed or constructed, the Developer must liaise with the relevant authority, arrange and pay all costs and fees associated with providing street lighting, underground electrical power, telecommunication services, and adjustment of surface fittings, pits, etc. affected by the propose works.

A26 Engineering Plans - All underground services and services in general must be detailed on engineering plans, submitted and approved by Council prior to development approval.

Street Trees and Landscaping

A27 Installation of Street Trees - Street trees are to be installed across the entire property frontage, for development types 7, 8, and 9 and where the footway and road is to be reconstructed regardless of the development type.

A28 Suitable Species - Council's Landscape Architect is to be consulted in regards to suitable plant species.

A29 Location - Street trees are to be planted at an offset distance of not less than 600mm from the face of kerb to the centre of the tree. Trees are to be planted at the distances tabulated below.

Location	Distance (metres)
From any road intersection (tangent point/kerb return)	10
Between tree centres	6
From the top of driveway wings	2
From signs, poles, posts	1

A30 Edging - For concrete pavements, no timber edging is required around the landscape islands. For surface types other than concrete pavements (e.g. turf or bitumen), the perimeter edging around the landscape island, shall be timber 30mm wide by 100mm deep. Landscape islands shall be square in shape, 1200mm wide by 1200mm long.

A31 Bedding Material - For concrete pavements, bedding material shall be "arboresin" or equivalent. For bitumen pavements or grassed areas, bedding material shall be mulch. Colour shall be as specified by Council's Landscape Architect at the lodgement of the Development Application (DA).

A32 Submission of Detailed Landscape Plans - Detailed landscape plans are to be submitted and approved by Council prior to development consent.

ES2 Vehicular Access

Objectives

V1 Uniformity - To ensure uniformity in the design and construction of vehicular crossings in the City of Canada Bay Local Government Area.

V2 Safe and Convenient Access - To ensure that safe and convenient vehicular access can be provided to and from parking spaces for all properties.

Definitions

V3 General - Vehicular access or driveway crossing refers to the formal access for vehicles (85th percentile vehicle in accordance with ***AS/NZS2890.1:2004 Off Street Car Parking Code***).

V4 Formal Access - Driveway refers to the formal platform between the kerb line and the property boundary by which vehicular access is provided.

V5 Exclusions - In this Section, vehicular access does not include internal access roads, (both vehicular and pedestrian access) within the property boundary, suspended structures and the like, which would be assessed separately on its merits and will require separate Development Application (DA) approval.

V6 Ancillary Works - Ancillary works refers to any works other than driveways and laybacks such as footpath construction or reconstruction, pavements, stormwater drainage pipes and pits and the like within the road reserve. These works could be undertaken in conjunction with or separately from driveway construction.

Application

V7 Applications to Council for the Location and Construction of a Vehicular Crossing or Ancillary works must be submitted.

No construction work will be permitted until formal written approval is obtained from Council following the submission of the Application.

An Application for Driveway Construction and Ancillary Works must be submitted for all proposed construction and reconstruction of vehicular access and this applies to:

- All Developments Applications involving residential, commercial, and industrial development, and
- Where a stand alone formal crossing(s) or cross-over (layback) is proposed.

V8 Consultation - Prior to the lodgement of a Driveway Application, please ensure that:

- The Applicant has consulted with Council's Planning Section, in regards to heritage, LEP and DCP matters and has been given advice that a driveway at the specified location is permissible; and that
- The Applicant has read this Specification and is fully aware of any limitations and/or constraints, which may preclude the approval of a driveway.

Statutory and Design Requirements

Persons who can undertake Construction

V9 Approved Persons - Vehicle crossings can be constructed by either Council's Construction Team or a Private Contractor, to ensure that works are built to a reasonable standard and uniformity.

Property owners may appoint their own Private Contractor to construct the driveway. However, to ensure that the quality of the work is maintained and public safety is not compromised, the nominated Contractor must have extensive experience in concrete works especially in the construction of vehicle crossings with current public liability insurance cover and must be approved by Council.

A Private Contractor, nominated by the Property Owner, may be approved by Council to carry out the works following submission of the following:

- A copy of the current public liability insurance is provided to Council. The insurance cover shall be for a sum not less than $A20,000,000 for a period of six (6) months, and nominating on the policy the City of Canada Bay Council as indemnifying them against public risk claims, arising during the construction of the crossing or as a result of the construction of the crossing;
- A copy of the Contractor's current concrete license and record of previous work are provided to Council; and
- A Security Deposit is paid to Council by the Contractor, as set down in Council's Fees and Charges lodged prior to any works commencing. This Deposit is refundable upon satisfactory completion of the works, at the discretion of Council.
- An additional non-refundable administration fee, as set down in Council's Fees and Charges shall also be paid. This fee covers the processing of the driveway application and three (3) site inspections. Note this fee applies to each driveway applied for per property. If more than one driveway is to be constructed, the same fee must be paid for any additional driveway to be processed.

If all of the above requirements are not satisfied, the application may be rejected and a further fee (10% of the Security Deposit) will be required before reconsideration.

For ancillary works such as the construction of a concrete footpath, an administration fee is payable. A refundable deposit is also required.

Issuing Driveway Levels

V10 Written Permission - No work shall commence without written permission from Council.

The Contractor is to submit a driveway design appropriate for the site, complying with ***AS/NZS2890.1:2004***. This design must be approved by Council in writing before any construction can be carried out.

In exceptional circumstances, e.g. due to omission of information on the part of the applicant and notwithstanding the above advice, Council may consider that the construction of a driveway at the proposed location or site is inappropriate or impractical. The Applicant will then be advised accordingly and all but $A50 will be refunded.

Supervision and Inspections

V11 Supervision - Works are to be carried out in accordance with this document, relevant Council Specifications and Australian standards.

No work is to be carried out except under the supervision and approval of Council or its nominated representative.

Council shall meet with the nominated Contractor and/or Owner to carry out mandatory inspections for the purpose of:

- Formwork inspection - at least forty-eight (48) hours notice must be given for checking timbering for alignment, reinforcement placement, level and stability and sub-grade preparation.
- Final inspection - the Owner or Contractor shall notify Council for a Final inspection once the concrete has been poured and finished, formwork removed and area restored. At least twenty-four (24) hours notice must be given.

To arrange for appropriate inspection times, bookings shall be made through Council's Customer Service Section.

If more inspections are required above the mandatory inspections due to any omission or unsatisfactory work, including the storage of materials, insufficient barricading and site safety, on the part of the owner or contractor, or remedial actions that Council deems necessary to achieve compliance, an additional fee shall be charged, as defined in Council's Fees and Charges Schedule.

Final Approval

V12 Notification in Writing - Council will notify the owner in writing of the Final Approval of the work. Any defects found during the Final Inspection must be remedied. This is the responsibility of the owner and therefore it is advised that final payment not be made to the Contractor until such approval has been received.

Once the driveway is completed and Council is satisfied with the works, a refund of the crossing bond can be arranged. The Applicant shall apply in writing to Council.

Adjustments to Utility Services

V13 Service Alterations - Any alteration, which may be necessary, for the construction of the vehicle crossing, to any water, sewer, gas, electricity, telecommunication, stormwater system, and other utility services is to be arranged by the contractor with the relevant utility authority.

V14 Protective Box Adjustments - The protective boxes over any hydrant, gas cocks, stop valves, sewer lines, and the like shall be adjusted by the contractor, in consultation with the relevant utility authority, so that they are flush with the finished surface.

V15 Physical Location - The contractor is responsible for the physical location of all utility services likely to affect the proposed works. The contractor is liable for any damage to service utilities. The contractor is required to contact “Dial before you dig” (ph 1100) before any work commencing.

V16 Associated Costs - Any cost incurred as part of the adjustment will be borne by the owner.

V17 Conflicts with Stormwater Conduits - Where an existing or proposed house stormwater pipe traverses the proposed driveway crossing, and there is insufficient cover over the pipe, the section of pipe shall be converted to a galvanised steel 200 x 100 x 6 rectangular hollow section (RHS) across the footpath, to achieve adequate cover. Alternatively, relocate the pipe, where possible, away from the driveway and in the direction which allows adequate drainage

Road Design Affecting Driveway Levels

V18 Proposed Design - Where a proposed design has been prepared by Council to alter the carriageway and/or footpath fronting the property concerned, the driveway works shall be carried out in conformity with the proposed design. Information for this purpose shall be supplied by Council or its representative.

V19 Proposal to Modify Street Levels - Where Council has a proposal to modify the area at the front of the property but a proposed design has not yet been prepared, the work shall be set out in accordance with the best available information and in accordance with this Document and any other relevant standards, on the understanding that if Council should carry out future construction works to a proposed design, which may involve the alteration to part or whole of any of the constructed work, then a contribution may be payable had no work been carried out, will be levied and must be paid by the property owner, in accordance with the Roads Act, at the time when the Council proposed works are to be carried out.

Public Safety and Provision for Traffic

V20 Pedestrian and Vehicle Safety - The contractor is responsible for the safe passage of pedestrian and vehicular traffic. During the progress of the works, all necessary warning notices, barricades and lights must be installed, in accordance with ***AS1742.3-2009, Traffic control devices for works on roads***.

Where the works require traffic control, the contractor will be responsible for appropriate traffic control devices being put in place, including necessary lamp signage, maintenance and the like in accordance with ***AS1742.3 - 1996.***

Where works are to be carried out on roads of a "Collector Road" status or higher, and obstruction to traffic is unavoidable, a Traffic Management Plan must be submitted with the application to Council, endorsed by the Police and relevant authorities e.g. RTA, for approval. This plan is to be prepared in compliance with ***AS1742.3 - 1996***. A minimum notification period not less than ten (10) working days shall be provided prior to the commencement of works.

These ancillaries should be included in the total cost towards the works.

V21 Liability - The contractor shall be liable for any accident, damage or injury to persons or property resulting from the work. In this regard, the Contractor must have appropriate and current public liability insurance to this effect.

Compliance with Other Regulations

V22 Compliance - Works shall be carried out in compliance with The Clean Waters Act, The Roads Act, The Motor Traffic Act and the Occupational Health and Safety Act, and any other Acts as deemed relevant.

Hours of Construction/ Demolition

V23 Hours of Construction/Demolition - The hours of construction/demolition shall be restricted to 7:00am to 5:00pm, Mondays to Fridays and 8:00am to 1:00pm Saturdays, with a total exclusion of work on Sundays and Public Holidays.

V24 Non-offensive Works - Non-offensive works, where power operated plant is not used such as setting out, surveying, plumbing, electrical installation, or site cleaning by hand shovel and site landscaping, is permitted between the hours of 1:00pm to 4:00pm Saturdays, at Council's approval.

Important Note: The Protection of the Environment Operations Act 1997 may preclude the operation of some equipment on site during these permitted working hours.

Preparation and Excavation

V25 Minimum Excavation - The Contractor shall excavate to the full depth required for the specified thickness of the proposed crossing slab.

In rock, clay or unstable foundation material, additional excavation shall be carried out and a sub-base of sand, or other approved material, to a minimum depth of 75mm consolidated thickness, shall be provided.

V26 Compaction - The sub-grade or sub-base shall be adequately compacted to the required minimum depth of 150mm to the following requirements:

- Sands - density index of 70% in accordance with ***AS 1289.E3.1*** where the compaction test is in accordance with ***AS 1289.E5.1***.
- Material other than sand - dry density rates in accordance with ***AS 1289.E4.1*** of more than 95% where the compaction test is in accordance with ***AS 1289.E1.1*** (standard).

V27 Adjacent Surface - The surface adjacent to the proposed driveway shall be trimmed to conform generally to the levels and cross-fall similar to the adjoining area, free of trip hazard, unless otherwise instructed by Council's Engineer. This shall include lifting and resetting footpath lawns where necessary.

Driveway Dimensions and Alignment

V28 Maximum Driveway Slab Widths - The width of any crossing to a property must be kept to a minimum. Excessively wide vehicle crossings will not be approved because it:

- compromises pedestrian safety by encouraging vehicles to cross the footway at greater speeds,
- minimises the area for pedestrian refuge,
- encourages illegal parking on the footway,
- detracts from passive streetscape by increasing the amount of visible hard paving, and
- reduces on-street parking spaces.

Refer to Part B3 of DCP for crossing and driveway widths.

V29 Driveway Slabs for Commercial Premises - Commercial premises, properties requiring two-level entries, or where traffic is heavy (for example, the property frontage to a main road with heavy vehicular traffic movement); the above widths may be increased at Council's discretion. For example, service stations may be granted wider driveway widths based on swept vehicle paths and submission of a Traffic Report.

V30 Wheel Strips - Wheel strips **are not acceptable** because they do not provide sufficient protection to the public footway. Constant wearing by vehicular traffic may cause rutting in the grass verge which compromises the safety of pedestrians using the footway.

V31 Vehicle Crossings to be Perpendicular to Kerb Line - Vehicle crossings are to be constructed perpendicular to the kerb line. In special circumstances, to reduce disturbance to traffic flow along a major road, an angled driveway may be permitted subject to the approval of Council's Asset Engineer.

Driveways off Narrow Roads

V32 Splays and Widened Driveways - Splays are not to be used. The maximum crossing slab width shall be 3.0 metres. Council does not encourage the construction of wide crossovers where it is unnecessary as it increases the risk to pedestrians and diminishes the opportunity for on-street parking.

Vehicle crossings are generally required to be constructed perpendicular to the kerb line. This encourages vehicles to slow down whilst entering properties.

In special circumstances, the driveway may be widened to prevent vehicles from driving onto the nature- strip or where safer access and egress can be provided.

Where the width of the road carriageway is less than 5.5 metres, the driveway may be permitted to be widened, subject to a check using a standard swept turning path of the 85th Percentile vehicle (B85).

Permitted Number of Driveways per Property

V33 A maximum of one (1) vehicle crossing for vehicle access is permitted per site. See Part B of DCP for further information.

Driveway Locations

V34 Prohibition - Access shall be located so that sight distances are not affected by existing structures such as street trees, earth mounds, bus shelters, and other physical features. Council may not approve the location of such an access if the location will adversely affect sight lines or detracts from the streetscape of the area.

Vehicle access will not be permitted at the following locations and circumstances:

- At Council's discretion
- Where the proposed vehicle access is likely to diminish on-street parking
- To a major road if reasonable access can be gained from another public road of lower classification
- Opposite or within 6.0 metres of a median opening in a major road
- Within 25.0 metres of a signalised intersection*
- Within 9.0 metres at non-signalised intersections*
- At localised depressions** ("sag" points)
- At the entrance into a basement or sub-floor level regardless of whether it is in a localised depression or not***

The above distances are measured perpendicular from the face of the kerb of the intersecting street (or prolongation of the kerb line or tangent point if curved).

***Important Note 1:** Access may be permitted provided that it can be demonstrated, to Council's satisfaction, that it is safe to do so and that extenuating circumstances exist, for example, where this is the only location where vehicular access can be gained.

****Important Note 2:** At sag locations in the road, if the proposed driveway could result in the driveway becoming a spillway for stormwater entry or stormwater ponding here, unless an appropriate hydraulic model (using either Manning's Equation or HEC-RAS, which-ever being appropriate and based on the 100-yr ARI design storm) is used to determine the water surface profile to demonstrate that the driveway profile has a design crest which prevents stormwater from entering into the premises and/or that the stormwater runoff can be safely conveyed along a suitably designed overland flow path, then the driveway will not be approved.

*****Important Note 3:** All driveways to basement or sub-floor areas, whether it be located in a sag or not, will not be approved unless a catchment analysis for the 100-yr ARI design storm is undertaken to determine the stormwater runoff and then an appropriate hydraulic model (using either Manning's Equation or HEC-RAS, which-ever being appropriate) is used to determine the water surface profile, to demonstrate that the proposed driveway will offer adequate protection from stormwater entering into the premises. Refer Section ***Overland Flow and Flood Studies*** for further details.

V35 Minimum Length of Parking Bay - A driveway will not be permitted if the proposed parking space within the property between the boundary and building line is less than 5.5m in length, causing a parked vehicle to encroach onto the footway reserve.

V36 Sight Lines - Vehicle crossings shall be located so that minimum sight distances to traffic and pedestrians can be provided. Sight distance to pedestrians shall be met by providing clear sight lines in accordance with ***AS/NZS 2890.1 - 2004, Parking Facilities, Part 1: Off-street car parking.***

Vehicle crossings should also not be located where existing trees or power poles may obstruct sight lines or where it is too close to the root zone of trees. Similarly, the driveways shall not be located too close to power poles where undermining may occur.

V37 Removal of Obstructions - In certain situations, Council may grant approval for the removal or relocation of these structures, where there is no alternative location.

In this circumstance, approval must be sought from Council's relevant officers who may include Asset Engineer, Traffic Engineer, Tree Preservation Officer and Planners. All costs associated with such work shall be borne by the Owner.

V38 Stormwater Pits - All driveways must be clear of existing stormwater inlet pits. The removal or reduction in the length of the pit lintel or grating is not acceptable, as this would reduce the rate of stormwater collection. However, excluding existing pits located in a depression (sag), if the hydraulic characteristics of the drainage system are not made less efficient, the relocation of the pit may be permitted. In this circumstance Council will undertake the works of pit relocation or nominate an approved Contractor. All costs associated with the relocation of the pit shall be borne by the Owner.

V39 Street Trees - Driveways must not be located over or near trees to be retained. The minimum clearance to trees will depend on factors such as the proximity to the trees root zone and sight lines.

Existing Crossings

V40 Retention of Existing Crossings - Existing crossing slabs and laybacks may be re-utilised if:

- They are in the correct location, set at the correct levels and in reasonable condition, **and**
- its retention is NOT contrary to this Document.

V41 Removal of Existing Crossings - Existing crossings and layback must be removed, where the crossing slab and layback is made redundant. It shall be completely removed and the footway area and kerb/gutter restored to Council's satisfaction.

V42 Owner's Cost for Removal of Redundant Crossings - Any existing un-used crossing(s) and/or layback(s) must be removed and the kerb/gutter and footpath reinstated/restored at the owners expense to Council's satisfaction.

Driveway Levels and Gradients

V43 Design – The Applicant shall submit a longitudinal driveway profile, which will show dimensions, levels and gradients, for Council approval.

V44 Absolute Maximum Longitudinal Gradient - The absolute maximum longitudinal gradient of driveways shall not exceed 25% within the property and 10% in the footway (unless justification can be provided to vary these grades). Where the gradient exceeds 18%, a check is required using standard vehicle template (B85) to ensure that it does not scrape.

If a pedestrian footpath exists or is required, the gradient across the footway must not exceed 2.5% (1 in 40) where the footpath meets the driveway.

The location of the footpath is to match existing or 450mm offset from the property boundary or as directed by Council's Asset Engineer if no footpath currently exists. It may be necessary to transition existing footpaths both sides of the driveway to align with the new driveway such that cross fall across the footpath is maintained at not more than 2.5% (3% absolute maximum). Driveways are to be graded to fall towards the kerb wherever possible.

V45 Changes in Gradients - Changes in gradients shall not exceed 12.5% algebraically (1 in 8) in a crest and 15% (1 in 6.7) in a depression (sag) to prevent vehicles scraping or bottoming.

Changes in grades in excess of 12.5% (crest) and 15% (sag) will require the introduction of transitions. A minimum transition of 2.0 metres in length will be required (a 1.5 metres transition may be permitted if a template is overlaid onto the driveway profile which demonstrates that it will not scrape).

V46 Compliance – Driveways shall be designed to match in with the topography of the site, and shall comply with ***AS/NZS 2890.1 - 2004, Parking Facilities, Part 1: Off-street car parking***.

Council, at its discretion, may not approve a Driveway Application on the basis that the information provided to Council, at the time of approval, was in error or there are deficiencies in the information provided for Council to make an informed determination at the time of the assessment.

Driveway Material

V47 Concrete - All vehicle crossing slabs and laybacks are to be constructed in plain concrete with a minimum compressive strength of 32MPa at 28 days.
Ready mixed concrete conforming to ***AS1379-1973*** shall be used. The Contractor is to arrange for certificates by the manufacturer to be given for all concrete delivered and shall be able to produce these to Council's Representative upon request.

V48 Cosmetic Pavement - Construction of driveways, within the road reserve, using brick pavers, coloured, stained, stamped or patterned concrete, pebblecrete, or any other cosmetic material other than plain concrete **will not be approved**. Only standard plain concrete finishes to vehicle crossings will be permitted.

V49 Base - Clean sand shall be used, free of any deleterious material, compacted and screeded to a smooth finish. Bedding thickness is to be a minimum of 50mm uniform thickness.

Compact sand bedding to a minimum density index of 70 as per ***AS1289 5.6.1***.

For road base (DGB20), the standard shall be ***AS1289.5.2.1***.

V50 Filling Material - Where filling under the proposed concrete is necessary, such filling shall consist of granular material of maximum size of 40mm and shall be spread in layers of a maximum thickness of 150mm and consolidated to provide a 95% compaction when tested under the modified proctor method.

Expansion and Construction Joints

V51 Expansion and Construction Joints - Shall be provided to the full depth of the slab, at each side of the slab and where required or as directed by Council.

The joint shall be filled with a 12mm thick bitumen impregnated material such as a compressible mastic board. Other types of jointing material can only be used with the approval of Council.

Expansion joints shall separate the concrete apron from the driveway area that it adjoins, in line with the leading edge of paths.

V52 Concrete Footpaths - Concrete footpaths shall have expansion and tooled (dummy) joints installed at the widths as indicated below:

Slab Width (metres)	Tooled Joint (metres)	Expansion Joint (metres)
1.2	1.2	3.6
2.0	2.0	6.0
3.0	3.0	9.0
3.5	3.5	10.5

Finish

V53 Concrete Finish - The concrete surface shall be finished true and even, free from air and stone pockets, depressions and projections. The concrete shall be tamped and screeded to the correct surface levels and shall be given an even non-skid finish.

The crossings are to be cove finished in the direction of the kerb and gutter unless it has a gradient steeper than 1 (vertical) to 5 (horizontal), where it shall be finished with a wooden float and then grooved (ensure grooves do not create tripping hazard to pedestrians). The path section behind the apron shall be soft broom finished across the path. All edges of the slab shall be rounded with a 50mm edging tool.

V54 Slip Resistance - In general, driveways should have a slip resistance appropriate for the pavement slope in accordance with ***AS3600***.

Minimum Driveway Slab Thickness

V55 Council Standards - All work is to be carried out in accordance with Council's standard details, Construction Specification for Concrete and Restoration Works, where applicable.

V56 Minimum Thickness of Gutter Crossings - Gutters and gutter crossings (laybacks) shall have a minimum uniform thickness of 150mm or 180mm for commercial and industrial sites.

V57 Minimum Thickness of Driveway Slabs - The minimum crossing slab thickness shall be in accordance with the following table:

Development Type	Minimum Slab Thickness (millimetres), Reinforcement
Residential	110, SL62
Commercial	180, SL72
Industrial	180, SL72
Residential Flat Buildings	150, SL72

V58 Minimum Thickness of Footpaths - Footpaths shall be a minimum of 75mm in thickness to match existing pathways unless under driveway in which the thickness shall be the same as for the driveway or as directed otherwise by Council

Non-Compliance

V59 Non-compliance - Failure to comply with the conditions of this Document will result in the approval to carry out construction of the crossing being revoked. If works are constructed in non-conformity, Council will issue an order to have the area restored or remedied.

V60 Recovery of Costs - The cost for reinstatement of non-complying works shall be recoverable by Council, for example, deducted from the Security Deposit held by Council.

This page was intentionally left blank

ES3 Stormwater Management

Objectives

SWM1 Uniform Guidelines - To provide uniform guidelines and applying control systems to achieve consistency, in the assessment and conditioning of Development Applications, in relation to stormwater runoff from all development types.

SWM2 Minimise Adverse Impact to Properties - To minimise any adverse impact on properties caused by stormwater runoff from all developments types.

SWM3 Minimise Impact on Water Quality - To ensure that the water quality of receiving waterways is not adversely affected by the discharge of pollutants such as nutrients and pathogens, from stormwater runoff as a result of development.

SWM4 Uniform Controls - To ensure that uniform stormwater controls are applied throughout the whole of the City of Canada Bay Council Local Government Area.

Controls

SWM5 Controls - To achieve the above objectives, the following controls are applied:

- For controls where the site is within a Flood Planning Area, refer to the Flood Planning Section of Council's Development Control Plan.
- The provision of safe overland flowpaths within developments and on public land.
- The definition of floodways for major storms within developments and on public land.
- The provision of controls such as on-site stormwater detention, community basins and the like and on-site retention systems to reduce and control stormwater runoff.
- The application of alternative methods of merit based stormwater control and conveyance devices.
- The removal of flood effected development from known floodways and the prohibition of future developments in such floodways.
- The provision of minimum free-boards for assigning floor levels to reduce the risk of flood damage to property/s.
- The installation of pipe/channel systems to minimise hazard to pedestrian and vehicular traffic caused by uncontrolled surface stormwater runoff.
- The installation of water quality control devices such as trash screens, gross pollutant traps, water quality ponds and the like and encouraging the use of water sensitive urban design to protect the quality of receiving waters.
- Depending on the development type and general site fall, the following stormwater control types would be applicable.

Development Type	Site slope/ Site drains to	Control Type
1	Front boundary	E, G
	Rear boundary	B, C, D, E, G
2	Front boundary	A*, F**
	Rear boundary	A+, B***, C, D, F**
3, 4, 4a	Front boundary	A, D++, F
	Rear boundary	A+, B***, C, D++, F
5, 6, 7, 8, 9	Front boundary	A, D++, F, H
	Rear boundary	A+, B***, C, D++, F, H
2, 3, 4, 4a, 5, 6, 7, 8, 9	Waterfront property or site drains to a public reserve or park	E, F, H

Key:

Development Type

1 - Demolition Only
2 - Alterations and additions
3 - New dwelling with existing footpath along frontage
4 - New dwelling with no existing footpath
4a - Dual occupancy, town homes etc.
5 - Residential Flat Building (RFB), commercial and mixed developments
6 - Development under SEPP Housing for Seniors or People with a Disability
7 - Substantial Development
8 - Subdivision of one into two allotments
9 - "Greenfields" site, subdivision of more than two allotments

Stormwater Control System

A - On-site Stormwater Detention System (OSD)
B - On-site Retention System or absorption system (OSA)
C - "Charged" system
D - Mechanical Pump-out System
E - Scour and erosion control system/devices
F - Rainwater Re-use System
G - Sediment Pond
H - Water Sensitive Urban Design (WSUD)

* Where additional impervious area increase of building or structure is 50sqm or more.
** Where additional impervious area increase of building or structure is 40sqm or more
*** Geotechnical Investigation is required to support OSA design if more than 50sqm is to drain into the OSA
+ OSD is not required if all stormwater collected from impervious areas can be disposed by OSA
++ To drain basement or sub-floor areas only

Nuisance Overland Flooding to Low-Lying Habitable Floors and Basement Areas

SWM6 Gutter Capacity - Where the proposed development will result in the exposure of low lying habitable floors or basements including sub-floor areas, garages and low level car parking areas to potential ingress of surface runoff, the determination of the street gutter capacity based on the peak runoff for the 100-year ARI storm event will be required. This is to ensure that the likelihood of surface runoff from the street entering the proposed low lying areas does not occur.

SWM7 Flood Protection – For all low lying habitable floors or basements including sub-floor areas, garages and low level car parking areas, following determination of the 100-year ARI design storm and gutter capacity, if it is found that there is potential for surface stormwater to enter into the property or minimum free boards cannot be achieved, it will be necessary to introduce a crest in the driveway ramp, or relocate the basement entry to a location where it is not vulnerable to water ingress , or install flood gates or raise floor levels to provide adequate free board protection.

Overland Flow and Flood Studies

SWM8 Gutter Capacity - Where the proposal has the potential to obstruct natural flow paths, encroach over stormwater drainage easements, is a proposed driveway into a basement or sub-floor area, or the area proposed for development is potentially flood affected, an overland stormwater flow assessment or flood study will be required.

SWM9 Design Storm - The design storm to be used to determine the flowrate for the overland flow assessment or flood study shall be the peak 100-year ARI storm event. Design guidelines are given in Section ***Stormwater Drainage Design***.

On-site Stormwater Detention Systems

General

OSD1 Runoff Control - On-site Stormwater Detention (OSD) systems are to be implemented to control the rate of runoff from development sites and subdivisions to limit or reduce the rate of runoff to existing conditions or better.

OSD2 Alternative Methods - Alternative methods of stormwater control may be used but are merit based and would only be permitted if OSD is found to be of no benefit in attenuating flows and reducing the peak discharge downstream.

Exemptions

OSD3 Exemptions - OSD will be applied to the developments types as listed in the table under the Section ***Controls***. Exemption from OSD would only apply in the following situations:

- The proposal is a residential development consisting of only alterations and additions to an existing dwelling where the additional increase in impervious area does not exceed 50sqm outside the footprint of the existing building and the land naturally falls towards the property street frontage with direct access to a formed public road/street.
- The development consists of improvements only to the existing building such as a second floor extension or internal refurbishments, which are wholly confined within the footprint of the existing building.
- The development is located within a known flood affected area or subject to tidal influence. This does not include areas where it is affected by nuisance flooding caused by inadequate capacity of the drainage system. Council should be consulted on this matter for further clarification.
- The runoff from the development is directly discharged into one of the bays or waterways and does not pass through any public drainage system (e.g. piped conduit, dish drain, open channels, kerb and gutter, public reserve, public roadway etc.) or that downstream properties could be adversely affected by the discharge from the development site.
- An alternative method of stormwater disposal is applied such as an on-site absorption system, which fully caters for the site's runoff.

Site Storage Requirement and Permissible Site Discharge

OSD4 Catchment Based Method - The Catchment Based Method for determining the Site Storage Requirement (SSR) and Permissible Site Discharge (PSD) is to be used to size OSD systems for all development types except demolition works. The hydrological Site Based Method (ILSAX or DRAINS) is only to be used if more than 30% of the site cannot be routed through the OSD system.

OSD5 Design Parameters - OSD design parameters are as follows:

- Site Storage Requirement (SSR) is 200cum per hectare.
- Permissible Site Discharge (PSD) is 180L/s per hectare.

OSD6 Area for Calculating Volume and Discharge – For the Catchment Based Method, the area to be used in calculating the OSD volume (SSR) and discharge (PSD) shall be based on the total site area.

For the hydrological Site Based Method, the PSD shall be calculated on a 0% pre-development site impervious area during the peak 5 year ARI storm event or 25L/s (which-ever is the smaller value in the case of discharge to the kerb) and the volume shall be sized on the basis of reducing the fully developed (post-development) site discharge for the peak 100 year ARI storm event back to the PSD.

OSD7 Alterations and Additions - In the case of development type 2, where the proposed alterations and additions are to be completely separated from the existing building/s and represent less than 10% of the total site area, then the SSR and PSD can be determined from the proposed footprint of the additions only.

OSD8 Maximum Site Discharge - The maximum discharge from the site must not be greater than the calculated PSD. This would include both piped and uncontrolled flows. That is, the total outflow from the site must not exceed the PSD.

OSD9 Concentrated Discharge - If the discharge from the development is to be concentrated at a single point (e.g. to the kerb and gutter) in the road reserve or public land, the maximum concentrated discharge is limited to 25L/s per 15 lineal metre of frontage, for all storm events.

Rainwater Re-use deductions

OSD10 Rainwater Re-use Deductions - Rainwater re-use volume can be deducted from the calculated SSR only if the rainwater re-use volume has been obtained from the BASIX Certificate. A maximum of 50% reduction is allowed. The PSD shall be retained for all controlled outflows.

Orifice controls

OSD11 Orifice Types - Orifice is to be a circular shaped hole drilled in a flat plate made from a stainless steel plate of 3mm thick and 200mm x 200mm minimum dimension. The orifice shall be formed to a circular square edged cut (circular hole is to be pre-drilled into the plate) and the plate permanently fixed to an oversized conduit or pipe stub if the hole is greater than 100mm.

OSD12 Permanent Fixture of Orifice - Dyna bolts or equivalent are to be used to permanently fix orifice plates. For orifice stubs/pipes, the fixture is to be such that tampering and removal is minimised.

OSD13 Minimum Orifice Diameter - For orifice plates, the size of the orifice must not be less than 50mm in diameter to avoid blockages.

OSD14 Orifice equation - The orifice equation to be used is:
$Q = C.A.\sqrt{(2.g.h)}$
Where
D = diameter of orifice = $\sqrt{(4.A/\pi)}$ in metres
A = area of orifice hole in square metres
π = pi = 3.1416 (dimensionless)
g = acceleration due to gravity = 9.81 m/s^2
C = orifice coefficient (dimensionless). Ref table
h = depth of water to centre of orifice in metres

OSD15 Orifice Coefficient - Orifice coefficients are given in table below.

Orifice Type	Discharge Coefficient
Stainless steel flat plate with circular hole	0.6
Pipe stub 100mm long	0.8

High Early Discharge (HED) Control

OSD16 HED Control Pit Type - The control pit in the OSD system must be a "High Early Discharge" (HED) arrangement for the Catchment Based Method.

OSD17 Non HED Control Pit Type - If a HED control configuration is not used, then an additional 20% volume must be added to the basic storage (SSR) for the Catchment Based Method.

Tail-water influence

OSD18 Orifice Control - The centre-line of the orifice must be higher than the water level at the point of connection into the existing receiving drainage system otherwise a "drowned orifice" or downstream control occurs.

OSD19 Drowned Orifice - Where a "drowned orifice" occurs, supporting hydraulic calculations will need to be submitted to ensure that there is no loss in storage volume as a result.

OSD20 Control Types - Adopted water control levels are given in table below.

Discharge point	Water level to be adopted
Kerb and Gutter	At the top of kerb
Pipe outlet or culvert	Top of conduit if super-critical flow or "free outlet"
	Depth as calculated if sub-critical flow
Pit	150mm above top of pit
Open channel	Depth as calculated
Waterway or Bay	Depth at High Tide

Site area to be routed through OSD

OSD21 Area to be routed through OSD System - The majority of the site runoff must be routed through the OSD facility.

A maximum of 30% of the site is permitted to bypass the OSD system if the Catchment Based Method is to be used. The 30% bypass must not be made up of more than 50% of the site's impervious areas.

For the Site Based Method, a maximum of 50% of the site is permitted to bypass the OSD system. This must be made up of at least 80% of the site's impervious areas.

OSD22 Adjustment of Volume and PSD due to Bypass for the Catchment Based Method.

For a bypass of 30% of total site area, an additional 20% increase in the calculated SSR volume shall be applied and the PSD shall be reduced by 20%. Proportional increase of the basic volume and reduction of the PSD shall apply between 0% and 30% bypass.

Trash screens

OSD23 Purpose - A rustproof screen or cage is to be used to protect the outlet from potential blockages.

OSD24 Removable - The screen or cage must be removable for ease of maintenance and inspections.

OSD25 Material - The screen or cage is to be made from Lysaght's maxi-mesh RH3030 or similar material.

OSD26 Minimum Surface Area - The minimum surface area of the screen is to be 50 times the area of the orifice outlet.

OSD27 Location - The screen or cage shall completely protect the outlet. It is to be located at a distance 1.5 times the orifice diameter or 200mm away, whichever is the greater.

OSD28 Orientation - Where possible, the main incoming line is to flow across the face of the mesh.

OSD29 Lifting Handle - The screen or cage shall include a lifting handle for ease of removal for inspection and maintenance.

Minimum requirements for underground OSD systems

OSD30 Purpose - Underground OSD systems shall be designed and located to attenuate and safely control stormwater runoff from the site to the public road gutter or receiving drainage system.

OSD31 Overland Flow path - Where likely overflow from the OSD facilities pass through private property and a controlled and safe overland flow path cannot be provided, the overflow is to be fully contained within an underground piped drainage system with a design capacity equivalent to the peak 100-year ARI storm event.

OSD32 Location - Underground OSD systems must be located external to all building footprints. This includes basements, ground floor parking areas, garages, or patios unless all access points and emergency overflow provisions are external to the structure.

Underground OSD systems must be located outside the root zones of trees that are to be retained.

Underground OSD systems must be located in areas which will not impede existing overland flow paths, or cause concentration or diversion of stormwater into public or private property/s resulting in the undermining of existing structures or services or jeopardising public safety or cause public nuisance.

Underground OSD systems must not be located within deep soil areas. Deep soil areas must be provided in accordance with any deep soil requirements prescribed within the Landscaped area sections of Parts E-H and J-K of this DCP.

Where underground OSD systems are located under soft landscaped areas, it must have a minimum topsoil cover of not less than 600mm over the tank.

Underground OSD systems are to be located where they can be easily accessible for inspections and routine cleaning.

In this regard, for development types 4a, 5, 6 and 7, the following requirements must be met:

- The underground OSD facility must be located in common areas and not in private courtyards
- The location of the underground OSD system is such as to ensure that the facility is located where easy unimpeded access is possible for routine inspections and maintenance requirements. It needs to be accessible for third party inspectors including Council

OSD33 Provision of Formal Surcharge Path - A formal surcharge path must be provided even when the 100-year ARI flows can be fully catered for by the system, to account for pipe blockages and higher intensity storms.

OSD34 Easements - Easements must be created over private property/s for pipe systems and surcharge paths through adjoining property/s.

OSD35 Structural Adequacy - Underground OSD systems are to be designed to be structurally sound and able to adequately withstand all service loads.

OSD36 Adequate Soundproofing - Underground OSD systems must be adequately soundproofed to minimise noise when stormwater is collected or discharged.

OSD37 Drainage of Base - The base of the OSD system must be graded to drain completely. Permanent water ponding in the tank encourages insect infestation and will not be acceptable. The base of the structure is to have a minimum longitudinal gradient of 0.7% to the outlet.

OSD38 Material - Underground OSD systems must be constructed from reinforced concrete, pre-fabricated material or proprietary system/s approved by Council. Atlantis units or similar type systems are not to be used for detention storage due to reduced storage and difficulties with maintenance and inspections.

OSD39 Inspection Access - Underground OSD systems must have at least one (1) inspection access opening over the outlet. This inspection point must be a minimum 600mm x 600mm in dimension.

For ease of maintenance at least one (1) additional access at the extreme corner of the tank must be provided.

Additional access or flushing points shall be provided for irregular shaped structures to allow for easier access for routine cleaning and maintenance.

Underground OSD systems must have additional access points at distances of not less than 5000mm.

Where the tank is less than 500mm in clearance height, gratings over the tank must be installed which cover at least 30% of the surface area of the structure.

OSD40 Confined Spaces - Underground OSD systems must comply with ***AS2865 Safe Working in a Confined Space*** and be appropriately designed to eliminate gas build-up.

OSD41 Steps - Underground OSD systems must have step irons when the depth exceeds 1200mm.

Minimum requirements for above-ground OSD systems in landscaped areas

OSD42 General - Above-ground OSD systems include areas where detention storage is provided in soft and hard landscaped area and above ground storage structures such as rainwater tanks.

OSD43 Purpose - As with Underground OSD systems, above-ground OSD systems are to be designed to collect, attenuate and safely control all stormwater runoff from the site to the public road gutter or drainage system.

OSD44 Overland Flow path - Where likely overflow from these OSD facilities is across private property and a suitable overflow path cannot be provided then the overflow shall be contained within an underground piped drainage system with a design capacity equivalent to the peak 100-year ARI storm event. This underground system (both pits and pipes) shall be designed to receive and fully contain controlled flows and overflows from the OSD facility.

OSD45 Location - Above-ground OSD systems must be located external to all building footprints, basements, ground floor parking areas, garages, or patios unless access points and emergency overflow provisions are either provided externally or are easy to get to for the purpose of inspections and maintenance to the system.

Above-ground OSD systems must not be located across the boundary/s of allotment/s.

Above-ground OSD systems must not be located such as to restrict pedestrian access from the public road to the building.

Where above-ground structures such as rainwater tanks are to be used, they must be located in an area least visually obtrusive and in compliance with Councils other planning requirements.

Above-ground OSD systems must be located where they can be easily accessible for inspections and routine cleaning. In this regard, for development types 4a, 5, 6 and 7, the following requirements must be met:

- The OSD facility must be located in common areas and not in private courtyards
- The location of the OSD system is such as to ensure that the facility is located where easy unimpeded access is possible for routine inspections and maintenance requirements

OSD46 Provision of Formal Surcharge Path - A formal surcharge path must be provided even when the 100-year ARI design flow is fully accommodated within the piped system to account for greater storm intensities and blockages.

OSD47 Easements - Formal easements must be created on private property for pipe systems and surcharge paths.

OSD48 Adequate Soundproofing - Above-ground OSD systems must be adequately soundproofed to minimise noise when stormwater is collected or discharged.

OSD49 Adequate Waterproofing - The barrier around the perimeter of the OSD storage area must be constructed of masonry type material or a fully waterproof (prefabricated) material or equivalent.

OSD50 Accessibility of Control Structures - Control structures must be located where they can be easily accessible for routine inspections and cleaning.

OSD51 Drainage of OSD Base - The base of above-ground OSD systems must be graded to drain completely. In soft landscaped areas, the gradient of the base must not be less than 1.0%.

OSD52 Subsoil Drainages - To avoid ground saturation in soft landscaped areas, subsoil drains shall be installed where gradients are less than 1.0%.

OSD53 Good Design - Above-ground OSD systems must be designed in a manner which minimises inconvenience, unsightliness and hazard and is compatible with the proposed development in terms of functionality and purpose.

OSD54 Maximum Ponding Depths - Above-ground OSD systems must not allow water to pond more than 200mm in tennis court areas and other hard paved surface areas.

Above-ground OSD systems may be allowed to pond more than 300mm in soft landscaped areas, provided that the following parameters are satisfied:

- Restricted access is enforced
- Embankment batter slopes are greater than 1 in 4
- OSD basin is fully fenced off with approved pool fencing and childproof, self-closing gates with batter slopes into the basin, around its perimeter, not to exceed 1 in 6
- The maximum depth of ponding in landscaped areas must not exceed 1200mm, regardless of other restrictive measures implemented

Minimum requirements for above-ground OSD systems in driveways and car parking areas

OSD55 Purpose - These OSD systems must be designed and located to collect, attenuate and safely control stormwater runoff from the site to the public road gutter or drainage system.

OSD56 Overland Flow path - Where likely overflow from these OSD facilities is across private property and a suitable overflow path cannot be provided, the overflow shall be contained within an underground piped drainage system with a design capacity equivalent to the peak 100-year ARI storm event. This underground system (both pits and pipes) shall be designed to receive and fully contain controlled flows and overflows from the OSD facility.

OSD57 Location - These above-ground OSD systems must be located external to all building footprints. This includes basements, ground floor parking areas, garages, or patios unless all access points and emergency overflow provisions are external to the structure.

These above-ground OSD systems must not be located such as to restrict pedestrian access from the public road to the building.

Control structures must be located where they can be easily accessible for routine inspections and cleaning.

OSD58 Provision of Formal Surcharge Path - A formal surcharge path must be provided even where the 100-year ARI design flow is fully accommodated within the piped system to cater for greater storm intensities and blockages.

OSD59 Drainage of Base - To avoid localised ponding within the detention area, the base of the OSD system must be graded to drain completely, with gradients not less than 0.5% in concrete paved areas or similar and 0.7% in bitumen surfaced areas.

OSD60 Good Design - These above-ground OSD systems must be designed in a manner which minimises inconvenience, unsightliness and hazard and is compatible with the proposed development in terms of functionality and purpose.

OSD61 Adequate Waterproofing - These above-ground OSD systems must be totally impermeable unless permeable pavement has been designed as a function provided any water penetration will not affect adjoining buildings, structures and the like.

OSD62 Maximum Ponding Depths - Water is not permitted to pond more than 200mm in depth for all storm intensities, in these above-ground OSD systems.

Overland Flows and Flow Paths

OSD63 Existing and Natural Overland Flow paths- Existing and natural overland flow paths for surface stormwater are to be maintained whenever possible.

Overland flows or surface runoff collected from the site or passing through the site from upstream property/s is not permitted to be concentrated and channelled onto adjoining property/s.

OSD64 Concentration of Overland Flow paths - Where surface runoff or overland flows become concentrated, they will need to be safely re-directed to the street or to the site's OSD facility.

OSD65 Diversion of Surface Runoff or Overland Flows to OSD System - Where concentrated surface runoff or overland flows are to be controlled through the OSD facility, the OSD system must be designed to cater for any additional inflow.

OSD66 Emergency Overland Flow path - To cater for unexpected blockages in the OSD system or additional runoff in excess of the design storm, provision must be made for an emergency flow path from the OSD system to the street such as installing overflow weirs or spillways. The width of overflow weirs shall not exceed more than 2000mm across any property frontage.

OSD67 Designated Flow paths - Any likely overflow from these facilities must be fully contained within designated flow paths and must be conveyed safely to the nearest public road reserve or waterway.

Designated flow paths shall be designed for the peak 100-year ARI storm event. Open channels, kerbs, pits and pipes may be used to contain runoff within the flow path.

Freeboard

OSD68 Definition - Freeboard refers to the clearance distance between the maximum water level and the surface level of habitable floors and garage floors.

OSD69 Adequate Freeboard - Adequate freeboard or clearance distance between the maximum depth of ponding in the detention system and the finished floor level of all habitable areas, garages, storage facilities, etc., are to be provided so that damage to goods and materials, nuisance flooding, or hazard is avoided.

OSD70 Minimum Freeboard - The minimum freeboard requirements for OSD pondage are tabled below.

Maximum water level in (A)	Finished floor level (B)	Minimum Freeboard between (A) and (B)
Detention facility	Warehouse	150mm
Detention facility	Factory	150mm
Detention facility	Garage	150mm
Detention facility	Carport	150mm
Detention facility	Office space	300mm
Detention facility	Habitable rooms	300mm
Detention facility	Living rooms	300mm
Detention facility	Retail space	300mm
Detention facility	Store rooms	300mm
Detention facility	Show rooms	300mm

***Important Note:** Refer to Clause **SW25** and the Flooding Control Section of Council's **Development Control Plan** for freeboard requirements in flood prone land.

All proposed developments are generally prohibited in known flood areas, flood ways and flood zones unless it can be demonstrated that a fail safe emergency evacuation route can be provided for occupants and that the proposed development will not cause an increase of the flood waters both upstream and downstream of the proposed development.

Council's Stormwater Policy is for the removal of such flood affected developments from known flood ways and the prohibition of future developments in such floodways, wherever possible, to protect life and amenity.

Discharge Points

OSD71 Maximum Concentrated Stormwater Runoff - The maximum concentrated stormwater runoff allowed to be discharged to the kerb and gutter at any single point is 25L/s even if the permissible site discharge exceeds this rate.

If more than 25L/s must be discharged, the following alternatives may be considered:

- Alternative 1 - Discharge made directly to the nearest Council piped drainage system, or to an approved piped drainage system or lay a new pipe and pit system to connect into the existing drainage infrastructure. This new line shall be designed and installed to Council's standards and will become a public system. Note: Approval under Section 138 of the Roads Act 1997 will be required
- Alternative 2 - The detention system is upsized (where on-site detention is required) to accept additional flows such as to limit the outflow to 25 L/s
- Alternative 3 - If there is sufficient property frontage width to enable split flows to the kerb at a minimum distance of 15 metres apart between kerb outlets
- Alternative 4 - Discharge directly into a watercourse or channel or to a stormwater channel or to the Bay, subject to joint approval from Council and other relevant governing authority. Adequate protection against scour and erosion at the point of discharge must be provided

OSD72 Maximum Discharge Velocity - The maximum discharge velocity into an unlined, that is, other than concrete channel shall be in accordance with the Department of Sustainable Natural Resources document ***Managing Urban Stormwater, Soils and Construction***, table 5.1 maximum discharge flow velocities in waterways.

OSD73 Approval for Connection into Existing Council Piped Drainage System - Connection into an existing Council piped drainage system may be permitted subject to Council approval.

OSD74 Construction of New Piped System - If direct connection outside of the property frontage cannot be obtained, for example, the nearest piped system is more than 10 metres or one property frontage away (whichever is the smaller distance), this will require the construction of new inlet pits and the laying of a new pipeline, to Council standards, to connect into the existing line. Minimum Council design standards are given in Section under ***Stormwater Drainage Systems***.

OSD75 Minimum Drainage Infrastructure - Council encourages minimising the number of pits, junctions and pipe lengths in the road reserve. However, pits are preferable over bend joins to eliminate blind junctions such that ease of maintenance can be achieved.

OSD76 Private Stormwater Drainage System - Any private stormwater pipe leaving the site, must be laid at an angle of not less than 45 degrees to the front boundary line. If the pipe needs to be laid at a more acute angle or must run parallel with the kerb line in order to achieve gravity discharge to the kerb or connection into an under-ground system, then it must be taken to the kerb at 45 degrees and then a minimum 375-dia RCP is to be laid parallel to the kerb line connecting into the nearest downstream underground public drainage system. Standard gully inlet pits with minimum 1.2 metre long kerb lintels (subject to required inlet capacities) will need to be constructed at all bends, junctions and minimum distances between pits as described in ***Australian Rainfall and Runoff, volume 1***.

OSD77 Equivalent Conduit Sizes - Conduits laid to the kerb face must be sized to cope with the design flow and with at least 50mm cover. Where cover is inadequate, the following pipe equivalencies shall be used:

- 100mm-dia equivalent to one (1) 100mm x 100mm x 6mm thick RHS
- 150mm-dia equivalent to one (1) 200mm x 100mm x 6mm thick RHS
- 225mm-dia equivalent to two (2) 200mm x 100mm x 6mm thick RHS

OSD78 Outlets through Sandstone Kerbing - Outlets laid through existing sandstone kerbing will require drilling through sandstone kerb subject to Council approval.

OSD79 Pipe Class - The pipe class must be adequate to withstand proposed traffic loads.

OSD80 Rectangular Hollow Sections - All Rectangular Hollow Sections (RHS) are to be hot-dipped galvanised or stainless steel material.

Discharge to Different Catchment

OSD81 Gravity Drainage - Stormwater is to be drained in the same direction as the natural fall of the land by gravity means.

OSD82 Diversion of Stormwater to Different Catchment - Diverting stormwater runoff from one catchment (or sub-catchment) to another catchment (or sub-catchment) is generally prohibited.

OSD83 Approval for Drainage to Different Catchment - Approval for drainage "against the natural fall of the land" is only permitted in the following circumstances:

- Adjacent downstream property owner/s have indicated that they are not prepared to grant easement/s to permit the drainage of the low lying property to follow the natural fall of the land. Proof of genuine attempt at easement acquisition in the form of correspondence will be required
- An assessment of the receiving drainage system confirms that it can adequately cope with the additional runoff proposed to be discharged

OSD84 Drainage "Against Fall of Land" - Where drainage "against the fall of the land" is permitted, On-site stormwater Detention will be required, regardless of the development type. The volume and discharge is to be calculated on the area being directed to the outlet.

OSD85 Low-Lying Property Drainage - For low lying properties, on-site absorption (OSA) may be used for the disposal of runoff from on-ground paved or roof areas that are unable to be collected and taken to the street frontage.

Legal Obligations

OSD86 Positive Covenant and Restriction on the Use of Land – All OSD facilities other than those located in single residential dwellings and type – 2 alteration & additions developments will require a Positive Covenant and Restriction on the use of land, in favour of the City of Canada Bay Council on the Title.

OSD87 Purpose of Positive Covenant - The purpose of the Covenant is to ensure that the registered proprietor of the land is made aware and takes responsibility for the control, care and maintenance of the OSD system.

OSD88 The Purpose of Restriction on the Use of Land - The purpose of the Restriction ensures that the system cannot be altered in any manner, shape or form.

OSD89 Newly Created Allotments - For newly created parcels of land, these terms shall be created under Section 88B of the Conveyancing Act 1919.

OSD90 Existing Land - For existing titles, the terms of Positive Covenant and Restriction on the use of land shall be created by an application to the Land Titles Office using Forms 13PC and 13RPA.

OSD91 Standard Wording - Standard wording for Positive Covenant and Restriction on the use of land are given in the Appendix.

On-site Stormwater Absorption Systems

General

OSA1 Application - On-site stormwater absorption (OSA) systems may be used for disposal of the site's stormwater runoff. Refer to the Section under ***Controls*** for when it can be applied.

OSA systems can be used to dispose of stormwater on the site subject to the suitability of soil conditions and site constraints. Typical OSA systems include rubble drains, rubble trenches, and on-ground infiltration systems.

OSA can be used as an alternative method of stormwater disposal for 'low lying' properties where an easement through adjoining downstream properties cannot be obtained.

Design Principles

OSA2 Standard Design Methodology - The OSA system shall be appropriately sized, based on the area to be captured, using the methodology as given in the following table:

Total Impervious Area to be captured (sqm)	OSA Design Methodology*
≤ 50	Standard trench detail - 'Jumbo 410' type or equivalent material (refer to Appendix). The trench length is to be 4 metres for every 25sqm of catchment (hard stand, roof) area draining to it.
>50	Geotechnical Report to be prepared by a Geotechnical Engineer. Trench area and volume calculated from soil infiltration rate and Report recommendations. Mass Curve Method can be used.

***Important Note:** Design Constraints apply

OSA3 Location - OSA systems are to be located in 'soft' landscape areas, such as in the garden and vegetated on-ground areas. In 'hard' landscape areas, the use of porous pavement (pervious paving) is preferred.

Absorption systems shall not be located under or over any sewer service without Sydney Water approval.

Absorption systems are not to be located in rock (most non-sedimentary rocks and some sedimentary rocks such as shale) which has zero or near-zero permeability. Where rock is encountered, the base of any proposed gravel filled trench shall be set at least 500mm above the rock.

OSA systems are not permitted in shallow soil over bedrock.

Absorption trenches must follow the line of contours.

OSA4 Access - For routine inspections and maintenance, an access chamber is to be provided at either end of the OSA system.

OSA5 Water Sensitive Urban Design (WSUD) - OSA systems may be used in combination with WSUD systems and integrated as part of its performance principals.

OSA6 Design Storm Event - Runoff generated from the development must be fully catered for by the absorption system, for all storm events up to and including the 100-yr ARI storm event.

OSA7 Soil Type - Soils to be used for OSA systems **must not** be predominantly loose aeolian sands or clay soils.

Suitable soils must have a uniform thickness of at least 3.0 metres.

A soil assessment and permeability test is required from a qualified Geotechnical Engineer where runoff is collected from an area greater than 50sqm.

Suitable soils must have hydraulic conductivity values greater than 1×10^{-6} m/s and the minimum absorption rate to be adopted shall be limited to 1.0 L/sqm per second irrespective of the absorption rate achieved by any geotechnical testing.

OSA8 Minimum Clearance from Structures and Buildings - Clearance distance between all buildings, footings, structures and downstream boundaries are to be at least 3.0 metres from the proposed OSA system.

Minimum clearances are not to be reduced without a supporting Geotechnical Report.

The minimum clearance distance between sewer mains and the proposed absorption system is to be at least 1.0 metre unless approved by Sydney Water. Where clearance between buildings or structures to the OSA system cannot be provided, the structure is to be supported on a pier and beam system to a minimum 300mm below the base of the OSA system, which must be certified by a Structural Engineer.

OSA9 Steep Sites - Absorption systems will not be permitted on 'steep' sites with slopes greater than 5%, unless there is a supporting Geotechnical Report.

OSA10 High Water Table - Absorption systems will not be permitted where there is the presence of a high water table or the location of the OSA system would likely cause the water table to rise.

Where a high water table is encountered, the base of any proposed gravel filled trench shall be set at least 500mm above the water table.

OSA11 Sediment Traps and Trash Screens - Runoff directed into the OSA system must pass through an approved silt trap and filter system to remove all debris, silts, sands, etc. prior to absorption.

OSA12 Dispersion System - To ensure any overflows from the OSA system are not concentrated onto adjoining downstream properties, a dispersion system shall be provided at the overflow outlet.

Charged Systems

General

CH1 Application - 'Charged Systems' refers to a network of sealed or watertight stormwater drainage pipes which convey stormwater under constant pressure, requiring sufficient hydraulic head to move water.

Where a site naturally falls to the rear and the property is not benefited by any stormwater drainage easement and following unsuccessful attempts at obtaining a drainage easement and other drainage disposal methods such as OSA, have been found to be inappropriate for the site, then charged systems may be considered, to convey stormwater to the street frontage. Refer to Section ***Controls***, for when it can be applied.

Charged systems are generally not to be used if a gravity feed system is available to dispose of stormwater off the site to the nearest downstream Council drainage system.

Important Note: Charged systems are only permitted when used in combination with rainwater re-use facilities.

CH2 Permissibility - Charged systems may only be used if:

- Genuine attempt at easement acquisition has been undertaken and the downstream property owner/s have indicated that they are not prepared to grant easement/s to permit the drainage of the property to follow the natural fall of the land - written evidence is to be submitted as proof
- The soil absorption characteristics and other physical constraints indicate that an OSA system is not feasible to cater for the development. A Geotechnical Report, indicating that the soil has very poor absorption rate, may be submitted as proof
- The existing street drainage system and gutter capacity must have sufficient capacity to cope with the additional runoff and not result in nuisance or flooding to 'low level' property/s. A check of the gutter capacity is required to ensure stormwater does not overtop the kerb into low lying property/s

Design Principles

CH3 Permissible Site Discharge - The rate of runoff discharged to the street must not exceed the Permissible Site Discharge (PSD) calculated from Section ***On-site Stormwater Detention Systems***.

The PSD is 180L/s per ha and calculated only on the area being discharged/directed to the outlet.

CH4 Combination of OSD, OSA and Charged Systems - The design of a charged system may be used in combination with an OSD and/or OSA system to minimise the runoff to the street.

CH5 Watertight System - Charged lines may be taken directly from the roof gutter to the street and must be fully watertight.

CH6 Rainwater Re-use Overflows - Overflows from the rainwater re-use system are to be drained to the external drainage system, OSD or OSA system if these have been designed to accommodate the runoff.

CH7 Directing runoff to the street - If the charged system is to be directly taken to the street, details and supporting calculations need to be provided showing that sufficient pressure head can be generated to direct flows to the street.

CH8 Outflows from OSD systems under pressure -Outflows from OSD systems are generally to be by gravity feed ('free outlet' control). However, 'drowned outlets' may be permitted if supporting calculations can be provided showing that sufficient pressure head can be generated to direct flows to the street via a charged system and that the permissible discharge for the site can be maintained. A suitable hydrological program such as DRAINS can be used to model such situations.

CH9 Design Storm Event - The charged drainage system including roof gutters pipes and pits is to be designed for the 1 in 100-year ARI storm event.

CH10 Minimum Height of Pressure Head - The minimum height difference between the roof gutter level and the discharge pit must be at least 2.0 metres unless supporting calculations showing a hydraulic grade line for the 1 in 100-year ARI storm event indicates that the system can drain to the street with a 300mm free board to the gutter line.

CH11 Gravity Feed to Street - The charged line must discharge to a sump within the property boundary and then gravity fed to the street or receiving drainage system.

Where gravity feed to the street is not achievable, a non-return valve must be installed over the inlet pipe to the sump.

CH12 Location of Surcharge Pits - Surcharge pits are to be located such that any likely overflow is safely directed to the street or away from structures and buildings.

CH13 Minimum Pipe Sizes for Pressure Application - Pipes must be minimum 150mm-dia in size for pressure applications and solvent welded unless hydraulic calculations support that a smaller pipe can be used. Pipes less than 80mm-dia will not be acceptable.

CH14 Cleaning Eyes - Cleaning eyes within a sump must be installed at the lowest point in the system.

CH15 Gutter Guards - Gutter guards are to be installed to minimise debris entering the charged system.

Mechanical Pump-out Systems

General

MP1 Application - Mechanical pumps are to be used generally to convey sub-surface, or seepage water in a basement (sub-floor) area or to drain minor surface runoff collected from weather exposed areas (e.g. vehicular ramp) of less than 50m^2 or 100m^2 for development Types 5, 6 and 7.

MP2 Pumping of Stormwater - The pumping out of stormwater runoff in general is only permitted if:

- Gravity drainage cannot be achieved
- Genuine attempt at easement acquisition has been undertaken and the downstream property owner/s have indicated that they are not prepared to grant easement/s to permit the drainage of the property to follow the natural fall of the land - written evidence is to be submitted as proof.
- A 'charged system' cannot be installed because it does not satisfy Charged System Design Principles
- An OSA system cannot be installed because it does not satisfy OSA Design Principles
- There is no possibility of nuisance or flooding or damage to adjoining buildings and structures in the event of pump failure.
- The capacity of the receiving drainage system or kerb/gutter is capable of carrying/containing the flows. Council may request for gutter or system capacity calculations to support the proposal.

MP3 Disposal of Sub-surface Water – Because it is a relatively constant source that promotes algal growth and constant wetness, draining of sub-surface water, whether by pumping or by gravity; either directly or indirectly, to the kerb is not permitted except by way of a controlled release specifically and separately approved under Section 138.1(d) of the Roads Act 1993. Generally it is preferable to connect such sources to the nearest public underground drainage system. If that is not feasible and a thorough investigation has exhausted all acceptable alternatives then Council will consider an application for controlled release to the kerb.

Alternative methods of seepage water disposal and controlled release parameters are given in Section ***Subsurface Water***.

MP4 Where Council determines that mechanical pump out system (subsurface inflow or surface runoff) can negatively impact on the Council's infrastructure assets or is likely to cause nuisance flooding to adjacent properties, the applicant/the owner will need to adopt one or more the requirements below;

- Extension of the existing drainage system to enable a direct connection to underground drainage system.
- Acquisition of drainage easement to drain the subject property towards the fall of the land.

Design Principles

MP5 Minimum requirements for Mechanical Pump-out Systems - The minimum requirements for mechanical pump-out systems for stormwater apply as follows:

- The pump-out system shall consist of two (2) mechanical pumps, connected in parallel, with each pump being capable of emptying the holding tank at a rate equal to the peak 100-year ARI, 5 minute duration storm event. Any subsurface inflow rate during wet weather determined by an approved test procedure or estimated value is to be included
- The mechanical pump must be capable of draining the surface runoff collected from weather exposed areas of not less than $50m^2$ or $100m^2$ for Types 5, 6 and 7
- The capacity of the holding tank shall be calculated as above the level at which all pumps are automatically brought into operation
- The minimum capacity (volume) of the holding tank well shall be adequately sized in accordance with **AS/NZS3500.3.2 - 1998, National Plumbing and Drainage, Part 3.2: Stormwater drainage - acceptable solutions**, but based on the 100-year ARI, 5 hours design storm.
- A silt trap shall be provided on the inlet side of the holding tank
- The rising main from the pump system shall be designed and installed in accordance with the pump manufacturer's specification
- The rising main from the pump system shall discharge to a stilling sump within the property boundary and then gravity fed to the underground receiving drainage system or to an OSD system if the OSD system is piped to an underground receiving drainage system
- A one-way valve is to be installed on the rising main outlet. The stilling sump is to be located such that any likely overflow is safely directed to the street and away from adjoining buildings and structures
- The switching of the pumps shall be arranged so that they operate alternately
- The pumps shall be provided with automatic level switches so that they operate simultaneously should the capacity of the tank be exceeded
- An automatic alarm system shall be provided to warn of failure of any part of the pump system
- The alarm shall have visual indicators and an audible alarm siren
- A rechargeable battery back-up system for the alarm is to be provided in the event of power failure

Legal Obligations

MP6 Positive Covenant and Restriction on the Use of Land - Mechanical pump-out systems regardless of whether or not used as OSD systems shall require the creation of a Positive Covenant and Restriction on the Use of Land affixed to the title requiring the owner of the property to maintain the system, not tamper with the system and indemnifying Council against liability in respect of any damage sustained as a result of the failure of the pump system and damage to neighbouring property or any other cause not in Council's control, and providing for regular inspection by the proprietor. Refer to Section **On-site Stormwater Detention Systems**, Section under **Legal Obligations**.

Scouring, Erosion and Water Quality Control

General

SC1 Application - Where discharge of stormwater is to a natural watercourse, into bushland/ reserve, property or water way, adequate controls are required to protect these adjoining properties, bushland, roadways and receiving waters from erosion and degradation due to pollution, silt laden stormwater runoff and/or high concentration of runoff.

SC2 Scour and Erosion Control Devices - Notwithstanding other stormwater controls that may be required such as OSD (flow attenuating devices) or OSA, appropriate scour and erosion control devices are to be installed at the outflow to the system.

Minimum Requirements

SC3 Application - The installation of scour and erosion control devices and other stormwater management measures are required as follows:

- Appropriate scour protection devices installed at all outlets to stormwater conduits
- Additional installation of pollution control devices at the source, on-line*, off-line or at the end of the line to control sediment laden overland stormwater flows
- Stormwater management measures shall not be located on-line in water courses or within riparian zones or areas of remnant native vegetation
- Where the volume of runoff is considered high, it may be appropriate to include an OSD (for sites larger than 1200 sqm) and/or OSA system/s to reduce runoff into the receiving waterway
- The type of available control or treatment required for each development type that drains directly into a natural watercourse, bushland/ reserve, or water way are tabled below:

Development Type	Control Type
1	E*
2, 3, 4, 4a, 6, 8	A, B, E*, F, H
5, 7	A, B, E*, F, G*, H

Key:

Development Type

1 - Demolition only
2 - Alterations and additions
3 - New dwelling with existing footpath along frontage
4 - New dwelling with no existing footpath
4a - Dual occupancy, town homes etc.
5 - Residential Flat Building (RFB), commercial and mixed developments
6 - Development under SEPP Housing for Senior Citizens or People with a Disability
7 - Substantial development
8 - Subdivision of one into two allotments

Water Quality Treatment System

A - On-site Stormwater Detention System (OSD)
B - On-site Retention System or Absorption System (OSA)
C - "Charged" System
D - Mechanical Pump-out System
E - Scour and Erosion Control System/Devices
F - Rainwater Re-use System
G - Sediment Pond/Water Quality Device
H - Water Sensitive Urban Design (WSUD)
* denotes mandatory requirement

SC4 Pollutant Load to be Retained - Water quality treatment systems or pollution control devices such as sediment ponds where required to be installed are to ensure the following pollutant loads are retained on the site:

Pollutant Type	Percentage Retention of Post-development Loads
Total suspended solids (TSS)	80%
Total phosphorus (TP)	45%
Total Nitrogen (TN)	45%
Gross Litter	All Litter - 70% Material (>50mm) - 70%

SC5 Monitoring Water Quality - Water quality treatment systems or pollution control devices are to be installed and monitored regularly to ensure that they achieve their treatment objectives and that their performance meets the above criteria. If they fail to meet these targets, or if so required by the Appropriate Regulatory Authority (ARA), it shall be modified to achieve them and the system upgraded.

SC6 Ease of Maintenance - Water quality treatment systems or pollution control devices are to be designed to ensure ease of maintenance.

SC7 Scour Protection - Scour protection devices shall include embankment stabilisation e.g. rock walls, concrete aprons, gabions, turfing, jute mesh, energy dissipating units, or other more appropriate erosion control devices approved by Council. Preference is for 'soft engineering' solutions.

SC8 Control Devices near Creeks - Stormwater pollution control devices may not be appropriate within or adjacent to creek locations. In this regard, The Department of Planning and NSW Fisheries shall be contacted for advice about suitable erosion control measures here.

SC9 First Flush - Stormwater pollution control devices to remove pollutants during the 'first flush', shall be installed within the site. These include proprietary items such as Humeceptors or CDS units, silt and grease arrestors. Installation of these devices shall be in accordance with the manufacturer's specification.

SC10 Large Scale Control Devices - Other sediment control devices such as stilling basins and constructed wetlands shall be required for large-scale or substantial developments. These include land and community title subdivisions. Design of these devices shall be in accordance with the ***Managing Urban Stormwater, Soils and Construction Manual*** issued by the NSW Department of Housing.

SC11 Silt Traps - Silt traps are to be installed in all stormwater pits to contain silt and debris. Silt traps shall be installed at the bottom of pits at a depth of 200mm to capture silts and fines. Weep holes shall be drilled into the base of the pit to ensure that it does not permanently hold water and create a breeding ground for insects. Where the pit is located over impervious material, a 100mm layer of gravel bedding with subsoil drains will also need to be laid.

Soil and Water Management

SC12 Soil and Water Management Plan - A soil and water management plan is required for all development types, except for minor developments, for example extension to an existing dwelling of less than 50sqm.

Minimum guidelines shall be in accordance with the ***Managing Urban Stormwater, Soils and Construction Manua***l by the NSW Department of Housing, August 1998.

SC13 Installation and Maintenance - All sediment control devices are to be installed prior to any commencement of clearing and earthworks on the site. Ongoing maintenance of these devices during construction will be required.

SC14 Maintenance Schedule - For large scale developments, residential flat buildings and mixed used developments, a maintenance schedule is to be kept on site to ensure that the devices are cleaned on a regular basis.

Rainwater Re-use

General

RR1 Application - Notwithstanding BASIX water conservation targets, the collection of rainwater for non-potable use is encouraged. Non-potable water usage shall include watering of the garden, irrigation, washing machine and toilet flushing.

Minimum Requirements

RR2 BASIX Certificate Requirements - Rainwater re-use shall be provided in accordance with BASIX Certificate requirements.

BASIX is a web-based planning tool designed and developed by Department of Planning in association with other government agencies and utilities to assess the water and energy efficiency of new residential developments.

The NSW Government introduced BASIX into the development approval system on 1 July 2004.

RR3 Rainwater Re-use - Part of BASIX requires the installation of rainwater re-use facilities. The volume of storage required depends on the size of the dwelling, the number of amenities and other site factors. Further details can be obtained at www.basix.nsw.gov.au.

RR4 Council's Rainwater Re-use Volume - Council requires a minimum volume of 3,000L for residential developments (Development Types 2 and 3 only) and 5,000L for the other developments (Development Types 4a, 5, 6, and 7).

RR5 Minimum Rainwater Re-use Volume to be provided - The minimum re-use volume to be provided shall be the greater of the volume determined from the BASIX Certificate and Council's minimum Rainwater Re-use volume.

Additional storage is also encouraged but is subject to Council's planning requirements.

RR6 Submission of a Development Application - Where it is proposed to install a rainwater tank only, a Development Application (DA) would need to be lodged if the volume of the proposed rainwater tank exceeds 10,000 L. No DA would be required if the proposed rainwater re-use volume is less than 10,000 L or if the rainwater harvesting proposal forms part of a DA for Development Types 2, 3, 4, 4a, 5, 6 and 7.

On-site Stormwater Detention Offset

RR7 Exemption from OSD - The provision of a rainwater re-use system does not negate the requirements for OSD, if required, as stipulated in Section ***On-site Detention System, Controls***.

RR8 Reduction of OSD from Rainwater Re-use - The calculated basic OSD storage volume (ref. Section ***On-site Detention System***) can be reduced by a portion of the rainwater re-use volume as calculated from the BASIX Certificate or Council's Rainwater Re-use volume.

A maximum of fifty percent (50%) of the required volume (BASIX Certificate minimum volume or Council's Rainwater Re-use volume) can be deducted from the basic OSD calculated site storage volume. Additional storage deduction or volume beyond what has been determined from the BASIX Certificate or Council's Rainwater volume **will not be permitted**.

The re-use volume shall be deducted from the calculated OSD volume by straight subtraction of the volumes.

The permissible site discharge (PSD) is not required to be adjusted.

RR9 Dual Usage - Dual usage for both OSD and re-use in the same tank is permitted. However it must be noted that stormwater collected for re-use must not include runoff collected from on-ground areas, balconies and sub-floor areas (sub-surface water). Only stormwater collected from roof areas can be stored for re-use.

RR10 Permitted Use - Rainwater collected for re-use is classified as non-potable and is only permitted for use in the flushing of toilets, laundry clothes washing, irrigation systems including watering the garden and must not be used for human consumption in accordance with Sydney Water guidelines.

RR11 When designing dual-purpose tanks, consideration must be made for the collection of rainwater from the site, noting that OSD control generally applies to the total site area but stormwater collected for the re-use component can only be collected from the roof of dwellings. A dual-purpose OSD/re-use system that collects only rainwater from the roof may result in much of the stormwater from the site area to bypass the OSD system. Therefore the design must take into consideration of the majority of the site's runoff, especially the roofed and impervious areas, to ensure that it can be controlled through the OSD system.

Stormwater Drainage Design

General

SW1 Application - This Section provides the minimum design guidelines for both private and public stormwater drainage systems.

Stormwater drainage systems referred to herewith are the systems which are designed to convey stormwater runoff. This includes property drainage, street drainage (both piped and surface flow paths), and trunk drainage (larger conduits, open channels) and receiving waters (rivers, creeks, groundwater storage, sea and ocean).

SW2 Purpose - Stormwater drainage systems are to be designed to collect and convey stormwater runoff from a site to a receiving waterway with minimal nuisance, danger to life or damage to properties.

Minimum Requirements

SW3 Australian Rainfall and Runoff Handbook - Stormwater drainage systems shall be designed in accordance with the Australian Rainfall and Runoff Handbook utilising the "major" and "minor" system design criteria.

SW4 Gravity Drainage - Stormwater runoff shall be conveyed to follow the natural fall of the land, by gravity means, wherever possible. The design of "Charged Systems" is not covered in this Section. Charged systems are not acceptable for public drainage systems.

SW5 Re-directing Stormwater - Re-directing stormwater runoff from one catchment (or sub-catchment) to another catchment (or sub-catchment) is generally prohibited.

SW6 Public Drainage systems - Public stormwater drainage systems must be designed as gravity systems. For private stormwater drainage systems, an alternative to gravity drainage will only be considered where easement acquisition is unsuccessful and on-site disposal such as OSA is not possible.

SW7 Minimising the Quantity and Improving the Quality of Stormwater Runoff - Stormwater quantity and quality (pollutants) shall be minimised by designing the system with the following criteria:

- Have adequate sub-surface drainage to provide protection to structures, and prevent long term water ponding
- Have adequate inlets to collect and convey surface stormwater runoff to prevent water from entering buildings or damage structures, minimise nuisance and danger to persons and vehicular traffic, prevent long term surface water ponding, prevent erosion, and protect adjoining and downstream properties from any adverse impacts as a result of stormwater runoff from proposed developments
- Include a system of overland flowpaths, where possible, to provide fail-safe protection to buildings, structures, adjoining and downstream properties in the event of pipe blockage or storm events that generate greater runoff than the capacity of the piped drainage system
- Include sediment and silt traps and trash screens strategically located in catch drains and inlet pits to capture pollutants
- This can be achieved by:
  - The construction of surface flow routes to convey floodwaters away from private and public properties and, in flood prone land, the velocity and depth of flows are controlled to an acceptable level.
  - The provision of surface flow routes and piped drainage systems to direct/control frequent runoff, so that convenience and safety for pedestrians and vehicle traffic can be provided.
  - The provision of both piped drainage and surface flowpaths for new developments, re-developments and new subdivisions.
  - The installation of water quality control devices such as gross pollutant traps, stilling basins, baskets and the like to collect pollutants present in the stormwater runoff.

Minor and Major System Design

SW8 "Dual Drainage" System - The method of stormwater drainage design used to size pipe networks and trunk drainage systems to convey stormwater runoff to the receiving water is known as the "dual drainage" system approach or minor/ major design concept, as described in the Australia Rainfall and Runoff Handbook. This method has been adopted by Council and a summary of the design criteria are set out below.

Minor System Design

SW9 Definition - The gutter and pipe network capable of conveying stormwater runoff during minor storm events is known as the "minor system".

SW10 Widths of Flows - When designing the minor system, adequate inlet pits are to be installed such that the maximum gutter flow widths shall not exceed the lesser of 2.5 metres or one-quarter of the road carriageway width.

Wider flow widths may be accepted on roads whose cross-sectional gradients are less than 1.0%. This is subject to Council approval.

For private stormwater drainage systems, the minor system must be capable of capturing or containing the runoff produced from the average rainfall recurrence interval as stipulated in ***SW21 Average Recurrence Interval for Public Drainage Systems***.

SW11 Minimum Conduit Size - The minimum conduit sizes for the minor system design shall be as follows:

- Public system - pipes, 375mm-dia
- Public system - box culverts, 600mm wide x 450mm high
- Private system - pipes, 90mm-dia for roof runoff only
- Private system - pipes, 100mm-dia for surface runoff within the property only
- Roads - pipes, 375mm-dia
- Roads - conduits, equivalency to 375mm-dia

SW12 Minimum Pipe Gradient - The minimum pipe gradient shall be as follows:

- For pipes less than or equal to 225mm-dia: 3%
- For pipes greater than 225mm-dia: 1.0%
- For concrete lined box culverts poured in-situ: 0.5%

SW13 Anchor Blocks - Pipes which are to be laid at a slope greater than 20% will require anchor blocks at the top and bottom of the section and at intervals of not more than 3.0 metres in between. Bulkheads shall be provided on steep gradients where soil instability is likely. To retain backfill material, bulkheads shall be installed at intervals of not more than 5.0 metres.

SW14 Pipe Material and Jointing Type - Type of pipe material and jointing to be used for the minor system design shall be as follows:

- Public system - reinforced or fibre reinforced concrete*, rubber ring jointed
- Private system - up to 300mm-dia uPVC, solvent welded joints; 300mm-dia and larger reinforced or fibre reinforced concrete*, rubber ring jointed

SW15 Alternative Material - Subject to Council approval, other types of material such as plastic pipes may be used for larger conduits, if it can be demonstrated that the substitute material has the same, if not better, structural and durability qualities when compared to reinforced concrete.

SW16 Depth of Cover - Depth of cover to the conduit obvert shall be as follows:

- Public system not subject to vehicle loads - 450mm
- Pubic system subject to vehicle loads - 600mm
- Private system not subject to vehicle loads - 300mm
- Private system subject to vehicle loads - 600mm

SW17 Less than Minimum Cover - If it is not practical to provide for the minimum cover requirements specified above, then at least 50mm thick granular overlay shall be provided over the obvert of the conduit with a 150mm thick reinforced concrete slab constructed over it or conduit is to be mass concrete surrounded.

SW18 Pipe Class - The appropriate class of pipe to be used shall depend on the minimum cover provided and the loading onto the pipe in accordance with ***AS3725 - 1989, loads on buried concrete pipes***.

SW19 Design Velocity of Flows - Design velocity of flows shall be as follows:

- Conduits - 0.6 m/s minimum, 6.0m/s maximum
- Surface flow - 2.0m/s maximum

Where these values are exceeded, appropriate erosion control and scour protection measures are to be provided at the outlet.

SW20 Maximum Depth of Flows - Maximum permitted depth of surface flow shall be:

- Road carriageway, driveways, footpaths and carparks - 150mm
- Landscaped areas - 300mm

SW21 Average Recurrence Interval for Public Systems - The average recurrence interval to be adopted for the design of the public drainage system is tabulated below:

Location	ARI (years)
Local Roads	10
Collector roads	10
Sub-arterial roads	10
Arterial roads	20
State roads	50
Access to emergency facilities	100
At a depression (low point) in road	100
Public system passing through private property	100

SW22 Average Recurrence Interval for Private Systems - The average recurrence interval to be adopted for private drainage systems (minor system design) is tabulated below:

Location	ARI* (years)
Residential - low density	10
Residential - medium to high density	20
Commercial	50
Industrial	50
Hospitals and Emergency Facilities	100

*** Important Note:** The underground drainage system (includes pipes, conduits and pits) is to be designed for the 1 in 100-year ARI where major system flows (e.g. along a drainage easement) are likely to surcharge across private property or cause localised flooding. A surcharge path must also be provided to safely convey surface stormwater across private property within easements. The minimum design ARI for surcharge paths shall be the 1 in 100-years.

Major System Design

SW23 Definition - The "major system" comprises the drainage route, which conveys the runoff for the major storm events. This may be a series of trunk drainage systems and overland surface routes including open channels, creeks, and river systems.

SW24 Provision of Overland Flow Routes - Overland flow routes are to be provided at the following locations:

- Within the road carriageway excluding footpaths and the footway reserve. Flows across footpaths will only be permitted where this will not cause flooding to property or create danger to pedestrians and is subject to Council approval
- Within drainage easements. Where it is not practical to provide an overland flow route over the easement, the piped drainage system shall be sized to accept the runoff for the major storm event i.e. the 100-year ARI
- Within a known and designated floodway
- Within creeks and river systems.

SW25 Minimum Freeboard Requirement for Flood Prone Land - Freeboard can vary according to parameters such as the size of the upstream catchment, the local terrain, the difference between the 1% AEP (Annual Exceedance Probability) level and the PMF (Probable Maximum Flood) level and the proposed use.

In some cases the determination of an appropriate freeboard will be best done on the merits of the individual case through the Development Application process. However the minimum freeboard requirement unless overridden by a Flood Study, Draft Flood Study, Floodplain Risk Management Study, Floodplain Risk Management Plan or the DCP (Development Control Plan) shall be as follows:

Freeboard requirements above 1% AEP water surface level				
Finished Floor Level (B)	Adopted Flood planning area	Overland flow path identified by Council as "Minor"	Overland flow paths other than ones identified by Council as "Minor	Mainstream flooding
Residential – Habitable rooms	As per the adopted Plan	300mm	500mm	500mm
Residential – Non-habitable rooms	As per the adopted Plan	300mm	300mm	500mm
Commercial or Industrial – All internal areas	As per the adopted Plan	300mm	500mm	500mm
Carport open on 3 or 4 sides (At Ground Level)	As per the adopted Plan	150mm*	150mm	300mm
Entrance to Basement	As per the adopted Plan	300mm*	Difference between the 100-yr ARI Level and the PMF Level	Difference between the 100-yr ARI Level and the PMF Level
Critical Infrastructure	As per the adopted Plan	300mm	Difference between the 100-yr ARI Level and the PMF Level	Difference between the 100-yr ARI Level and the PMF Level

* **Note**: At Council's discretion, may be reduced

SW26 Design Velocities and Depths of Flow - Design velocities and depths of surface flows shall be in accordance with Figures G1 and G2 of the ***New South Wales Government Floodplain Management Manual: The management of flood liable land***, with hazard category classed as "low hazard".

SW27 Average Recurrence Interval - The average recurrence interval to be adopted for the major system design is tabulated below:

Location	ARI (years)
Private	100
Public	100

Catchment Area

SW28 Definition - The catchment area is defined by the limits from where surface runoff will make its way, either by man-made or natural paths, to the point of exit.

Catchment Runoff

SW29 Catchment Runoff - Catchment runoff shall be determined using a suitable hydrological method depending on the level of accuracy required and the extent and shape of the catchment. Limitations of each method are given in the Australian Rainfall & Runoff Handbook.

SW30 Determination of Catchment Runoff - Catchment runoff is to be calculated using the following methods:

Method	Application
Rational Method	For catchments areas < 1200 sqm
Hydrological Method	For catchment areas > 1200 sqm

SW31 Rational Method Approach - The Rational Method for the estimation of peak flows will be acceptable for small catchments. This method is best suited to catchments with uniform slope and roughness characteristics and where the level of accuracy is not critical. This would include site discharge calculations and roof runoff.

SW32 Hydrological Computer Model Approach - The use of hydrological computer models is best suited to medium to large catchments and where a reasonable level of accuracy is required.

Acceptable computer models include ILSAX, DRAINS, RAFTS and RORB.

SW33 Impervious Areas - The impervious area percentages to be adopted for determining runoff are tabulated as follows:

Public System (trunk drainage)	
Residential Areas	80
Commercial	100
Road Reserves	80

Private System (inter-allotment drainage)	
Road Reserves	80
Residential Single	80
Residential Medium Density	90
Residential High Density	100
Industrial	100
Commercial	100

SW34 Roughness coefficients - Roughness Coefficients are to be used to calculate free surface flow.

For the purpose of determining stormwater runoff into open channels and free surface hydraulics, Manning's roughness coefficients shall be used. Typical values are given in appendix and the Australian Rainfall and Runoff Handbook.

For sections with composite roughness values, Horton's Equation may be used to convert to an equivalent roughness value for simplicity in calculations.

Horton's Equation is given as:
$n = \{\Sigma (Pi.ni^{3/2}) / \Sigma Pi \}^{2/3}$

Where ni = is the Manning's Roughness Coefficient for section i and
Pi = is the wetted perimeter or length of the section with a roughness value ni

Hydraulic Grade Line

SW35 Analysis - Hydraulic grade line calculations are to be performed in accordance with the ***Australian Rainfall and Runoff***, and shall be undertaken by a qualified person with experience in hydrology and hydraulic design.

SW36 Full Hydraulic Calculations - Full hydraulic calculations must be submitted for all public and major piped systems (375mm-dia and larger), drainage lines through easements and flood assessment to ascertain flood levels or where Council deems it necessary to determine the feasibility of the proposal.

SW37 Reduction of Losses - Drainage lines shall be designed with minimal bends to avoid bend losses. Where this is unavoidable, junction pits shall be provided at the location of bends or changes in direction.

SW38 Avoidance of Chokes - Pipes will not be permitted to be laid such that a larger pipe joins into a smaller pipe downstream, to avoid potential chokes in the system. However, this may be unavoidable when the new line is connected into an existing system. In this circumstance, the starting hydraulic control shall be adopted at the ground level at the point of connection.

SW39 Water Surface Profiles – For determination of flood profiles and surface drainage systems (e.g. channels, open drains and the like), hydraulic calculations are to include determination of water surface profiles and backwater effect using suitable computer models such as DRAINS and HEC-RAS.

SW40 Frictional Losses - Frictional losses in closed conduits of circular shaped cross-section (e.g. pipes), shall be determined using the Darcy-Weisbach Formula. This Formula may be applied to rectangular sections (e.g. box culverts), by converting the product of the area and hydraulic radius to the power of two-thirds (A.R2/3) to an equivalent circular section.

SW41 Colebrook-White Roughness Values - Colebrook-White roughness parameters used for pipes are as tabulated:

Conduit Material	K value (mm)
uPVC pipe	0.03
Reinforced concrete pipe	0.06
Fibre reinforced concrete pipe	0.06

SW42 Pit Energy Losses - Pit energy losses and pressure changes at junctions, bends, transition structures, slope junctions, inlet pits, junction pits, drops and outlets must be considered in the hydraulic assessment.

Pressure head coefficients for determining these "head losses" are to be obtained from the following sources:

- Missouri Charts
- Hare Equations
- U S Corp of Engineers mitre bend charts
- AR&R 1987 Handbook or later editions

SW43 Downstream Hydraulic Controls - The following downstream water surface level or controls are to be adopted:

- Where the hydraulic grade line level downstream of the proposed works, including the upstream pit losses at the starting pit is known (corresponding to the design storm recurrence interval as adopted), this level is to be used
- Where the downstream starting point is at a pit and its hydraulic grade line is unknown, a level of 150mm below the surface level of this pit is to be adopted
- Where the outlet is to an open channel, the water surface level is to be determined using Manning's Equation or an appropriate hydraulic model. The water level shall be adopted as the normal depth calculated using an appropriate method, or the top of the outlet pipe, whichever is the greater
- Where the outlet is to an open channel, and downstream flood levels are known, the water surface level to be adopted shall be the 1% AEP flood level

- Where the outlet is affected by tidal or wave action, the resulting tide water level shall be adopted
- Where the outlet is to an existing pipe or conduit, the hydraulic grade line of the conduit shall be determined downstream to a pit where its water level is known (e.g. at a grate in the gutter where the maximum free surface ponding is at the top of kerb)
- Where the outlet is at the invert of the k erb, the water surface level shall be adopted at the top of the kerb

Stormwater Drainage Pits

SW44 Pit Types - Standard Council kerb inlet pits with kerb lintel openings, junction pits and letter box type pits are to be installed for all public drainage systems. Pits for private drainage systems are to be inlet and junction pit types with grates or solid covers.

SW45 Material - Public drainage pits are to be precast concrete, fibre reinforced concrete or insitu poured concrete.

Private drainage pits may be constructed from pre-fabricated high density poly-plastic of appropriate load class as specified by the Manufacturer.

The bases of pits shall be concrete benched to minimise hydraulic losses.

Pits constructed of brick or blockwork will not be acceptable unless they are designed and constructed to withstand structural loading and fully waterproofed to prevent leakage.

SW46 Minimum Dimensions - Minimum internal dimensions of pits are tabulated below:

Pit Type	Dimension (mm)
Kerb Inlet with Lintel and Grate	600 x 900
Inlet Pits in Landscaped Areas	600 x 600
Junction Pits	600 x 600
Private Grated Inlet Pit < 1.2m deep	300 x 300
Private Grated Inlet Pit > 1.2m deep	450 x 450
Private Junction Pit < 1.2m deep	300 x 300
Private Junction Pit > 1.2m deep	450 x 450

SW47 Private Stormwater Drainage Pit Location - Private pits are to be located wholly within property boundaries. If any private pit is required to be located external to the property, then it shall be constructed to a public standard and becomes the property of Council.

SW48 Grates - Grates over public pits are to be galvanised and hinged to frame. Private pits may have grates made from pre-fabricated high density poly-plastic of appropriate load class as specified by Manufacturer.

SW49 Load Class of Grates and Covers - Stormwater drainage pit grates and covers shall be provided to support the required load classification at the following locations:

Location	Load Class Required*
Driveways including access handles	Heavy Duty
Car parks	Heavy Duty
Road Carriageways	Heavy Duty
Footways	Heavy Duty
Reserve, landscaped areas with pedestrian traffic only	Medium Duty
Reserve, landscaped areas with no traffic	Light Duty

*** Important Note**: Light duty is equivalent to 1 tonne wheel load, medium duty is equivalent to 3.5 tonne wheel load and heavy duty is equivalent to 9 tonne wheel load.

All public grates shall be hinged to frame and lockable.

Private grates are to be hinged to frame and lockable where it is designed to surcharge or where upwelling is likely.

SW50 Liftable Lids - All lids over pits must be liftable for routine inspections and maintenance.

SW51 Junction Pits - Junction pits are not to be designed as pressurised systems.

SW52 Step Irons - Where pits are 1.2 metres or greater in depth, step irons in accordance with ***AS1657*** are to be provided to one side of the pit wall to allow access for inspections and cleaning.

SW53 Letterbox Type Pits - Letterbox type pits may be used for collection of surface water. However, they are not permitted at or near kerb locations where there is likely pedestrian and/or vehicular traffic. In these locations, pits with butterfly type grates flush with the surrounding ground level are preferred.

SW54 Lintels - Lintels over kerb openings shall be provided at the kerb side with the opening length dependent on its design capture rate, but not less than 1.2 metres and not greater than 4.0 metres.

SW55 Pit Locations - Stormwater drainage inlet pits shall be positioned at the following locations:

- Spaced such that the gutter flow width is limited to 2.5 metres maximum width for the minor system design.
- Located at the upstream side of allotments to minimise runoff flowing across the road.
- Located at sag points and at road depressions.
- Located where access for inspections and maintenance is readily available.
- Provided at changes in direction, grade, conduit level, size, or class of conduit.
- Provided at junctions.
- Spaced at a distance of no greater than 50 metres apart.

SW56 Inlet Capacities - The inlet capacity of pits shall be determined in accordance with the Australian Rainfall and Runoff Handbook.

Inlet capacities are to be restricted with the following blockage factors:

Location	Inlet Type	Capacity Allowed (%)
sag	side entry only	80
sag	grate only	80
sag	combination	100 side 0 grate
sag	letterbox	50
on-grade	side entry only	80
on-grade	grate only	50
on-grade	combination	80

Open Channels

SW57 Preferences - Piped drainage systems are preferred over open channel systems.

Open channels will only be permitted if they form part of the major drainage system and where permitted, shall be designed to have smooth transitions, with adequate access provisions available for inspections, general maintenance and adequate safety measures installed to protect persons and vehicles.

These include perimeter fences, bollards, and grills over outlet pipes. Step irons shall be installed and flow velocities and depths are to be reduced at nominated access points.

SW58 Design - Open channels shall be designed in accordance with the Australian Rainfall and Runoff Handbook and the NSW Government Floodplain Management Manual and must be able to contain the major system runoff. Open channels shall be designed to avoid hydraulic jumps or generate supercritical flow conditions. Side slopes must not exceed 1 in 3, unless fully fenced off.

Wherever possible, low flows shall be contained within a piped system or contained within a concrete lined channel at the invert of the channel.

SW59 Manning's Roughness Coefficient – Manning's roughness coefficients for open channel sections applicable to specific channel types can be obtained from the Australian Rainfall and Runoff Handbook.

Typical values are given below:

Surface Finish	n value
Concrete pipes or box sections	0.012
Concrete trowel finish	0.015
Concrete formed without finishing	0.016
Sprayed concrete, granite	0.018
Bitumen, smooth finish	0.016
Bricks or pavers	0.016
Pitchers or dressed stone in mortar	0.016
Rubble masonry or random stone in mortar	0.028
Rock lining or rip-rap	0.028
Earth, clean	0.027
Corrugated metal	0.027
Earth, weed and gravel	0.022
Rock cut	0.028
Short grass	0.033
Long grass	0.035
Medium to dense brush	0.150

Building Adjacent to Stormwater Drainage Systems

SW60 Location of Structural Supports - Where structural supports such as foundations, piers, and footings are to be located adjacent to the drainage system, they are to be located outside of the drainage easement and must not load bear onto the underlying drainage structure. In general, where a drainage structure is parallel or adjacent to foundations, piers or footings, the base of the footing shall be located outside the influence zone created by an angle of 45 degrees to the horizontal extended from the invert of the drainage structure.

Stormwater Connections

SW61 Under Buildings - shall be carried out in accordance with ***AS/NZS3500.3, Section 3***.

SW62 Above ground pipe work - Shall be carried out in accordance with ***AS/NZS3500.3, Section 6*** and this Document.

Non-return valves are not permitted to be installed in Council maintained (public) systems.

SW63 Connection Detail - If the ratio of the private pipe size to the Council (public) pipe size is more than one third, a standard stormwater gully pit at the connection point, will be required.

Avoid Conflict with Utility Services

SW64 General - Care shall be taken to ensure that the proposed stormwater drainage system will not conflict with utility services. In this regard, all utility services shall be located prior to final drainage system design. Stormwater drainage conduits crossing over or under sewer lines must be laid in accordance with Sydney Water requirements. This may require support trenching and concrete encasement of sections that traverse the utility.

SW65 Location of Drainage Lines in Road Reserve - Public drainage lines laid in the road reserve, shall be located under the kerb line or within the road carriageway, to avoid conflict with the utility services in the footway.

For private drainage lines which must cross the footway reserve, they shall be laid across the footway perpendicular to or at a maximum angle of 45 degrees to the kerb face to minimise conflict with services.

Easements

SW66 Requirement - Where the site grades to the rear, the creation of formal drainage easements will be necessary. Evidence in the form of a Legal Agreement between affected parties or copies of titles showing the creation or intention to create easements must be provided to Council in support of the Development Application. This is essential for DA approval. Where easements cannot be negotiated, signed documents by all affected parties or acceptable documentation provided as evidence shall be submitted to support the case for alternative solutions.

Easements shall be required over constructed public drainage systems within private properties, to **ensure** that Council has full rights of access to such drainage systems for the purpose of inspection, maintenance or upgrade.

Stormwater drainage easements shall be required over all private inter-allotment drainage lines.

Stormwater drainage easements will not be required within or over natural drainage systems such as creeks and watercourses.

Council does not favour or encourage the piping, construction within or over, or interference with natural drainage systems. Any proposal to carry out such works will be subject to an assessment pursuant to other relevant Council policies and joint approval from other relevant authorities.

SW67 Easement Acquisition - Council will take the opportunity to acquire drainage easements over existing constructed public drainage systems within private property whenever a development occurs by Condition of Consent.

When a developer, property owner or Council proposes to relocate or reconstruct a public drainage system within the site, a drainage easement in Council's favour must be created to suit the relocated or reconstructed drainage system at the cost to the developer.

A subdivision **will not** be approved where a formal drainage easement cannot be provided to drain a newly created allotment in the same direction as the natural fall of the land.

SW68 Prohibition of Building over Easements - Any construction of buildings or other permanent structures over a public drainage easement is not permitted.

Easements allow Council reasonable access for the purpose of construction, maintenance and upgrade of the stormwater drainage system.

Encroachments impede or re-direct overland flows away from the easement, and may load bear onto the underlying drainage structure.

Council may require the relocation of an existing pipe to avoid encroachment. Where encroachment is necessary to achieve reasonable development, then the conduit and easement may be relocated subject to Council approval.

SW69 Load bearing Structures adjacent to Drainage Easements - Any structural support such as footings and piers will only be permitted to be located adjacent to an easement if they do not load bear onto the underlying drainage structure, and that the built structure will not be undermined by any future maintenance work necessary within the easement.

SW70 Planting of Significant Trees - The planting of trees or large shrubs, particularly those with extensive root systems will not be permitted in or within proximity of drainage easements.

SW71 Construction over Public Drainage Easements - Construction over a public drainage easement is generally prohibited. Public drainage easements must be free of all encroachments with a minimum vertical clearance from the surface/ground level over the drainage structure to a height of 5.0 metres above.

Paved surfaces over the public drainage easement are permitted provided that construction joints along each longitudinal edge of the easement are installed to facilitate access to the drainage structure.

SW72 Public Easement Widths - Public easement width shall be a minimum width equal to the external width of the conduit plus 1.0 metre, rounded to the nearest 0.1 metre.

Inter-allotment Drainage

SW73 Application - Inter-allotment drainage shall be provided for property/s that does not drain directly to its street frontage by gravity means, or directly by gravity means to an existing stormwater drainage system (public or legally private) or by gravity means to a natural watercourse.

Easements shall be created over all inter-allotment drainage systems on private property/s in favour of all upstream properties to be benefited by it.

SW74 Inter-allotment Easement Widths – Inter-allotment easement widths (private) shall be a minimum width equal to the external width of the conduit plus 300mm. However these widths may be varied where there are site constraints.

SW75 Sizing of Inter-allotment Drainage Systems - Inter-allotment conduits shall be sized on the total site area of the benefitted allotments with a minimum impervious area as given in Section ***Impervious Areas***.

SW76 Material - Inter-allotment drainage pits and pipes shall be of reinforced concrete, fibre reinforced concrete or uPVC material. All pipes/conduits are to be rubber ring jointed or solvent welded as specified by the manufacturer and in accordance with ***AS4058***, ***AS4139*** and ***AS1254*** respectively.

Subsurface Water

SW77 Definition - Subsurface or groundwater is water held in the soil or in pores and crevices in rock and is generally present behind basement walls or subfloor areas which are below the natural ground level.

SW78 Minimum Information to be Provided – Where a proposal is for the installation of a basement or below ground area or the development will require cutting into the existing ground level, a Geotechnical Report must be submitted to Council for assessment. This Report shall detail an investigation of subsurface conditions including groundwater levels, the likelihood or indication of a high water table or seepage water, the soil type encountered and the soil infiltration rate.

SW79 Disposal – Generally subsurface water is collected by sub-soil drainage pipes and collected in a holding tank which is either pumped or gravity fed into an approved disposal point. Subsurface water is not permitted to be discharged to the kerb either directly or indirectly except in a controlled manner specifically approved by Council under **S138.1(d) of the Roads Act 1993** (refer ***SW80*** below). It must be drained directly into an underground public drainage system or other disposal point approved by Council.

SW80 Direct Connection into an Underground Public Drainage System – This is the preferred method of subsurface water disposal. The subsurface water is conveyed across the public footway by gravity means and drained into the nearest public underground piped drainage system.

A junction pit is to be installed within the property boundary with a non-return valve on the upstream pipe to prevent water back flowing into the site.

If there is no existing underground drainage system in the vicinity of the source, a new underground (piped) drainage system shall be installed and connected into the nearest downstream underground drainage system. The new drainage system other than the line that crosses the footway shall be designed to a public drainage system standard and shall become part of the public drainage system.

SW81 On-site Disposal of Subsurface Water – Subsurface water may be disposed of via on-site absorption in combination with a level spreader. However, this is subject to the same constraints as for the disposal of stormwater runoff from an On-site Stormwater Absorption (OSA) system design.

OSA may not be suitable where a high water table exists or for low lying properties or sites which have limited space for disposal.

SW82 Waterproofing Subfloor Areas – Basement walls and subfloor areas may be waterproofed to minimise the collection of seepage water, in particular where Type 2 acid sulphate soils or high water tables are encountered.

Water proofing has its limitations and subsoil water ingress may still exist as there would be high pore pressures exerted on the walls and floors of the “tanked” structure. Pore pressures and floatation forces mean these types of structures require specialized design and certification by a Qualified Structural Engineer.

SW83 High Water Table – In the case of a high water table, the draw down effect of the water table when subsurface water is collected and disposed would necessitate a statement from a Geotechnical Engineer that nearby structures will not be affected by the development. It may be necessary to obtain licence for the drawing down of groundwater from the Department of Primary Industries.

SW84 Controlled Disposal – If all alternative acceptable solutions have been exhausted, Council will consider separate specific approval of controlled release to the kerb under **Section 138.1(d) of the Roads Act**. In this circumstance subsurface water may be disposed to the kerb and gutter in a controlled rate, period and duration. This will necessitate the following:

- Provision of a sump or holding tank which can store collected seepage water for a minimum duration of 24 hours.
- The soil infiltration rate shall be determined by geotechnical investigation but shall not be less than 0.001 L/s per m^2.
- The holding tank shall be sized for the collected seepage water based on the area of exposed wall to the soil. For example, for typical double garage and an infiltration rate of 0.001 L/s per sqm and a wall height of 2.4m with subsoil drainage install around its perimeter say 25m long, the volume of the holding tank required will be 2.4 x 25 x (0.001/1000) x 24 x 60 x 60 = 5.2 cum or 5200 L required. Note this is in addition to the volume required for collected stormwater from weather exposed areas.
- Dual pumps to be installed and shall be designed to operate to discharge a maximum of 5L/s and restricted to pumping between 11pm and 3am only.

Stormwater Pollution and Erosion Control

Soil and Water Management

SPE1 Soil and Water Management Plan - A soil and water management plan shall be submitted and must be approved by Council prior to the commencement of any construction or demolition activity.

SPE2 Guidelines - Guidelines shall be in accordance with the ***Managing Urban Stormwater, Soils and Construction Manual, NSW Department of Housing*** or later editions.

SPE3 Sediment Control Devices - All sediment control devices are to be installed prior to any commencement of clearing and earthworks on the site. Ongoing maintenance of these devices during construction will be required.

A maintenance schedule is to be provided with the Soil and Water Management Plan for large scale developments and works within public land.

SPE4 Soil Erosion Control - Soil erosion control is required to protect adjoining properties, bushland, roadways and receiving waters from degradation due to silt laden stormwater runoff as a result of development and/or concentration of runoff. Soil erosion control shall be provided as follows:

- Appropriate scour protection installed at the outlet to stormwater conduits, and
- Installation of pollution control devices at the source, on-line, off-line or at the end of the line to control sediment laden overland stormwater flows.

SPE5 Scour Protection Devices - Scour protection devices shall include embankment stabilisation e.g. rock walls, concrete aprons, gabions, turf, jute mesh, energy dissipating units, or other more appropriate erosion control devices approved by Council.

Please note that some types of scour protection devices may be inappropriate along certain creek locations.

SPE6 Silt and Sediment Control - Silt and Sediment Control devices are required as part of a development to remove pollutants during the "first flush".

These units shall be installed on line or within the site and may include proprietary items such as “Humeceptor” devices or CDS units, silt and grease arrestors approved by Council. Installation of these devices shall be in accordance with the manufacturer's specification.

Other sediment control devices such as stilling basins and constructed wetlands shall be required for large-scale developments and include land and community title subdivisions.

Design of these devices shall be in accordance with the ***Managing Urban Stormwater, Soils and Construction Manual, NSW Department of Housing, August 1998*** or later editions.

Integrated Developments

SPE7 Part 3A Permit for Development near Water Bodies - Any development within 40m of a water body such as a stream, creek, lagoon, or river may require a Part 3a Permit under the Department of Lands Guidelines and The Rivers and Foreshores Improvement Act 1948.

Water Sensitive Urban Design

Objectives

WSUD1 Principles of Water Sensitive Urban Design - All developments are encouraged to implement the principles of Water Sensitive Urban Design (WSUD) in order to minimise the impact of the development on the water cycle and achieve more sustainable forms of urban development.

WSUD2 Aim of WSUD - The aim of WSUD is to integrate stormwater management systems into the landscape component of the site in a manner that provides benefits that incorporate stormwater detention, retention, re-use and water efficiency whilst addressing issues such as nuisance flooding, protection from pollution of the receiving waterways and groundwater and improving visual amenity.

Design Principles

WSUD3 How Design Principles are achieved - In addition to those control systems already identified in ***Stormwater Management*** such as On-site Stormwater Detention, infiltration or absorption systems and rainwater harvesting, the aim of WSUD is to combine these options together with the proposed landscaping to achieve integration rather than relying on 'end of pipe' devices prior to discharge. These are achieved by:

- Operating practices and technologies which would prevent contamination of stormwater
- Locate the development such as to minimise disturbance of the natural drainage system
- Minimise impervious surfaces and encouraging soft landscaping to promote infiltration and reduce stormwater runoff
- WSUD elements are to be located and configured such that impervious areas to be treated can be maximised

WSUD4 Water Sensitive Urban Design Measures - Where WSUD principles are to be applied, the following table lists measures, which can be used to achieve water quality and water quantity targets. Note their uses may be complementary to other 'hard' engineering solutions.

WSUD Measure	Comments
Constructed Wetlands	To be considered for medium to large scale subdivisions
Sedimentation Basins	To be considered for medium to large scale subdivisions
Vegetated Filter Strips	Can be incorporated into new developments
Sand Filters	Used in combination with absorption system design
Bio-retention Systems	Used in combination with absorption system design or for water quality improvement targets in lieu of straight discharge into the waterways. Alternative Gross Pollutant Traps may be considered (mechanical system) for screening silts, sands and debris, may be considered
Permeable Pavers	As a complementary system to absorption trench to minimise on-ground impervious areas
Infiltration Trenches	Absorption trench design as described above
Rainwater Harvesting	Re-use is encouraged. Offset provision allowable from OSD

WSUD5 Water Sensitive Urban Design Modelling – Modelling of WSUD using a suitable program such as MUSIC (Model for Urban Stormwater Improvement Conceptualisation) will be acceptable to Council.

Document Submission

General

DS1 Minimum Requirements - At the lodgement of a Development Application, minimum submission of documentation is required to support the proposed development. Usually conceptual plans would suffice unless the proposed development would impact on public land or Council considers that there may be site constraints which may result in non-compliance to standards.

DS2 Stormwater Drainage Conceptual Plan - a stormwater drainage concept plan (SDCP) must be submitted with the Development Application.

DS3 Detailed Design Drawings - Detailed design drawings and supporting calculations are generally required at Construction Certificate submission and not required at DA stage except in the following circumstances:

- The proposed works include activities on Council property. A separate approval under Section 138 of the Roads Act may be necessary. It is important the Applicant contact Council in this case to ensure that approval can be granted.

  Important Note: Works in the road reserve can only be approved under Section 138 of the Roads Act. Approval under Part 4 of the Environmental Planning and Assessment Act does not grant automatic approval for works on public land.
- The proposed development is a new dwelling, residential flat building, mixed development, commercial or industrial development and the land falls to the rear and does not benefit from a formal drainage easement.
- A Stormwater Assessment Report is required due to likely flood affectation to ascertain design floor levels or if there is a proposed subfloor level which may be likely to be affected by stormwater inundation or disposal of seepage water is difficult.

  Where detailed design drawings are required, they must be submitted and approved by Council prior to the issue of the Construction Certificate.

Development Application

DS4 Submission of Conceptual Drawings - Engineering conceptual drawings shall be submitted at the lodgement of the Development Application containing the following information:

- A3 or A1 size drawing sheets at an appropriate scale of 1:100, 1:200 or 1:500.
- Showing the layout of the proposed drainage system and structures including the location of all downpipes, kerbs, channels, open drains, pits, pipes, retaining walls etc.
- Showing the nominal size of all stormwater conduits, grades, and pit dimensions.
- Showing conduit gradients.
- Showing the finished surface levels of any open channels, drains, or swales.
- Showing the location of all buildings, driveways, retaining walls, and other impervious and pervious surfaces.
- Showing the finished surface levels of paved areas, unpaved areas, building floors and garages
- Showing typical cross sectional details of any open channels, drains, or swales
- Where drainage easements are required, the location of the proposed easement for stormwater drainage and legal agreements attached
- Showing details of the proposed On-site Stormwater Detention (OSD) or On-site Absorption (OSA) System, or dispersion trenches, if required
- Include basic supporting computation or information
- Showing the location of any utility services, structures, trees, etc., which might affect the proposed development

  Important Note: It is the responsibility of the applicant to submit sufficient details of all relevant services, which may conflict with the proposed design. The exact locations of any crossings or connections are to be shown.

Construction Certificate

DS5 Submission of Construction Certificate Drawings - Detailed construction drawings are to be submitted as required, either to Council or to a nominated Principal Certifying Authority (PCA) and must include the following information:

- Drawings to be issued on standard A3 or A1 size drawing sheets at an appropriate scale of 1:100, 1:200 or 1:500.
- Drawings must clearly show the layout of the proposed engineering works, including the location of all retaining walls, downpipes, pits and pipes and labelled with their pipe sizes, gradients, existing and finished surface and invert levels, dimensions of all OSD, OSA and pump-out systems, including the proposed storage volumes, surcharge/overflow paths, permissible site discharge, and other relevant information sufficient for construction.
- All supporting calculations are to be supplied on computer disc (where applicable) with relevant hydrologic and hydraulic information.

DS6 Minimum Information - the minimum information to be provided on the drawings are as follows:

- Total site area in m^2.
- Total impervious area (roof and paved) in m^2.
- Area draining into the proposed stormwater (OSD or OSA) facility.
- Dimensions (mm), volume (cum), and discharge rate from the OSD or OSA system.
- Maximum water depth (mm) from centreline of outlet to top water level.
- Maximum depth of ponding for above ground OSD systems.
- Type and size of orifice (mm-dia), outlet pipe (mm-dia) and PSD (L/s).
- Details of the OSD control device(s) used including size and shape, outlet pipe diameter and invert level.
- For underground systems, at least one (1) detailed section through the OSD or OSA facility sufficient for construction.
- For above ground systems, at least two (2) detailed sections through the OSD facility, which shall include the maximum water level, gradients and overflow weir, sufficient for construction.
- Existing and proposed levels and details of adjoining structures and buildings shall be shown on the sections through the OSD or OSA facility.
- Overland flow path and PSD from the site.
- Plan showing the location of OSA or OSD facilities including dimensions, pervious (landscape) and paved (existing and proposed roof and paved) areas, and all existing and proposed surface levels.
- For pump-out systems, the pump type and rate, and holding tank volume.
- Location of any utility services, structures, trees, etc., which may affect the proposed drainage system.
- Full details of all relevant services, which may conflict with the proposed design, including invert levels and size of the service are to be shown.
- Structural details of retaining walls including sub-soil drainage, reinforcement details, dimensions and concrete strength.
- Where an inter-allotment drainage line is to be laid, a longitudinal section of the proposed pipe from the point of connection to the discharge point is to be provided. This must include pipe sizes, gradients, flowrates and a hydraulic grade line.

DS7 Certification - For residential flat buildings, dual occupancies, commercial, industrial, mixed developments, multi-residential developments, and similar type developments, the construction drawings must be certified by a qualified practising Civil Engineer, with membership with the Institution of Engineers, Australia, practising in the relevant competency category (civil, geotechnical, structural) and on the National Professional Engineers Register (NER).

For single residential developments, residential extensions, and small scale developments such as car ports, garages, sheds, etc, certification can be provided by a draftsperson, surveyor, or plumber with appropriate and relevant experience.

DS8 Drainage Easements - Where drainage easements are required, evidence in the form of a legal agreement between the affected parties or copies of titles showing the created easements shall be submitted with the drawings.

Occupation (Final) Certificate

DS9 Minimum Information - the minimum information to be provided to Council or a nominated Principal Certifying Authority (PCA) are as follows:

- **Works-as-executed drawings:** an engineering survey of the final works is to be submitted on one (1) set of the approved plans. This plan is to include finished levels, dimensions and volume of the built OSA, OSD facility, the location of all drainage pipes, sizes and levels, etc., and signed by a Registered Surveyor
- **Copies of titles** showing the creation of Positive Covenants and Restriction on the use of land
- **Certification** of the constructed drainage system by a suitably qualified and experienced Chartered Professional Engineer, on the National Engineers Register (NER) with the Australian Institute of Engineers for residential flat buildings, dual occupancies, commercial, industrial, mixed developments, multi-residential developments, and the like. For single residential developments, residential extensions, and small scale developments, a Compliance Certificate from a Surveyor or plumber with experience in stormwater design would be acceptable. The Compliance Certificate must certify that the works have been installed in accordance with the relevant Australian standards ***(AS3500)*** and Council's relevant specifications and DCP.
- **Identification Plate:** an identification plate of not less than 110mm wide x 80mm high, is to be fixed near or onto the control structure of the OSD system, this is to advise the registered proprietor of their responsibility to maintain the OSD facility and not to tamper with it in any manner without written consent. This plaque shall read 'This is an On-site Stormwater Detention System. It is an offence to reduce the volume of the system (tank or basin) or to remove the orifice that controls the outflow. The base of the outlet control pit and the debris screen must be cleared of debris and silt on a regular basis. This plate must not be removed.'

  Identification plates can be purchased from Council's Customer Services Centre

DS10 Where Onsite Detention system or a mechanical pump out system is proposed on site, the following documents must be submitted to Council or Principal Certifying Authority prior to occupation:

a) A Certificate from a Chartered Professional Engineer with Institution of Engineers, Australia Corporate Membership and registered on the National Engineers Register (NER) under the appropriate professional Category certifying the intended function of constructed stormwater drainage system including Onsite Detention (OSD) system, Onsite absorption system, Mechanical Pump out system, Stormwater retention system (OSR) etc, and

b) "Work - As - Executed" drawings of constructed stormwater drainage system prepared by a Registered Surveyor or equivalent.

- Where Council is not the Principal Certifying Authority, two (2) copies of the above documents are to be provided to Council prior to the issue of any Occupation Certificate. These documents are to be retained on Council's Construction Certificate files.

Section 138 Consent under the Roads Act

DS11 General - Development Approval does not give automatic approval for external works to the site, that is, in public domain areas.

Important Note - Private Certifiers cannot issue Consent under the Roads Act. The Road Authority which can issue Consent under the Roads Act will generally be either Council or the RMS. In some cases where Council or RMS is the Road Authority, the consent of both Council and the RMS will be required due to traffic or maintenance impacts.

Council is the Consent Authority for all works within the footway area, regardless of RMS approval for road pavement works or activities. This may be in the form of a **Road Opening Permit** (for minor works such as the laying of a private stormwater pipe across the footpath), **Driveway Application** (for driveway and footpath construction) or a **Section 138 Application for Major Works** (such as laying a stormwater drainage line under the kerb or road pavement construction). All these activities require approval from Council under Section 138 of the Roads Act 1993.

DS12 External works - Pursuant to Section 138 of the Roads Act 1993, written approval from the Appropriate Road Authority (Council or RMS), must be sought for proposed works external to the site. External works include the following:

- Closure of a carriageway on a State Road
- Closure of a carriageway on a Regional Road
- Works which may impact the traffic flow on a State Road or Regional Road
- Works within 100m of a Traffic Facility (e.g. Signalized Traffic Lights)
- Closure of a lane for the purpose of standing a crane, concrete pump or waste bin

DS13 Types of External Works cover by a Section 138 Approval - The types of works requiring Section 138 approval include but not limited to:

- Road works in general
- Stormwater drainage works
- Traffic devices or local area traffic management (LATM) schemes
- Footpath construction
- Water quality control devices on public land
- Driveway construction
- Any related works within an adjacent road reserve (path, verge or carriageway)

DS14 Road Occupancy License - Any works within the road reserve, for a State or Regional classified road, will require a Road Occupancy License to be obtained from the Planned Incidents Unit of the Traffic Management Centre of the RMS.

The Application must include details of a Traffic Management Plan.

DS15 Other Consents under Section 138 of the Roads Act - ***An Application for Driveway Construction and Ancillary Works, Road Opening Permit*** or a ***Consent Letter*** from Council is required for all other types of works within the road reserve.

ES4 Appendices

Terms of Positive Covenant

Existing Allotments

A1 The Terms of Positive Covenant - Where there is no land subdivision (no Section 88B instrument required) then the following standard wording for the "The Terms of Positive Covenant" is to be used and attached with the standard NSW Department of Lands form 13RPA.

Terms of Positive Covenant
(Show full details of Positive Covenant)

The registered proprietors covenant with the City of Canada Bay Council (Council) that they will maintain and repair the structure and works on the land in accordance with the following terms and conditions:

I. The registered proprietor will:

i. keep the structure and works clean and free from silt, rubbish and debris

ii. maintain and repair at the sole expense of the registered proprietors the whole of the structure and works so that it functions in a safe and efficient manner.

II. For the purpose of ensuring observance of the covenant the Council may by its servants or agents at any reasonable time of the day and upon giving to the person against whom the covenant is enforceable not less than two days notice (but at any time without notice in the case of an emergency) enter the land and view the condition of the land and the state of construction maintenance or repair of the structure and works on the land.

III. The registered proprietors shall indemnify the Council and any adjoining land owners against any claims for damages arising from the failure of any component of the on-site stormwater detention (OSD), on-site stormwater retention/absorption (OSA), stormwater quality improvement device (SQID) and/or mechanical pump-out system, or failure to clean, maintain and repair the stormwater management system.

IV. By written notice the Council may require the registered proprietors to attend to any matter and to carry out such work within such time as the Council may require to ensure the proper and efficient performance of the structure and works and to that extent Section 88F(2) (a) of the Act is hereby agreed to be amended accordingly.

V. Pursuant to Section 88F(3) of the Act the authority shall have the following additional powers pursuant to this covenant:

i. In the event that the registered proprietor fails to comply with the terms of any written notice issued by the Council as set out above the Council or its authorised agents may enter the land with all necessary equipment and carry out any work which the Council in its discretion considers reasonable to comply with the said notice referred to in I hereof.

ii. The Council may recover from the registered proprietor in a Court of competent jurisdiction:

(a) Any expense reasonably incurred by it in exercising its powers under sub-paragraph i hereof. Such expense shall include reasonable wages for the Council's own employees engaged in effecting the said work, supervising the said work and administering the said work together with costs, reasonably estimated by the Council, for the use of machinery, tools and equipment in conjunction with the said work.

(b) Legal costs on an indemnity basis for issue of the said notices and recovery of the said costs and expenses together with the costs and expenses of registration of a covenant charge pursuant to Section 88F of the Act or providing any certificate required pursuant to Section 88G of the Act or obtaining any injunction pursuant to Section 88H of the Act.

VI. This covenant shall bind all persons who claim under the registered proprietors as stipulated in Section 88E(5) of the Act.

For the purposes of this covenant:

Structure and Works shall mean the on-site stormwater detention (OSD), on-site stormwater retention/absorption (OSA), stormwater quality improvement device (SQID) and/or mechanical pump-out system constructed on the land as set out in the plan annexed hereto and marked with the letter "A" or alternatively as detailed on the plans approved by the Principal Certifying Authority (INSERT ORGANISATION/COMPANY NAME): {INSERT CONSTRUCTION CERTIFICATE NUMBER AND DATE ISSUE BY PRINCIPAL CERTIFYING AUTHORITY, DRAWING NUMBER, DATE, REVISION NUMBER AND DESIGNER DETAILS} including all gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to temporarily detain stormwater on the land.

The Act means the Conveyancing Act 1919.

A copy of the construction certificate or complying development certificate is held on Council file “DA number” or “CDC number”.

Name of authority having the power to release, vary or modify the ‘Positive Covenant’ is City of Canada Bay Council.

Land Subdivision

A2 The Terms of Positive Covenant - Where a subdivision has been lodged and a Section 88B instrument created, then the following standard wording for the "The Terms of Positive Covenant" shall be used.

Terms of Positive Covenant referred to in the above-mentioned Plan

The registered proprietors covenant with the City of Canada Bay Council (Council) that they will maintain and repair the structure and works on the land in accordance with the following terms and conditions:

I. The registered proprietor will:

i. keep the structure and works clean and free from silt, rubbish and debris

ii. maintain and repair at the sole expense of the registered proprietors the whole of the structure and works so that it functions in a safe and efficient manner.

II. For the purpose of ensuring observance of the covenant the Council may by its servants or agents at any reasonable time of the day and upon giving to the person against whom the covenant is enforceable not less than two days notice (but at any time without notice in the case of an emergency) enter the land and view the condition of the land and the state of construction maintenance or repair of the structure and works on the land.

III. The registered proprietors shall indemnify the Council and any adjoining land owners against any claims for damages arising from the failure of any component of the on-site stormwater detention (OSD), on-site stormwater retention/absorption (OSA), stormwater quality improvement device (SQID) and/ or mechanical pump-out system, or failure to clean, maintain and repair the stormwater management system.

IV. By written notice the Council may require the registered proprietors to attend to any matter and to carry out such work within such time as the Council may require to ensure the proper and efficient performance of the structure and works and to that extent Section 88F(2) (a) of the Act is hereby agreed to be amended accordingly.

V. Pursuant to section 88F(3) of the Act the authority shall have the following additional powers pursuant to this covenant:

i. In the event that the registered proprietor fails to comply with the terms of any written notice issued by the Council as set out above the Council or its authorised agents may enter the land with all necessary equipment and carry out any work which the Council in its discretion considers reasonable to comply with the said notice referred to in I hereof.

ii. The Council may recover from the registered proprietor in a Court of competent jurisdiction:

(a) Any expense reasonably incurred by it in exercising its powers under sub-paragraph i hereof. Such expense shall include reasonable wages for the Council's own employees engaged in effecting the said work, supervising the said work and administering the said work together with costs, reasonably estimated by the Council, for the use of machinery, tools and equipment in conjunction with the said work.

(b) Legal costs on an indemnity basis for issue of the said notices and recovery of the said costs and expenses together with the costs and expenses of registration of a covenant charge pursuant to Section 88F of the Act or providing any certificate required pursuant to Section 88G of the Act or obtaining any injunction pursuant to Section 88H of the Act.

VI. This covenant shall bind all persons who claim under the registered proprietors as stipulated in Section 88E(5) of the Act.

For the purposes of this covenant:

Structure and Works shall mean the on-site stormwater detention (OSD), on-site stormwater retention/absorption (OSA), stormwater quality improvement device (SQID) and/or mechanical pump-out system constructed on the land as set out in the plan annexed hereto and marked with the letter "A" or alternatively as detailed on the plans

approved by the Principal Certifying Authority (INSERT ORGANISATION/COMPANY NAME): {INSERT CONSTRUCTION CERTIFICATE NUMBER AND DATE ISSUE BY PRINCIPAL CERTIFYING AUTHORITY, DRAWING NUMBER, DATE, REVISION NUMBER AND DESIGNER DETAILS} including all gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to temporarily detain stormwater on the land.

The Act means the Conveyancing Act 1919.

A copy of the construction certificate or complying development certificate is held on Council file “DA number” or “CDC number”.

Name of authority having the power to release, vary or modify the ‘Positive Covenant’ is City of Canada Bay Council.

Restriction on the Use of Land

Existing Allotments

A3 The Terms of Restriction on the Use of Land - Where there is no land subdivision (no Section 88B instrument required) then the following standard wording is to be used for the "The Terms of Restriction on the Use of Land" and attached with the standard NSW Department of Lands form 13RPA.

Terms of Restriction on the Use of Land
(Show full details of the Restriction)

The registered proprietors covenant with the City of Canada Bay Council (Council) that they will not:

I. Do any act, matter or thing which would prevent the structure and works from operating in an efficient manner.

II. Make any alterations or additions to the structure and works or allow any development within the meaning of the Environmental Planning and Assessment Act 1979 to encroach upon the structure and works without the express written consent of the authority.

III. This covenant shall bind all persons who claim under the registered proprietors as stipulated in Section 88E(5) of the Act.

For the purposes of this covenant:

Structure and Works shall mean the on-site stormwater detention (OSD), on-site stormwater retention/ absorption (OSA), stormwater quality improvement device (SQID) and/or mechanical pump-out system constructed on the land as set out in the plan annexed hereto and marked with the letter "A" or alternatively as detailed on the plans approved by the Principal Certifying Authority (INSERT ORGANISATION/ COMPANY NAME): {INSERT CONSTRUCTION CERTIFICATE NUMBER AND DATE ISSUE BY PRINCIPAL CERTIFYING AUTHORITY: {INSERT DA NUMBER, DRAWING NUMBER, DATE, REVISION NUMBER AND DESIGNER DETAILS} including all gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to temporarily detain stormwater on the land.

The Act means the Conveyancing Act 1919.

Name of Authority having the power to release, vary or modify the ‘Restriction’ is City of Canada Bay Council.

Land Subdivision

A4 The Terms of Restriction on the Use of Land - Where a subdivision has been lodged and a Section 88B instrument created, then the following standard wording for the "The Terms of Restriction on the Use of Land" shall be used.

Terms of Restriction on the Use of Land referred to in the above-mentioned Plan

The registered proprietor covenant with the City of Canada Bay Council (Council) in respect to the structure erected on the land described as "on-site stormwater detention system" (which expression includes all ancillary gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to temporarily detain stormwater) shown on plans approved by the Principal Certifying Authority: {INSERT DA NUMBER, DRAWING NUMBER, DATE, REVISION NUMBER AND DESIGNER DETAILS} (hereinafter called "the system").

The registered proprietors covenant with the City of Canada Bay Council (Council) that they will not:

I. Do any act, matter or thing which would prevent the structure and works from operating in an efficient manner.

II. Make any alterations or additions to the structure and works or allow any development within the meaning of the Environmental Planning and Assessment Act 1979 to encroach upon the structure and works without the express written consent of the authority.

III. This covenant shall bind all persons who claim under the registered proprietors as stipulated in Section 88E(5) of the Act.

For the purposes of this covenant:

Structure and Works shall mean the on-site stormwater detention (OSD), on-site stormwater retention/ absorption (OSA), stormwater quality improvement device (SQID) and/or mechanical pump-out system constructed on the land as set out in the plan annexed hereto and marked with the letter "A" or alternatively as detailed on the plans approved by the Principal Certifying Authority (INSERT ORGANISATION/ COMPANY NAME): {INSERT CONSTRUCTION CERTIFICATE NUMBER AND DATE ISSUE BY PRINCIPAL CERTIFYING AUTHORITY}, including all gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to temporarily detain stormwater on the land.

The Act shall mean the Conveyancing Act 1919.

Name of Authority having the power to release, vary or modify the ‘Restriction’ is City of Canada Bay Council.

Generic Letter for Seeking Easement on Adjoining Land

B1 The following generic letter can be used to seek easement/s from adjoining downstream properties.

Dear . . . . . .

I/we are proposing to redevelop our property at

. . . . . .

Before we can proceed with this proposal, Council has advised us that we need to seek a formal drainage easement (Council's preferred option) to convey the stormwater runoff from our property to the nearest downstream public stormwater drainage infrastructure or to a Council approved discharge point, being (street)

. . . . . .

This will require you to grant me/us a drainage easement through your property with all legal and survey costs for the creation of the easement being borne by us, together with any consideration for the use of your property as determined by an independent valuation or agreement.

(Attach independent valuation/agreement to this form)

The other alternative is to have the development of our site limited to a discharge rate nominated by Council to allow sufficient area between the house and our rear/side boundary next to your property to install an underground absorption system (if appropriate for this site) to spread and disperse the stormwater flows into the ground. Discharging our stormwater to the street frontage is not a preferred option for Council as this could severely impact on the capacity of the existing drainage system in the street.

As the runoff and seepage from this system may flow towards your property because of the slope of the land, the best solution would be to have a drainage system that will convey our stormwater to (street)

. . . . . .

You are advised that if Council determines that the only way for the drainage of stormwater is via an easement through your property, I/we may have to use Section 88K of the Conveyancing Act 1919 to request the Supreme Court to grant me/us the drainage easement.

This will probably result in legal expenses and time spent for both you and I/us.

Could you please indicate your position regarding this matter so that we can advise Council to enable our application to progress?

YES I/we are/are not willing to grant you a drainage easement.

NO I/we are not willing to grant you a drainage easement.

Signed . . . . . Dated . . . . . .

Intensity-Frequency-Duration Charts

Rhodes

Parameters Used		
2 year I 1 hr: 35.87 I 12 hr: 7.57 I 72 hr: 2.39		
50 year I 1 hr: 70.00 I 12 hr: 16.00 I 72 hr: 5.22		
Co-efficient G: 0.00	F2: 4.29	F50: 15.84

Average Recurrence Interval (ARI) in mm/hour

	Years								
Time	1	2	5	10	20	50	100	200	500
5 min	89.7	115	145	162	186	216	238	261	292
6 min	84.0	108	136	153	174	203	224	246	274
7 min	79.4	102	129	144	165	192	212	233	260
8 mins	75.4	96.5	122	137	157	182	202	221	247
9 mins	71.9	92.1	117	131	150	174	193	212	237
10 mins	68.8	88.2	112	126	144	167	185	203	227
12 mins	63.7	81.6	104	116	133	155	172	188	211
14 mins	59.4	76.2	96.9	109	125	145	161	176	197
15 mins	57.6	73.8	94.0	106	121	141	156	171	192
16 mins	55.9	71.7	91.2	102	117	137	151	166	186
18 mins	52.8	67.8	86.4	97.0	111	130	144	158	177
20 mins	50.2	64.4	82.1	92.3	106	123	137	150	168
25 mins	44.9	57.6	73.6	82.8	95.0	111	123	135	151
30 mins	40.8	52.5	67.1	75.5	86.6	101	112	123	138
40 mins	35.0	45.0	57.6	64.9	74.6	87.1	96.7	106	119
50 mins	30.9	39.8	51.0	57.5	66.1	77.3	85.9	94.5	106
1 hour	27.9	35.9	46.1	52.0	59.8	70.0	77.7	85.6	96.1
1.5 hours	21.7	28.0	36.2	40.9	47.2	55.4	61.6	67.9	76.4
2 hours	18.1	23.4	30.4	34.4	39.7	46.7	52.0	57.4	64.7
3 hours	14.0	18.1	23.7	26.9	31.1	36.7	40.9	45.2	51.1
4.5 hours	10.8	14.0	18.4	21.0	24.3	28.8	32.1	35.6	40.3
6 hours	9.0	11.7	15.4	17.6	20.4	24.2	27.1	30.0	34.0
9 hours	7.0	9.1	12.0	13.7	16.0	19.0	21.3	23.6	26.8
12 hours	5.8	7.6	10.0	11.5	13.5	16.0	18.0	20.0	22.7
15 hours	5.1	6.6	8.8	10.1	11.8	14.0	15.8	17.5	19.9
18 hours	4.5	5.9	7.9	9.1	10.6	12.6	14.2	15.8	17.9
24 hours	3.8	5.0	6.6	7.6	8.9	10.6	11.9	13.3	15.1
30 hours	3.3	4.3	5.8	6.7	7.8	9.3	10.4	11.6	13.2
36 hours	2.9	3.8	5.1	5.9	6.9	8.3	9.3	10.4	11.8
48 hours	2.4	3.2	4.3	4.9	5.8	6.9	7.8	8.7	9.9
72 hours	1.8	2.4	3.2	3.7	4.4	5.2	5.9	6.6	7.5

Concord West

Parameters Used		
2 year I 1 hr: 35.91 I 12 hr: 7.48 I 72 hr: 2.37		
50 year I 1 hr: 72.50 I 12 hr: 15.83 I 72 hr: 5.00		
Co-efficient G: 0.00	F2: 4.29	F50: 15.84

Average Recurrence Interval (ARI) in mm/hour

	Years								
Time	1	2	5	10	20	50	100	200	500
5 min	89.5	115	146	165	189	220	244	268	300
6 min	83.9	108	138	155	177	207	229	252	283
7 min	79.2	102	130	146	168	198	217	239	268
8 mins	75.2	96.6	124	139	160	187	207	228	255
9 mins	71.7	92.2	118	133	153	178	198	218	244
10 mins	68.7	88.3	113	127	146	171	190	209	235
12 mins	63.5	81.7	105	118	136	159	176	194	218
14 mins	59.3	76.3	98.0	111	127	149	165	182	205
15 mins	57.4	73.9	95.0	107	123	144	161	177	199
16 mins	55.7	71.7	92.3	104	120	140	156	172	193
18 mins	52.7	67.9	87.4	98.7	114	133	148	163	183
20 mins	50.1	64.5	83.1	93.9	108	127	141	155	175
25 mins	44.8	57.7	74.5	84.3	97.2	114	127	140	157
30 mins	40.7	52.5	68.0	77.0	88.8	104	116	128	144
40 mins	34.9	45.0	58.4	66.3	76.5	90.0	100	111	125
50 mins	30.8	39.8	51.8	58.8	67.9	80.0	89.2	98.5	111
1 hour	27.8	35.9	46.8	53.2	61.5	72.5	80.9	89.4	101
1.5 hours	21.6	28.0	36.6	41.6	48.2	56.9	63.6	70.3	79.5
2 hours	18.0	23.4	30.6	34.9	40.4	47.8	53.4	59.1	66.9
3 hours	13.9	18.1	23.7	27.1	31.5	37.2	41.6	46.2	52.3
4.5 hours	10.7	13.9	18.4	21.0	24.4	29.0	32.4	36.0	40.8
6 hours	8.9	11.6	15.3	17.6	20.4	24.3	27.2	30.2	34.2
9 hours	6.9	9.0	11.9	13.6	15.9	18.9	21.2	23.5	26.7
12 hours	5.7	7.5	9.9	11.4	13.3	15.8	17.8	19.8	22.5
15 hours	5.0	6.5	8.7	10.0	11.6	13.8	15.5	17.3	19.6
18 hours	4.5	5.9	7.8	8.9	10.4	12.4	13.9	15.5	17.6
24 hours	3.8	4.9	6.5	7.5	8.7	10.4	11.7	13.0	14.7
30 hours	3.3	4.3	5.7	6.5	7.6	9.0	10.1	11.3	12.8
36 hours	2.9	3.8	5.1	5.8	6.8	8.0	9.0	10.0	11.4
48 hours	2.4	3.2	4.2	4.8	5.6	6.7	7.5	8.3	9.4
72 hours	1.8	2.4	3.1	3.6	4.2	5.0	5.6	6.2	7.1

North Strathfield

Parameters Used		
2 year I 1 hr: 37.60 I 12 hr: 7.71 I 72 hr: 2.45		
50 year I 1 hr: 77.00 I 12 hr: 16.20 I 72 hr: 5.03		
Co-efficient G: 0.00	F2: 4.29	F50: 15.85

Average Recurrence Interval (ARI) in mm/hour

	Years								
Time	1	2	5	10	20	50	100	200	500
5 min	93.3	120	152	171	196	228	252	277	310
6 min	87.5	112	143	161	184	215	238	261	293
7 min	82.6	106	135	152	175	204	226	248	278
8 mins	78.4	101	129	145	166	194	215	236	265
9 mins	74.8	96.1	123	138	159	186	206	227	254
10 mins	71.6	92.1	118	133	153	178	198	218	244
12 mins	66.3	85.2	109	123	142	166	184	203	228
14 mins	61.8	79.6	102	116	133	156	173	190	214
15 mins	59.9	77.2	99.3	112	129	151	168	185	208
16 mins	58.2	74.9	96.4	109	125	147	163	180	202
18 mins	55.0	70.9	91.4	103	119	140	155	171	192
20 mins	52.3	67.4	87.0	98.4	113	133	148	163	184
25 mins	46.7	60.3	78.1	88.5	102	120	134	147	166
30 mins	42.5	54.9	71.3	80.8	93.4	110	122	135	152
40 mins	36.4	47.1	61.4	69.8	80.7	95.1	106	117	132
50 mins	32.2	41.7	54.5	62.0	71.8	84.8	94.7	105	118
1 hour	29.0	37.6	49.3	56.2	65.2	77.0	86.1	95.3	108
1.5 hours	22.5	29.2	38.4	43.8	50.8	60.1	67.2	74.5	84.3
2 hours	18.8	24.4	32.0	36.5	42.4	50.2	56.2	62.3	70.5
3 hours	14.5	18.8	24.7	28.3	32.8	38.9	43.5	48.3	54.7
4.5 hours	11.1	14.5	19.1	21.8	25.4	30.1	33.7	37.4	42.4
6 hours	9.2	12.0	15.9	18.2	21.1	25.1	28.1	31.2	35.4
9 hours	7.1	9.3	12.3	14.0	16.4	19.4	21.8	24.2	27.4
12 hours	5.9	7.7	10.2	11.7	13.6	16.2	18.2	20.2	22.9
15 hours	5.2	6.7	8.9	10.2	11.9	14.1	15.8	17.6	20.0
18 hours	4.6	6.0	8.0	9.1	10.6	12.6	14.2	15.7	17.8
24 hours	3.9	5.1	6.7	7.7	8.9	10.6	11.8	13.1	14.9
30 hours	3.4	4.4	5.8	6.7	7.7	9.2	10.3	11.4	12.9
36 hours	3.0	3.9	5.2	5.9	6.9	8.2	9.1	10.1	11.5
48 hours	2.5	3.3	4.3	4.9	5.7	6.7	7.5	8.3	9.5
72 hours	1.9	2.4	3.2	3.7	4.3	5.0	5.6	6.2	7.1

Mortlake - Breakfast Point - Cabarita

Parameters Used		
2 year I 1 hr: 37.17 I 12 hr: 7.61 I 72 hr: 2.43		
50 year I 1 hr: 72.50 I 12 hr: 16.00 I 72 hr: 5.15		
Co-efficient G: 0.00	F2: 4.29	F50: 15.85

Average Recurrence Interval (ARI) in mm/hour

	Years								
Time	1	2	5	10	20	50	100	200	500
5 min	92.7	118	149	167	190	220	243	266	297
6 min	86.9	111	140	157	179	207	229	250	279
7 min	82.1	105	132	148	169	196	217	237	265
8 mins	78.0	99.7	126	141	161	187	206	226	252
9 mins	74.4	95.1	120	135	154	179	197	216	241
10 mins	71.2	91.1	115	129	147	171	189	207	232
12 mins	65.9	84.3	107	120	137	159	176	193	215
14 mins	61.5	78.8	99.9	112	128	149	165	181	202
15 mins	59.6	76.3	96.9	109	124	145	160	175	196
16 mins	57.8	74.1	94.1	105	121	140	155	171	191
18 mins	54.7	70.1	89.1	99.9	114	133	147	162	181
20 mins	52.0	66.6	84.8	95.1	109	127	140	154	173
25 mins	46.5	59.6	76.0	85.4	97.9	114	126	139	155
30 mins	42.3	54.3	69.3	77.9	89.4	104	116	127	142
40 mins	36.2	46.6	59.6	67.1	77.1	90.0	99.8	110	123
50 mins	32.0	41.2	52.8	59.5	68.4	80.0	88.8	97.7	110
1 hour	28.9	37.2	47.7	53.9	61.9	72.5	80.5	88.6	99.6
1.5 hours	22.4	28.9	37.3	42.2	48.6	57.0	63.4	69.9	78.7
2 hours	18.6	24.1	31.2	35.3	40.8	47.9	53.4	58.9	66.4
3 hours	14.3	18.6	24.2	27.4	31.7	37.4	41.7	46.1	52.0
4.5 hours	11.0	14.3	18.7	21.3	24.7	29.2	32.6	36.1	40.8
6 hours	9.1	11.9	15.6	17.8	20.7	24.4	27.3	30.3	34.3
9 hours	7.0	9.2	12.1	13.8	16.1	19.1	21.4	23.7	26.9
12 hours	5.8	7.6	10.1	11.6	13.5	16.0	17.9	19.9	22.6
15 hours	5.1	6.7	8.8	10.1	11.8	14.0	15.7	17.5	19.8
18 hours	4.6	6.0	7.9	9.1	10.6	12.6	14.1	15.7	17.8
24 hours	3.9	5.0	6.7	7.6	8.9	10.6	11.9	13.2	15.0
30 hours	3.4	4.4	5.8	6.7	7.8	9.2	10.3	11.5	13.1
36 hours	3.0	3.9	5.2	5.9	6.9	8.2	9.2	10.3	11.7
48 hours	2.5	3.2	4.3	4.9	5.7	6.8	7.7	8.5	9.7
72 hours	1.9	2.4	3.2	3.7	4.3	5.1	5.8	6.4	7.3

Concord East - Canada Bay

Parameters Used		
2 year I 1 hr: 37.27 I 12 hr: 7.70 I 72 hr: 2.40		
50 year I 1 hr: 75.00 I 12 hr: 16.00 I 72 hr: 5.00		
Co-efficient G: 0.00	F2: 4.29	F50: 15.85

Average Recurrence Interval (ARI) in mm/hour									
	Years								
Time	1	2	5	10	20	50	100	200	500
5 min	92.7	119	151	169	193	225	248	272	305
6 min	86.9	111	141	159	182	211	234	257	287
7 min	82.1	105	134	150	172	200	222	243	272
8 mins	77.9	99.9	127	143	164	191	211	232	260
9 mins	74.3	95.4	122	137	157	183	202	222	249
10 mins	71.2	91.3	117	131	150	175	194	213	239
12 mins	65.8	84.5	108	122	139	163	181	198	223
14 mins	61.4	79.0	101	114	131	153	169	186	209
15 mins	59.5	76.5	98.0	110	127	148	164	181	203
16 mins	57.8	74.3	95.2	107	123	144	160	176	197
18 mins	54.6	70.3	90.2	102	117	137	152	167	188
20 mins	51.9	66.8	85.8	96.8	111	130	145	159	179
25 mins	46.4	59.8	77.0	87.0	100	117	130	144	162
30 mins	42.2	54.4	70.3	79.4	91.5	107	119	132	148
40 mins	36.2	46.7	60.5	68.5	79.0	92.9	103	114	129
50 mins	32.0	41.3	53.6	60.8	70.3	82.7	92.1	102	115
1 hour	28.8	37.3	48.5	55.1	63.7	75.0	83.6	92.4	104
1.5 hours	22.4	29.0	37.8	43.0	49.8	58.7	65.5	72.4	81.8
2 hours	18.7	24.2	31.6	35.9	41.6	49.1	54.8	60.7	68.5
3 hours	14.4	18.7	24.4	27.8	32.3	38.1	42.6	47.1	53.3
4.5 hours	11.1	14.4	18.9	21.5	25.0	29.5	33.0	36.6	41.4
6 hours	9.2	12.0	15.7	18.0	20.9	24.7	27.6	30.6	34.6
9 hours	7.1	9.2	12.2	13.9	16.2	19.1	21.4	23.8	26.9
12 hours	5.9	7.7	10.2	11.6	13.5	16.0	17.9	19.9	22.5
15 hours	5.2	6.7	8.9	10.1	11.8	14.0	15.6	17.4	19.7
18 hours	4.6	6.0	7.9	9.1	10.5	12.5	14.0	15.5	17.6
24 hours	3.9	5.0	6.6	7.6	8.8	10.5	11.7	13.0	14.7
30 hours	3.4	4.4	5.8	6.6	7.7	9.1	10.2	11.3	12.8
36 hours	3.0	3.9	5.1	5.9	6.8	8.1	9.1	10.0	11.4
48 hours	2.5	3.2	4.2	4.8	5.6	6.7	7.5	8.3	9.4
72 hours	1.8	2.4	3.2	3.6	4.2	5.0	5.6	6.2	7.0

Five Dock - Rodd Point

Parameters Used		
2 year I 1 hr: 38.64 I 12 hr: 7.78 I 72 hr: 2.43		
50 year I 1 hr: 77.50 I 12 hr: 16.20 I 72 hr: 5.00		
Co-efficient G: 0.00	F2: 4.29	F50: 15.85

Average Recurrence Interval (ARI) in mm/hour									
	Years								
Time	1	2	5	10	20	50	100	200	500
5 min	95.9	123	155	173	197	229	253	277	309
6 min	89.9	115	145	163	186	216	238	261	291
7 min	84.9	109	138	154	176	204	226	248	277
8 mins	80.7	103	131	147	168	195	215	236	264
9 mins	77.0	98.6	125	140	160	187	206	226	253
10 mins	73.7	94.4	120	134	154	179	198	217	243
12 mins	68.2	87.4	111	125	143	167	185	203	227
14 mins	63.6	81.7	104	117	134	156	173	190	213
15 mins	61.7	79.2	101	114	130	152	168	185	207
16 mins	59.8	76.8	98.1	110	127	148	164	180	202
18 mins	56.6	72.7	93.0	105	120	140	155	171	192
20 mins	53.8	69.1	88.5	99.7	114	134	148	163	183
25 mins	48.1	61.9	79.5	89.6	103	121	134	147	165
30 mins	43.8	56.4	72.6	81.9	94.3	110	123	135	152
40 mins	37.5	48.4	62.5	70.7	81.5	95.7	106	117	132
50 mins	33.2	42.8	55.5	62.9	72.6	85.3	95.0	105	118
1 hour	29.9	38.6	50.2	57.0	65.8	77.5	86.4	95.4	108
1.5 hours	23.2	30.0	39.0	44.3	51.3	60.4	67.4	74.5	84.1
2 hours	19.2	24.9	32.5	37.0	42.8	50.5	56.3	62.3	70.4
3 hours	14.8	19.1	25.0	28.5	33.1	39.0	43.6	48.3	54.6
4.5 hours	11.3	14.7	19.3	22.0	25.5	30.2	33.7	37.4	42.3
6 hours	9.4	12.2	16.0	18.3	21.2	25.1	28.1	31.1	35.3
9 hours	7.2	9.4	12.3	14.1	16.4	19.4	21.8	24.1	27.3
12 hours	6.0	7.8	10.3	11.7	13.7	16.2	18.1	20.1	22.8
15 hours	5.2	6.8	9.0	10.2	11.9	14.1	15.8	17.5	19.9
18 hours	4.7	6.1	8.0	9.2	10.6	12.6	14.1	15.7	17.8
24 hours	3.9	5.1	6.7	7.7	8.9	10.5	11.8	13.1	14.8
30 hours	3.4	4.4	5.8	6.6	7.7	9.1	10.2	11.4	12.9
36 hours	3.0	3.9	5.2	5.9	6.9	8.1	9.1	10.1	11.4
48 hours	2.5	3.2	4.3	4.9	5.7	6.7	7.5	8.3	9.4
72 hours	1.9	2.4	3.2	3.6	4.2	5.0	5.6	6.2	7.0

Drummoyne - Chiswick - Abbotsford - Wareemba - Russell Lea

Parameters Used		
2 year I 1 hr: 39.13 I 12 hr: 8.00 I 72 hr: 2.50		
50 year I 1 hr: 80.00 I 12 hr: 16.83 I 72 hr: 5.35		
Co-efficient G: 0.00	F2: 4.29	F50: 15.86

Average Recurrence Interval (ARI) in mm/hour									
	Years								
Time	1	2	5	10	20	50	100	200	500
5 min	96.9	124	157	176	201	233	258	283	316
6 min	90.8	116	148	165	189	220	243	267	298
7 min	85.8	110	140	157	179	209	231	253	283
8 mins	81.5	104	133	149	171	199	220	242	271
9 mins	77.7	99.7	127	143	163	191	211	232	260
10 mins	74.4	95.5	122	137	157	183	203	223	250
12 mins	68.8	88.4	113	127	146	170	189	208	233
14 mins	64.3	82.6	106	119	137	160	178	195	219
15 mins	62.3	80.1	103	116	133	155	173	190	213
16 mins	60.4	77.8	99.8	112	129	151	168	185	208
18 mins	57.2	73.6	94.6	107	123	144	160	176	197
20 mins	54.3	70.0	90.1	102	117	137	152	168	189
25 mins	48.6	62.7	80.9	91.5	106	124	138	152	171
30 mins	44.2	57.1	73.9	83.7	96.6	114	126	140	157
40 mins	37.9	49.0	63.7	72.4	83.7	98.5	110	121	137
50 mins	33.5	43.3	56.6	64.4	74.6	88.0	98.2	109	123
1 hour	`30.2	39.1	51.2	58.4	67.7	80.0	89.4	99.0	112
1.5 hours	23.4	30.4	39.9	45.5	52.8	62.4	69.8	77.4	87.5
2 hours	19.5	25.3	33.3	38.0	44.1	52.2	58.4	64.7	73.3
3 hours	15.0	19.5	25.7	29.4	34.1	40.4	45.2	50.2	56.8
4.5 hours	11.6	15.0	19.8	22.7	26.4	31.3	35.0	38.8	44.0
6 hours	9.6	12.5	16.5	18.9	22.0	26.1	29.2	32.4	36.8
9 hours	7.4	9.6	12.7	14.6	17.0	20.2	22.6	25.1	28.5
12 hours	6.1	8.0	10.6	12.2	14.2	16.8	18.9	21.0	23.8
15 hours	5.4	7.0	9.3	10.6	12.4	14.7	16.5	18.4	20.9
18 hours	4.8	6.2	8.3	9.5	11.1	13.2	14.8	16.5	18.7
24 hours	4.0	5.2	6.9	8.0	9.3	11.1	12.4	13.8	15.7
30 hours	3.5	4.5	6.0	6.9	8.1	9.6	10.8	12.0	13.7
36 hours	3.1	4.0	5.4	6.2	7.2	8.6	9.6	10.7	12.2
48 hours	2.6	3.3	4.4	5.1	6.0	7.1	8.0	8.9	10.1
72 hours	1.9	2.5	3.3	3.8	4.5	5.3	6.0	6.7	7.6

Rhodes Peninsula Site Specific Requirements

Minimum Standards

MS1 General - The minimum engineering standards given in this Appendix applies to all proposed developments in the Rhodes Peninsular area.

The general standards given in the main body of this Engineering Development Control Plan will still apply where no reference or detail is given in this Appendix.

Shared Paths

SP1 Shared cycle ways and footpaths - shared cycle ways and footpaths shall be provided in all public domain areas. They shall be constructed to the following standards:

- Wearing surface material shall be of concrete 100mm thick, 32MPa compressive strength and reinforced with F72 mesh placed centrally.
- Concrete pavement shall be of uniform colour to match existing area. Coloured black oxide may be used.
- Concrete pavement to have keyed or dowelled joints at 12 metre centres. Control joints shall be saw cut at 3 metre intervals as soon as the concrete has set sufficiently as to not pull stones when cutting.
- Concrete pavement shall be laid on a 20mm sand blinding layer on a compacted sub-grade in accordance with the ***AUSPEC*** specification.
- Concrete pavement shall be finished with a coving trowel.

Seawalls

SE1 Serviceability Level - Seawalls shall be constructed to a serviceable level in accordance with the Australian Standards for Marine Structures.

SE2 Sea Level Rise - Seawalls shall be designed and constructed to withstand a 1 in 100 year ARI storm event with no overtopping inclusive of additional height of 900mm to account for sea level rise.

Jetty

JE1 Prohibited - Jetties or similar structures are prohibited.

Council is unable to maintain and renew jetties due to financial constraints.

Street Lighting

ST1 Design Requirements - All street lights shall be designed and installed to the requirements, specification and approval of Energy Australia.

All street lights are to be connected to the Energy Australia street lighting network.

ST2 Maintenance - All lighting and associated electrical components shall be designed to a public standard.

Energy Australia shall be responsible for the maintenance and continual future maintenance of all street lights.

ST3 Meters and Switch Boards - meters, switch boards and the like shall be separate from any private system and located wholly within land proposed to be dedicated as public domain in the future.

Park Lighting

PL1 Lighting Type - 'Bega Pole 8682 Lights' or equivalent are acceptable.

PL2 Prohibited - Bollard lighting, solar lighting or similar will not be acceptable.

Council has found that the high vandalism and unreliability of these lights makes them unsustainable.

Tree Planting

TP1 General - Refers to tree planting in road carriageways and footways in general.

TP2 Street Trees - Street trees generally shall be planted within a square reinforced concrete cut-off wall as a structural root barrier. Approved synthetic root barrier systems or equivalent may be used in footway areas (pedestrian access areas only).

Where street trees are to be planted in road carriageways (pavement area subject to vehicular loads), it shall be planted within a square reinforced concrete cut-off wall only.

The root barriers shall be extended 300mm below the road pavement. The purpose of the root barriers is to protect the road pavement from moisture and root ingress.

Design Life of all Structures

DL1 General - All public infrastructure shall be designed and selected to provide the least lifecycle costs with respect to maintenance and renewal of the infrastructure throughout its entire serviceable life.

DL2 Seawalls - Seawalls shall be designed and constructed for a minimum design life of 100 years in accordance with the Australian Standards for Marine Structures.

DL3 Road Pavements - All new road pavements shall be designed for a service life of not less than 40 years. Refer Section ***Road Carriageway***

Civic Signage

SG1 General - All signage shall be designed and installed in accordance with Canada Bay Council's Signage Manual.

Garbage Bins

GR1 General - All garbage bins shall be minimum 240 Litres wheelie bin type and housed in stainless steel and timber surround (model no. EM235 Bennelong Bin Enclosures by Emerdyn Pty Ltd).

Stormwater Drainage

SD1 General - Stormwater drainage systems shall be designed generally in accordance with Section ***Stormwater Management***.

SD2 On-site Stormwater Detention - On-site stormwater detention (OSD) shall be required for all proposed development allotments unless drainage from the developed site is discharged directly into the Bay, or that the street trunk drainage system has been designed to cater for the 1 in 100 year ARI storm event.

Where OSD is required, the permissible site discharge shall be based on a "greenfields" site with an impervious area of 0%.

SD3 Sub-surface Water - Sub-surface water collected from basements and all lowered floor areas shall not be discharged directly to the kerb. Refer to Section 3 ***Stormwater Management***, ***Sub-surface Water*** for further guidelines.

SD4 Scour and Erosion Control - Refer to Section 3 ***Stormwater Management*** for further guidelines.

Road Pavement

RP1 General - All new road pavements shall be designed for a minimum 2.5 x 10^6 ESA.

RP2 California Bearing Ratio - Testing shall be undertaken to obtain CBR values for pavement design.

The CBR value shall be obtained using the four (4) day soak test with the standard procedure adopted by the RMS.

RP3 Wearing Surface - Road pavement wearing surface shall be constructed as flexible or rigid to match existing pavements or as approved by Council.

Works as Executed Drawings and Asset Data

WAE1 Works-As-Executed Drawings - Prior to handing over land or assets to Council, the developer is to provide Works-As-Executed drawings prepared and certified by a registered surveyor.

The plans are to be provided in the form of:

- A1 size pdf drawings suitable for archiving (vector based, not raster) and
- A vector format suitable for importing into Council's Land Information Systems (MapInfo) or Cad systems (AutoCAD).

WAE2 Detailed Asset Data - Prior to handing over land or assets to Council, the developer is to provide detailed asset data at a component level for importation into Council's Asset Management System.

Information required will depend on the components and the developer should submit a component list to Council for further advice.

The following list is representative of what would be required:

- A vector representation of the component and its location on MGA94 coordinates linked to:
  - Description.
  - Material details.
  - Design life.
  - Installation date.
  - Acquisition date.
  - Dimensional and quantity information where it is not defined by the graphic object (e.g. The length of a pipe can be represented by the length of a line object on the plan. A data value representing the diameter needs to be attached to that line object. The area of a segment of road can be defined by a polygon. A data value representing the pavement depth needs to be attached to the polygon.)
  - Valuation at installation date.

It is recommended that these requirements be considered at the design documentation stage.

For more complex and proprietary items, for example pumps or lighting systems, the developer shall provide to Council's satisfaction details of Brand, Model, Supplier, Warranty, Installation Guide, User Guide, Safety Instructions, Servicing Record, Maintenance Manual, Keys etc as appropriate.

Community Land

CL1 Plan of Management - This Section provides a guideline for the preparation of a Plan of Management for open space land which will be transferred to Council as community land.

CL2 The Local Government Act - The ***Local Government Act 1993*** emphasises that Plans of Management should be prepared for all community land for which Council will be responsible to ensure land it owns or controls is actively and effectively managed.

CL3 Description of Use - The Plan of Management should describe how public land will be managed, maintained and utilised, who is responsible for its management, its facilities and the uses and activities that occur there.

CL4 Status - The plan should show the status of each park or reserve and the planning of each, meet the other requirements of the Act pertaining to community land management, have informed the community based on a consultative process and establish a framework for meeting community needs regarding open space.

CL5 Strategic Document - The plan would be a strategic document with prioritised actions which give Council flexibility to develop strategies consistent with the objectives identified in its Management Plan.

CL6 Development of Opportunities - The plan should also enable Council to take advantage of any opportunities that arise during the life of the plan that enable implementation of the strategies in ways that may be more cost-effective, more time efficient, or in some other way provide benefits that were unavailable or not recognised during preparation of the plan.

Strathfield Triangle Site Specific Requirements

Minimum Standards

MS1 General - The minimum engineering standards given in this Appendix applies to all proposed developments in the North Strathfield area otherwise known as the Strathfield Triangle.

The general standards given in the main body of this Engineering Specification will still apply where no reference or detail is given in this Appendix.

This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.

STRATHFIELD TRIANGLE

GENERAL NOTES

1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer
2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
3. Make smooth connection with all existing works.
4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
6. For all temporary batters refer to geotechnical recommendations.

REFERENCE DRAWINGS

1. These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
BYRNE	SURVEY	1021705	E	27.11.15
SILK	LANDSCAPE	L-001	C	17.06.16
STONE	STRATHFIELD_20160621	–	–	21.06.16
TTPA	w_strathfield	DS0000	A	16.02.16

STORMWATER DRAINAGE NOTES

1 Stormwater Design Criteria :
- (A) Average recurrence interval –
  1:100 years for roof drainage to first external pit
  1:20 years for paved and landscaped areas
- (B) Rainfall Intensities –
  Time of concentration: 6 minutes
  1:100 years = 233 mm/hr
  1:20 years = 181 mm/hr
- (C) Runoff coefficients –
  Roof areas: Cxa = 1.00
  Roads and paved areas: Cxa = 0.95
  Landscaped areas: Cxa = 0.68

2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O.
3. Pipes up to 300 dia shall be sewer grade uPVC with solvent welded joints.
4. Equivalent strength VCP or FRP pipes may be used subject to approval.
5. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
6. Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.
7. Grates and covers shall conform with AS 3996–2006, and AS 1428.1 for access requirements.
8. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
9. Care is to be taken with levels of stormwater lines. Grades shown are not to be reduced without approval.
10. All stormwater pipes to be 150 dia at 1.0% min fall U.N.O.
11. Subsoil drains to be slotted flexible uPVC U.N.O. class 1000
12. Adopt invert levels for pipe installation (grades shown are only nominal).

SITEWORKS NOTES

1. All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified dry density in accordance with AS 1289 5.2.1.
2. All trench backfill material shall be compacted to the same density as the adjacent material.
3. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1

BOUNDARY AND EASEMENT NOTE

The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from : BYRNE & ASSOCIATES
Al–1021705

Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct.
Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels : SSM 91103 RL 16.66
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : MGA
Survey prepared by : BYRNE & ASSOCIATES
Setout Points : CONTACT THE SURVEYOR

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.
Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

PAVEMENT LEGEND

NOTES
1. Asphaltic concrete shall conform to AS2150 and the specification
2. Pavement based on geotechnical report by J&K GEOTECHNICS 28855rpt 17.12.15

P1 — 50mm Thickness asphaltic concrete (AC10) with AMC1 binder on 150mm Compacted thickness fine crushed rock (DGB20) on 350mm Compacted thickness fine crushed rock (DGS40)

P2 — 50mm mill existing pavement and replace with 50mm Thickness asphaltic concrete (AC10) with AMC1 binder TO RMS SPECIFICATION

P3 — 100mm Thickness concrete (f'c=32MPa) with SL62 fabric and expansion joints at max 6.0m centres and weakened plane joints at max 1.5m centres on 100mm Compacted thickness fine crushed rock (DGB20)

P4 — 150mm Thickness concrete (f'c=32MPa) with SL82 fabric (40 top cover) on 100mm Compacted thickness fine crushed rock (DGB 20)

P5 — 80mm ECOTHREK Pavers with 3mm stone in voids on 30mm Sandbedding on 200mm Filter material (crushed hard rock or natural gravel) with grading in accordance with the specification section 5.3.5 – subsoil drains on 100mm Lean mix concrete on 100mm Compacted thickness fine crushed rock (DGB20) on Subgrade compacted to 98% SMDD

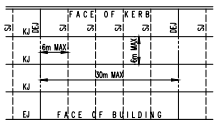
P6 — 100mm Thickness concrete (f'c=32MPa) with SL62 fabric finished to SILK drawings with expansion joints at max 6.0m centres and weakened plane joints at max 1.5m centres on 100mm Compacted thickness fine crushed rock (DGB20)

P7 — Pavers as per SILK drawings on 30mm Thickness mortar on 100mm Thickness concrete (f'c=32MPa) with SL62 fabric and expansion joints at max 6.0m centres and weakened plane joints at max 1.5m centres on 100mm Compacted thickness fine crushed rock (DGB20)

JOINTING NOTES

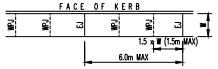
Vehicular Pavement Jointing

1. Keyed construction joints should generally be located at a maximum of 6m centres.
2. Saw joints should generally be located at a maximum of 6m centres or 1.5 x the spacing of keyed joints, where key joint spacing is less than 4m, with doweled expansion joints at maximum of 30m centres.
3. Provide 10mm wide full cork depth expansion joints between buildings and all concrete or unit pavers.
4. The timing of the saw cut is to be confirmed by the contractor on site. Site conditions will determine how many hours after the concrete pour before the saw cuts are commenced. Refer to the specification for weather conditions and temperatures required.
5. Vehicular pavement jointing as follows.



Pedestrian Footpath Jointing

1. Expansion joints are to be located where possible at tangent points of curves and elsewhere at max 6.0m centres.
2. Weakened plane joints are to be located at a max 1.5 x width of the pavement.
3. Where possible joints should be located to match kerbing and / or adjacent pavement joints.
4. All pedestrian footpath jointings as follows (uno).



CONCRETE NOTES

EXPOSURE CLASSIFICATION : External : B1

CONCRETE

Place concrete of the following characteristic compressive strength f'c as defined in AS 1379.

Location	AS 1379 f'c MPa at 28 days	Specified Slump	Nominal Agg. Size
FOOTPATHS	N25	80	20
KERBS	N20	80	20
VEHICLE PAVEMENTS	SF25 (4.0MPa at 10 days)	80	20

1. Use Type "GP" cement, unless otherwise specified.
2. All concrete shall be subject to project assessment and testing to AS 1379.
3. Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
4. For all fails in slab, drip grooves, regiets, chamfers etc. refer to Architects drawings and specifications.
5. Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
6. No holes or chases shall be made in the slab without the approval of the Engineer.
7. Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
8. Slurry used to lubricate concrete pump lines is not to be used in any structural members.

FORMWORK

1. The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

KERBING NOTES

Includes all kerbs, gutters, dish drains, crossings and edges.

1. All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
2. Expansion joints (E/J) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
3. Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
4. Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
5. In the replacement of kerbs –
   Existing road pavement is to be sawcut 500mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 500mm wide to match existing materials and thicknesses.
   Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole.
   Existing kerbs are to be completely removed where new kerbs are shown.

SAFETY IN DESIGN

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practically possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practically possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions.
Refer to geotechnical report by J&K GEOTECHNICS 17.12.15 for details.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practises as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by J&k GEOTECHNICS 17.12.15 for details.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods, use appropriate PPE when entering confined spaces and be licenced.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

SITE ACCESS/EGRESS

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshall to supervise vehicle movements where necessary.

SIGNS AND LINE MARKING NOTES

1. Pavement marking and sign posting to be in accordance with RMS. 'Interim Guide to Signs and Markings'.
2. Contractor is to provide guide posts, spaced in accordance with AS1742.2. They are to be located near all head walls and pipe outlets.
3. Raised pavement markers to be in accordance with AS1742.2
4. Where existing pavement marking conflicts with proposed, it is to be removed.
5. Line marking plan does not define boundaries.
6. Erect temporary sign 'changed traffic conditions ahead' 120m ahead of new work in both directions.
7. Establish the location of existing utility services and locate new signs clear of these installations.
8. The sloped face of the SF median kerbs which adjoin through lanes, are to be painted white in lieu of an E3 edge line. The reflective pavement markers normally associated with an E3 edge line are to be located on the pavement adjacent to the SF kerb.
9. Bicycle pavement markings and sign posting to be in accordance with Austroads Standards.
10. The design of major directional sign posting to be prepared and assessed by the RMS.

CONCRETE FINISHING NOTES

1. All exposed concrete pavements are to be broomed finished.
2. All edges of the concrete pavement including keyed and doweled joints are to be finished with an edging tool.
3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
4. Carborundum to be added to all stair treads and ramped crossings U.N.O.

BULK EARTHWORKS NOTES

1. All bulk earthworks setout from grid lines U.N.O.
2. All batters at a slope of 3 (H) : 1 (V) U.N.O.
3. Excavated material may be used as structural fill provided,
   (i) It complies with the specification requirements for fill material,
   (ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements.
4. Compact fill areas and subgrade to not less than:

Location	Standard dry density (AS 1289 5.1.1.)	Moisture (OMC)
Under building slabs on ground:	98%	±2%
Under roads and carparks:	98%	±2%
Landscaped areas:	95%	±2%

5. Before placing fill, proof roll exposed subgrade with a 10 tonne minimum roller to test subgrade and then remove soft spots (areas with more than 3mm movement under roller). Soft spots to be replaced with select fill U.N.O.
6. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
7. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
8. Bulk earthwork drawings are not to be used for detailed excavation.
9. Refer to Geotechnical Report prepared by – J&k GEOTECHNICS 28855rpt 17.12.15

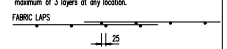
REINFORCEMENT NOTES

1. Fix reinforcement as shown on drawings. The type and grade is indicated by a symbol as shown below. On the drawings this is followed by a numeral which indicates the size in millimetres of the reinforcement.

N.	Hot rolled ribbed bar	grade D500N
R.	Plain round bar	grade R250N
SL.	Square mesh	grade 500L
RL.	Rectangular mesh	grade 500L

2. Provide bar supports or spacers to give the following concrete cover to all reinforcement unless otherwise noted on drawings.

Footings – 75 top, 75 bottom, 75 sides.
Slabs – 40 top, 40 bottom,
Cover to reinforcement ends to be 50 mm u.n.o.
3. Provide N12–450 support bars to top reinforcement as required, Lap 500 U.N.O.
4. Maintain cover to all pipes, conduits, regiets, drip grooves etc
5. All cogs to be standard cogs unless noted otherwise.
6. Fabric end and side laps are to be placed strictly in accordance with the manufacturers requirements to achieve a full tensile lap. Fabric shall be laid so that there is a maximum of 3 layers at any location.



PIT SCHEDULE

Note: Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheet – C11
Final internal pit dimensions are to comply with AS3500

Type	Description	Cover (Clear Opening)	Number
A	Kerb inlet pit 1800 lintel	600 x 900 Class D galvanised mild steel grate hinged to frame	1,2,16,17,18, 19,21,22,23, 24,25,26,27, 28,29,30,31, 32,33,36
B	Surface inlet pit	900 x 900 Class D galvanised mild steel grate hinged to frame	3,4,5,6,7,9 10,11,13,14 34
C	Surface inlet pit	900 x 900 Class D galvanised mild steel grate hinged to frame	12
		900 x 900 Class D galvanised mild steel grate with concrete infill	35
D	Surface inlet pit	900 x 900 Class D galvanised mild steel 'V' grate hinged to frame	8,20
E		Adjust existing pit to suit proposed works	37,38,39,40
F		Existing pit to remain	15

SITEWORKS LEGEND

- F22.20 — Finished surface level
- *F22.20 — Level to be confirmed on site
- F22.00 — Finished contour
- K&G — Kerb and gutter
- KO — Kerb only
- DD — Dish drain
- RK&T — Roll kerb and toe
- SA — RMS Kerb (SA)
- CE — Concrete edge
- Stormwater pit, flow direction and line with
- IR — Intermediate riser with subsoil drainage line (100 dia)
- FP — Flushing point with subsoil drainage line (100 dia)
- Proposed boundary
- Proposed conduits
- W — TAP — Top with proposed water line connection

EXISTING SEVICES LEGEND

- S — Existing sewer
- W — Existing water
- EU — Existing underground electrical
- OH — Existing aerial electrical
- T — Existing communications
- G — Existing gas
- SW — Existing stormwater

SURVEY LEGEND

- +18.48 — Surface level
- 19 — Contour
- Kerb line
- Batter
- Retaining wall
- EASEMENT FOR ____(__m WIDE) — Easement
- Fence
- Tree to be removed/be retained
- Boundary

DRAWING LIST

Drawing Number	Drawing Title
C00	NOTES AND LEGENDS SHEET
C01	SOIL AND EROSION CONTROL PLAN
C02	SITEWORKS PLAN SHEET 1
C03	SITEWORKS PLAN SHEET 2
C04	SITEWORKS PLAN SHEET 3
C05	SITEWORKS PLAN SHEET 4
C06	COOPER STREET LONGITUDINAL SECTION
C07	HILTS ROAD AND LEICSTER LANE LONGITUDINAL SECTION
C08	CLARENCE STREET LONGITUDINAL SECTION
C09	NOT USED
C10	DETAILS SHEET 1
C11	DETAILS SHEET 2
C12	SECTIONS SHEET 1
C13	SECTIONS SHEET 2
C14	SECTIONS SHEET 3
C15	KERB RETURNS SHEET
C16	COOPER STREET CROSS SECTIONS SHEET 1
C17	COOPER STREET CROSS SECTIONS SHEET 2
C18	HILTS ROAD AND LEICSTER LANE CROSS SECTIONS SHEET 1
C19	HILTS ROAD AND LEICSTER LANE CROSS SECTIONS SHEET 2
C20	CLARENCE STREET CROSS SECTIONS
C21	STORMWATER LONGITUDINAL SECTIONS SHEET 1
C22	STORMWATER LONGITUDINAL SECTIONS SHEET 2
C23	STORMWATER LONGITUDINAL SECTIONS SHEET 3
C24	STORMWATER LONGITUDINAL SECTIONS SHEET 4
C25	STORMWATER LONGITUDINAL SECTIONS SHEET 5

STEP IRONS REQUIRED FOR PITS DEEPER THAN 900mm

FOR WATER SUPPLY/MODIFICATION/AUGMENTATION WORKS CONTRACTOR IS TO ENGAGE SYDNEY WATER SERVICES COORDINATION AND ACHIEVE WORK APPROVAL

Thickness 100mm - USES pltPen - Plot File Created: Sep 12, 2016 - 10:57am

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P5	ISSUE FOR TENDER	KH	PW	12.09.16
P4	PRELIMINARY	KH	PW	01.07.16
P3	ISSUE FOR APPROVAL	KH	PW	12.05.16
P2	ISSUE FOR REVIEW	KH	PW	18.02.15
P1	ISSUE FOR REVIEW	KH	PK	23.12.15

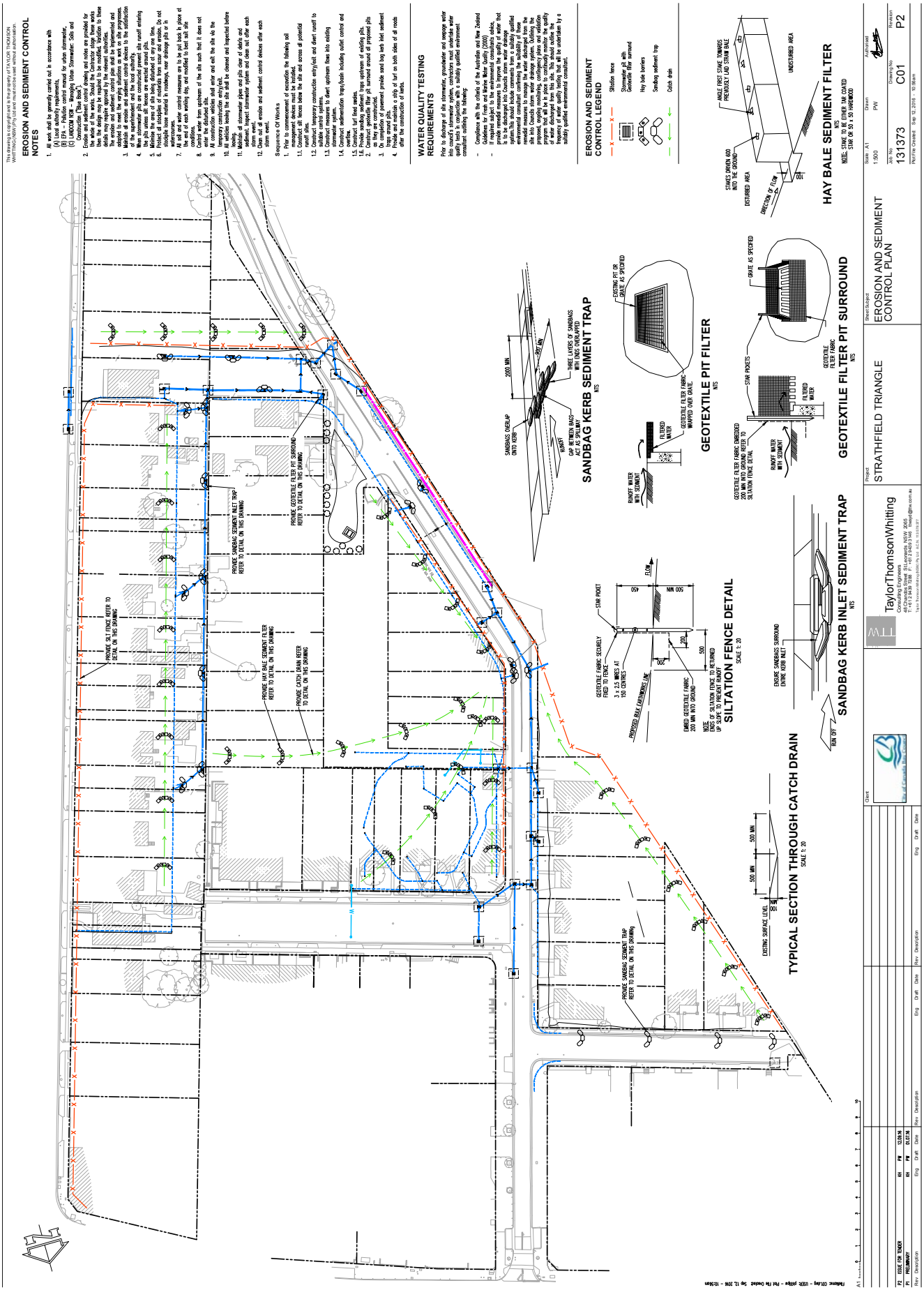
Client: City of Canada Bay Council

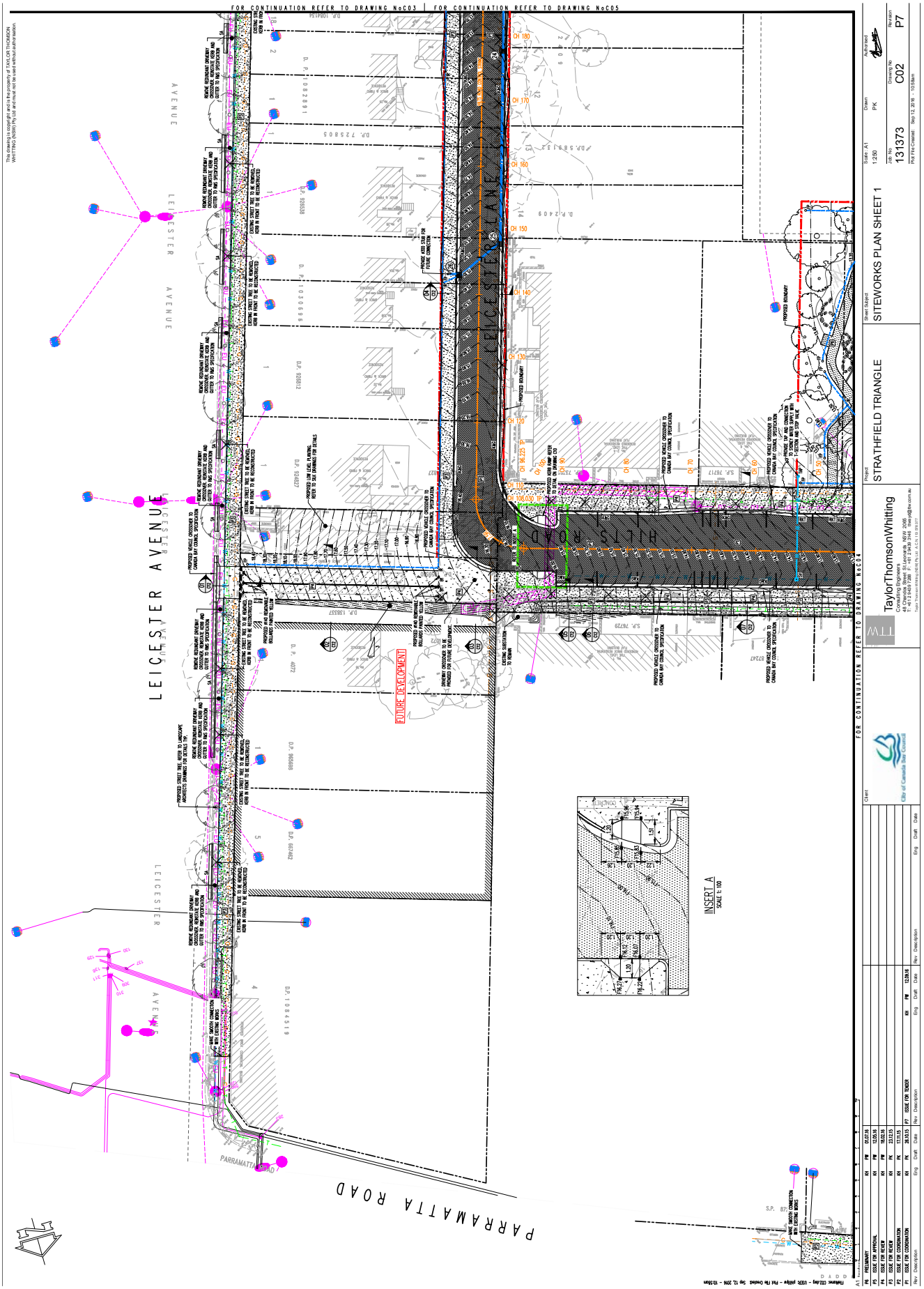
TaylorThomsonWhitting
Consulting Engineers
48 Chandos Street St.Leonards NSW 2065
T: +61 2 9439 7288 F: +61 2 9439 3946 ttsyd@ttw.com.au
Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 095 377

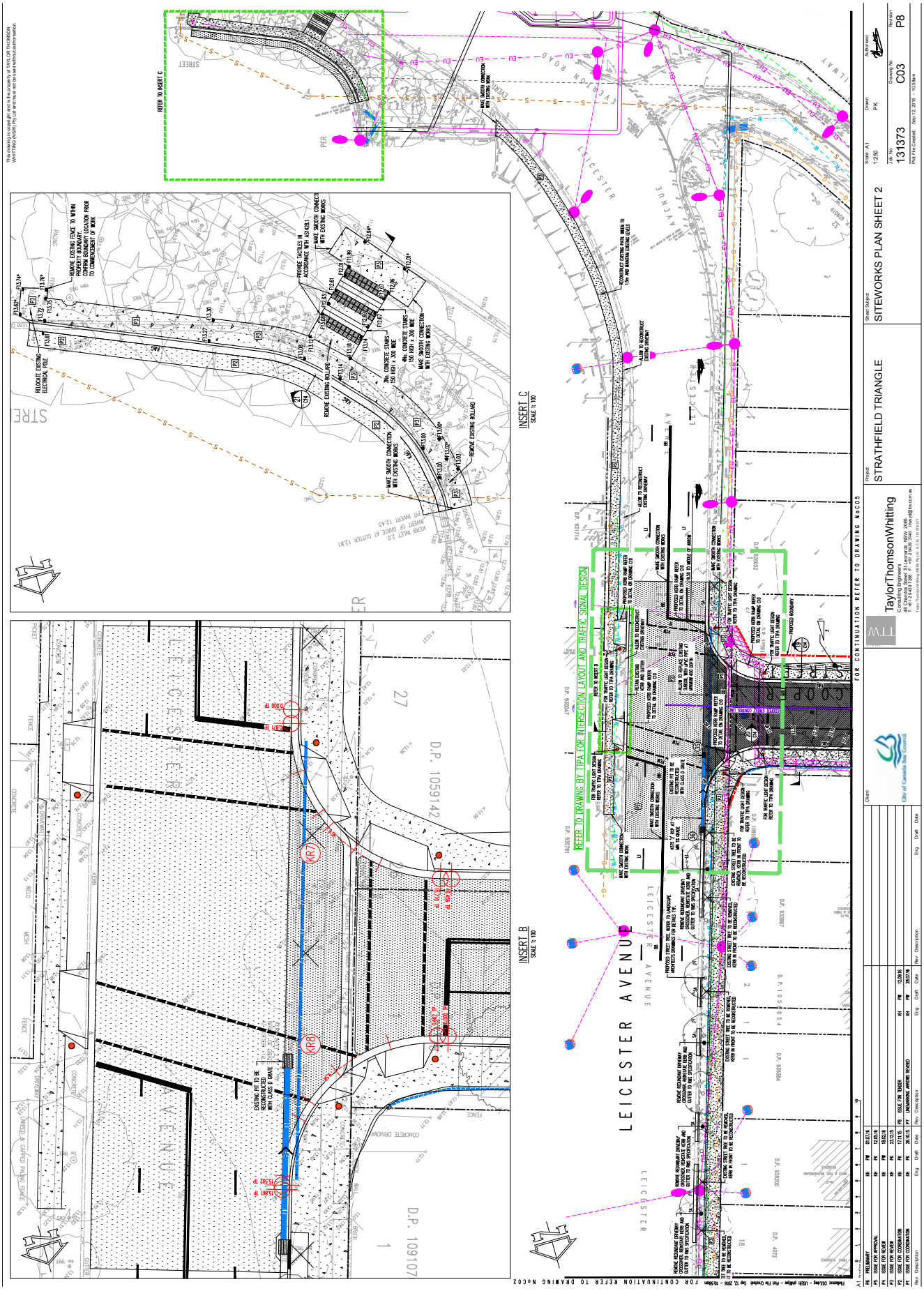
Project: STRATHFIELD TRIANGLE

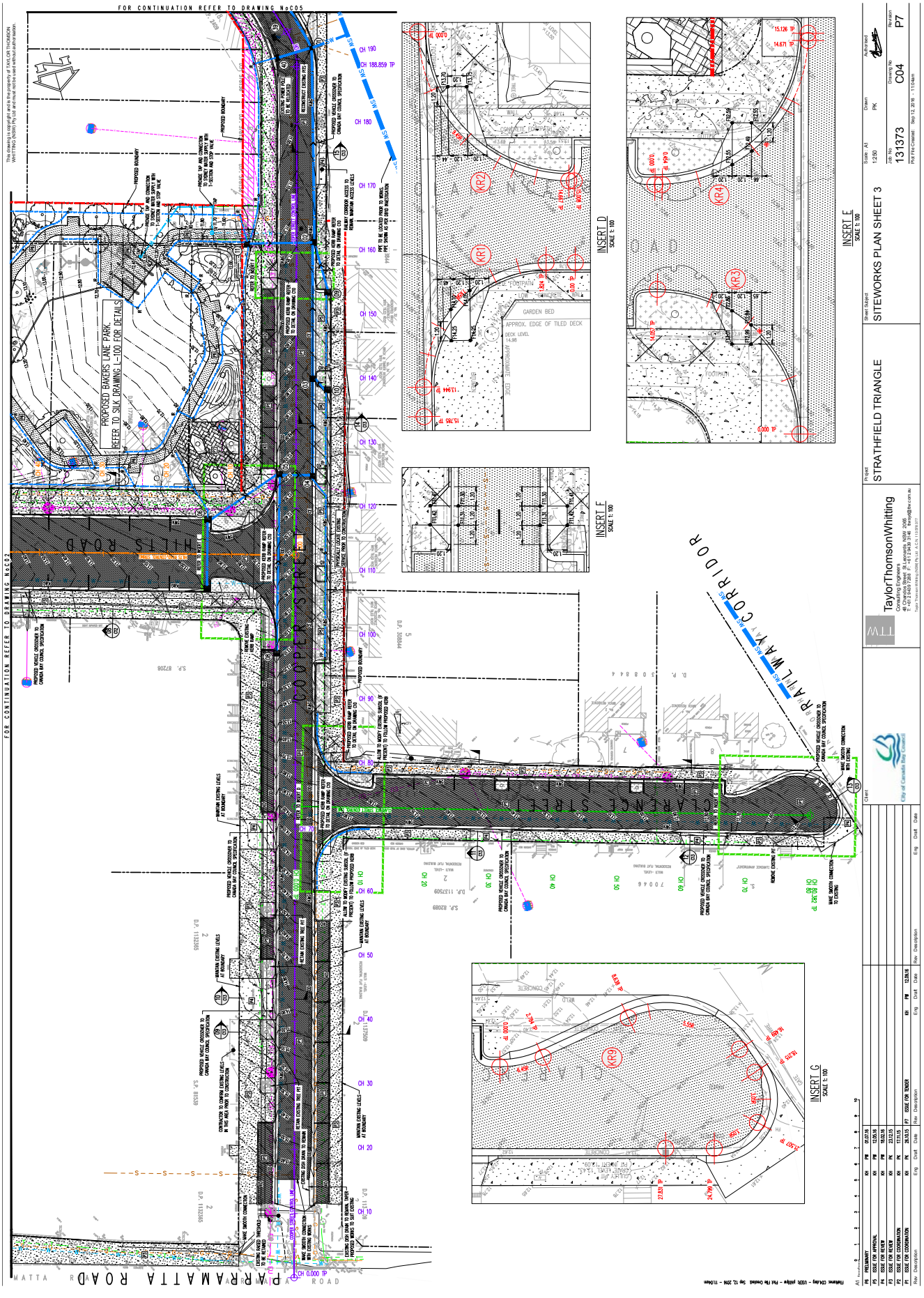
Sheet Subject: NOTES AND LEGENDS SHEET

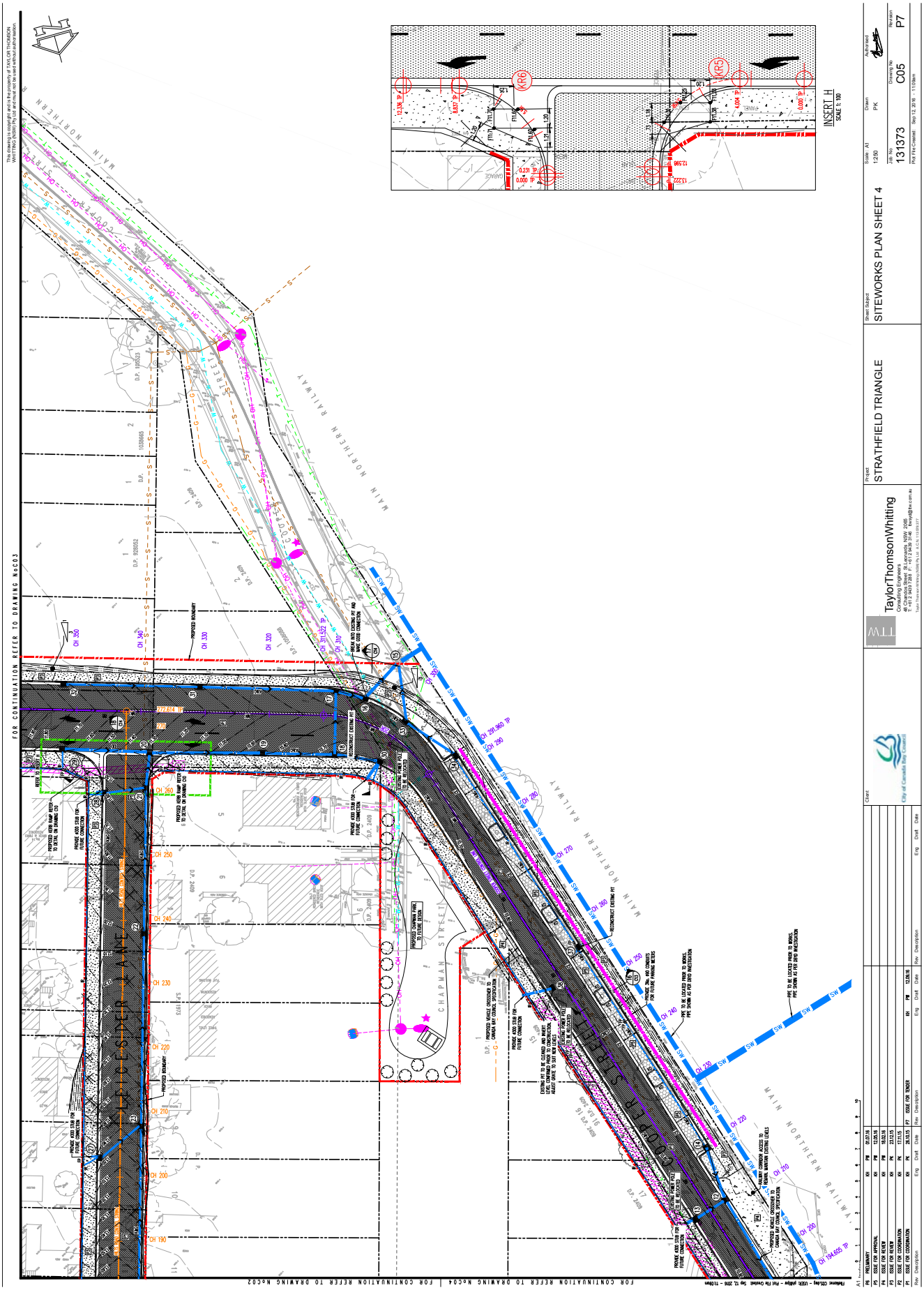
Scale: A1 -
Drawn: PK
Authorised:
Job No: 131373
Drawing No: C00
Revision: P5
Plot File Created: Sep 12, 2016 - 10:57am

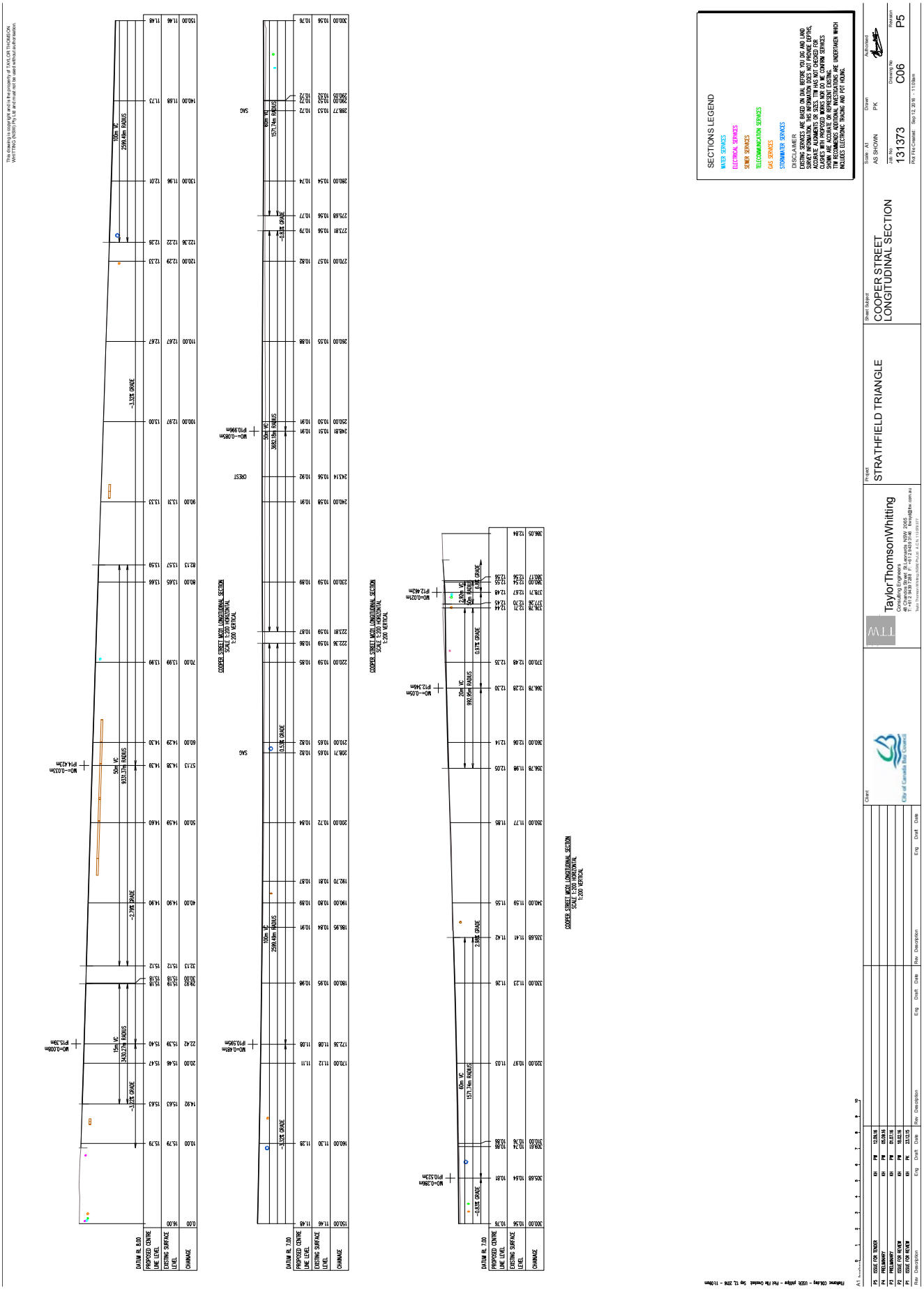

EROSION AND SEDIMENT CONTROL NOTES
1. All work shall be generally carried out in accordance with
(A) Local authority requirements.
(B) EPA - Pollution control manual for urban stormwater.
(C) Soils and Construction (Blue Book).
2. Erosion and sediment control drawing and notes are provided for minimum standard only. The contractor shall modify and upgrade these as required by the local authority.
3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
4. Minimise the area of site being disturbed at any one time.
5. Minimise the area of site being disturbed at any one time.
6. Protect all disturbed areas from stormwater runoff using the silt fences are erected around pits.
7. Where dewatering of excavated areas is necessary, do not discharge loose material in roadways, near drainage pits or in watercourses.
8. Construct sediment from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
10. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
11. Clean out all erosion and sediment control devices after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.
Maintenance Of Works
1. Prior to commencement of excavation the following soil management devices must be installed.
1.1. Construct silt fences below the site and across all potential runoff paths.
1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
1.3. Construct measures to divert upstream flows into existing stormwater system.
1.4. Construct sedimentation traps/basin including outlet control and overflow.
1.5. Protect existing turf lined swales.
1.6. Provide standing sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits and existing pits not protected.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.
4. Protect and stabilise a strip of turf on both sides of all roads after the construction of kerbs.
WATER QUALITY TESTING REQUIREMENTS
Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:
- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If water quality tests do not meet the criteria specified in the tables, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. The contractor shall engage the services of a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site. The contractor shall undertake the remedial measures proposed, ongoing monitoring, confirming if these are effective. A program that will be in place to continually monitor the quality of water discharged from this site. The plan shall outline the water quality parameters to be monitored and the frequency of testing to be undertaken by a suitably qualified environmental consultant.
EROSION AND SEDIMENT CONTROL LEGEND
Silt fence
Stormwater pit with Geotextile filter surround
Hay bale barriers
Sandbag sediment trap
Catch drain
SANDBAG KERB SEDIMENT TRAP
NTS
THREE LAYERS OF SANDBAGS WITH ENDS OVERLAPPED
2000 MIN
SANDBAGS OVERLAP ONTO KERB
RUNOFF WATER WITH SEDIMENT
GEOTEXTILE PIT SURROUND
EXISTING PIT OR GRATE AS SPECIFIED
GEOTEXTILE FILTER FABRIC WRAPPED OVER GRATE
FILTERED WATER
GEOTEXTILE PIT FILTER
NTS
GRATE AS SPECIFIED
STAR PICKETS
GEOTEXTILE FILTER FABRIC EMBEDDED 200 MIN INTO GROUND REFER TO SILTATION FENCE DETAIL
RUNOFF WATER WITH SEDIMENT
FILTERED WATER
GEOTEXTILE FILTER FABRIC
GEOTEXTILE FILTER PIT SURROUND
NTS
NOTE: FABRIC TO BE EXTENDED TWO COURSES OF 90 x 45 HARDWOOD
HAY BALE SEDIMENT FILTER
NTS
ANGLE FIRST STAKE TOWARDS PREVIOUSLY LAID STRAW BALE
STAKES DRIVEN 600 INTO THE GROUND
DISTURBED AREA
DIRECTION OF FLOW
UNDISTURBED AREA
SILTATION FENCE DETAIL
SCALE 1: 20
STAR PICKET
GEOTEXTILE FABRIC SECURELY FIXED TO FENCE
3 x 2.5 MMGS AT 150 CENTRES
PROPOSED BALE EARTHWORKS LINE
EMBED GEOTEXTILE FABRIC 200 MIN INTO GROUND
NOTE ENDS OF SILTATION FENCE TO RETURNED UP SLOPE TO PREVENT RUNOFF
450
500 MIN
400
200
500
TYPICAL SECTION THROUGH CATCH DRAIN
SCALE 1: 20
EXISTING SURFACE LEVEL
500 MIN
500 MIN
PROVIDE SANDBAG SEDIMENT TRAP REFER TO DETAIL ON THIS DRAWING
ENSURE SANDBAGS SURROUND ENTIRE KERB INLET
SANDBAG KERB INLET SEDIMENT TRAP
NTS
RUN OFF
PROVIDE SILT FENCE REFER TO DETAIL ON THIS DRAWING
PROVIDE HAY BALE SEDIMENT FILTER REFER TO DETAIL ON THIS DRAWING
PROVIDE CATCH DRAIN REFER TO DETAIL ON THIS DRAWING
PROVIDE SANDBAG SEDIMENT INLET TRAP REFER TO DETAIL ON THIS DRAWING
PROVIDE GEOTEXTILE FILTER PIT SURROUND REFER TO DETAIL ON THIS DRAWING
P2 ISSUE FOR TENDER KH PW 12.09.16
P1 PRELIMINARY KH PW 01.07.16
Rev Description Eng Draft Date
This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be loaned, copied or used without authorisation
Client
Project
STRATHFIELD TRIANGLE
Sheet/Subject
EROSION AND SEDIMENT CONTROL PLAN
TaylorThomsonWhitting
Consulting Engineers
48 Chandos Street St Leonards NSW 2065
Scale A1 1:500
Drawn PW
Authorised
Job No 131373
Drawing No C01
Revision P2
Plot File Created Sep 12, 2016 - 10:36am

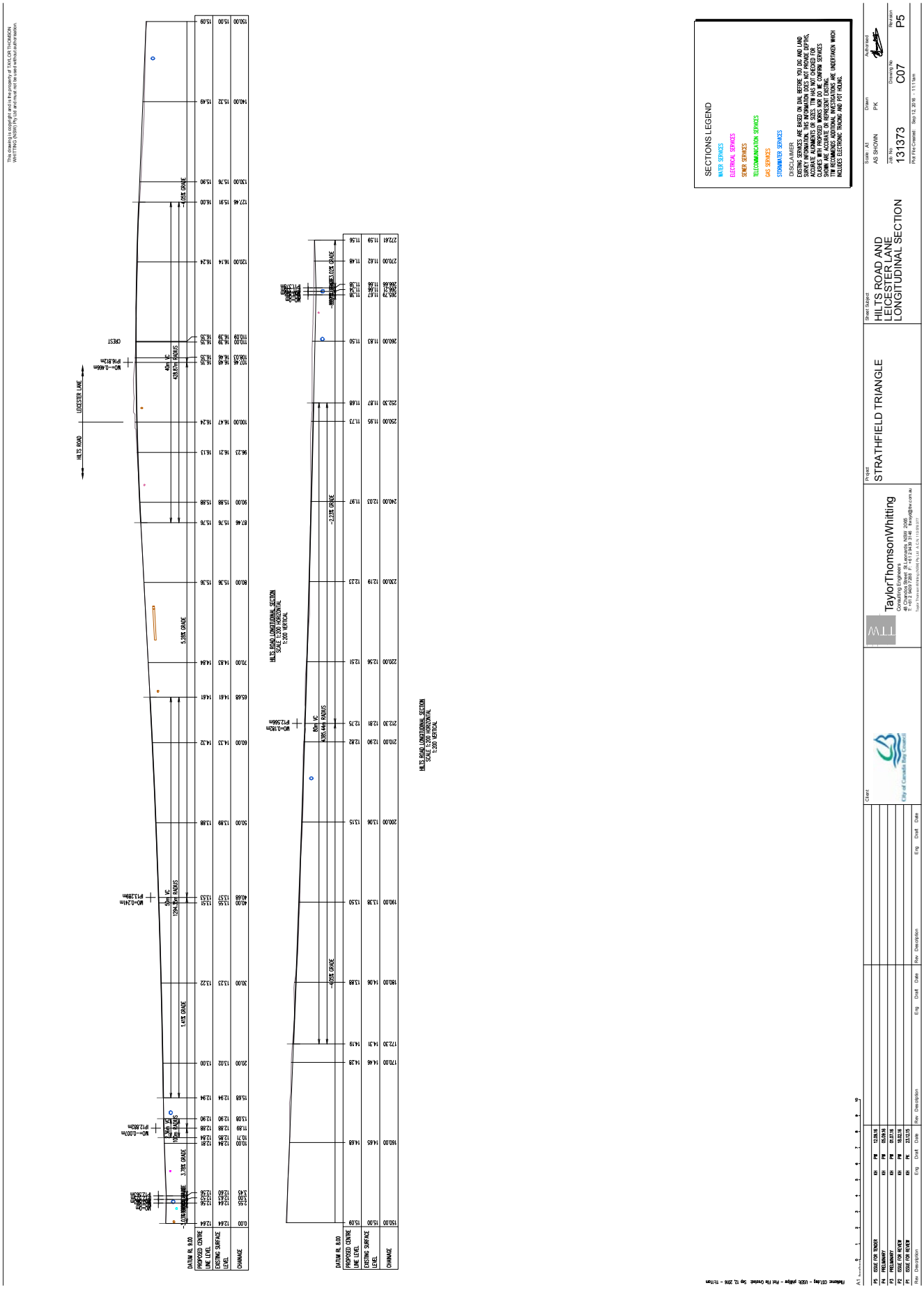

FOR CONTINUATION REFER TO DRAWING No.C03
FOR CONTINUATION REFER TO DRAWING No.C05
FOR CONTINUATION REFER TO DRAWING No.C04
LEICESTER AVENUE
LEICESTER LANE
HILLS ROAD
PARRAMATTA ROAD
FUTURE DEVELOPMENT
INSERT A
SCALE 1: 100
SITEWORKS PLAN SHEET 1
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
Scale: A1 1:250
Job No 131373
Drawing No C02
Revision P7
Authorised
Drawn PK
Plot File Created: Sep 12, 2016 - 10:58am
PRELIMINARY
ISSUE FOR APPROVAL
ISSUE FOR REVIEW
ISSUE FOR COORDINATION
ISSUE FOR TENDER


INSERT B
SCALE 1: 100
INSERT C
SCALE 1: 100
LEICESTER AVENUE
REFER TO DRAWING BY TTPA FOR INTERSECTION LAYOUT AND TRAFFIC SIGNAL DESIGN
FOR CONTINUATION REFER TO DRAWING No.C02
SITEWORKS PLAN SHEET 2
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
131373
C03
P8

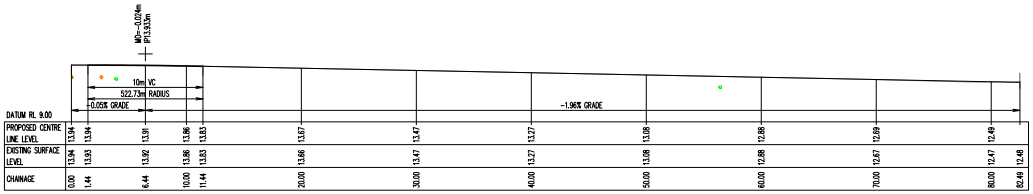

FOR CONTINUATION REFER TO DRAWING No.C05
FOR CONTINUATION REFER TO DRAWING No.C02
PROPOSED BAKERS LANE PARK
REFER TO SILK DRAWING L-100 FOR DETAILS
HILLS ROAD
COOPER STREET
CLARENCE STREET
RAILWAY CORRIDOR
MATTA ROAD
PARRAMATTA ROAD
INSERT D
SCALE 1: 100
INSERT E
SCALE 1: 100
INSERT F
SCALE 1: 100
INSERT G
SCALE 1: 100
GARDEN BED
APPROX. EDGE OF TILED DECK
DECK LEVEL
14.95
FOOTPATH
PROPOSED BOUNDARY
MAINTAIN EXISTING LEVELS AT BOUNDARY
PROPOSED VEHICLE CROSSOVER TO CANADA BAY COUNCIL SPECIFICATION
PROPOSED KERB RAMP REFER TO DETAIL ON DRAWING C10
REMOVE EXISTING KERB RAMP
MAKE SMOOTH CONNECTION WITH EXISTING
RECONSTRUCT EXISTING PITS TO BE ADJUSTED
PROPOSED WORKS TO SUIT EXISTING
EXISTING STORMWATER DRAIN TO REMAIN
EXISTING SEWER MANHOLE TO BE RETAINED
EXISTING WATER MANHOLE TO BE RETAINED
PROPOSED KERB TO FOLLOW EXISTING KERB ALIGNMENT
PROPOSED KERB TO FOLLOW PROPOSED KERB ALIGNMENT
PROPOSED KERB TO FOLLOW EXISTING SURFACE (IF EXISTING TO BE REMOVED)
PROPOSED KERB TO FOLLOW EXISTING SURFACE (IF EXISTING TO REMAIN)
PROPOSED KERB RAMP REFER TO DETAIL ON DRAWING C10
PROPOSED KERB RAMP REFER TO DETAIL ON DRAWING C10 (EXISTING LOCAL EXISTING KERB RAMP TO BE REMOVED)
PROPOSED KERB RAMP REFER TO DETAIL ON DRAWING C10


INSERT H
SCALE 1: 100
SITEWORKS PLAN SHEET 4
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
City of Canada Bay Council
Scale: A1 1:200
Job No 131373
Drawing No C05
Revision P7
Drawn PK
Authorised
Plot File Created: Sep 12, 2018 - 11:08am
FOR CONTINUATION REFER TO DRAWING No:C03
FOR CONTINUATION REFER TO DRAWING No:C04
FOR CONTINUATION REFER TO DRAWING No:C02
MAIN NORTHERN RAILWAY
CHAPMAN STREET
LEICESTER LANE
P7 ISSUE FOR TENDER
P6 ISSUE FOR COORDINATION
P5 ISSUE FOR REVIEW
P4 ISSUE FOR COORDINATION
P3 ISSUE FOR APPROVAL
P2 PRELIMINARY


COOPER STREET LONGITUDINAL SECTION
SCALE 1:200 HORIZONTAL
1:200 VERTICAL
SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. THIS INFORMATION DOES NOT PROVIDE DEPTHS, ACCURATE LAYOUTS OR SIZES. THE CONTRACTOR SHALL ALSO CHECK FOR CLASHES WITH PROPOSED WORKS NOR DO WE CONFIRM SERVICES SHOWN ARE ACCURATE OR REPRESENT EXISTING.
THE CONTRACTOR SHALL ASSUME ALL SERVICES ARE UNDERTAKEN WHICH INCLUDES ELECTRONIC TRACING AND POT HOLING.
TaylorThomsonWhitting
Consulting Engineers
49 Charles Street, Parramatta NSW 2150
Ph: 02 9687 0600 Fax: 02 9687 0626 Email: mail@ttw.com.au
STRATHFIELD TRIANGLE
COOPER STREET
LONGITUDINAL SECTION
Scale: A1
AS SHOWN
Drawn
PK
Authorised
Job No
131373
Drawing No
C06
Revision
P5
Plot File Created: Sep 12, 2018 - 11:09am
P5 ISSUE FOR TENDER KH PM 12.09.18
P4 PRELIMINARY KH PM 03.09.18
P3 PRELIMINARY KH PM 01.07.18
P2 ISSUE FOR REVIEW KH PM 18.02.16
P1 ISSUE FOR REVIEW KH PK 23.12.15
Rev Description Eng Draft Date
Client
City of Canada Bay Council


SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. THIS INFORMATION DOES NOT PROVIDE DEPTHS, ACCURATE ALIGNMENTS OR REPRESENT EXISTING SERVICE CLASSES WITH PROPOSED WORKS NOR DO WE CONFIRM SERVICES SHOWN ARE ACCURATE OR REPRESENT EXISTING. THE PROPOSED EXISTING SERVICES AND ASSOCIATED WORKS ARE UNDERTAKEN WHICH INCLUDES ELECTRONIC TRACING AND POT HOLING.
HILTS ROAD AND
LEICESTER LANE
LONGITUDINAL SECTION
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
Scale: A1 AS SHOWN
Drawn: PK
Job No: 131373
Drawing No: C07
Revision: P5
Plot File Created: Sep 12, 2018 - 11:11am
Client: City of Canada Bay Council
P5 ISSUE FOR TENDER KH PM 12.09.18
P4 PRELIMINARY KH PM 10.07.18
P3 ISSUE FOR REVIEW KH PM 19.02.18
P2 ISSUE FOR REVIEW KH PK 23.1.25
P1 ISSUE FOR REVIEW KH PK 23.1.25
Rev Description Eng Draft Date
This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.

This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.



CLARENCE STREET LONGITUDINAL SECTION
SCALE 1:200 HORIZONTAL
1:200 VERTICAL

SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES

DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. THIS INFORMATION DOES NOT PROVIDE DEPTHS, ACCURATE ALIGNMENTS OR SIZES. TTW HAS NOT CHECKED FOR CLASHES WITH PROPOSED WORKS NOR DO WE CONFIRM SERVICES SHOWN ARE ACCURATE OR REPRESENT EXISTING.
TTW RECOMMENDS ADDITIONAL INVESTIGATIONS ARE UNDERTAKEN WHICH INCLUDES ELECTRONIC TRACING AND POT HOLING.

I:\Wahroonga (GS)\dwg - ISSUED .pltPlot - Plot File Created: Sep 12, 2016 - 11:12am

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P5	ISSUE FOR TENDER	KH	PW	12.09.16
P4	PRELIMINARY	KH	PW	05.09.16
P3	PRELIMINARY	KH	PW	01.07.16
P2	ISSUE FOR REVIEW	KH	PW	18.02.16
P1	ISSUE FOR REVIEW	KH	PK	23.12.15

Client: City of Canada Bay Council

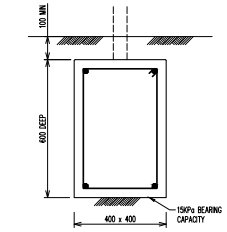
TaylorThomsonWhitting
Consulting Engineers
48 Chandos Street St Leonards NSW 2065
T: +61 2 9439 7288 F: +61 2 9439 3146 tkeys@ttw.com.au
Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 918 377

Project: STRATHFIELD TRIANGLE

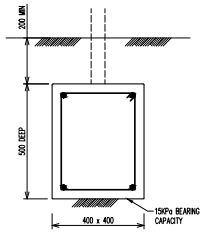
Sheet Subject: CLARENCE STREET LONGITUDINAL SECTION

Scale: A1: AS SHOWN
Drawn: PK
Authorised:
Job No: 131373
Drawing No: C08
Revision: P5
Plot File Created: Sep 12, 2016 - 11:12am

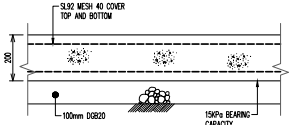
This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.



SHADE STRUCTURE FOOTING
SCALE 1:10



BALANCE BEAM FOOTING
(PLAY POLE FOOTING SIMILAR)
SCALE 1:10



PARK SIGN FOOTING
SCALE 1:10

I:\Mdocs\ 030.dwg - USER: jeffm - Plot File Created: Sep 12, 2016 - 11:13am

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P2	ISSUE FOR TENDER	KH	PW	12.09.16
P1	PRELIMINARY	KH	PW	01.07.16

Client: City of Canada Bay Council

TaylorThomsonWhitting
Consulting Engineers
48 Chandos Street St Leonards NSW 2065
T: +61 2 9439 7288 F: +61 2 9439 3146 tkwyk@ttw.com.au
Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 976 977

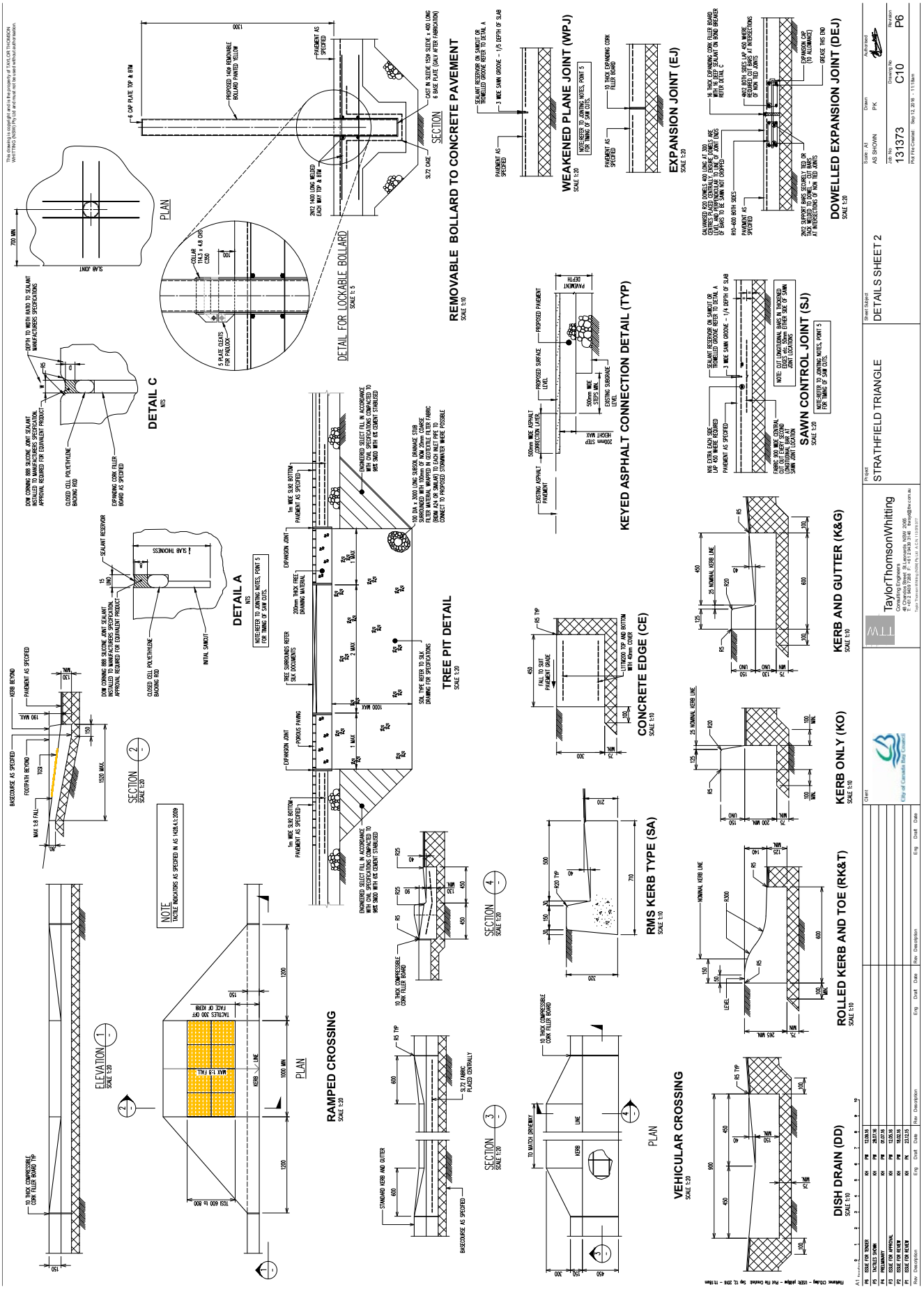
Project: STRATHFIELD TRIANGLE

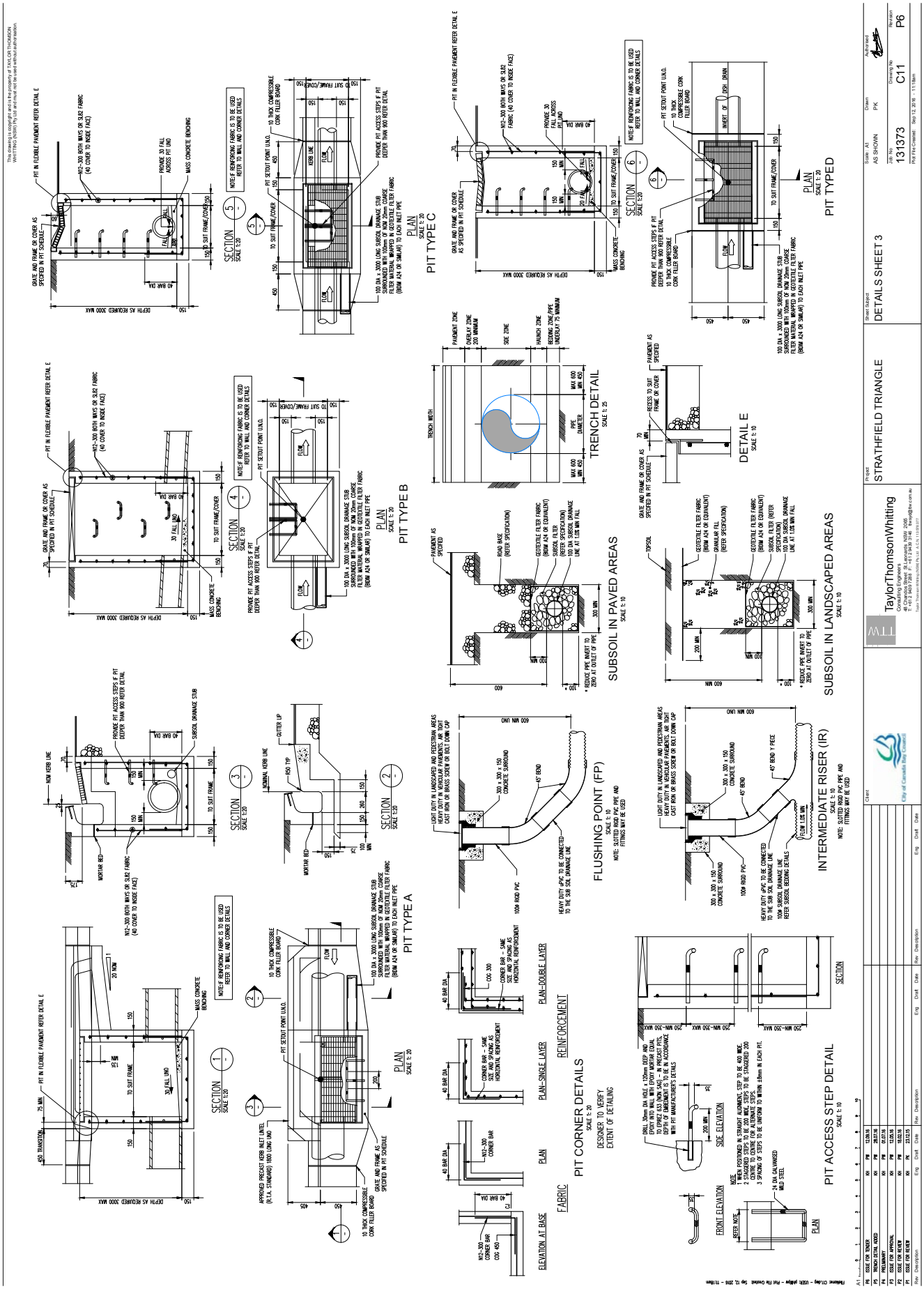
Sheet Subject: DETAILS SHEET 1

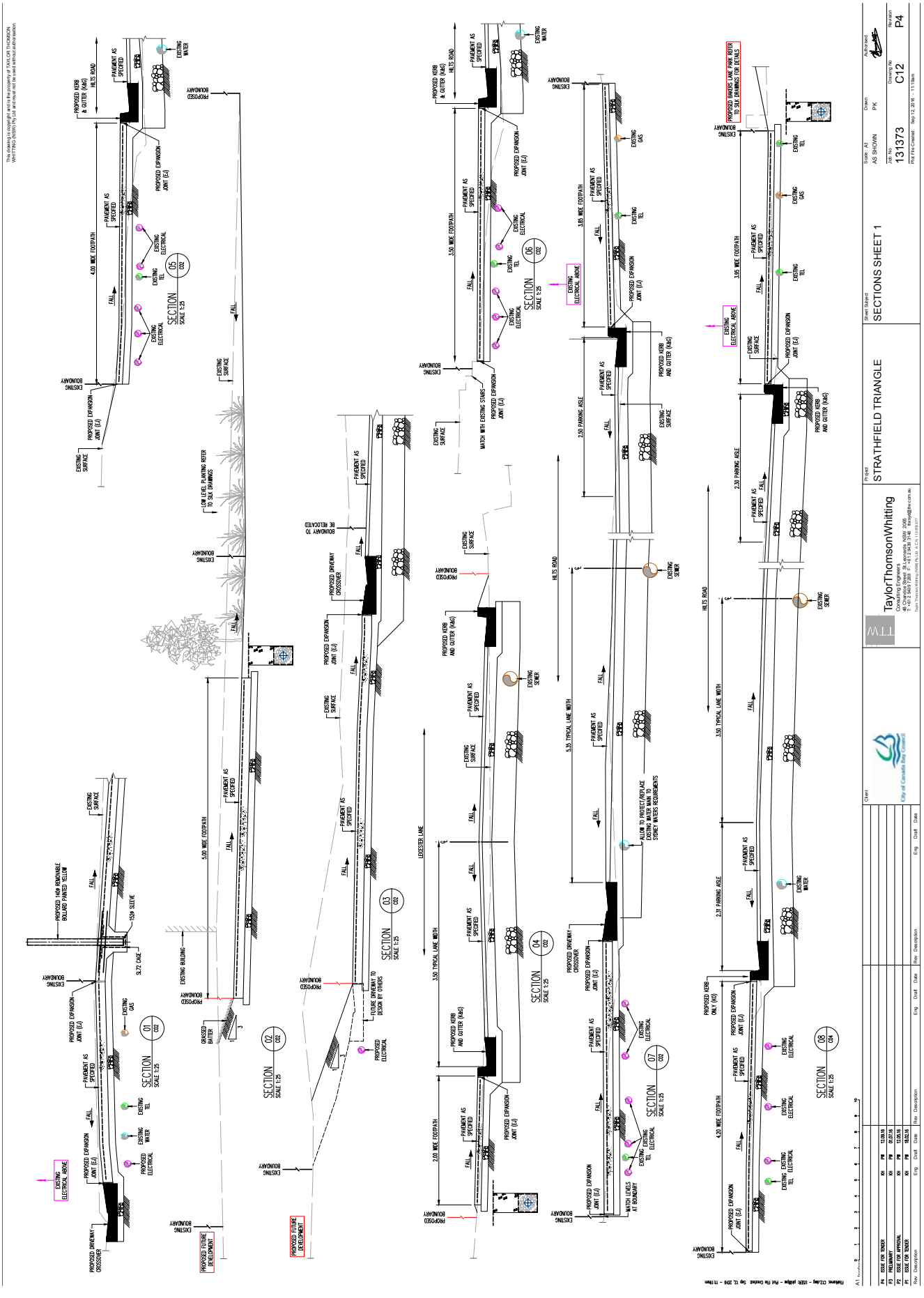
Scale: A1 AS SHOWN | Drawn PK | Authorised

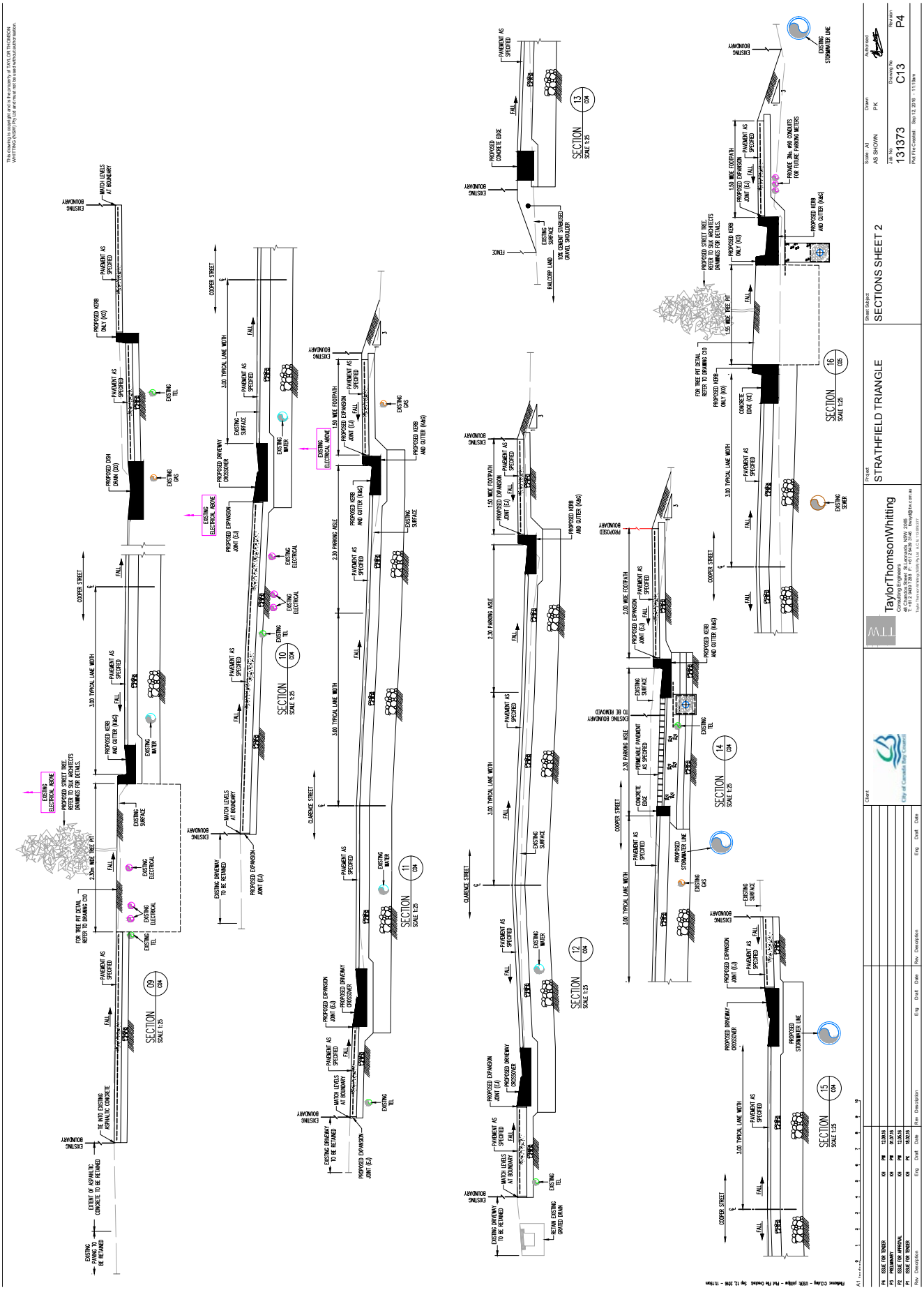
Job No 131373 | Drawing No C09 | Revision P2

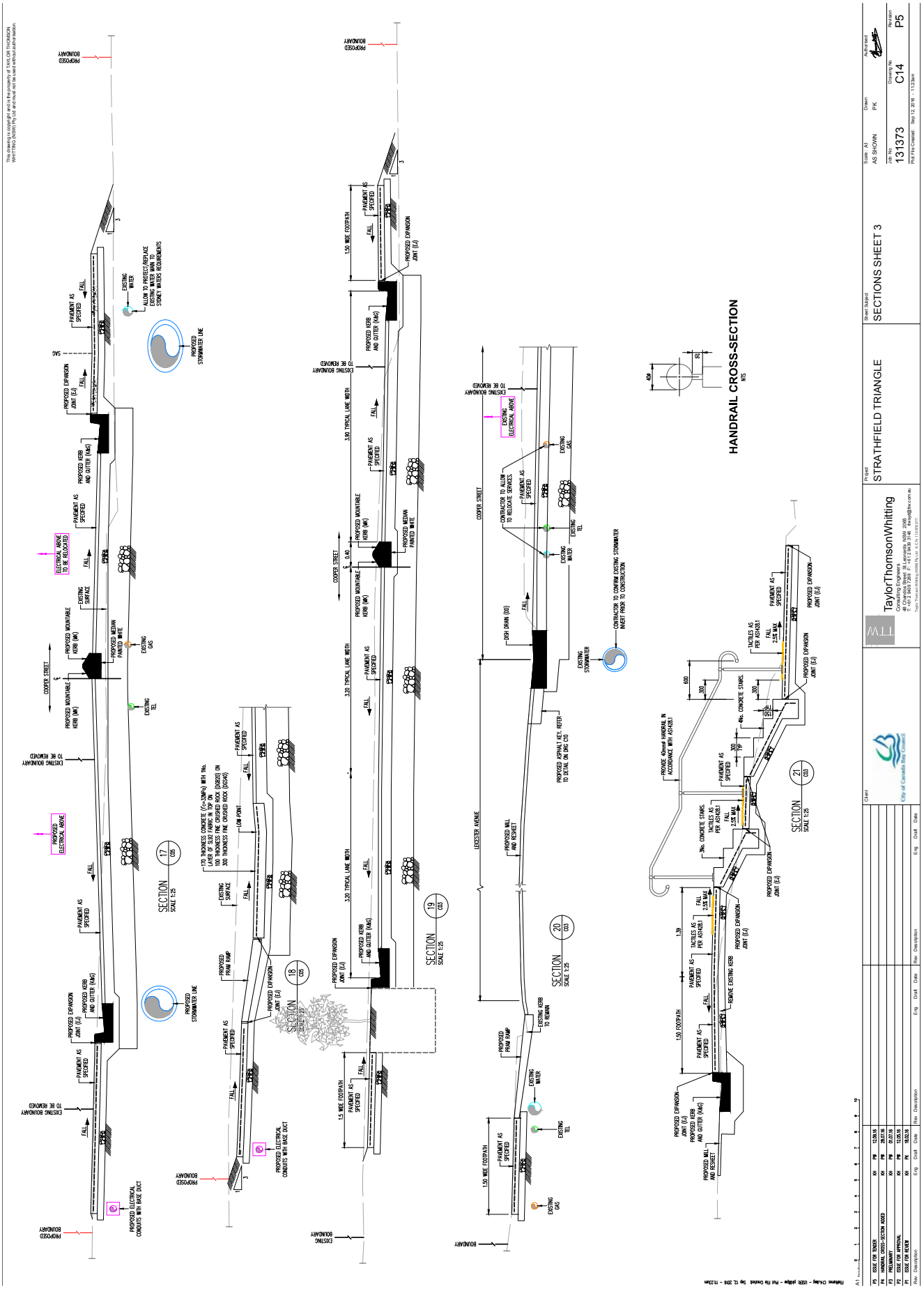
Plot File Created: Sep 12, 2016 - 11:13am

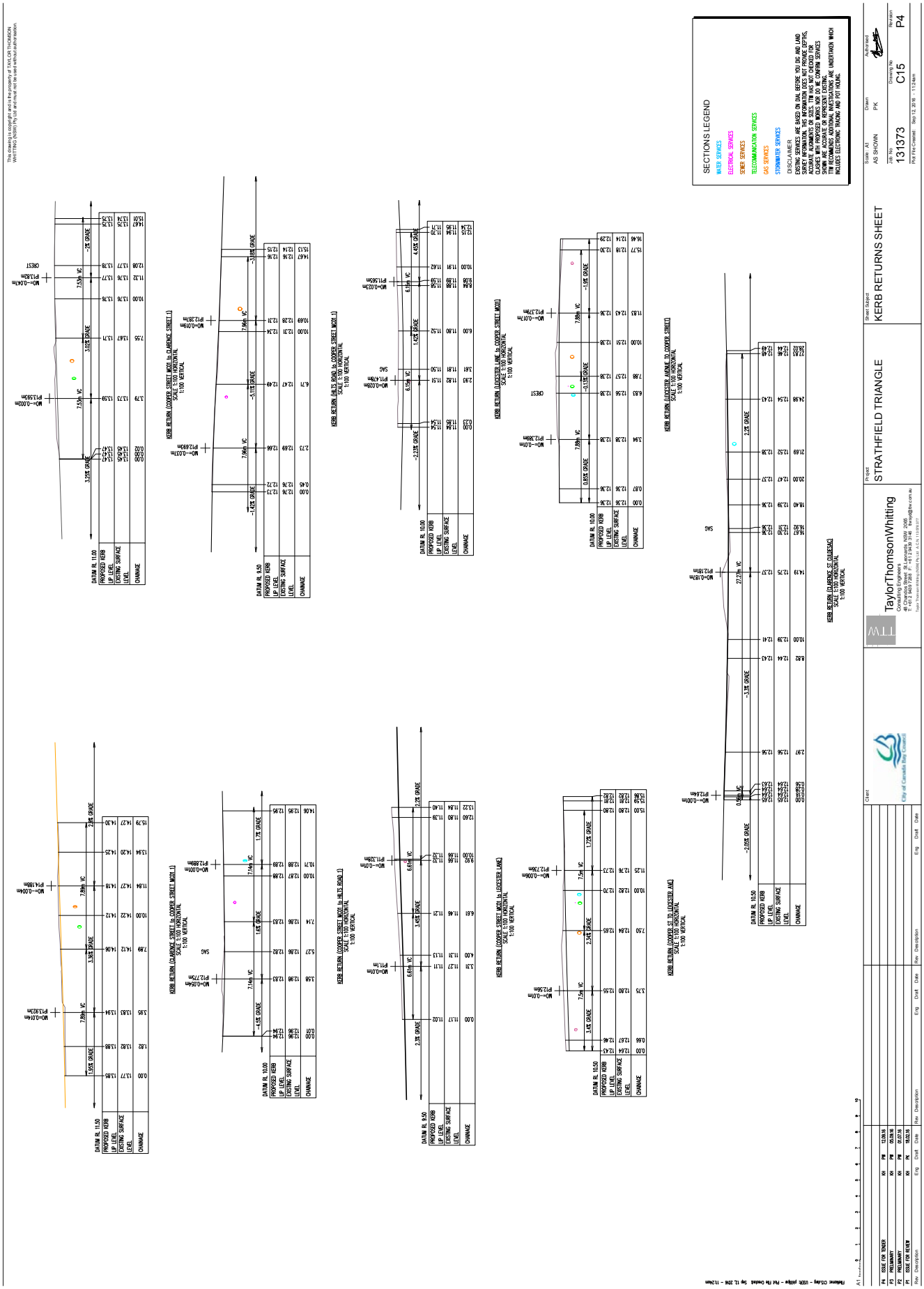

REMOVABLE BOLLARD TO CONCRETE PAVEMENT
SCALE 1:10
DETAIL FOR LOCKABLE BOLLARD
SCALE 1:5
DETAIL C
NTS
DETAIL A
NTS
TREE PIT DETAIL
SCALE 1:20
KEYED ASPHALT CONNECTION DETAIL (TYP)
CONCRETE EDGE (CE)
SCALE 1:10
RMS KERB TYPE (SA)
SCALE 1:10
KERB AND GUTTER (K&G)
SCALE 1:10
KERB ONLY (KO)
SCALE 1:10
ROLLED KERB AND TOE (RK&T)
SCALE 1:10
DISH DRAIN (DD)
SCALE 1:10
VEHICULAR CROSSING
SCALE 1:20
RAMPED CROSSING
SCALE 1:20
WEAKENED PLANE JOINT (WPJ)
SCALE 1:20
EXPANSION JOINT (EJ)
SCALE 1:20
SAWN CONTROL JOINT (SJ)
SCALE 1:10
DOWELLED EXPANSION JOINT (DEJ)
SCALE 1:20
NOTE
TACTILE INDICATORS AS SPECIFIED IN AS 1428.4.1:2009
PLAN
ELEVATION
SECTION
DETAIL FOR LOCKABLE BOLLARD
REMOVABLE BOLLARD TO CONCRETE PAVEMENT
Project
STRATHFIELD TRIANGLE
Sheet Subject
DETAILS SHEET 2
Scale: A1
AS SHOWN
Drawn
PK
Authorised
Job No
131373
Drawing No
C10
Revision
P6
Plot File Created: Sep 12, 2016 - 11:18am
TaylorThomsonWhitting
Consulting Engineers
Client
City of Canada Bay Council


PIT TYPE A
PIT TYPE B
PIT TYPE C
PIT TYPED
TRENCH DETAIL
DETAIL E
SUBSOIL IN PAVED AREAS
SUBSOIL IN LANDSCAPED AREAS
FLUSHING POINT (FP)
INTERMEDIATE RISER (IR)
PIT ACCESS STEP DETAIL
PIT CORNER DETAILS
REINFORCEMENT
FABRIC
DESIGNER TO VERIFY EXTENT OF DETAILING
TaylorThomsonWhitting
STRATHFIELD TRIANGLE
DETAILS SHEET 3
City of Canada Bay Council
131373
C11
P6

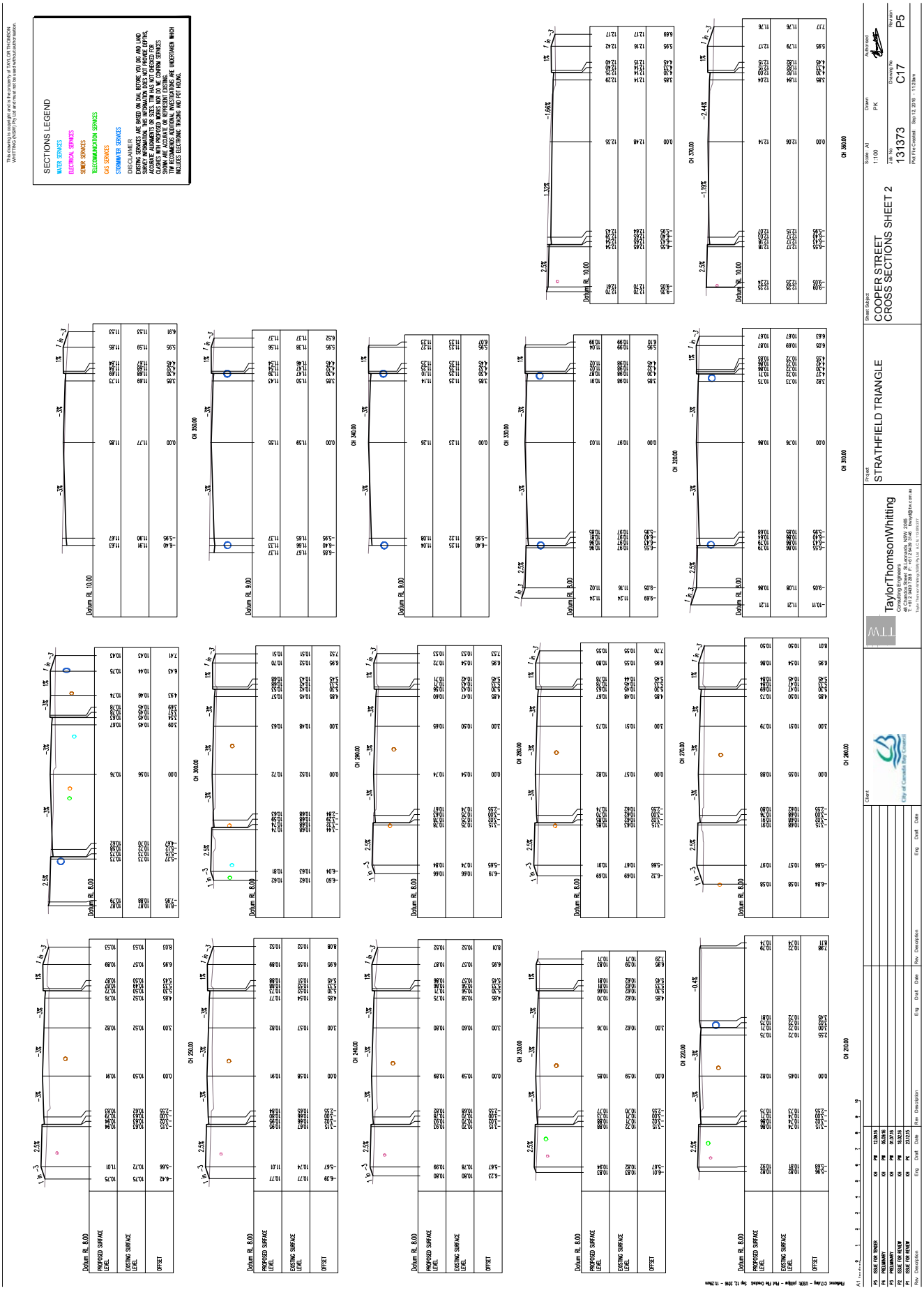

This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.
HELTS ROAD
PROPOSED KERB & GUTTER (KAG)
PAVEMENT AS SPECIFIED
EXISTING WATER
EXISTING BOUNDARY
PROPOSED EXPANSION JOINT (EJ)
4.00 WIDE FOOTPATH
EXISTING ELECTRICAL
EXISTING TEL
SECTION 05 SCALE 1:25
EXISTING SURFACE
FALL
LOW LEVEL PLANTING REFER TO L&A DRAWINGS
5.00 WIDE FOOTPATH
SECTION 02 SCALE 1:25
EXISTING BUILDING
GRASSED BATTER
PROPOSED FUTURE DEVELOPMENT
PROPOSED DRIVEWAY CROSSOVER
PROPOSED HDPE REMOVABLE BOLLARD PAINTED YELLOW
525I SLEEVE
S.T.C. CAGE
EXISTING GAS
SECTION 01 SCALE 1:25
EXISTING ELECTRICAL ABOVE
PROPOSED ELECTRICAL
BOUNDARY TO BE RELOCATED
SECTION 03 SCALE 1:25
FUTURE DRIVEWAY TO DESIGN BY OTHERS
LOCKESLEY LANE
3.50 TYPICAL LANE WIDTH
2.00 WIDE FOOTPATH
SECTION 04 SCALE 1:25
MATCH WITH EXISTING STAIRS
3.50 WIDE FOOTPATH
SECTION 06 SCALE 1:25
2.50 PARKING AISLE
5.35 TYPICAL LANE WIDTH
ALLOW TO PROTECT/REPLACE EXISTING MH TO SYDNEY WATERS REQUIREMENTS
MATCH LEVELS AT BOUNDARY
SECTION 07 SCALE 1:25
PROPOSED BAKERS LANE PARK REFER TO L&A DRAWINGS FOR DETAILS
3.05 WIDE FOOTPATH
2.30 PARKING AISLE
3.50 TYPICAL LANE WIDTH
4.20 WIDE FOOTPATH
PROPOSED KERB ONLY (KO)
SECTION 08 SCALE 1:25
Client
City of Canada Bay Council
TTW
TaylorThomsonWhitting
Consulting Engineers
49 Chandos Street St Leonards NSW 2065
Ph: (02) 9439 8611 Fax: (02) 9439 8688 Email: tsw@tsw.com.au
Taylor Thomson Whitting (NSW) Pty Ltd ACN 003 145 033
Project
STRATHFIELD TRIANGLE
Sheet Subject
SECTIONS SHEET 1
Scale: A1 AS SHOWN
Drawn PK
Authorised
Job No 131373
Drawing No C12
Revision P4
Plot File Created: Sep 12, 2016 - 11:18am
P4 ISSUE FOR TENDER KH PK 13.09.16
P3 PRELIMINARY KH PK 01.07.16
P2 ISSUE FOR APPROVAL KH PK 12.05.16
P1 ISSUE FOR TENDER KH PK 18.02.16
Rev Description Eng Draft Date
Rev Description Eng Draft Date


SECTION 09 C04 SCALE 1:25
SECTION 10 C04 SCALE 1:25
SECTION 11 C04 SCALE 1:25
SECTION 12 C04 SCALE 1:25
SECTION 13 C04 SCALE 1:25
SECTION 14 C04 SCALE 1:25
SECTION 15 C04 SCALE 1:25
SECTION 16 C05 SCALE 1:25
COOPER STREET
CLARENCE STREET
3.00 TYPICAL LANE WIDTH
2.30 PARKING AISLE
1.50 WIDE FOOTPATH
PROPOSED KERB AND GUTTER (KAG)
PROPOSED KERB ONLY (KO)
PROPOSED DISH DRAIN (DD)
PROPOSED EXPANSION JOINT (EJ)
PROPOSED DRIVEWAY CROSSOVER
EXISTING BOUNDARY
EXISTING ELECTRICAL ABOVE
EXISTING WATER
EXISTING GAS
EXISTING TEL
EXISTING ELECTRICAL
EXISTING SURFACE
PROPOSED STORMWATER LINE
EXISTING SEWER
EXISTING STORMWATER LINE
PROPOSED STREET TREE. REFER TO SUL ARCHITECTS DRAWINGS FOR DETAILS.
FOR TREE PIT DETAIL REFER TO DRAWING C10
PROVIDE 3No. #90 CONDUITS FOR FUTURE PARKING METERS
EXISTING DRIVEWAY TO BE RETAINED
MATCH LEVELS AT BOUNDARY
EXTENT OF ASPHALTIC CONCRETE TO BE RETAINED
RE-INTO EXISTING ASPHALTIC CONCRETE
RETAIN EXISTING GRATED DRAIN
RAILCORP LAND
FENCE
100 COMPACTED GRAVEL SHOULDER
PAVEMENT AS SPECIFIED
FALL
EXISTING PAVING TO BE RETAINED
TO BE REMOVED
PROPOSED CONCRETE EDGE
CONCRETE EDGE (CE)
PERMEABLE PAVEMENT AS SPECIFIED
PROPOSED STORMWATER LINE
Project
STRATHFIELD TRIANGLE
Sheet Subject
SECTIONS SHEET 2
TaylorThomsonWhitting
Consulting Engineers
Client
City of Canada Bay Council
Scale: A1 AS SHOWN
Drawn PK
Job No 131373
Drawing No C13
Revision P4
Authorised
Rev Description Eng Draft Date
P4 ISSUE FOR TENDER KH PK 03.09.18
P3 PRELIMINARY KH PK 10.07.18
P2 ISSUE FOR APPROVAL KH PK 12.06.18
P1 ISSUE FOR TENDER KH PK 04.05.18
First File Created: Sep 12, 2018 - 11:18am
This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without permission.

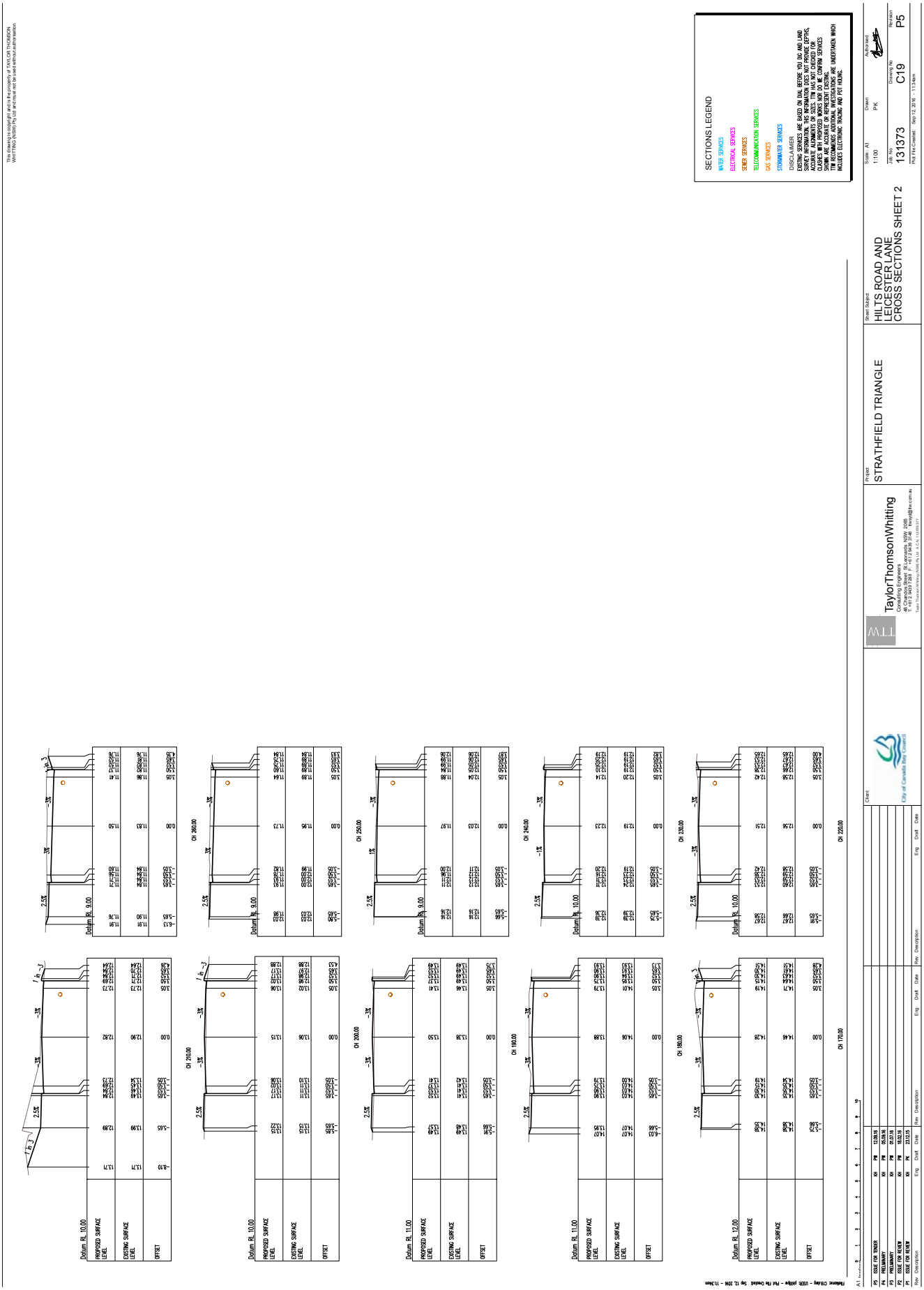

HANDRAIL CROSS-SECTION
SECTION 17
SECTION 18
SECTION 19
SECTION 20
SECTION 21
SECTIONS SHEET 3
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
Job No 131373
Drawing No C14
Revision P5
Scale: A1 AS SHOWN
Drawn PK
Authorised
Sheet Subject
Project
Client
City of Canada Bay Council
ISSUE FOR TENDER
AMENDED CROSS-SECTION ADDED
PRELIMINARY
ISSUE FOR APPROVAL
ISSUE FOR REVIEW

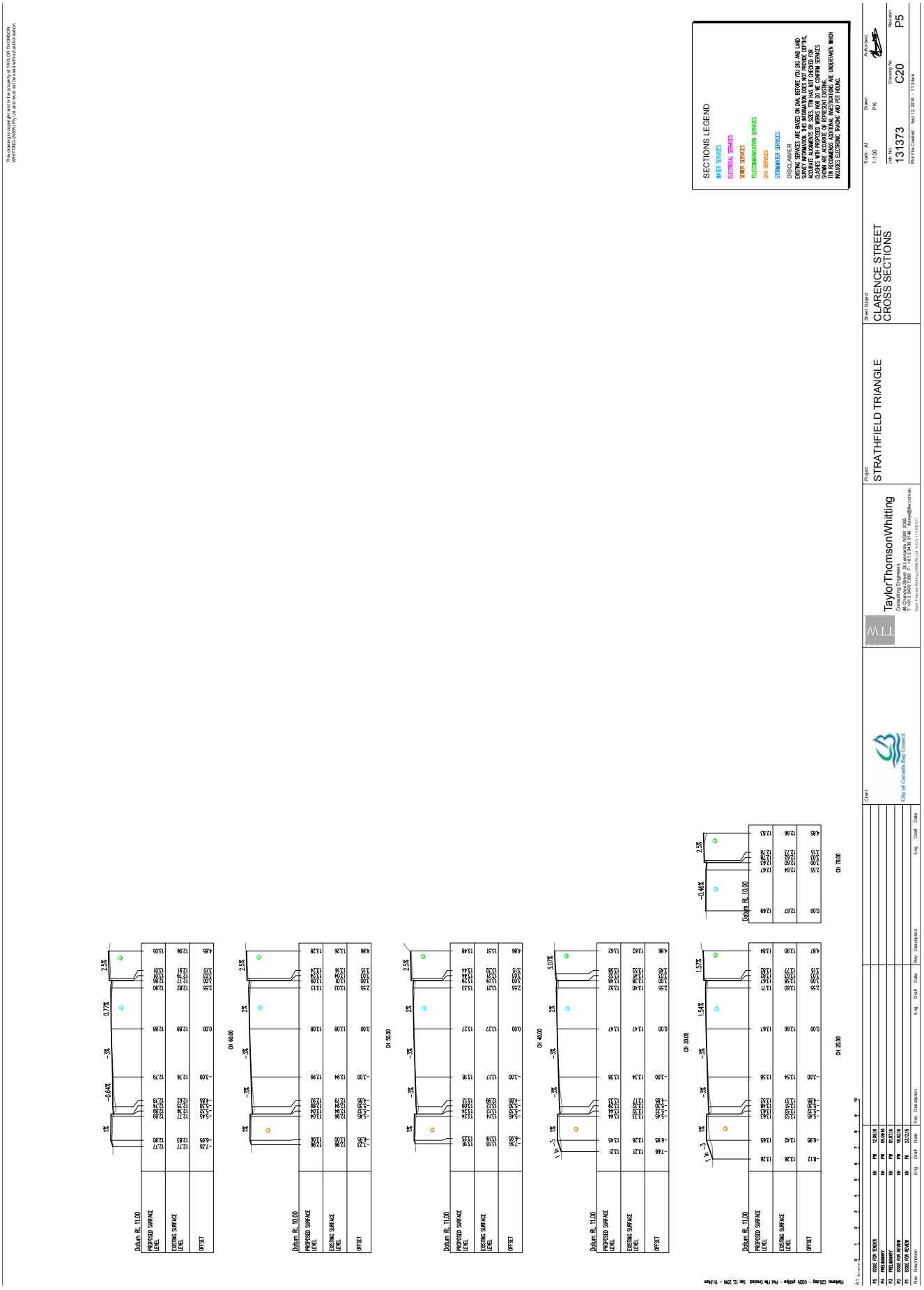

SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. ALL INFORMATION SHOWN IS APPROXIMATE ONLY AND ACCURATE ALIGNMENTS OR SIZES TTW HAS NOT CHECKED FOR CLASHES. WITH PROPOSED WORKS NOR DO WE CONFIRM SERVICES SHOWN ARE CORRECT OR ARE IN OPERATION. TTW RECOMMENDS ADDITIONAL INVESTIGATIONS ARE UNDERTAKEN WHICH INCLUDES ELECTRONIC TRACING AND POT HOLING.
KERB RETURNS SHEET
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
Scale: A1 AS SHOWN
Drawn: PK
Job No 131373
Drawing No C15
Revision P4
Authorised
Plot File Created: Sep 12, 2018 - 1:12am

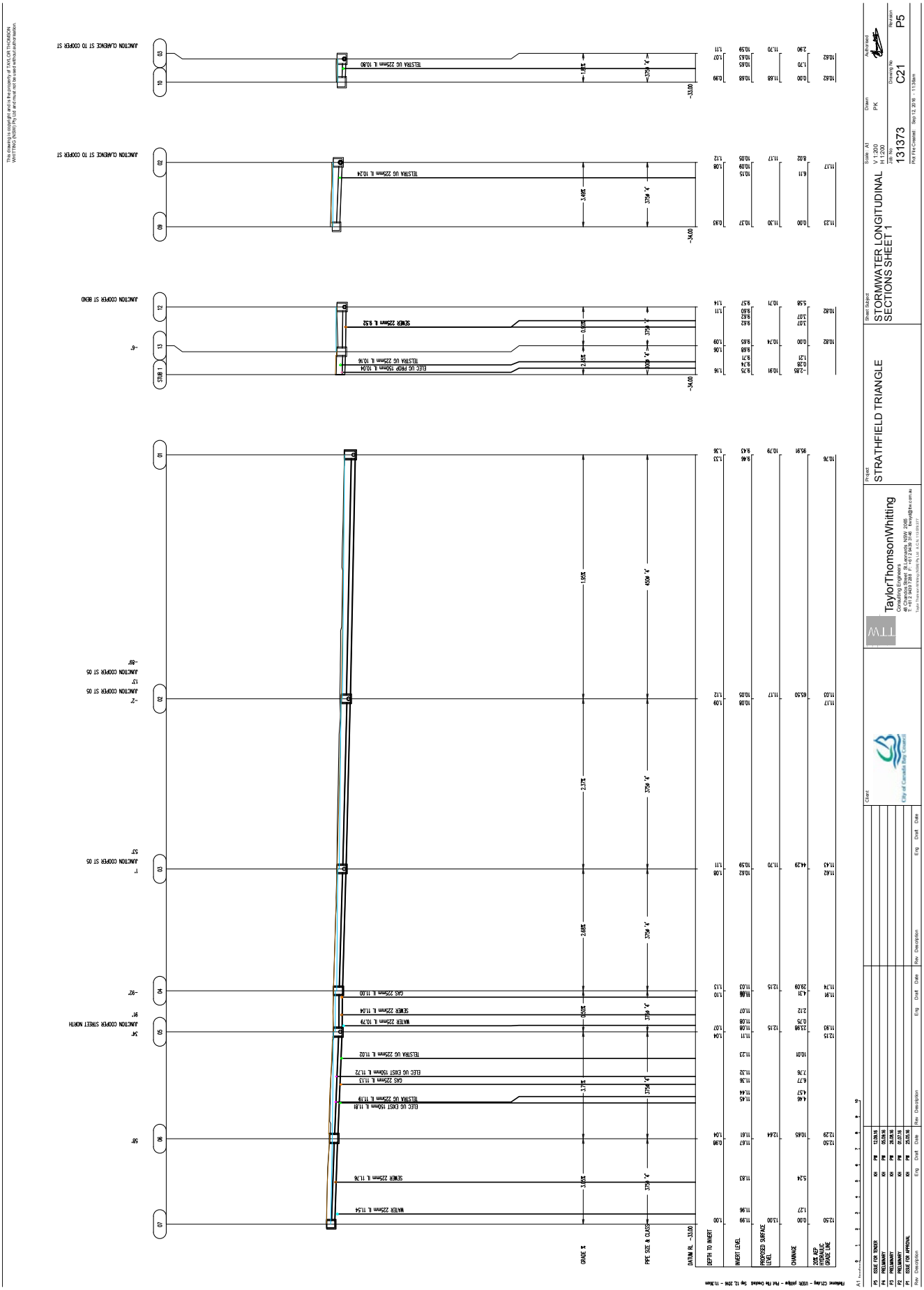

SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
CROSS SECTIONS ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. THIS INFORMATION DOES NOT PROVIDE DEPTHS, ACCURATE ALIGNMENTS OR SIZES. TTW HAS NOT CHECKED FOR ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN AS ACCURACY IS IMPROVED BY POTHOLING. TTW RECOMMENDS ADDITIONAL INVESTIGATIONS ARE UNDERTAKEN WHICH INCLUDES ELECTRONIC TRACING AND POT HOLING.
TaylorThomsonWhitting
Consulting Engineers
STRATHFIELD TRIANGLE
COOPER STREET
CROSS SECTIONS SHEET 1
Scale: A1 1:100
Drawn PK
Job No 131373
Drawing No C16
Revision P5
Plot File Created: Sep 12, 2016 - 1:12pm
P5 ISSUE FOR TENDER KH PM 12.09.16
P4 PRELIMINARY KH PM 30.08.16
P3 PRELIMINARY KH PM 01.07.16
P2 ISSUE FOR REVIEW KH PM 10.02.16
P1 ISSUE FOR REVIEW KH PK 23.12.15
Rev Description Eng Draft Date

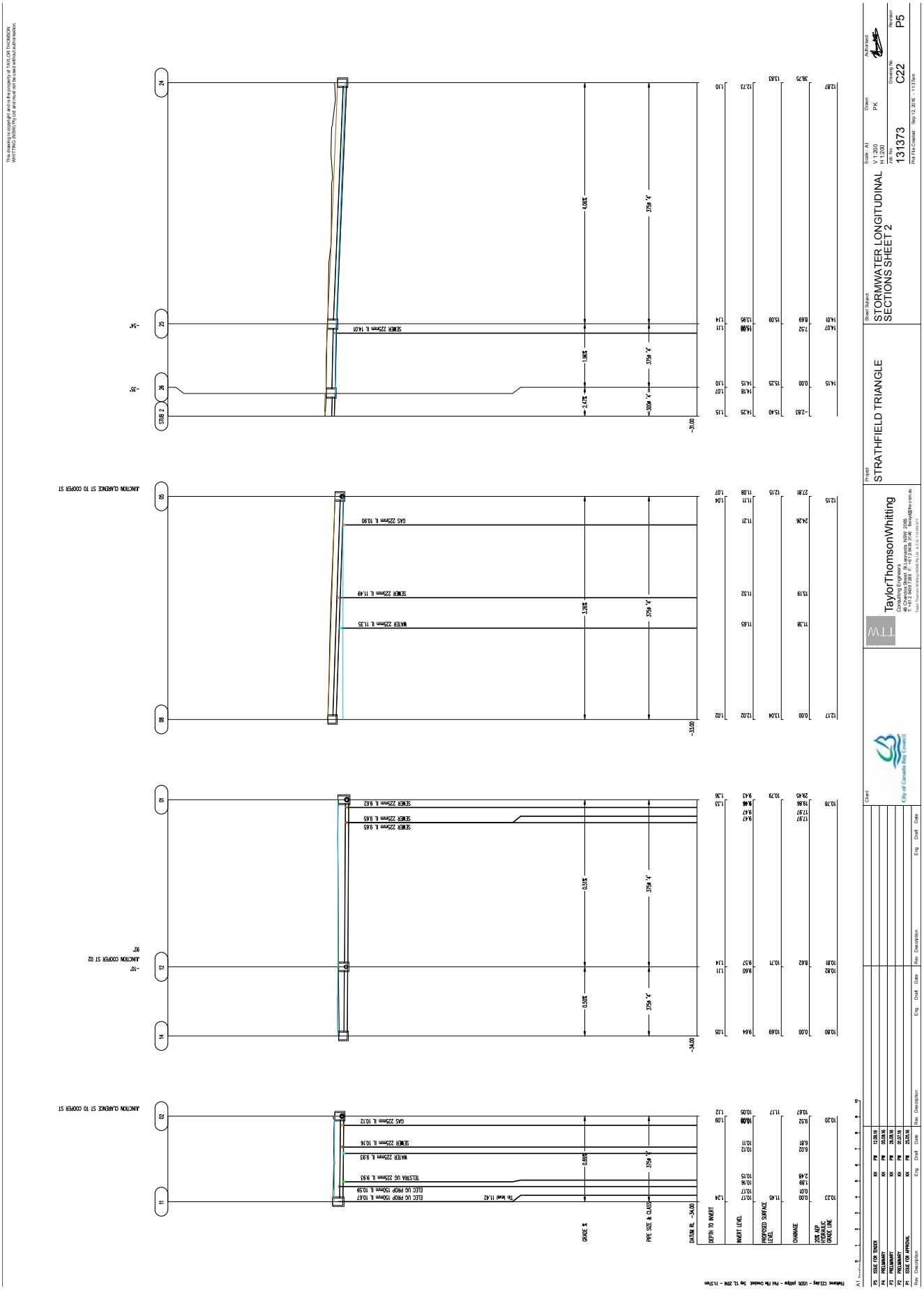

SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. THIS INFORMATION DOES NOT PROVIDE DEPTHS, ACCURATE ALIGNMENTS OR SIZES AND IS NOT ACCEPTED AS CLASS A OR B. THE CONTRACTOR MUST LOCATE ALL EXISTING SERVICES SHOWN ARE ACCURATE OR REPRESENT EXISTING. TFW RECOMMENDS ADDITIONAL INVESTIGATIONS ARE UNDERTAKEN WHICH INCLUDES EXISTING DRAWING AND PIT VISUAL
COOPER STREET
CROSS SECTIONS SHEET 2
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
City of Canada Bay Council
Job No 131373
Drawing No C17
Revision P5
Scale: A1 1:100
Drawn PK
Authorised
Plot File Created: Sep 12, 2018 - 1:12pm
Client
Project
Sheet Subject
Rev Description Eng Draft Date
P5 ISSUE FOR TENDER KH PM 12.09.18
P4 PRELIMINARY KH PM 10.07.18
P3 ISSUE FOR REVIEW KH PM 18.02.18
P2 ISSUE FOR REVIEW KH PK 23.12.15
P1 ISSUE FOR REVIEW KH PK 23.12.15
Rev Description Eng Draft Date

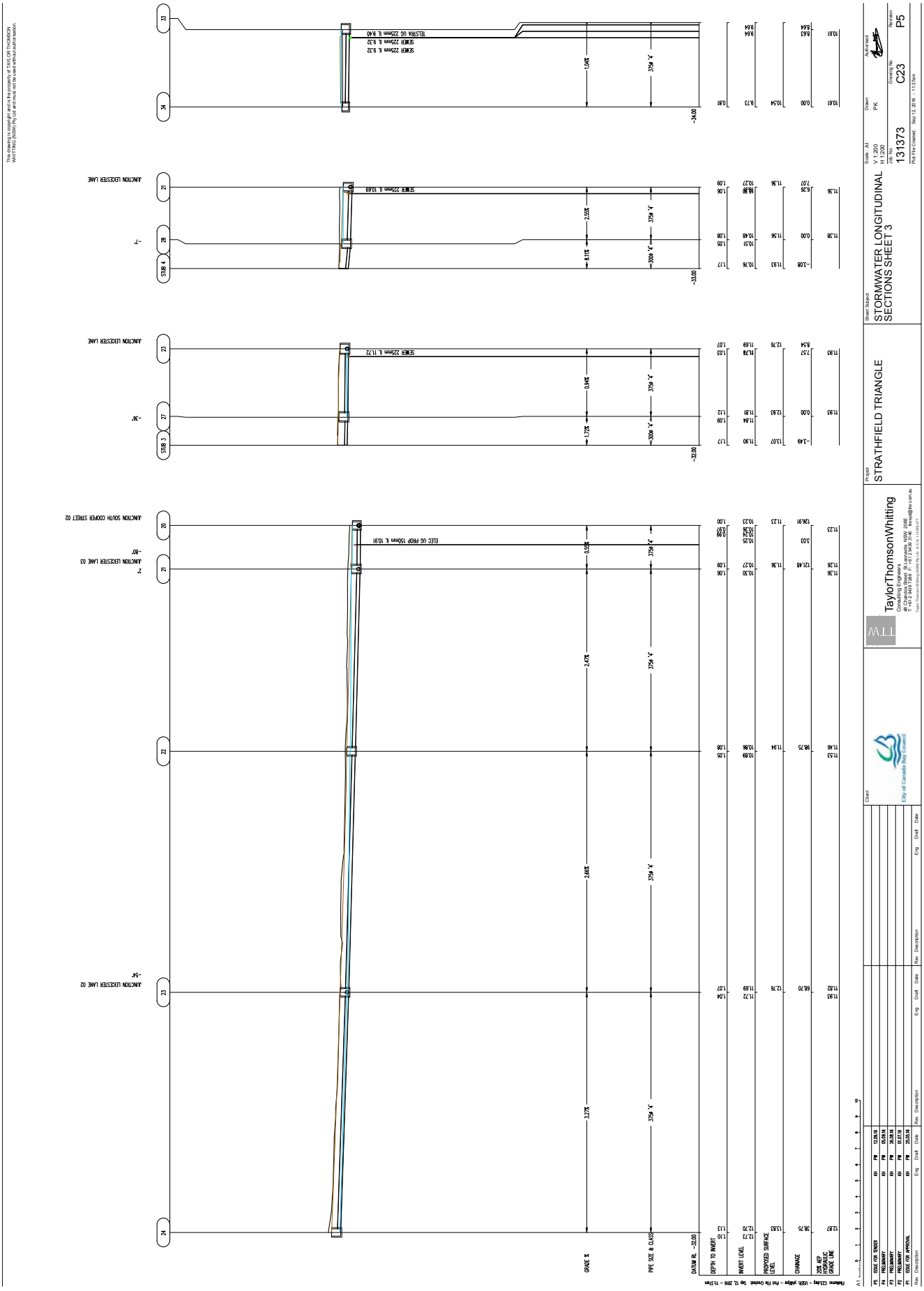

SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND DEVELOPMENT AGENCY RECORDS AND ARE APPROXIMATE ONLY. PRIOR TO ACCURATE ADJUSTMENTS OR SIZES TTW HAS NOT CHECKED FOR CLASHES. WHEN PROPOSED WORKS NOT DO WE CONFIRM SERVICES CONFLICT ARE ACCEPTED OR ACCEPTED CONSTRUCTION. TTW RECOMMENDS ADDITIONAL INVESTIGATIONS ARE UNDERTAKEN WHICH INCLUDES ELECTRONIC TRACING AND POT HOLING.
TaylorThomsonWhitting
Consulting Engineers
Project
STRATHFIELD TRIANGLE
Sheet Subject
HILTS ROAD AND LEICESTER LANE CROSS SECTIONS SHEET 1
Scale: A1 1:100
Drawn PK
Authorised
Job No 131373
Drawing No C18
Revision P5
Plot File Created: Sep 12, 2016 - 1:13:08pm
P5 ISSUE FOR TENDER KH PM 12.09.16
P4 PRELIMINARY KH PM 05.09.16
P3 PRELIMINARY KH PM 01.07.16
P2 ISSUE FOR REVIEW KH PM 10.02.16
P1 ISSUE FOR REVIEW KH PK 23.12.15
Rev Description Eng Draft Date
Datum RL 11.00
PROPOSED SURFACE LEVEL
EXISTING SURFACE LEVEL
OFFSET
CH 60.00
CH 50.00
CH 40.00
CH 30.00
CH 20.00
Datum RL 14.00
CH 110.00
CH 100.00
CH 90.00
CH 80.00
CH 70.00
Datum RL 13.00
CH 160.00
CH 150.00
CH 140.00
CH 130.00
CH 120.00
Datum RL 12.00

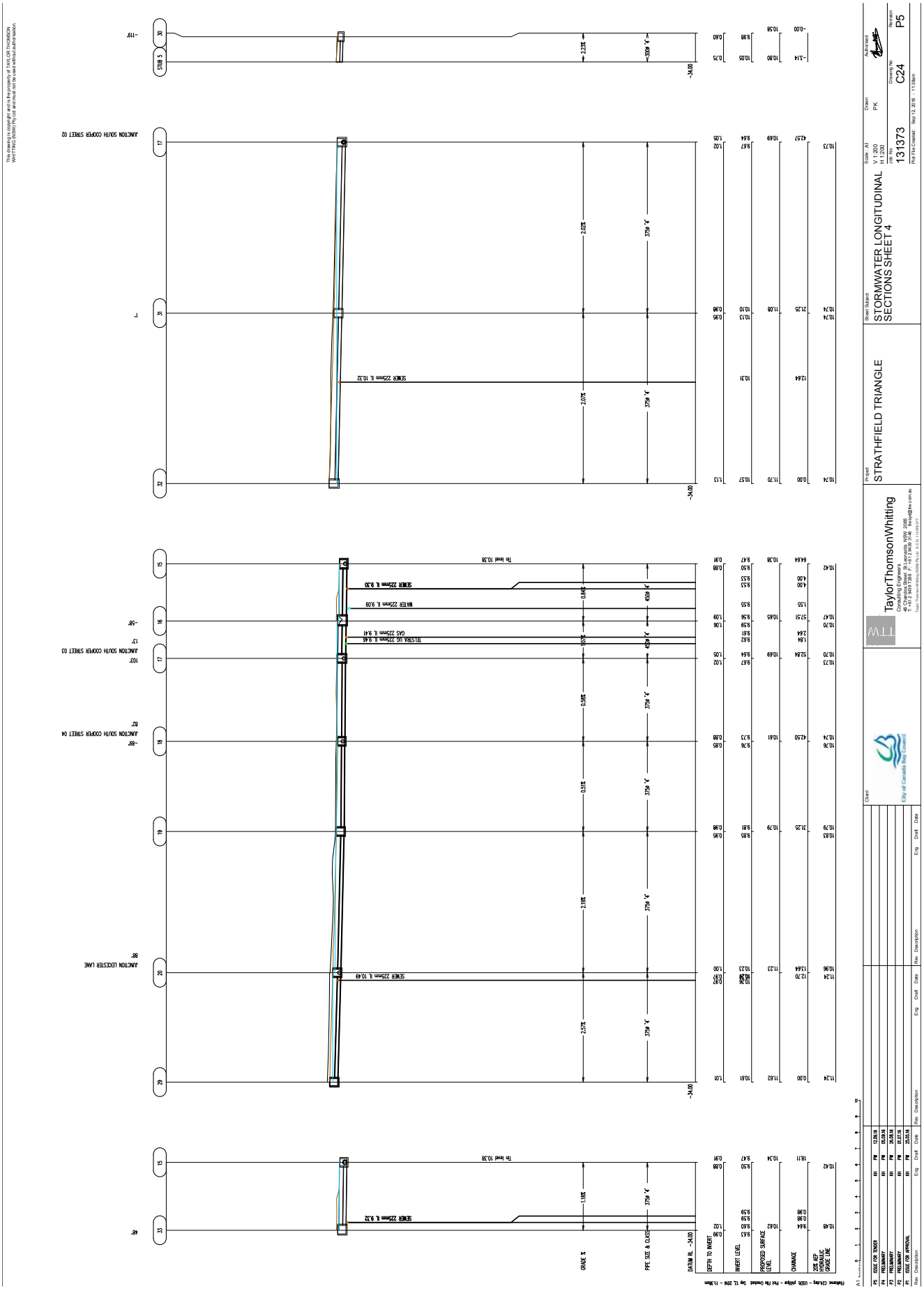

SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. THIS INFORMATION DOES NOT PROVIDE DEPTHS, ALWAYS EXCAVATE TRIAL HOLES TO CONFIRM DEPTHS AND LOCATIONS OF CLASHES WITH PROPOSED WORKS NOR DO WE CONFIRM SERVICES SHOWN ARE ACCURATE OR REPRESENT EXISTING.
TTW TAKES NO RESPONSIBILITY FOR ANY PERSONAL INJURY OR UNDERTAKEN WHICH INCLUDES ELECTRONIC TRADING AND POT HOLING.
TaylorThomsonWhitting
Consulting Engineers
STRATHFIELD TRIANGLE
HILTS ROAD AND
LEICESTER LANE
CROSS SECTIONS SHEET 2
Scale: A1 1:100
Drawn: PK
Job No 131373
Drawing No C19
Revision P5
Authorised
First File Created: Sep 12, 2016 - 7:13:34am
Client
City of Canada Bay Council
P5 ISSUE FOR TENDER KH PM 12.09.16
P4 PRELIMINARY KH PM 09.09.16
P3 PRELIMINARY KH PM 30.08.16
P2 ISSUE FOR REVIEW KH PM 19.02.16
P1 ISSUE FOR REVIEW KH PK 23.12.15
Rev Description Eng Draft Date
Datum RL 10.00
PROPOSED SURFACE LEVEL
EXISTING SURFACE LEVEL
OFFSET
Datum RL 9.00
CH 280.00
CH 260.00
CH 240.00
CH 220.00
CH 200.00
CH 180.00
CH 160.00
CH 140.00
CH 120.00
Datum RL 11.00
Datum RL 12.00
2.5%
-3%
1%
-1%


SECTIONS LEGEND
WATER SERVICES
ELECTRICAL SERVICES
SEWER SERVICES
TELECOMMUNICATION SERVICES
GAS SERVICES
STORMWATER SERVICES
DISCLAIMER
EXISTING SERVICES ARE BASED ON DIAL BEFORE YOU DIG AND LAND SURVEY INFORMATION. THIS INFORMATION DOES NOT PROVIDE ACTUAL OR ACCURATE ALIGNMENTS OR SIZES. TTW HAS NOT CHECKED FOR CLASHES WITH PROPOSED WORKS NOR DO WE CONFIRM SERVICES SHOWN ARE CLASH FREE WITH PROPOSED DESIGN.
TTW RECOMMENDS ADDITIONAL INVESTIGATIONS ARE UNDERTAKEN WHICH INCLUDES ELECTRONIC TRACING AND POT HOLING.
TaylorThomsonWhitting
Consulting Engineers
CLARENCE STREET
CROSS SECTIONS
STRATHFIELD TRIANGLE
Scale: A1 1:100
Job No 131373
Drawing No C20
Revision P5
Authorised
Drawn PK
Sheet Subject
Project
Client
City of Canada Bay Council
Datum RL 11.00
Datum RL 10.00
PROPOSED SURFACE LEVEL
EXISTING SURFACE LEVEL
OFFSET
CH 60.00
CH 50.00
CH 40.00
CH 30.00
CH 20.00
CH 70.00
P5 ISSUE FOR REVIEW
P4 PRELIMINARY
P3 PRELIMINARY
P2 ISSUE FOR REVIEW
P1 ISSUE FOR REVIEW
Rev Description Eng Draft Date

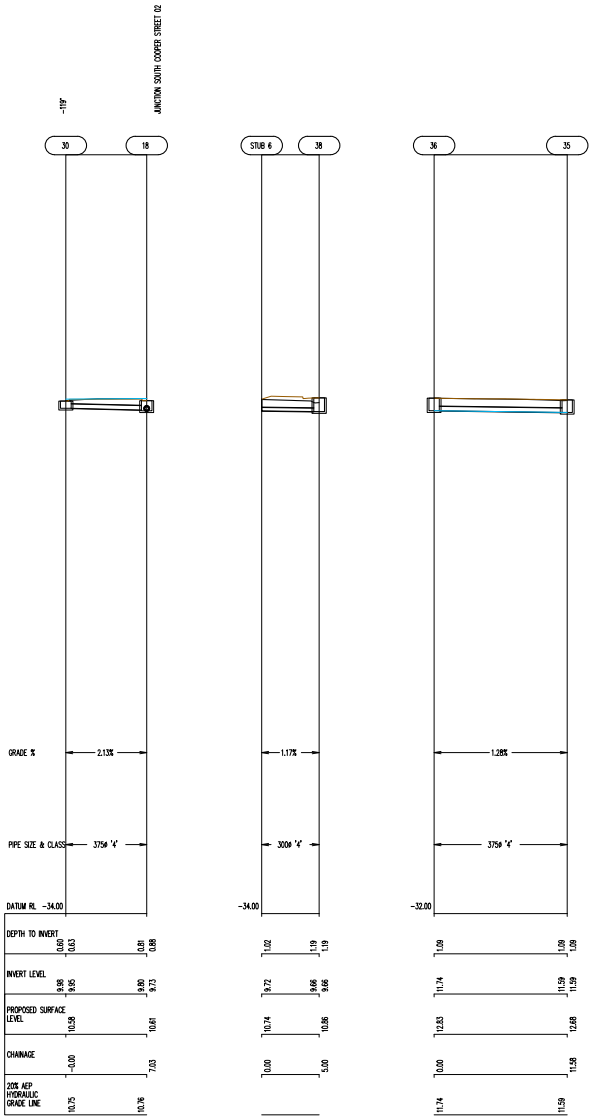

STRATHFIELD TRIANGLE
STORMWATER LONGITUDINAL SECTIONS SHEET 1
TaylorThomsonWhitting
Consulting Engineers
131373
C21
P5
JUNCTION CLARENCE ST TO COOPER ST
JUNCTION COOPER ST 66ND
JUNCTION COOPER ST 06
JUNCTION COOPER STREET NORTH
TESTRA US 225mm IL 10.80
TESTRA US 225mm IL 10.24
SEWER 225mm IL 9.52
ELEC US PROP 150mm IL 10.04
TESTRA US 225mm IL 10.36
GAS 225mm IL 11.00
SEWER 225mm IL 11.04
WATER 225mm IL 10.79
TESTRA US 225mm IL 11.02
ELEC US EXIST 150mm IL 11.72
GAS 225mm IL 11.13
ELEC US EXIST 150mm IL 11.81
TESTRA US 225mm IL 11.19
SEWER 225mm IL 11.76
WATER 225mm IL 11.54
DATUM RL -33.00
DEPTH TO INVERT
INVERT LEVEL
PROPOSED SURFACE LEVEL
CHAINAGE
PIPE SIZE & CLASS
GRADE %
ISSUE FOR TENDER
PRELIMINARY
ISSUE FOR APPROVAL


STORMWATER LONGITUDINAL SECTIONS SHEET 2
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
Drawing No C22
Revision P5
Job No 131373
Scale: A1 V 1:200 H 1:1000
Drawn PK
Authorised
Plot File Created: Sep 12, 2016 - 1:13:9am
P5 ISSUE FOR TENDER
P4 PRELIMINARY
P3 PRELIMINARY
P2 PRELIMINARY
P1 ISSUE FOR APPROVAL
JUNCTION CLARENCE ST TO COOPER ST
JUNCTION COOPER ST 02
DATUM RL -34.00
PIPE SIZE & CLASS
GRADE %
DEPTH TO INVERT
INVERT LEVEL
PROPOSED SURFACE LEVEL
CHAINAGE
DOS ADP ROADWAY/KERB GRADE LINE


STORMWATER LONGITUDINAL SECTIONS SHEET 3
STRATHFIELD TRIANGLE
TaylorThomsonWhitting
Consulting Engineers
Scale: A1 V 1:200 H 1:200
Job No 131373
Drawing No C23
Revision P5
Authorised
Drawn PK
Checked PF
Plot File Created: Sep 12, 2018 - 11:37am
Client
City of Canada Bay Council
ISSUE FOR TENDER
PRELIMINARY
ISSUE FOR APPROVAL
Rev Description Eng Draft Date
This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.


STRATHFIELD TRIANGLE
STORMWATER LONGITUDINAL SECTIONS SHEET 4
TaylorThomsonWhitting
Consulting Engineers
Drawing No. C24
Revision P5
Scale: A1 V 1:200 H 1:1000
Job No. 131373
Drawn PK
Authorised
Plot File Created: Sep 12, 2016 - 1:13pm
ISSUE FOR TENDER
PRELIMINARY
ISSUE FOR APPROVAL
Rev Description Eng Draft Date
Client
City of Canada Bay Council
JUNCTION SOUTH COOPER STREET 02
JUNCTION SOUTH COOPER STREET 03
JUNCTION SOUTH COOPER STREET 04
JUNCTION LEICHHARDT LANE
SEWER 225mm IL 10.32
SEWER 225mm IL 9.30
WATER 225mm IL 9.09
TELSTRA UG 225mm IL 9.46
GAS 225mm IL 9.41
SEWER 225mm IL 10.49
SEWER 225mm IL 9.32
Th level 10.38
DATUM RL -34.00
GRADE %
PIPE SIZE & CLASS
DEPTH TO INVERT
INVERT LEVEL
PROPOSED SURFACE LEVEL
CHAINAGE
SIDE ADP HYDRAULIC GRADE LINE

This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.



P:\Mainz CS\dwg - USER: jeffw - Plot File Created: Sep 12, 2016 - 11:38am

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P5	ISSUE FOR TENDER	KH	PW	12.09.16
P4	PRELIMINARY	KH	PW	05.09.16
P3	PRELIMINARY	KH	PW	26.08.16
P2	PRELIMINARY	KH	PW	01.07.16
P1	ISSUE FOR APPROVAL	KH	PW	25.05.16

Client: City of Canada Bay Council

TaylorThomsonWhitting
Consulting Engineers
48 Chandos Street St Leonards NSW 2065
T: +61 2 9439 7288 F: +61 2 9439 3146 tsnyd@ttw.com.au
Taylor Thomson Whitting (NSW) Pty Ltd A.C.N. 113 976 977

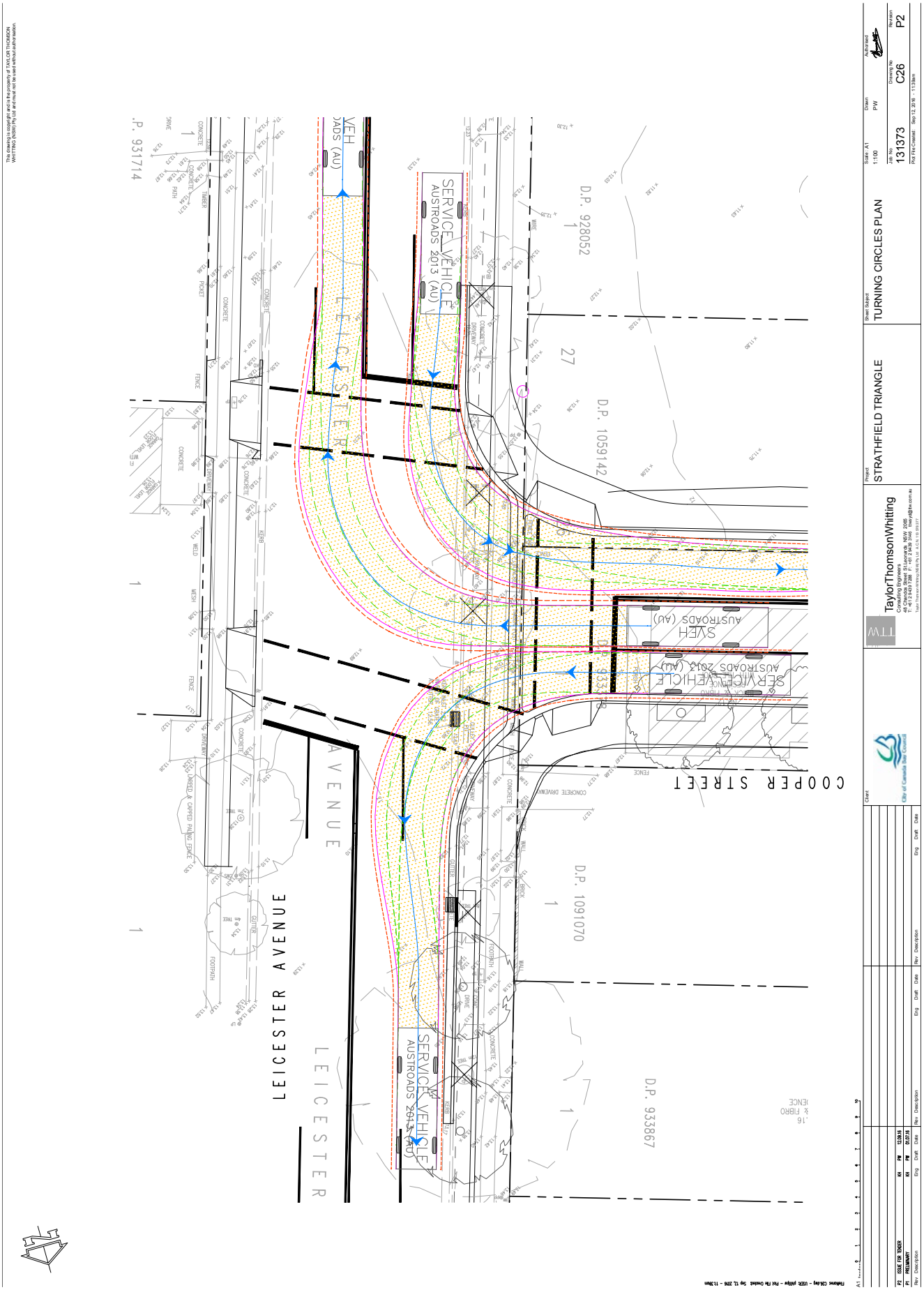
Project: STRATHFIELD TRIANGLE

Sheet Subject: STORMWATER LONGITUDINAL SECTIONS SHEET 5

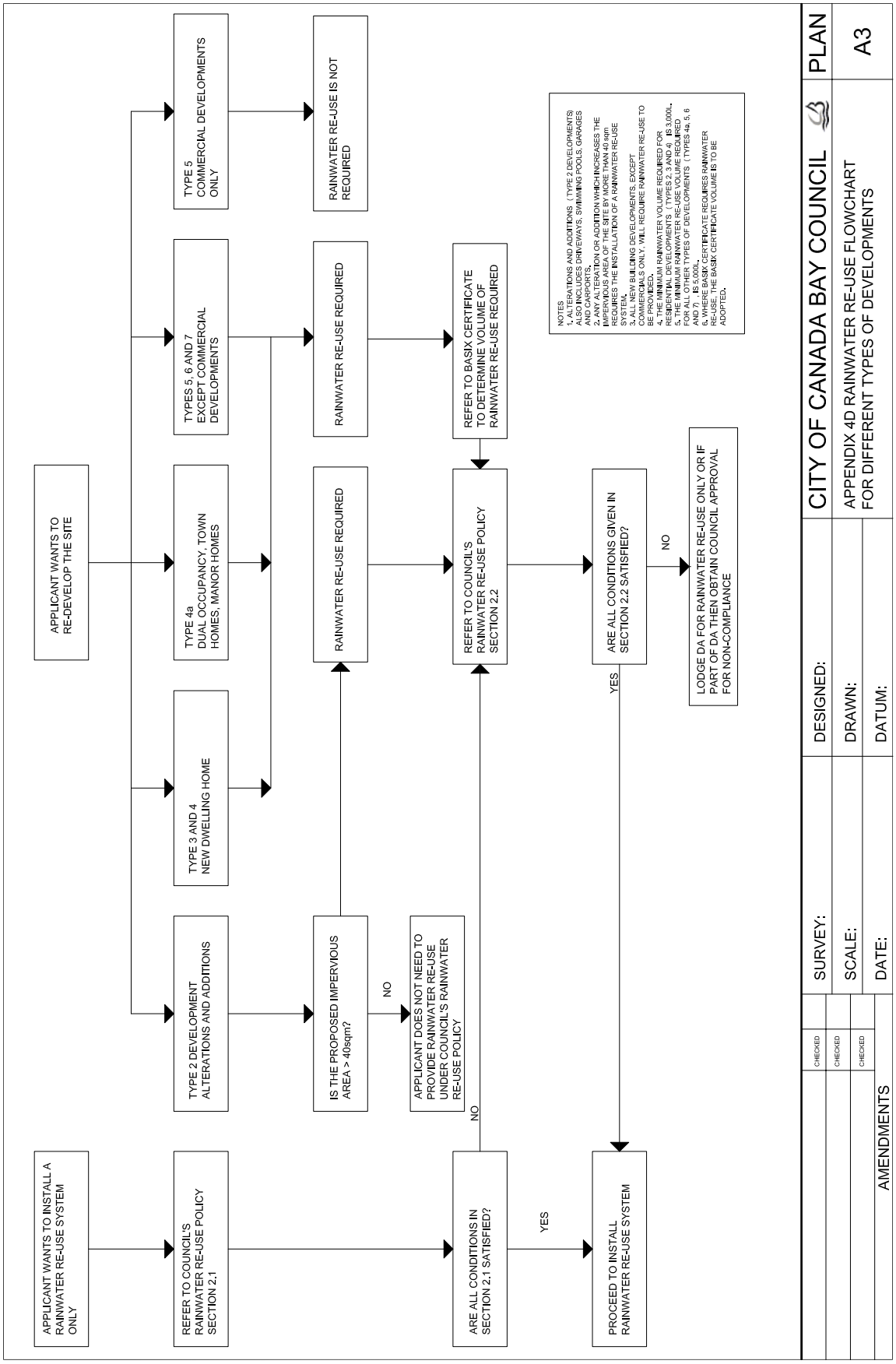
Scale: A1 V 1:200 H 1:200 | Drawn: PK | Authorised:

Job No: 131373 | Drawing No: C25 | Revision: P5

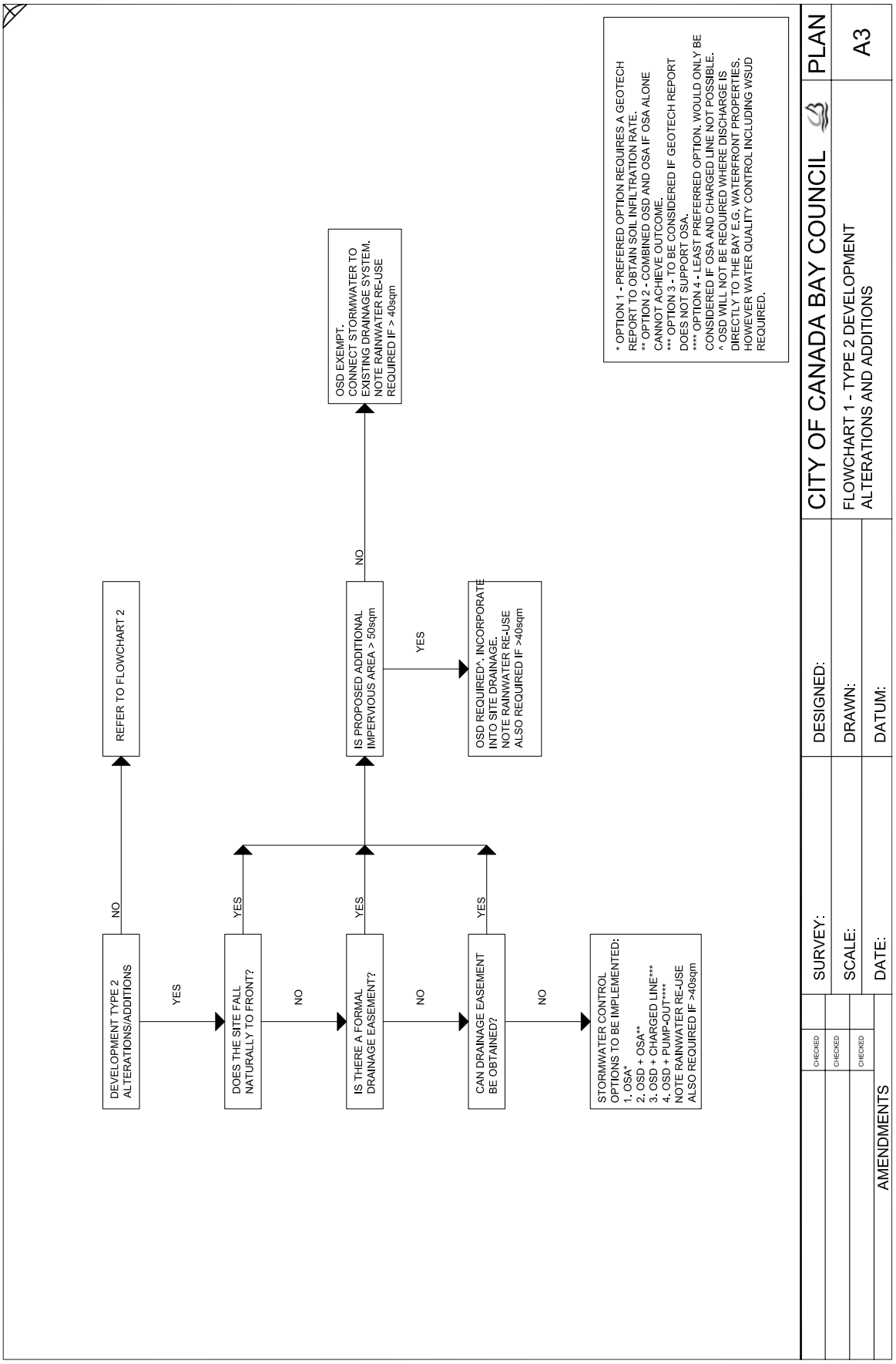
Plot File Created: Sep 12, 2016 - 11:38am


LEICESTER AVENUE
COOPER STREET
SERVICE VEHICLE
AUSTROADS 2013 (AU)
D.P. 928052
D.P. 105942
D.P. 1091070
D.P. 933867
D.P. 931714
TaylorThomsonWhitting
STRATHFIELD TRIANGLE
TURNING CIRCLES PLAN
Job No. 131373
Drawing No. C26
Revision P2

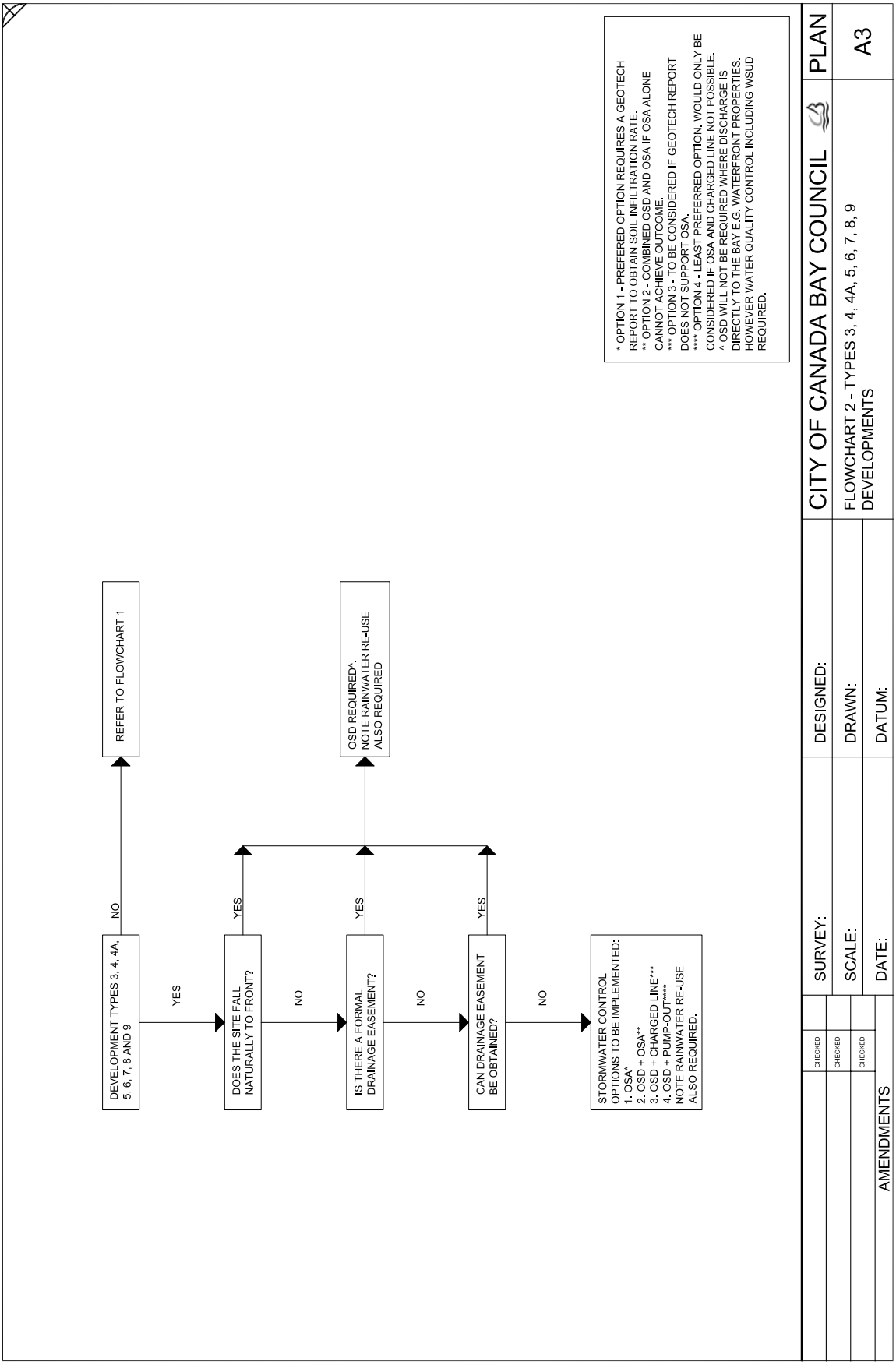
Flow Charts Rainwater Reuse



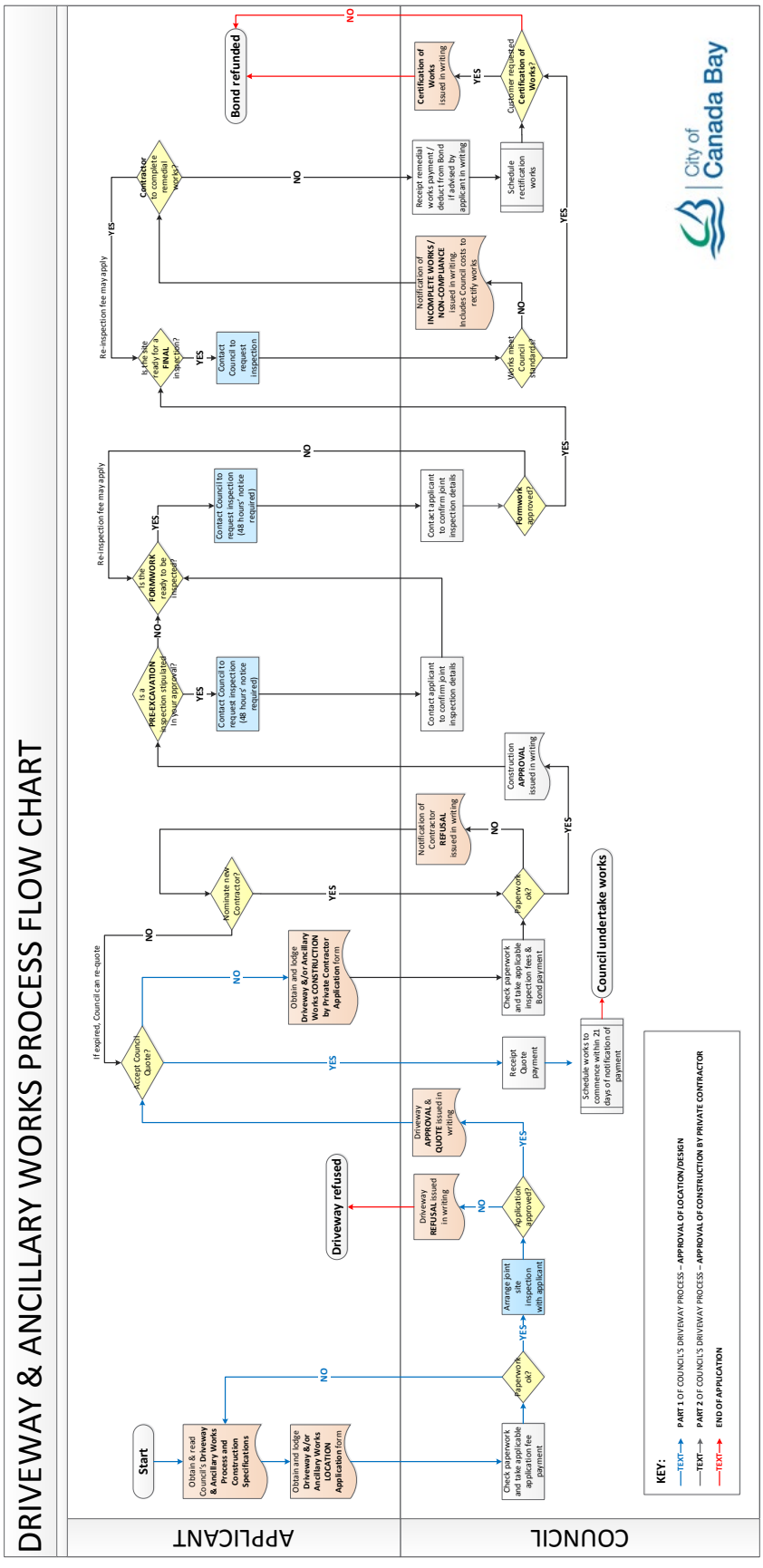
Stormwater Management Type 2 Developments



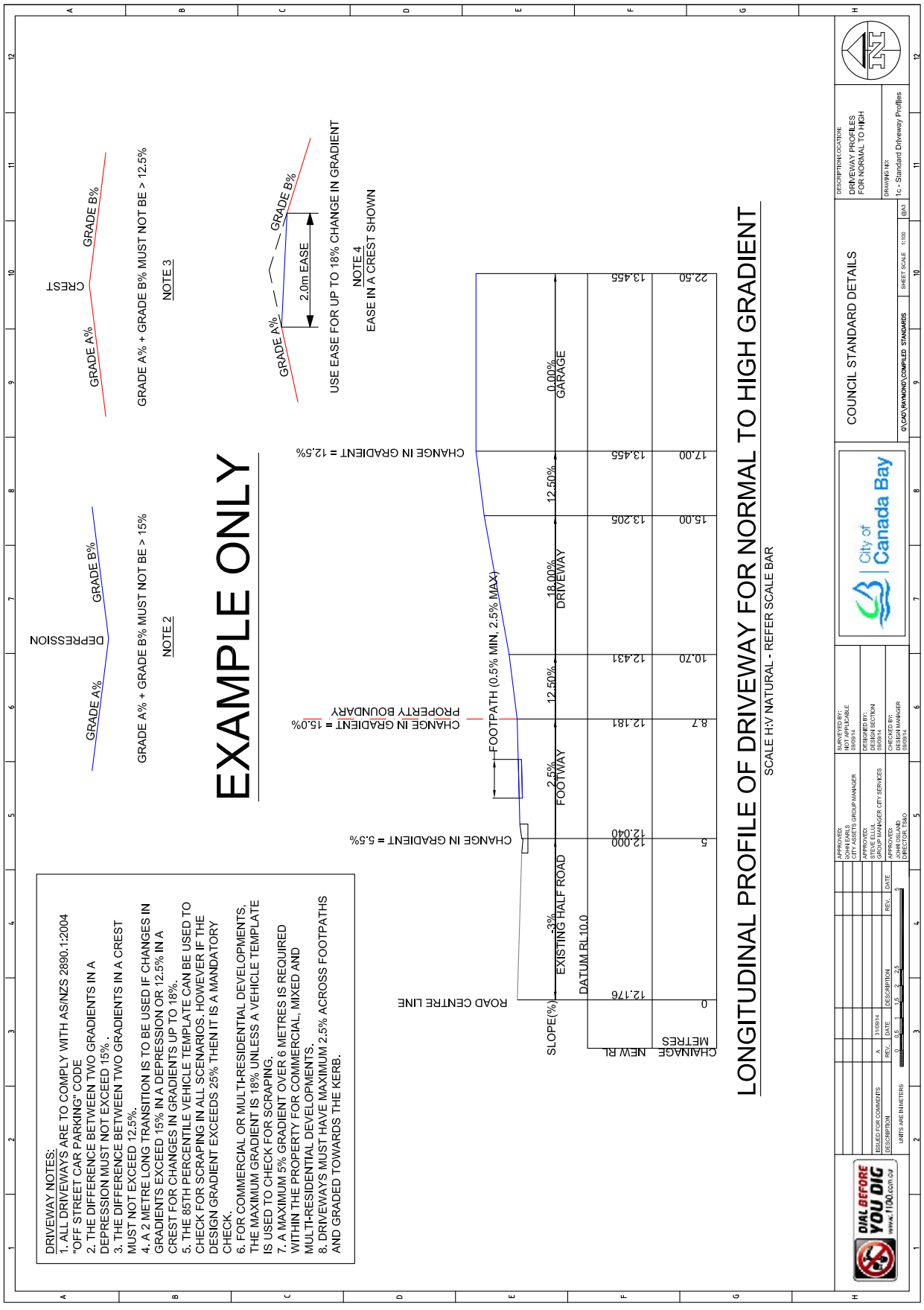
Stormwater Management Type 3 to 9 Developments

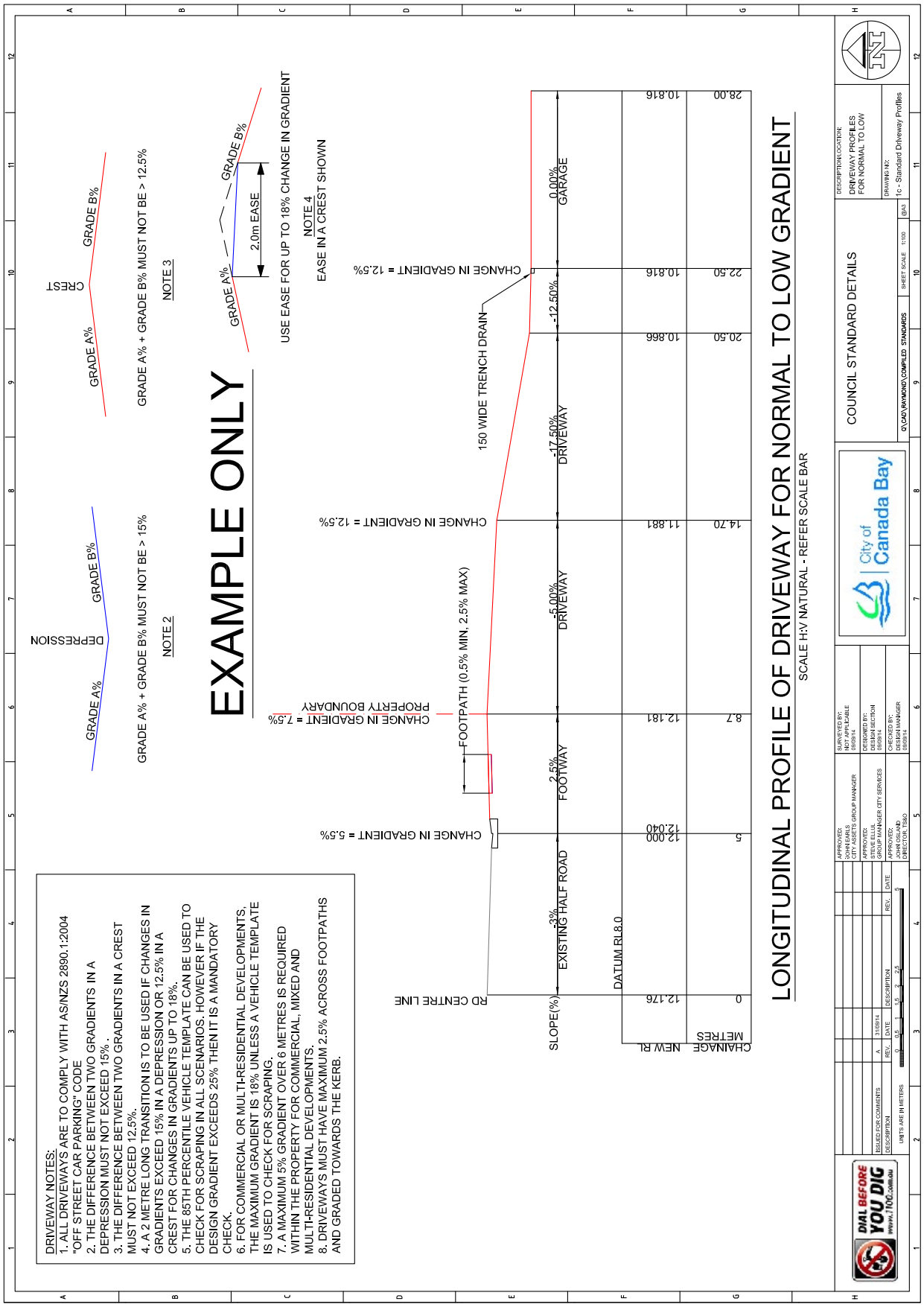


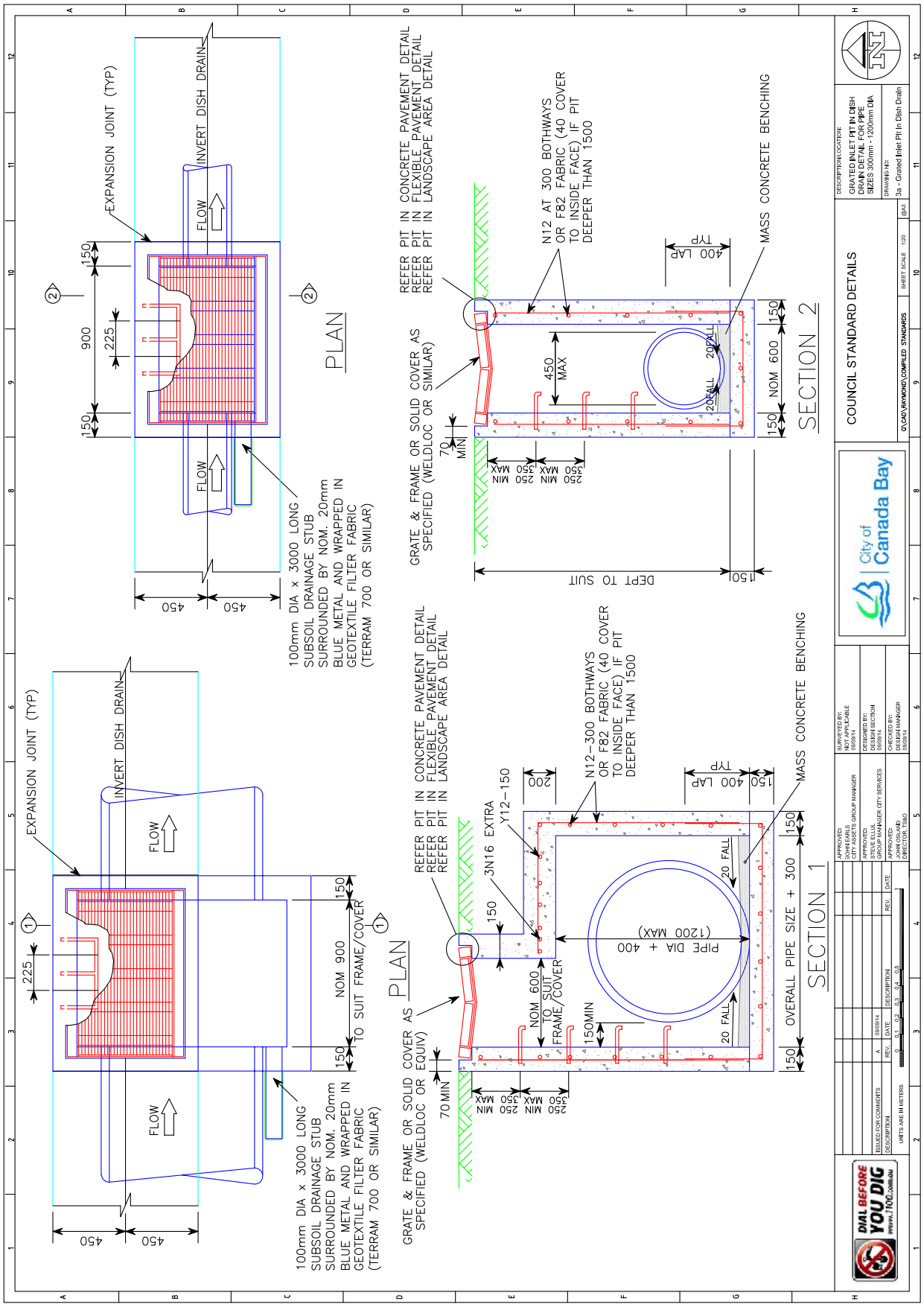
Driveway and Ancillary Works

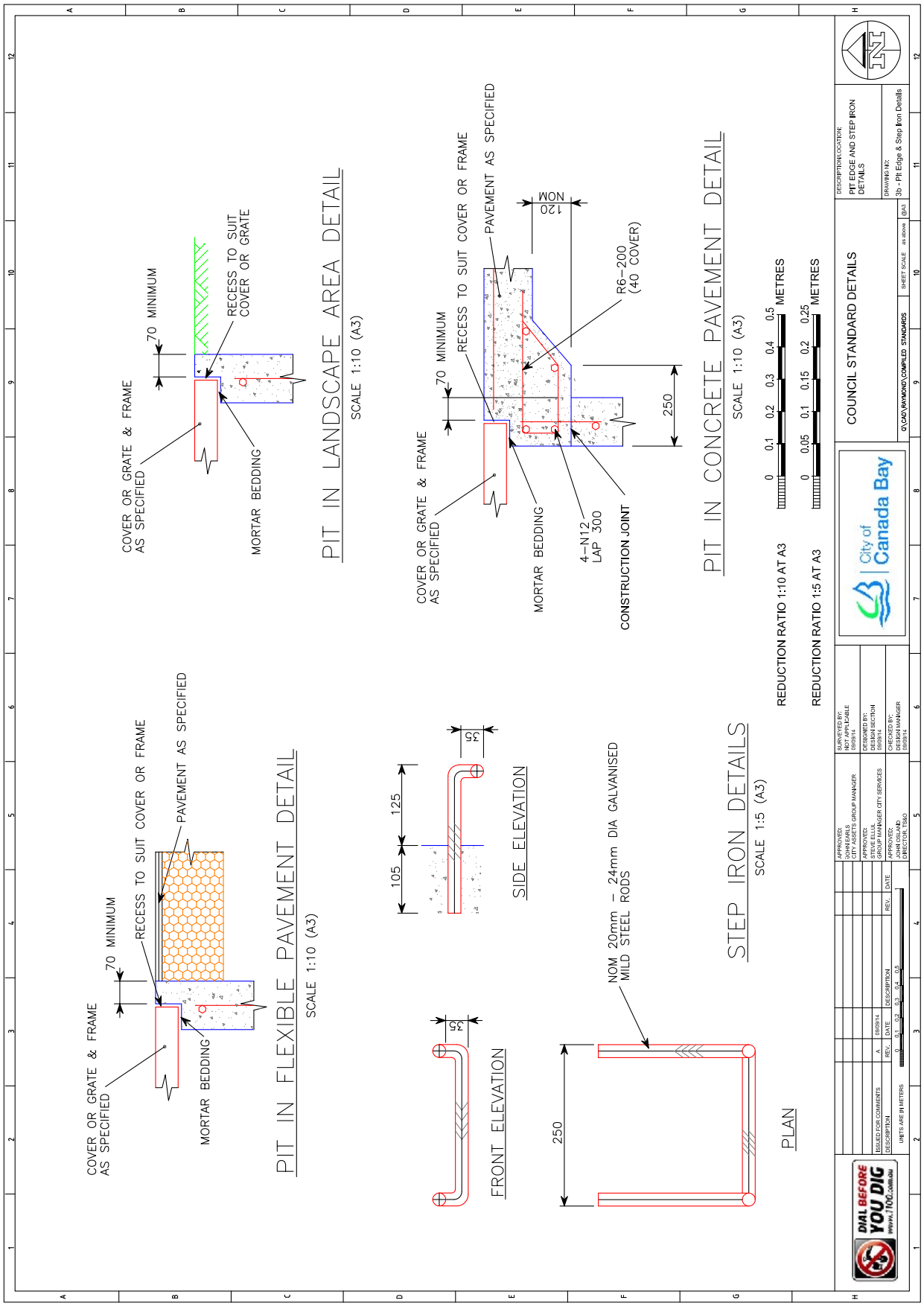


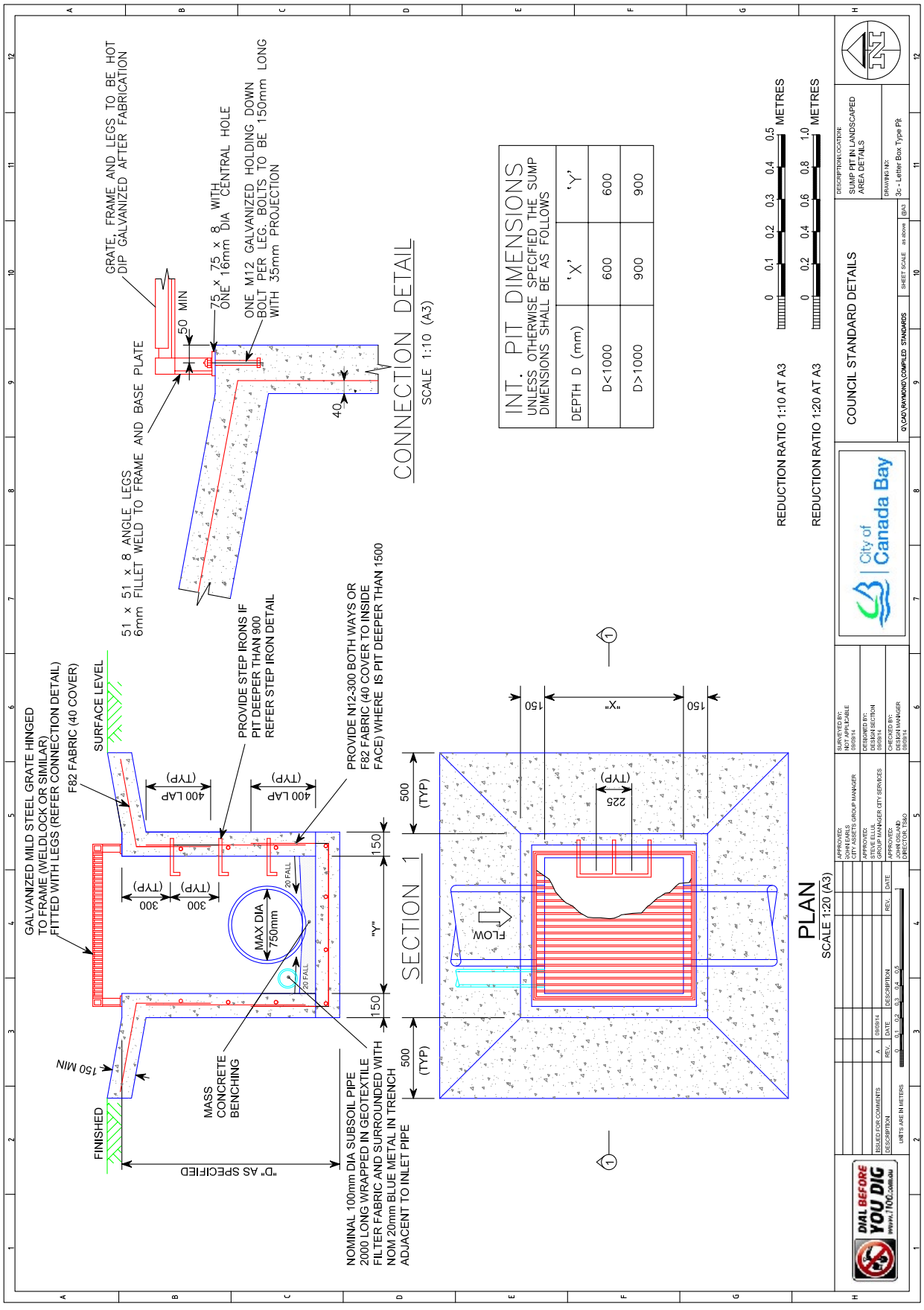
Standard Engineering Drawings

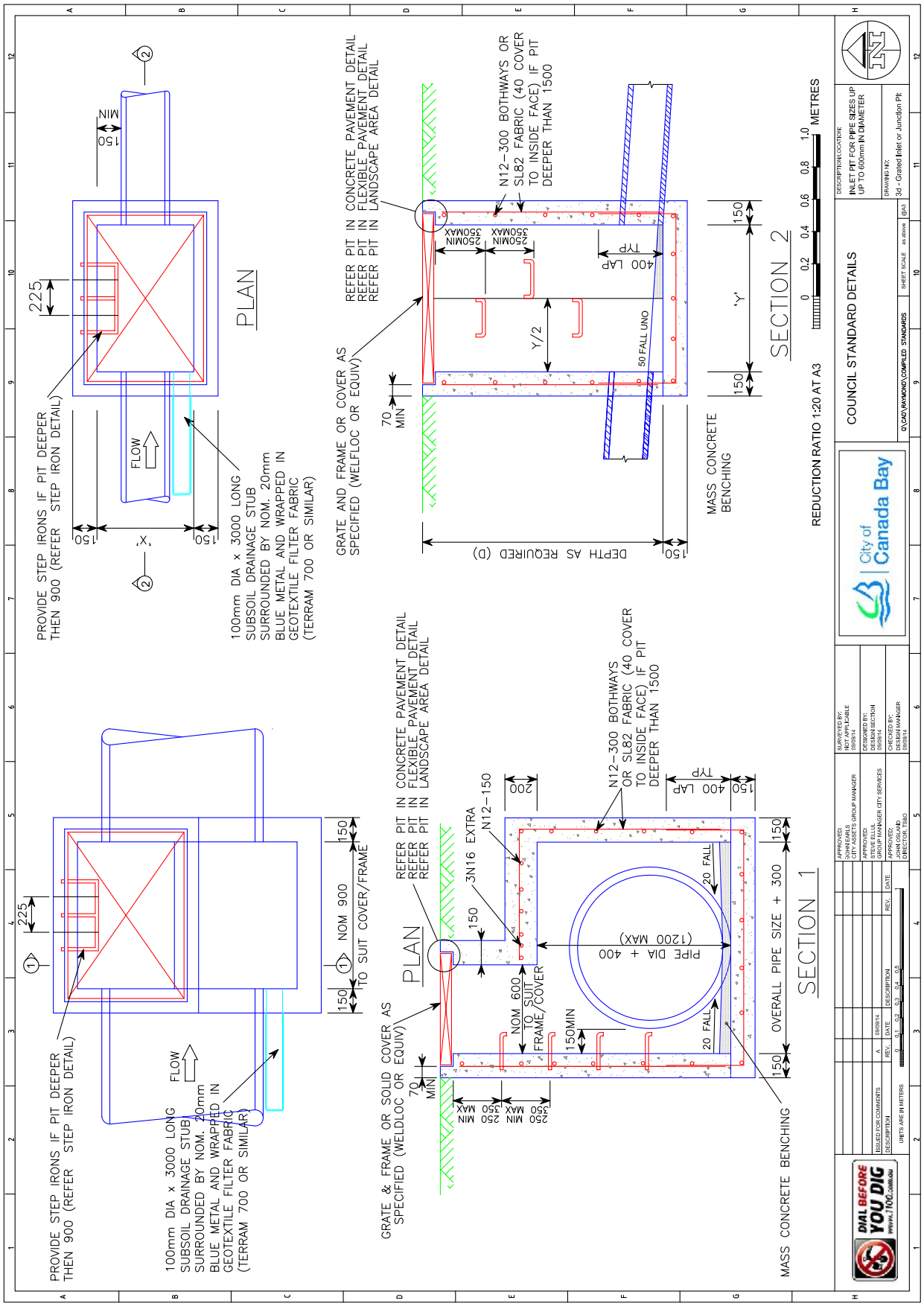


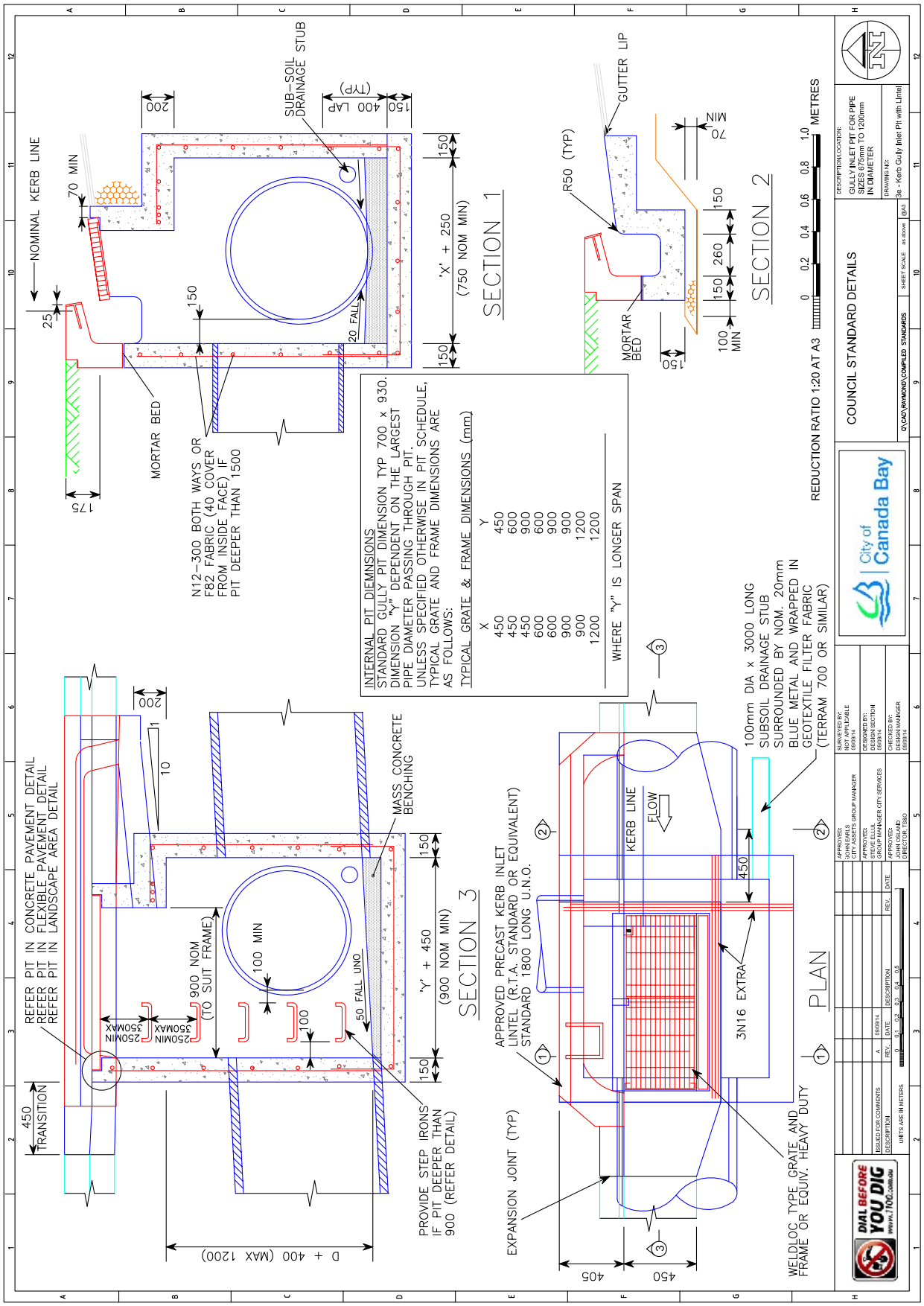

EXAMPLE ONLY
LONGITUDINAL PROFILE OF DRIVEWAY FOR NORMAL TO LOW GRADIENT
SCALE H:V NATURAL - REFER SCALE BAR
DRIVEWAY NOTES:
1. ALL DRIVEWAYS ARE TO COMPLY WITH AS/NZS 2890.1:2004 "OFF STREET CAR PARKING" CODE
2. THE DIFFERENCE BETWEEN TWO GRADIENTS IN A DEPRESSION MUST NOT EXCEED 15% .
3. THE DIFFERENCE BETWEEN TWO GRADIENTS IN A CREST MUST NOT EXCEED 12.5%.
4. A 2 METRE LONG TRANSITION IS TO BE USED IF CHANGES IN GRADIENTS EXCEED 15% IN A DEPRESSION OR 12.5% IN A CREST FOR CHANGES IN GRADIENTS UP TO 18%.
5. THE 85TH PERCENTILE VEHICLE TEMPLATE CAN BE USED TO CHECK FOR SCRAPING IN ALL SCENARIOS. HOWEVER IF THE DESIGN GRADIENT EXCEEDS 25% THEN IT IS A MANDATORY CHECK.
6. FOR COMMERCIAL OR MULTI-RESIDENTIAL DEVELOPMENTS, THE MAXIMUM GRADIENT IS 18% UNLESS A VEHICLE TEMPLATE IS USED TO CHECK FOR SCRAPING.
7. A MAXIMUM 5% GRADIENT OVER 6 METRES IS REQUIRED WITHIN THE PROPERTY FOR COMMERCIAL, MIXED AND MULTI-RESIDENTIAL DEVELOPMENTS.
8. DRIVEWAYS MUST HAVE MAXIMUM 2.5% ACROSS FOOTPATHS AND GRADED TOWARDS THE KERB.
DEPRESSION
GRADE A%
GRADE B%
GRADE A% + GRADE B% MUST NOT BE > 15%
NOTE 2
CREST
GRADE A%
GRADE B%
GRADE A% + GRADE B% MUST NOT BE > 12.5%
NOTE 3
GRADE A%
GRADE B%
2.0m EASE
USE EASE FOR UP TO 18% CHANGE IN GRADIENT
NOTE 4
EASE IN A CREST SHOWN
CHANGE IN GRADIENT = 12.5%
150 WIDE TRENCH DRAIN
CHANGE IN GRADIENT = 12.5%
CHANGE IN GRADIENT = 7.5%
PROPERTY BOUNDARY
FOOTPATH (0.5% MIN, 2.5% MAX)
CHANGE IN GRADIENT = 5.5%
RD CENTRE LINE
SLOPE(%)
-3%
2.5%
-5.00%
-17.50%
-12.50%
0.00%
EXISTING HALF ROAD
FOOTWAY
DRIVEWAY
DRIVEWAY
GARAGE
DATUM RL8.0
CHAINAGE METRES
NEW RL
0
12.176
5
12.000
12.040
8.7
12.181
14.70
11.881
20.50
10.866
22.50
10.816
28.00
10.816
SURVEYED BY:
NEW SURVEYABLE
08/09/14
APPROVED:
DUNCAN GIES
CITY ASSETS GROUP MANAGER
DESIGNED BY:
STEVE ELLIL
GROUP MANAGER CITY SERVICES
CHECKED BY:
JOHN OSLAND
DESIGN MANAGER
08/09/14
APPROVED:
JOHN OSLAND
DIRECTOR, TS&O
ISSUED FOR COMMENTS
A
3/09/14
REV.
DATE
DESCRIPTION
UNITS ARE IN METERS
0
0.5
1
1.5
2
2.5
5
DIAL BEFORE YOU DIG
www.1100.com.au
City of Canada Bay
COUNCIL STANDARD DETAILS
DESCRIPTION/LOCATION:
DRIVEWAY PROFILES
FOR NORMAL TO LOW
DRAWING NO:
1c - Standard Driveway Profiles
O:\CAD\.RAYMOND\.COMPILED_STANDARDS
SHEET SCALE
1:100
@A3

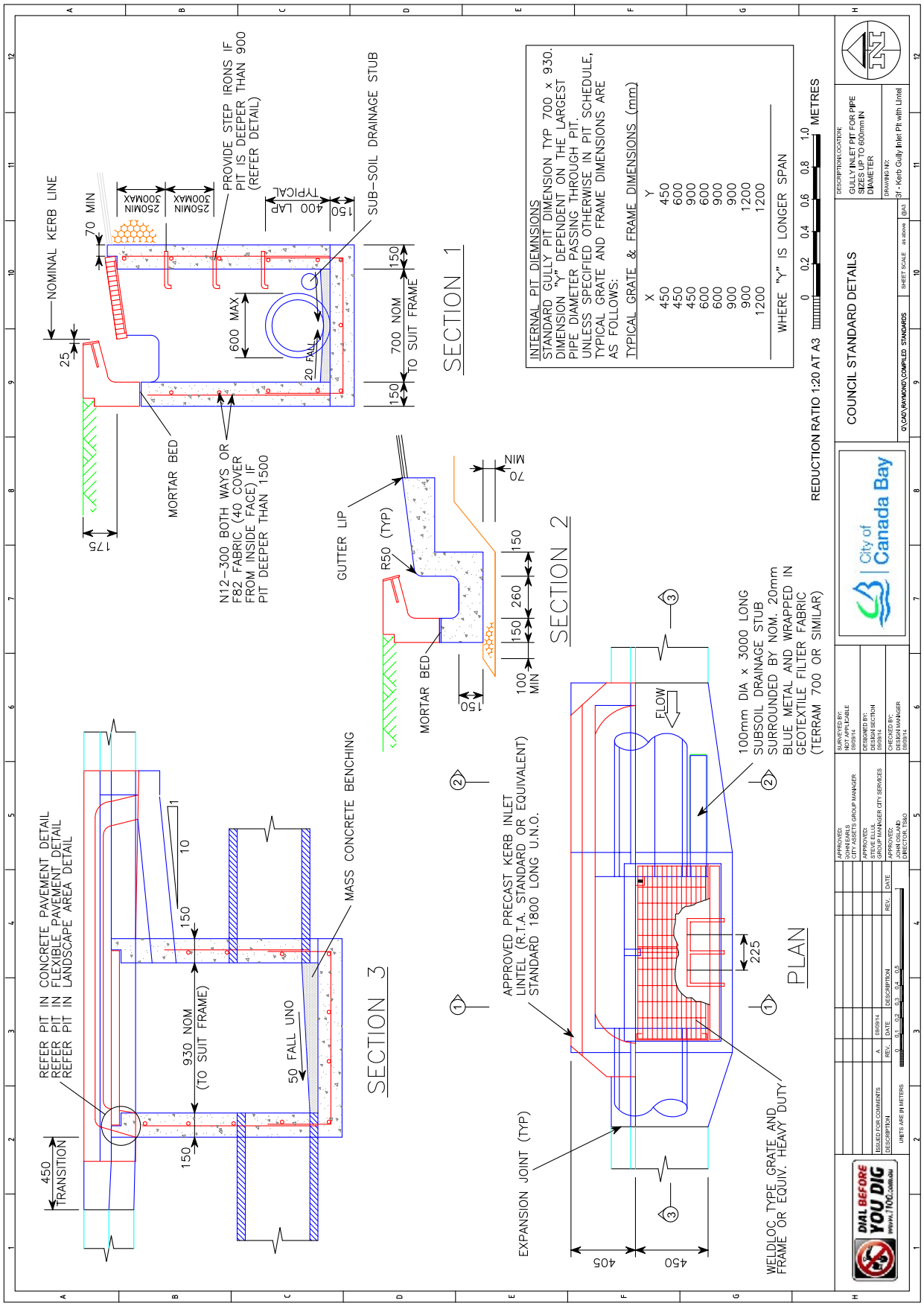

PLAN
EXPANSION JOINT (TYP)
INVERT DISH DRAIN
FLOW
150
900
225
150
450
450
100mm DIA x 3000 LONG SUBSOIL DRAINAGE STUB SURROUNDED BY NOM. 20mm BLUE METAL AND WRAPPED IN GEOTEXTILE FILTER FABRIC (TERRAM 700 OR SIMILAR)
SECTION 2
REFER PIT IN CONCRETE PAVEMENT DETAIL
REFER PIT IN FLEXIBLE PAVEMENT DETAIL
REFER PIT IN LANDSCAPE AREA DETAIL
GRATE & FRAME OR SOLID COVER AS SPECIFIED (WELDLOC OR SIMILAR)
70 MIN
N12 AT 300 BOTHWAYS OR F82 FABRIC (40 COVER TO INSIDE FACE) IF PIT DEEPER THAN 1500
400 LAP TYP
MASS CONCRETE BENCHING
450 MAX
20 FALL
250 MIN 250 MAX
NOM 600
150
DEPT TO SUIT
SECTION 1
3N16 EXTRA Y12-150
N12-300 BOTHWAYS OR F82 FABRIC (40 COVER TO INSIDE FACE) IF PIT DEEPER THAN 1500
200
150MIN
NOM 600 TO SUIT FRAME/COVER
PIPE DIA + 400 (1200 MAX)
OVERALL PIPE SIZE + 300
NOM 900 TO SUIT FRAME/COVER
COUNCIL STANDARD DETAILS
City of Canada Bay
GRATED INLET PIT IN DISH DRAIN DETAIL FOR PIPE SIZES 300mm - 1200mm DIA
3a - Grated Inlet Pit in Dish Drain
DRAWING NO:
SHEET SCALE 1:20 @A3
Q:\CAD\RAYMOND\COMPILED STANDARDS
DESIGNED BY: DESIGN SECTION 08/08/14
CHECKED BY: DESIGN MANAGER 08/08/14
APPROVED: MANAGER CITY ASSETS GROUP 08/08/14
APPROVED: STEVE ELLUL GROUP MANAGER CITY SERVICES 08/08/14
APPROVED: DIRECTOR, TS&O
DATE
REV.
DESCRIPTION
ISSUED FOR COMMENTS
UNITS ARE IN METERS
DIAL BEFORE YOU DIG
www.1100.com.au

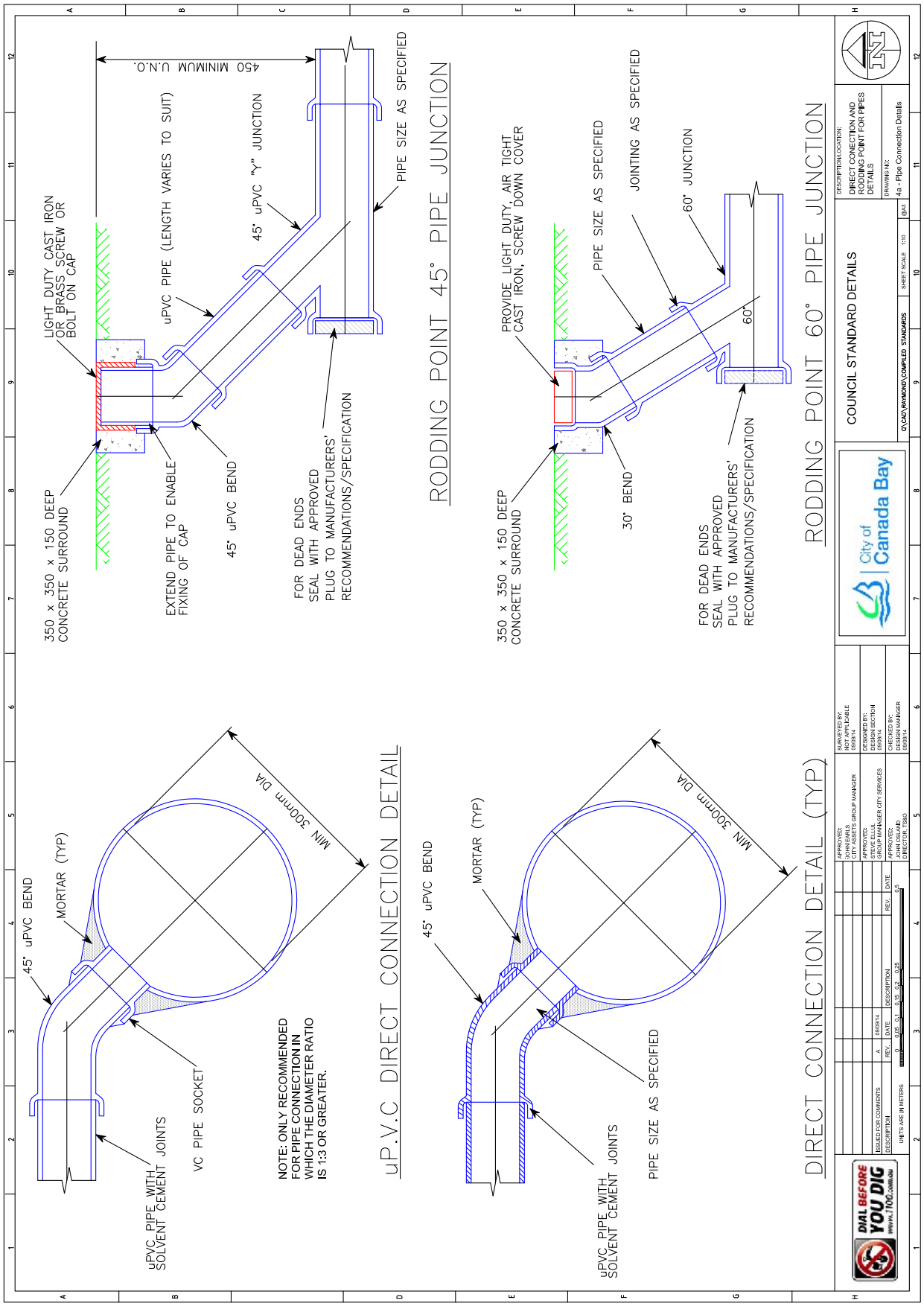

PIT IN LANDSCAPE AREA DETAIL
SCALE 1:10 (A3)
70 MINIMUM
RECESS TO SUIT COVER OR GRATE
COVER OR GRATE & FRAME AS SPECIFIED
MORTAR BEDDING
PIT IN CONCRETE PAVEMENT DETAIL
SCALE 1:10 (A3)
70 MINIMUM
RECESS TO SUIT COVER OR FRAME
PAVEMENT AS SPECIFIED
120 NOM
R6-200 (40 COVER)
COVER OR GRATE & FRAME AS SPECIFIED
MORTAR BEDDING
4-N12 LAP 300
CONSTRUCTION JOINT
250
0 0.1 0.2 0.3 0.4 0.5 METRES
REDUCTION RATIO 1:10 AT A3
0 0.05 0.1 0.15 0.2 0.25 METRES
REDUCTION RATIO 1:5 AT A3
PIT IN FLEXIBLE PAVEMENT DETAIL
SCALE 1:10 (A3)
70 MINIMUM
RECESS TO SUIT COVER OR FRAME
PAVEMENT AS SPECIFIED
COVER OR GRATE & FRAME AS SPECIFIED
MORTAR BEDDING
STEP IRON DETAILS
SCALE 1:5 (A3)
125
105
35
SIDE ELEVATION
35
FRONT ELEVATION
NOM 20mm - 24mm DIA GALVANISED MILD STEEL RODS
250
PLAN
COUNCIL STANDARD DETAILS
City of Canada Bay
PIT EDGE AND STEP IRON DETAILS
3b - Pit Edge & Step Iron Details
DIAL BEFORE YOU DIG
www.1100.com.au
UNITS ARE IN METERS
ISSUED FOR COMMENTS
DESCRIPTION
REV.
DATE
DESCRIPTION
APPROVED: MANAGER CITY ASSETS GROUP MANAGER
APPROVED: STEVE ELLUL GROUP MANAGER CITY SERVICES
APPROVED: JOHN OSLAND DIRECTOR, TS&O
SURVEYED BY: NEAL HARRADINE
DESIGNED BY: DESIGN SECTION
CHECKED BY: DESIGN MANAGER
O:\CAD\RAYMOND\COMPILED STANDARDS
SHEET SCALE as above @A3

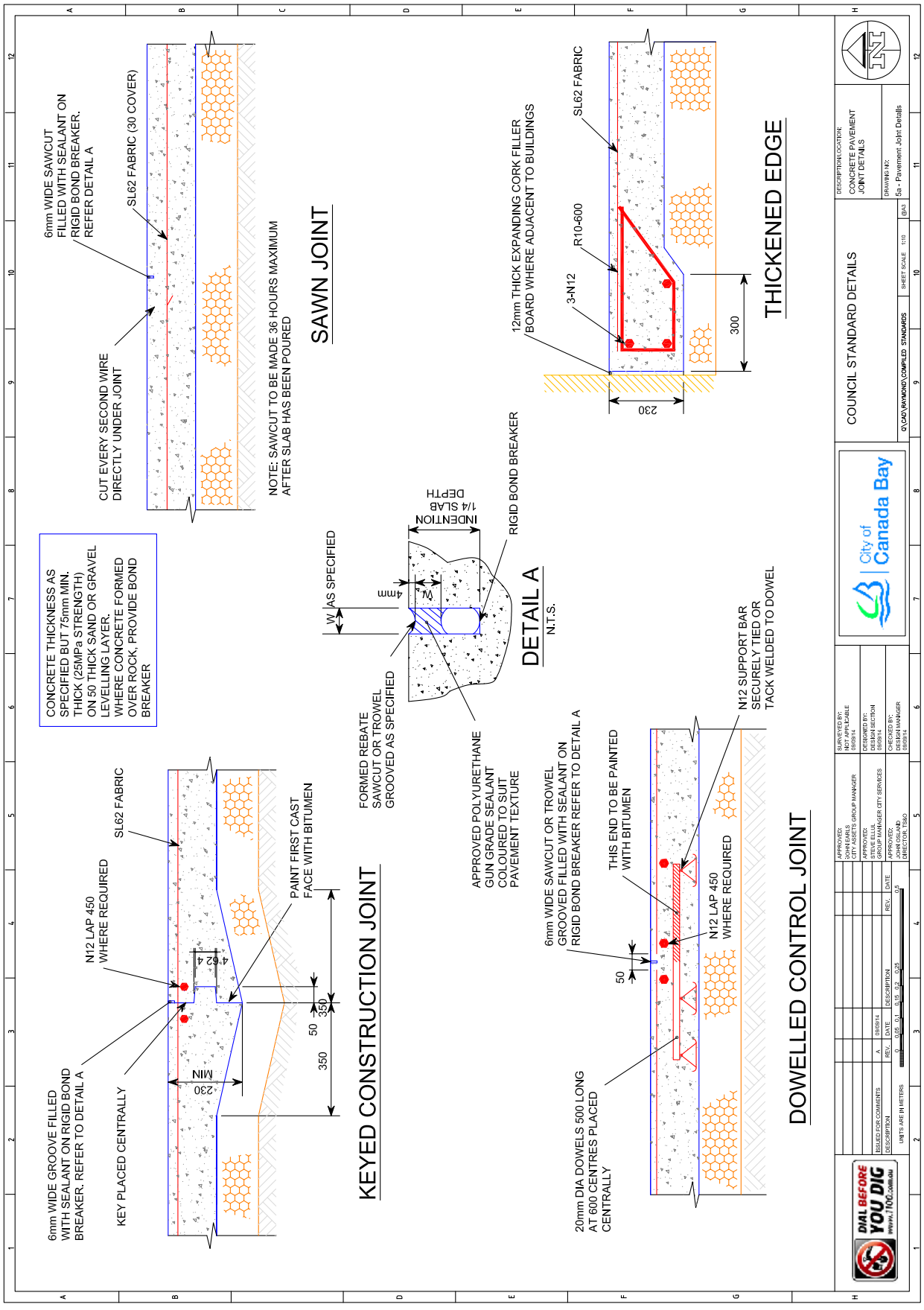

GRATE, FRAME AND LEGS TO BE HOT DIP GALVANIZED AFTER FABRICATION
50 MIN
75 x 75 x 8 WITH ONE 16mm DIA CENTRAL HOLE
ONE M12 GALVANIZED HOLDING DOWN BOLT PER LEG. BOLTS TO BE 150mm LONG WITH 35mm PROJECTION
51 x 51 x 8 ANGLE LEGS 6mm FILLET WELD TO FRAME AND BASE PLATE
40
CONNECTION DETAIL
SCALE 1:10 (A3)
INT. PIT DIMENSIONS
UNLESS OTHERWISE SPECIFIED THE SUMP DIMENSIONS SHALL BE AS FOLLOWS
DEPTH D (mm) | 'X' | 'Y'
D<1000 | 600 | 600
D>1000 | 900 | 900
REDUCTION RATIO 1:10 AT A3
REDUCTION RATIO 1:20 AT A3
METRES
GALVANIZED MILD STEEL GRATE HINGED TO FRAME (WELDLOCK OR SIMILAR) FITTED WITH LEGS (REFER CONNECTION DETAIL)
F82 FABRIC (40 COVER)
SURFACE LEVEL
400 LAP (TYP)
PROVIDE STEP IRONS IF PIT DEEPER THAN 900 REFER STEP IRON DETAIL
PROVIDE N12-300 BOTH WAYS OR F82 FABRIC (40 COVER TO INSIDE FACE) WHERE IS PIT DEEPER THAN 1500
300 (TYP)
MAX DIA 750mm
20 FALL
"Y"
150
500 (TYP)
150 MIN
FINISHED
MASS CONCRETE BENCHING
"D" AS SPECIFIED
NOMINAL 100mm DIA SUBSOIL PIPE 2000 LONG WRAPPED IN GEOTEXTILE FILTER FABRIC AND SURROUNDED WITH NOM 20mm BLUE METAL IN TRENCH ADJACENT TO INLET PIPE
SECTION 1
FLOW
"X"
225 (TYP)
PLAN
SCALE 1:20 (A3)
COUNCIL STANDARD DETAILS
City of Canada Bay
DESCRIPTION/LOCATION: SUMP PIT IN LANDSCAPED AREA DETAILS
DRAWING NO: 3c - Letter Box Type Pit
SHEET SCALE as above @A3
Q:\CAD\RAYMOND\COMPILED STANDARDS
DIAL BEFORE YOU DIG www.1100.com.au
UNITS ARE IN METERS
ISSUED FOR COMMENTS
DESIGNED BY: DESIGN SECTION 28/08/14
CHECKED BY: DESIGN MANAGER 28/08/14
APPROVED: CITY ASSETS GROUP MANAGER
APPROVED: GROUP MANAGER CITY SERVICES
APPROVED: DIRECTOR, TS&O

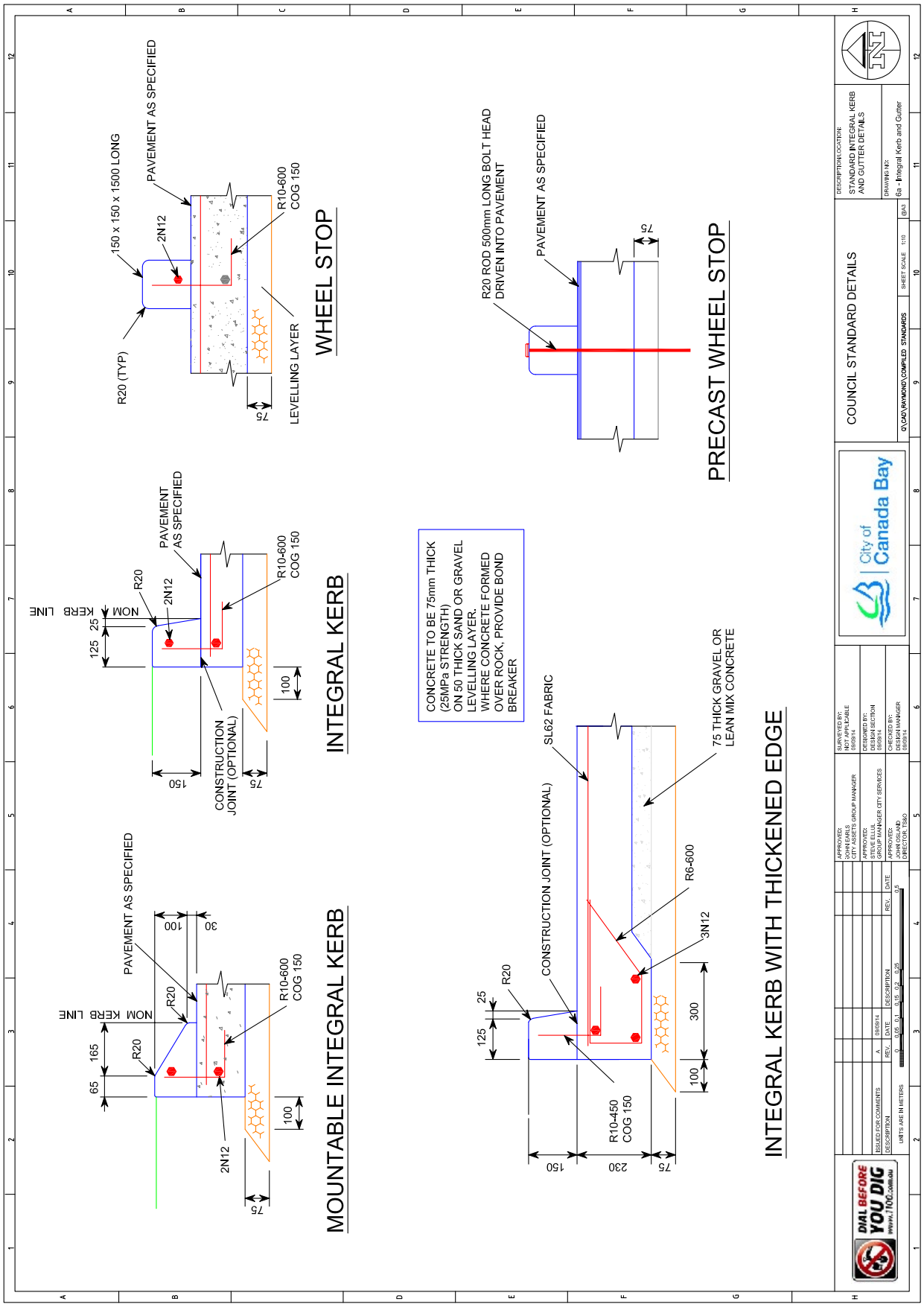

PLAN
SECTION 2
SECTION 1
COUNCIL STANDARD DETAILS
INLET PIT FOR PIPE SIZES UP TO 600mm IN DIAMETER
REDUCTION RATIO 1:20 AT A3
METRES
PROVIDE STEP IRONS IF PIT DEEPER THEN 900 (REFER STEP IRON DETAIL)
100mm DIA x 3000 LONG SUBSOIL DRAINAGE STUB SURROUNDED BY NOM. 20mm BLUE METAL AND WRAPPED IN GEOTEXTILE FILTER FABRIC (TERRAM 700 OR SIMILAR)
GRATE AND FRAME OR COVER AS SPECIFIED (WELFLOC OR EQUIV)
REFER PIT IN CONCRETE PAVEMENT DETAIL
REFER PIT IN FLEXIBLE PAVEMENT DETAIL
REFER PIT IN LANDSCAPE AREA DETAIL
N12-300 BOTHWAYS OR SL82 FABRIC (40 COVER TO INSIDE FACE) IF PIT DEEPER THAN 1500
MASS CONCRETE BENCHING
DEPTH AS REQUIRED (D)
OVERALL PIPE SIZE + 300
PIPE DIA + 400 (1200 MAX)
NOM 600 TO SUIT FRAME/COVER
NOM 900 TO SUIT COVER/FRAME
3N16 EXTRA N12-150
400 LAP
50 FALL UNO
20 FALL
150MIN
FLOW

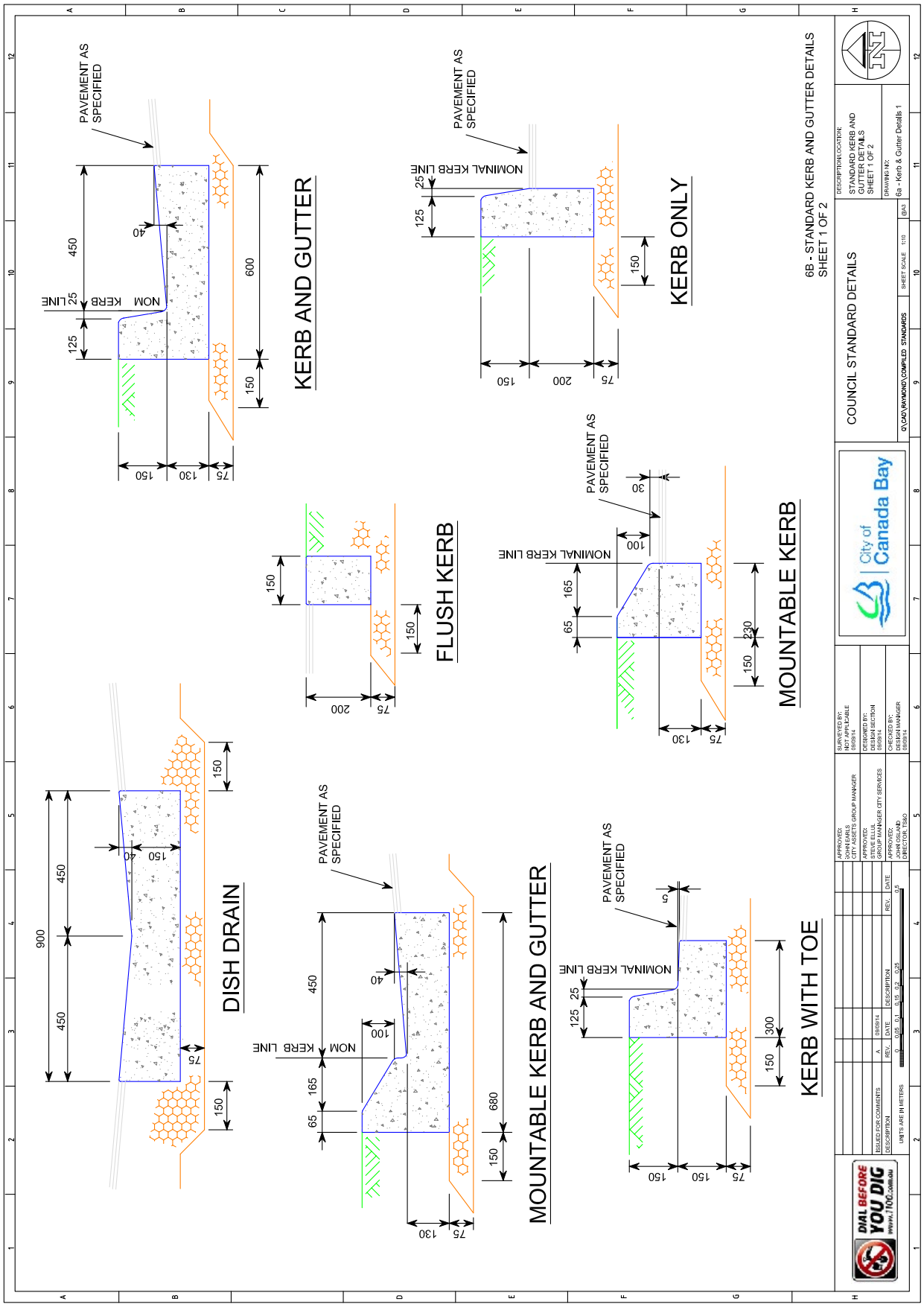

NOMINAL KERB LINE
70 MIN
25
200
SUB-SOIL DRAINAGE STUB
150
400 LAP (TYP)
150
'X' + 250 (750 NOM MIN)
150
SECTION 1
20 FALL
150
MORTAR BED
N12-300 BOTH WAYS OR F82 FABRIC (40 COVER FROM INSIDE FACE) IF PIT DEEPER THAN 1500
175
INTERNAL PIT DIEMNSIONS
STANDARD GULLY PIT DIMENSION TYP 700 x 930.
DIMENSION "Y" DEPENDENT ON THE LARGEST PIPE DIAMETER PASSING THROUGH PIT.
UNLESS SPECIFIED OTHERWISE IN PIT SCHEDULE, TYPICAL GRATE AND FRAME DIMENSIONS ARE AS FOLLOWS:
TYPICAL GRATE & FRAME DIMENSIONS (mm)
X Y
450 450
450 600
450 900
600 600
600 900
900 900
900 1200
1200 1200
WHERE "Y" IS LONGER SPAN
GUTTER LIP
R50 (TYP)
70 MIN
MORTAR BED
50
150
260
150
100 MIN
SECTION 2
0 0.2 0.4 0.6 0.8 1.0 METRES
REDUCTION RATIO 1:20 AT A3
COUNCIL STANDARD DETAILS
DESCRIPTION/LOCATION:
GULLY INLET PIT FOR PIPE SIZES 675mm TO 1200mm IN DIAMETER
DRAWING NO:
3a - Kerb Gully Inlet Pit with Lintel
SHEET SCALE as above @A3
Q:\CAD\RAYMOND\COMPLIED STANDARDS
City of Canada Bay
REFER PIT IN CONCRETE PAVEMENT DETAIL
REFER PIT IN FLEXIBLE PAVEMENT DETAIL
REFER PIT IN LANDSCAPE AREA DETAIL
450 TRANSITION
200
1
10
250MIN 350MAX
250MIN 350MAX
900 NOM (TO SUIT FRAME)
100 MIN
100
50 FALL UNO
MASS CONCRETE BENCHING
'Y' + 450 (900 NOM MIN)
150
150
SECTION 3
PROVIDE STEP IRONS IF PIT DEEPER THAN 900 (REFER DETAIL)
D + 400 (MAX 1200)
APPROVED PRECAST KERB INLET LINTEL (R.T.A. STANDARD OR EQUIVALENT) STANDARD 1800 LONG U.N.O.
EXPANSION JOINT (TYP)
KERB LINE
FLOW
100mm DIA x 3000 LONG SUBSOIL DRAINAGE STUB SURROUNDED BY NOM. 20mm BLUE METAL AND WRAPPED IN GEOTEXTILE FILTER FABRIC (TERRAM 700 OR SIMILAR)
450
3N16 EXTRA
WELDLOC TYPE GRATE AND FRAME OR EQUIV. HEAVY DUTY
405
450
PLAN
DIAL BEFORE YOU DIG
www.1100.com.au
UNITS ARE IN METERS
ISSUED FOR COMMENTS
DESCRIPTION
REV. A
DATE 28/08/14
APPROVED: MANAGER CITY ASSETS
APPROVED: GROUP MANAGER CITY SERVICES
APPROVED: DIRECTOR, TS&O
DESIGNED BY: DESIGN SECTION 28/08/14
CHECKED BY: DESIGN MANAGER 28/08/14

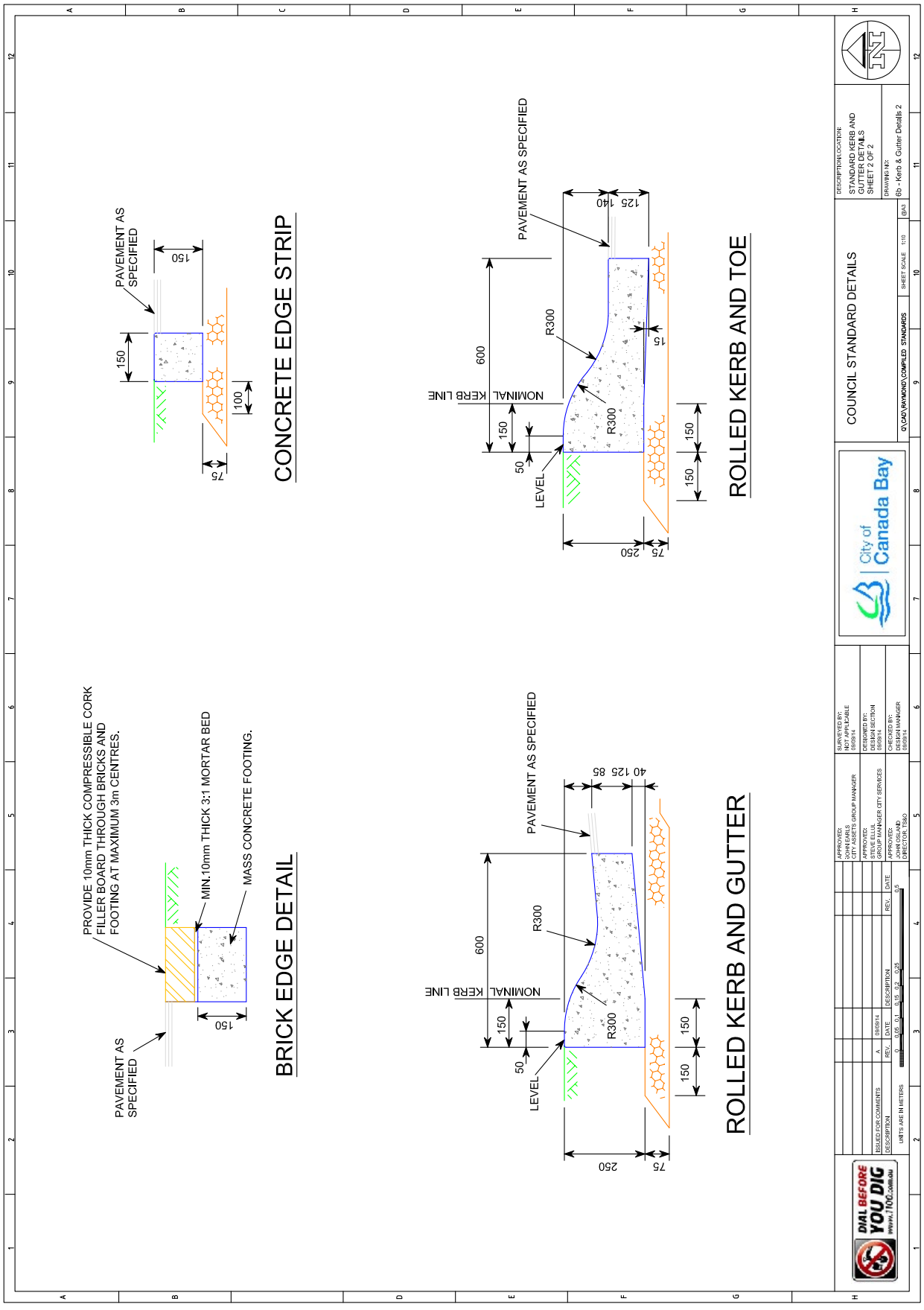

SECTION 1
SECTION 2
SECTION 3
PLAN
NOMINAL KERB LINE
PROVIDE STEP IRONS IF PIT IS DEEPER THAN 900 (REFER DETAIL)
SUB-SOIL DRAINAGE STUB
MORTAR BED
N12-300 BOTH WAYS OR F82 FABRIC (40 COVER FROM INSIDE FACE) IF PIT DEEPER THAN 1500
GUTTER LIP
R50 (TYP)
APPROVED PRECAST KERB INLET LINTEL (R.T.A. STANDARD OR EQUIVALENT) STANDARD 1800 LONG U.N.O.
100mm DIA x 3000 LONG SUBSOIL DRAINAGE STUB SURROUNDED BY NOM. 20mm BLUE METAL AND WRAPPED IN GEOTEXTILE FILTER FABRIC (TERRAM 700 OR SIMILAR)
EXPANSION JOINT (TYP)
WELDLOC TYPE GRATE AND FRAME OR EQUIV. HEAVY DUTY
REFER PIT IN CONCRETE PAVEMENT DETAIL
REFER PIT IN FLEXIBLE PAVEMENT DETAIL
REFER PIT IN LANDSCAPE AREA DETAIL
MASS CONCRETE BENCHING
INTERNAL PIT DIEMNSIONS
STANDARD GULLY PIT DIMENSION TYP 700 x 930.
DIMENSION "Y" DEPENDENT ON THE LARGEST PIPE DIAMETER PASSING THROUGH PIT.
UNLESS SPECIFIED OTHERWISE IN PIT SCHEDULE, TYPICAL GRATE AND FRAME DIMENSIONS ARE AS FOLLOWS:
TYPICAL GRATE & FRAME DIMENSIONS (mm)
X Y
450 450
450 600
450 900
600 600
600 900
900 900
900 1200
1200 1200
WHERE "Y" IS LONGER SPAN
REDUCTION RATIO 1:20 AT A3
METRES
COUNCIL STANDARD DETAILS
City of Canada Bay
DESCRIPTION/LOCATION: GULLY INLET PIT FOR PIPE SIZES UP TO 600mm IN DIAMETER
DRAWING NO: 3f - Kerb Gully Inlet Pit with Lintel
DIAL BEFORE YOU DIG

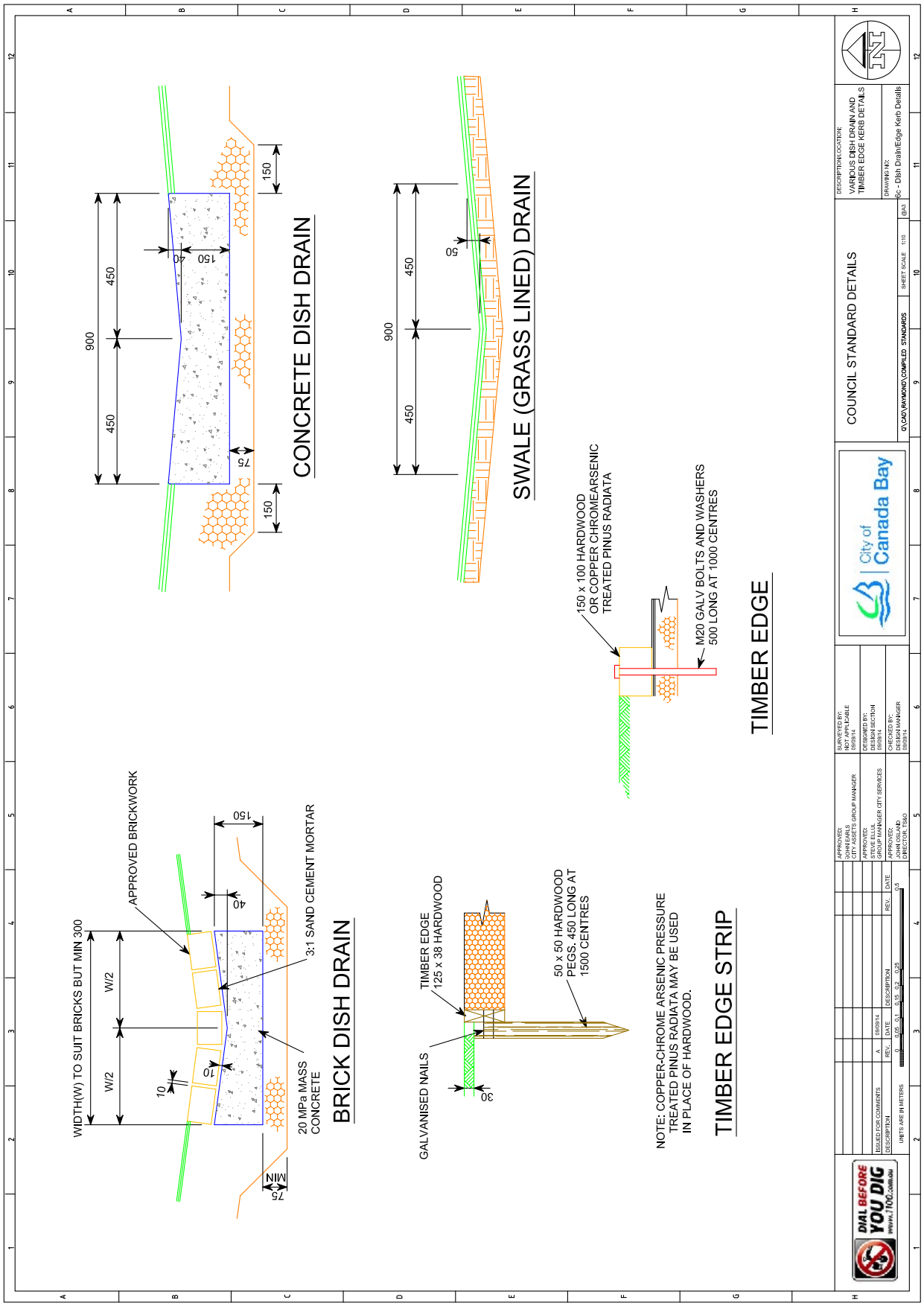

uP.V.C DIRECT CONNECTION DETAIL
45° uPVC BEND
MORTAR (TYP)
MIN 300mm DIA
uPVC PIPE WITH SOLVENT CEMENT JOINTS
VC PIPE SOCKET
NOTE: ONLY RECOMMENDED FOR PIPE CONNECTION IN WHICH THE DIAMETER RATIO IS 1:3 OR GREATER.
RODDING POINT 45° PIPE JUNCTION
450 MINIMUM U.N.O.
LIGHT DUTY CAST IRON OR BRASS SCREW OR BOLT ON CAP
uPVC PIPE (LENGTH VARIES TO SUIT)
45° uPVC "Y" JUNCTION
PIPE SIZE AS SPECIFIED
350 x 350 x 150 DEEP CONCRETE SURROUND
EXTEND PIPE TO ENABLE FIXING OF CAP
45° uPVC BEND
FOR DEAD ENDS SEAL WITH APPROVED PLUG TO MANUFACTURERS' RECOMMENDATIONS/SPECIFICATION
RODDING POINT 60° PIPE JUNCTION
PROVIDE LIGHT DUTY, AIR TIGHT CAST IRON, SCREW DOWN COVER
PIPE SIZE AS SPECIFIED
JOINTING AS SPECIFIED
60° JUNCTION
60°
350 x 350 x 150 DEEP CONCRETE SURROUND
30° BEND
FOR DEAD ENDS SEAL WITH APPROVED PLUG TO MANUFACTURERS' RECOMMENDATIONS/SPECIFICATION
DIRECT CONNECTION DETAIL (TYP)
45° uPVC BEND
MORTAR (TYP)
MIN 300mm DIA
uPVC PIPE WITH SOLVENT CEMENT JOINTS
PIPE SIZE AS SPECIFIED
COUNCIL STANDARD DETAILS
City of Canada Bay
DIRECT CONNECTION AND RODDING POINT FOR PIPES DETAILS
4a - Pipe Connection Details
DIAL BEFORE YOU DIG

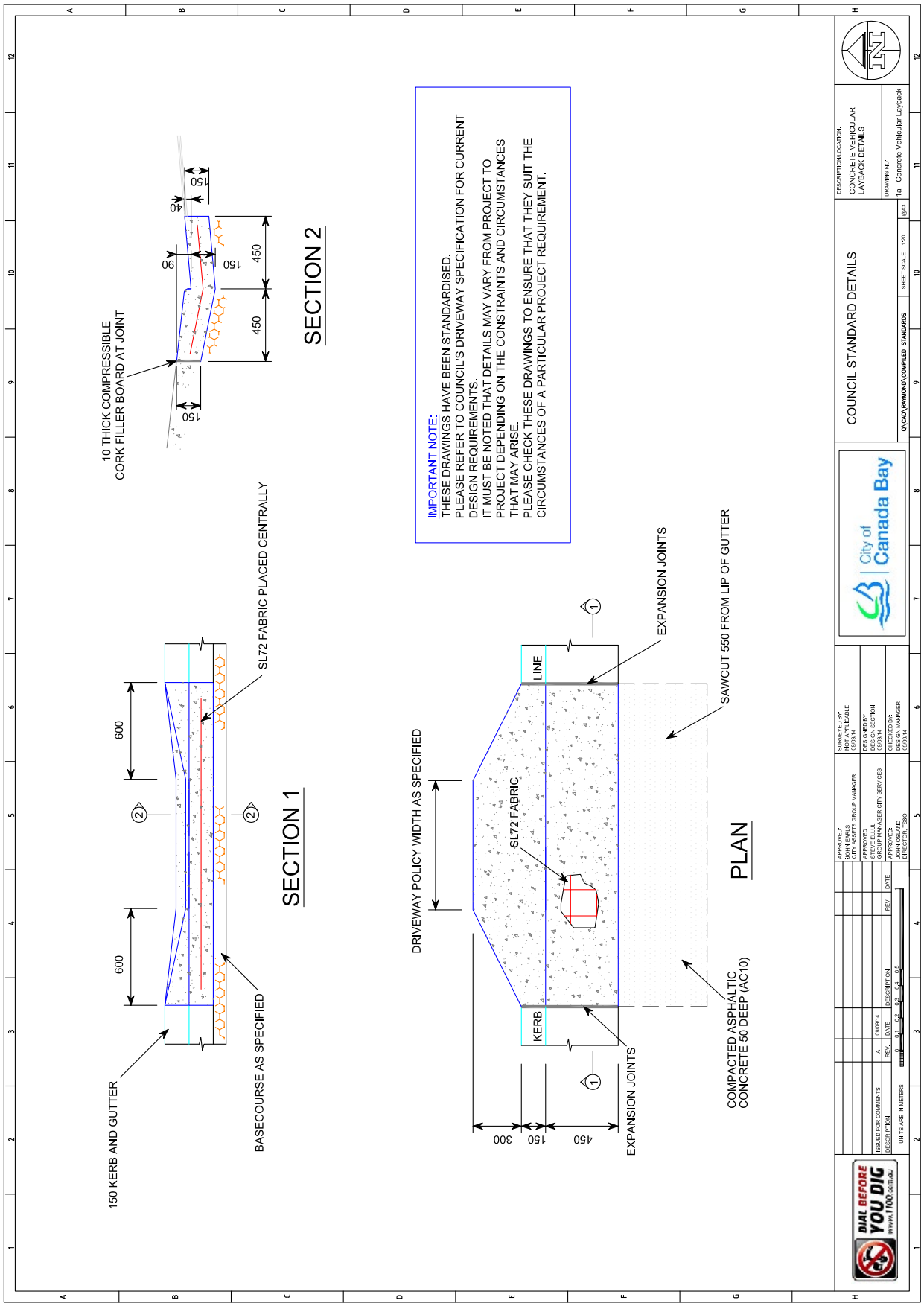

SAWN JOINT
6mm WIDE SAWCUT FILLED WITH SEALANT ON RIGID BOND BREAKER. REFER DETAIL A
SL62 FABRIC (30 COVER)
CUT EVERY SECOND WIRE DIRECTLY UNDER JOINT
NOTE: SAWCUT TO BE MADE 36 HOURS MAXIMUM AFTER SLAB HAS BEEN POURED
CONCRETE THICKNESS AS SPECIFIED BUT 75mm MIN. THICK (25MPa STRENGTH) ON 50 THICK SAND OR GRAVEL LEVELLING LAYER. WHERE CONCRETE FORMED OVER ROCK, PROVIDE BOND BREAKER
DETAIL A
N.T.S.
W AS SPECIFIED
4mm
W
INDENTION
1/4 SLAB DEPTH
RIGID BOND BREAKER
FORMED REBATE SAWCUT OR TROWEL GROOVED AS SPECIFIED
APPROVED POLYURETHANE GUN GRADE SEALANT COLOURED TO SUIT PAVEMENT TEXTURE
THICKENED EDGE
SL62 FABRIC
R10-600
3-N12
12mm THICK EXPANDING CORK FILLER BOARD WHERE ADJACENT TO BUILDINGS
300
230
KEYED CONSTRUCTION JOINT
6mm WIDE GROOVE FILLED WITH SEALANT ON RIGID BOND BREAKER. REFER TO DETAIL A
KEY PLACED CENTRALLY
N12 LAP 450 WHERE REQUIRED
SL62 FABRIC
PAINT FIRST CAST FACE WITH BITUMEN
MIN 230
42
62
50
350
350
DOWELLED CONTROL JOINT
6mm WIDE SAWCUT OR TROWEL GROOVED FILLED WITH SEALANT ON RIGID BOND BREAKER REFER TO DETAIL A
THIS END TO BE PAINTED WITH BITUMEN
N12 SUPPORT BAR SECURELY TIED OR TACK WELDED TO DOWEL
N12 LAP 450 WHERE REQUIRED
50
20mm DIA DOWELS 500 LONG AT 600 CENTRES PLACED CENTRALLY
COUNCIL STANDARD DETAILS
City of Canada Bay
DESCRIPTION/LOCATION: CONCRETE PAVEMENT JOINT DETAILS
DRAWING NO: 5a - Pavement Joint Details
SHEET SCALE 1:10 @A3
O:\CAD_RAYMOND_COMPILED_STANDARDS
APPROVED: MANAGER, CITY ASSETS GROUP MANAGER
APPROVED: STEVE ELLUL GROUP MANAGER CITY SERVICES
APPROVED: JOHN OSLAND DIRECTOR, TS&O
DESIGNED BY: DESIGN SECTION
CHECKED BY: DESIGN MANAGER
SURVEYED BY: NEW DEVELOPMENTS
ISSUED FOR COMMENTS
DESCRIPTION
REV. A
DATE 08/09/14
UNITS ARE IN METERS
DIAL BEFORE YOU DIG www.1100.com.au


WHEEL STOP
150 x 150 x 1500 LONG
PAVEMENT AS SPECIFIED
2N12
R10-600
COG 150
R20 (TYP)
LEVELLING LAYER
75
INTEGRAL KERB
PAVEMENT
AS SPECIFIED
R20
2N12
R10-600
COG 150
NOM KERB LINE
25
125
100
150
CONSTRUCTION
JOINT (OPTIONAL)
75
MOUNTABLE INTEGRAL KERB
PAVEMENT AS SPECIFIED
100
30
R20
R10-600
COG 150
NOM KERB LINE
165
65
R20
2N12
PRECAST WHEEL STOP
R20 ROD 500mm LONG BOLT HEAD
DRIVEN INTO PAVEMENT
PAVEMENT AS SPECIFIED
75
CONCRETE TO BE 75mm THICK
(25MPa STRENGTH)
ON 50 THICK SAND OR GRAVEL
LEVELLING LAYER.
WHERE CONCRETE FORMED
OVER ROCK, PROVIDE BOND
BREAKER
INTEGRAL KERB WITH THICKENED EDGE
SL62 FABRIC
75 THICK GRAVEL OR
LEAN MIX CONCRETE
CONSTRUCTION JOINT (OPTIONAL)
R6-600
3N12
25
125
R20
300
100
R10-450
COG 150
150
230
75
COUNCIL STANDARD DETAILS
City of Canada Bay
STANDARD INTEGRAL KERB
AND GUTTER DETAILS
6a - Integral Kerb and Gutter
SHEET SCALE 1:10
@A3
DIAL BEFORE YOU DIG
www.1100.com.au
UNITS ARE IN METERS
ISSUED FOR COMMENTS
DESCRIPTION
DATE
REV.


KERB AND GUTTER
PAVEMENT AS SPECIFIED
NOM KERB LINE
KERB ONLY
NOMINAL KERB LINE
FLUSH KERB
MOUNTABLE KERB
MOUNTABLE KERB AND GUTTER
KERB WITH TOE
DISH DRAIN
6B - STANDARD KERB AND GUTTER DETAILS
SHEET 1 OF 2
COUNCIL STANDARD DETAILS
STANDARD KERB AND GUTTER DETAILS SHEET 1 OF 2
City of Canada Bay
DIAL BEFORE YOU DIG


CONCRETE EDGE STRIP
PAVEMENT AS SPECIFIED
150
150
100
75
ROLLED KERB AND TOE
PAVEMENT AS SPECIFIED
125 140
R300
15
NOMINAL KERB LINE
600
150
50
LEVEL
150
150
75 250
BRICK EDGE DETAIL
PROVIDE 10mm THICK COMPRESSIBLE CORK FILLER BOARD THROUGH BRICKS AND FOOTING AT MAXIMUM 3m CENTRES.
MIN.10mm THICK 3:1 MORTAR BED
MASS CONCRETE FOOTING.
PAVEMENT AS SPECIFIED
150
ROLLED KERB AND GUTTER
PAVEMENT AS SPECIFIED
40 125 85
R300
NOMINAL KERB LINE
600
150
50
LEVEL
R300
150
150
75 250
COUNCIL STANDARD DETAILS
City of Canada Bay
STANDARD KERB AND GUTTER DETAILS SHEET 2 OF 2
6b - Kerb & Gutter Details 2
DIAL BEFORE YOU DIG
www.1100.com.au


CONCRETE DISH DRAIN
900
450
450
150
40
150
75
150
SWALE (GRASS LINED) DRAIN
900
450
450
50
TIMBER EDGE
150 x 100 HARDWOOD
OR COPPER CHROMEARSENIC
TREATED PINUS RADIATA
M20 GALV BOLTS AND WASHERS
500 LONG AT 1000 CENTRES
BRICK DISH DRAIN
WIDTH(W) TO SUIT BRICKS BUT MIN 300
W/2
W/2
APPROVED BRICKWORK
10
10
150
40
3:1 SAND CEMENT MORTAR
20 MPa MASS
CONCRETE
75
MIN
TIMBER EDGE STRIP
TIMBER EDGE
125 x 38 HARDWOOD
GALVANISED NAILS
30
50 x 50 HARDWOOD
PEGS, 450 LONG AT
1500 CENTRES
NOTE: COPPER-CHROME ARSENIC PRESSURE
TREATED PINUS RADIATA MAY BE USED
IN PLACE OF HARDWOOD.
COUNCIL STANDARD DETAILS
City of Canada Bay
DESCRIPTION/LOCATION:
VARIOUS DISH DRAIN AND
TIMBER EDGE KERB DETAILS
DRAWING NO:
6c - Dish Drain/Edge Kerb Details
SHEET SCALE
1:10
@A3
O:\CAD\RAYMOND\COMPILED STANDARDS
APPROVED:
RAY HASSALL
CITY ASSETS GROUP MANAGER
DESIGNED BY:
DESIGN SECTION
08/09/14
APPROVED:
STEVE ELLUL
GROUP MANAGER CITY SERVICES
08/09/14
CHECKED BY:
DESIGN MANAGER
08/09/14
SURVEYED BY:
NEAL HAMMOND
08/09/14
APPROVED:
JOHN DELAND
DIRECTOR, TS&O
ISSUED FOR COMMENTS
A
08/09/14
DESCRIPTION
REV.
DATE
DESCRIPTION
REV.
DATE
UNITS ARE IN METERS
0
0.05
0.1
0.15
0.2
0.25
0.5
DIAL BEFORE YOU DIG
www.1100.com.au


SECTION 2
10 THICK COMPRESSIBLE CORK FILLER BOARD AT JOINT
150
40
90
150
450
450
150
SECTION 1
SL72 FABRIC PLACED CENTRALLY
600
600
150 KERB AND GUTTER
BASECOURSE AS SPECIFIED
IMPORTANT NOTE:
THESE DRAWINGS HAVE BEEN STANDARDISED.
PLEASE REFER TO COUNCIL'S DRIVEWAY SPECIFICATION FOR CURRENT DESIGN REQUIREMENTS.
IT MUST BE NOTED THAT DETAILS MAY VARY FROM PROJECT TO PROJECT DEPENDING ON THE CONSTRAINTS AND CIRCUMSTANCES THAT MAY ARISE.
PLEASE CHECK THESE DRAWINGS TO ENSURE THAT THEY SUIT THE CIRCUMSTANCES OF A PARTICULAR PROJECT REQUIREMENT.
DRIVEWAY POLICY WIDTH AS SPECIFIED
EXPANSION JOINTS
SAWCUT 550 FROM LIP OF GUTTER
LINE
SL72 FABRIC
KERB
300
150
450
EXPANSION JOINTS
COMPACTED ASPHALTIC CONCRETE 50 DEEP (AC10)
PLAN
COUNCIL STANDARD DETAILS
City of Canada Bay
CONCRETE VEHICULAR LAYBACK DETAILS
1a - Concrete Vehicular Layback
DIAL BEFORE YOU DIG
ISSUED FOR COMMENTS
DESCRIPTION
UNITS ARE IN METERS