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OLTER INVESTMENTS PTY LTD

Remediation Action Plan

71-75 Victoria Road, Drummoyne NSW

E24806.E06_Rev0
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Executive Summary

EI Australia (EI) was engaged by Olter Investments Pty Ltd (the 'client') to prepare a Remediation Action Plan (RAP) for 71-75 Victoria Road, Drummoyne NSW (the 'site') as part of a Development Application (DA2021/0082) to City of Canada Bay Council for the proposed redevelopment, involving the demolition of former structures, followed by the construction of a multi-storey mixed retail/commercial and residential building overlying a double level basement carpark.

The site is located within the local government area of City of Canada Bay Council and is identified as Lot 1 and 2 Deposited Plan (DP) 1050010 and covers an area of approximately 1,350 m^2. The site was occupied by two adjacent buildings which were used by two light commercial activities.

This RAP follows on from previous investigations completed at site EI (2021), which identified localised carcinogenic PAHs impact in shallow filling soils in the vicinity of sample points BH2 and HA201. Remediation is required in order for the land to be made suitable for the proposed development.

The purpose of this RAP is to establish a sequential process for remediation and validation works, to support the proposed site redevelopment in compliance with the *State Environment Protection Policy 55 – Remediation of Land* (SEPP 55).

The preferred remedial approach involves excavation of impacted materials, and then waste classification and off-site disposal according to NSW EPA (2014a) *Waste Classification Guidelines*. It is envisaged that the remediation works will be implemented in stages, as follows:

- **Stage 1 –** Preliminaries / site establishment;
- **Stage 2 –** Site walkover and Ground Penetrating Radar (GPR);
- **Stage 3 –** Remedial excavation of carcinogenic PAHs impacted soils at locations BH2 and HA201;
- **Stage 4 –** Bulk excavation, waste classification and data gap closure;
- **Stage 5 –** Site validation;
- **Stage 6 –** Validation report preparation.

This RAP provides protocols for the appropriate management of any unexpected finds that may be discovered during the course of the remediation works. In addition, should any phase of the validation assessment identify residual contamination requiring additional remediation, the procedures described under the validation plan (**Section 9**) will be implemented until the remediation goals have been achieved and the site is deemed suitable for proposed land use.

In conclusion, EI considers that the site can be made suitable for the proposed land use through the implementation of the site remediation and validation process described in this RAP.

1. Introduction

1.1 Background

EI Australia (EI) was engaged by Olter Investments Pty Ltd (the 'client') to prepare a Remediation Action Plan (RAP) for 71-75 Victoria Road, Drummoyne NSW (herein referred to as the 'the site') for proposed redevelopment of the site.

The site is located 5 km north-west of the Sydney central business district (CBD), within the local government area (LGA) of City of Canada Bay Council (**Appendix A**, **Figure 1**). The site comprises of two cadastral allotments, identified as Lot 1 and 2 Deposited Plan (DP) 1050010 and covers an area of approximately 1,350 m^2, as depicted in **Appendix A**, **Figure 2**. At the time of this investigation, the site was occupied by two adjacent buildings which were used by two light commercial activities.

This RAP follows on from previous environmental investigations completed for the site entitled:

- A.D. Envirotech Australia (2000). Stage II Environmental Investigation, 71-75 Victoria Road, Drummoyne NSW, Project No.0515, for Mr J.B. O'Leary, dated 29 November 2000.
- Environmental Consulting Services (2003). Site validation, 73 Victoria Road, Drummoyne NSW, Ref. unknown, for Brecon Builders, dated 17 August 2003.
- Aargus Australia (2008). Environmental Site Assessment, 77, 85, 87, 97, 101, 105 Victoria Road, Drummoyne NSW, Ref.E2191, for EG Funds Management, dated May 2008.
- DLA Environmental Services (2015b). Remediation Action Plan, Victoria Road Development, 77-105 Victoria Road, Drummoyne NSW, Ref. DL3611_S003395, for EG Pty Ltd, dated September 2015.
- DLA Environmental Services (2015c). Construction Environmental Management Plan, Victoria Road Development, 77-105 Victoria Road, Drummoyne NSW, Ref. DL3611_S003351, for EG Pty Ltd, dated September 2015.
- JK Geotechnics (2015). Geotechnical Investigation, 77-105 Victoria Road, Drummoyne NSW, Report No. 28619Prpt, Rev0, for EG Funds Management, dated 2 September 2015.
- EI Australia (2021). *Detailed Site Investigation, 71-75 Victoria Road, Drummoyne NSW*, Report No. E24806.E02_Rev1, dated 27 October 2021.

Previous soil investigations at the site identified localised carcinogenic PAHs (as B(α)P TEQ) contamination at boreholes BH2 and HA201 (EI, 2021) in shallow fill at depths of 0.2m below ground level (BGL) to 0.3m BGL. Copper (BH1) in shallow fill marginally exceeded adopted ecological site acceptance criteria (SAC); however, this sampling location was located within the proposed basement area and therefore the ecological SAC does not apply. Copper in shallow fill at borehole location BH1 did not exceed the adopted human health SAC.

Groundwater investigation identified minor heavy metal (copper and zinc) impact in groundwater. However, EI considered that the detected zinc concentration was indicative of regional background conditions, rather than site specific impact.

It was concluded by EI (2021) that the site could be made suitable for the proposed development, after the remediation and validation of the site.

The purpose of this RAP is to establish a sequential process for remediation and validation works, in support of a Development Application (DA2021/0082) to City of Canada Bay Council and to comply with the *State Environment Protection Policy 55 – Remediation of Land (SEPP 55)*.

1.2 Proposed Development

Based on the proposed plans (**Appendix B**), site redevelopment will include the demolition of former structures, followed by the construction of a multi-storey mixed retail/commercial and residential building overlying a double level basement carpark at 73 Victoria Rd and a single level at 71 Victoria Rd.

The entire building footprint sits above a single level basement car park at a finished floor level (FFL) of 23.00m Australian Height Datum (AHD). The existing basement floor slab is at RL 24.83 mAHD over the north-western half of the site only, meaning that the proposed first level basement will be approx. 1.83 m deeper than the existing basement. The basement car park extends to a second level which occupies approximately half the building footprint at FFL 19.90 mAHD or approx. 4.93m deeper than the existing basement. There will be locally deeper excavations as necessary for footings, lift shafts and service trenches. The development also includes a small area (approx. 47m2) of retained deep soil in the southern corner of the site.

The most sensitive land use of the proposed development is equivalent to a setting of residential with minimal opportunities for soil access.

1.3 Objectives of the RAP

The main objective of this RAP is to set the remediation objectives and document the process to remediate the site, with the following sub-objectives:

- To provide details on the contaminant sources and site impacts;
- To detail the procedures to be implemented for site remediation;
- To demonstrate that the proposed remediation strategy for the site is environmentally justifiable, practical and technically feasible, and there are no unacceptable risks to onsite and offsite receptors;
- To define the remediation acceptance criteria to validate that the site is rendered suitable for the proposed land-uses;
- To provide guidance for mitigation against the risk of potential off-site migration of contaminants (including migration in existing utilities such as the sewer, stormwater and other subsurface pipes or service trenches); and
- To demonstrate that the plans for site management during remediation consider work health and safety, environmental management, and contingent action that may be warranted should unexpected finds be discovered during the site remediation and validation process.

1.4 Scope of Works

The above objectives will be achieved by:

- Review of the available data relevant to the remediation of the site, provided by the previous investigation reports;
- Definition of remediation goals and acceptance criteria;
- Review of the literature on remediation technologies relevant to the site;
- Evaluation of available remediation options and selection of the most appropriate remedial strategy (or combination of strategies) for the site;
- Provision of information so that remedial works may be carried out in accordance with relevant laws and regulations;
- Provision of information to assist the contractor in preparation of a Work Health and Safety Plan (WHSP) and other site management/planning documents; and
- Development of a Sampling and Analysis Quality Plan (SAQP) for hotspot delineation and post-remedial validation.

1.5 Regulatory Framework

The following legislation and guidelines were considered during the preparation of this RAP:

Legislation

- *Contaminated Land Management Act 1997* (CLM Act);
- *Water Management Act 2000* (Water Act);
- *Protection of the Environment Operations Act 1997* (POEO Act) and associated regulations, including the *Waste Regulation 2014*;
- *State Environment Protection Policy 55 - Remediation of Land* (SEPP 55);
- *City of Canada Bay Local Environmental Plan 2013*;
- *City of Canada Bay Development Control Plan 2020*; and
- *Work Health and Safety Act 2011* (WHS Act) and associated regulations and codes of practice.

Guidelines

- *NSW EPA Sampling Design Guidelines* (EPA,1995);
- *NSW EPA Waste Classification Guidelines* (EPA, 2014a);
- *NSW EPA Guidelines for the NSW Site Auditor Scheme* (EPA, 2017);
- *NSW EPA Consultants Reporting on Contaminated Land, Contaminated Land Guidelines* (EPA, 2020);
- *National Environment Protection (Assessment of Site Contamination) Amendment Measure* (NEPC, 2013); and
- *Western Australia Department of Health Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (WADoH, 2021).

1.6 Deviations from RAP

During the course of the program, it may become necessary to vary the sequence and/or details of the site remediation and validation works to meet site constraints. If so, any deviation from the methodology specified in this RAP is to be properly documented and approved, as required under the *Consultants Reporting on Contaminated Land Guidelines* (EPA, 2020).

Performing remedial works without the supervision of a qualified environmental engineer/scientist may lead to project delays and extra costs, due to additional investigation requirements imposed by an independent consultant, or the appointed Site Auditor, to confirm the environmental status of the site.

In worst case scenarios, waste materials removed from the site without proper characterisation and/or tracking, may lead to regulatory action and potential penalties, as described under the *Waste Regulation 2014* and the *Contaminated Land Management Act 1997*.

2. Site Description

2.1 Property Identification, Location, and Physical Setting

The site identification details and associated information are presented in **Table 2-1**.

Table 2-1 Site Identification

Attribute	Description
Street Address	71-75 Victoria Road, Drummoyne NSW
Location Description	Approximately 5 km north-west of CBD bound by Victoria Road to the north-east, Day Street to the south-west, Formosa Street to the west and mixed commercial / residential to the north-west. The surrounding area is primarily residential, commercial and light industrial.
Site Coordinates	Northeast corner of site: GDA2020-MGA56 ▪ Easting: 329582.884 ▪ Northing: 6252385.517 (Source: http://maps.six.nsw.gov.au)
Site Area	1,350 m^2 (**Appendix B**)
Lot and DP	▪ Lot 1 in DP 1050010 (71 Victoria Road); and ▪ Lot 2 in DP 1050010 (73 Victoria Road).
State Survey Marks	Four State Survey (SS) marks are situated within close proximity (approximately 180m) to the site: ▪ PM27837: Victoria Road (68m north); ▪ SS66005: Corner of Church and Formosa Street (66m north-west); and ▪ PM27836: Corner of Thornley Street and Victoria Road (100m south-east). (Source: http://maps.six.nsw.gov.au)
Local Government Authority	City of Canada Bay Council
Parish	Concord
County	Cumberland
Current Zoning	B4: Mixed Use (*Canada Bay Local Environmental Plan 2013*)

2.2 Local Land Use

The site is situated within an area of mixed use, as described in **Table 2-2**. The local sensitive receptors within close proximity to the site are also identified in this table.

Table 2-2 Local Land Uses

Direction	Land Use Description	Sensitive Receptors (& distance from site)
North	▪ Multi-storey residential apartment building: Ground floor contains light commercial properties with high density residential situated on the upper levels and with two basement levels (anecdotal).	-
South	▪ Low density residential properties; and ▪ Light commercial property.	▪ Residential properties (25m south) ▪ Brett Park (100m south)

Direction	Land Use Description	Sensitive Receptors (& distance from site)
	▪ Two service stations were observed approximately 100m south and are situated on Victoria Road.	
East	▪ Low density residential properties.	▪ Residential properties (100 m east)
West	▪ Light commercial properties; and ▪ Low density residential properties.	▪ Residential properties defined as general (local) conservation area (20m west)

2.3 Regional Setting

The topography, hydrogeology, geology and soil landscape information are summarised in **Table 2-3**.

Table 2-3 Regional Setting

Attribute	Description
Topography	The land displayed a slight to moderate downslope towards the south to south-east (>10^{o}). The site elevation ranged from 28.38 mAHD at the north-western boundary of the site to 26.32 mAHD at the south eastern boundary (refer to Survey Plus, 2020).
Site Drainage	Stormwater drainage pits were observed on the paved gutter system surrounding the site with the exception of the north-western boundary (EI, 2021). Surface water drainage is assumed to enter the stormwater system within the paved gutter system adjacent to the site and would eventuate into Parramatta River, followed by draining into Sydney Harbour. No exposed soils were present onsite to facilitate soil infiltration. Parramatta River is located approximately 260m south/south west of the site.
Regional Geology	With reference to the 1:100 000 scale Geological Series Sheet 9130 (Sydney) the site is likely to be underlain by Hawkesbury Sandstone (Rh). Hawkesbury Sandstone is described as *medium to coarse-grained quartz sandstone, very minor shale and laminite lenses*.
Soil Landscape	The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 1989) indicates that the site overlies the Gymea (gy) Erosional landscape, which typically includes undulating to rolling rises and low hill on Hawkesbury Sandstone. Local relief of 20-80m, slope 10-25%. Localised rock outcrop of <25% on low broken scarps. Broad convex crests, moderately inclined side slopes with wide benches.
Acid Sulfate Soil (ASS) Risk	The Canada Bay LEP 2013 Acid Sulfate Soils Map did not classify the site in terms of ASS risk. The 1:25 000 scale Acid Sulfate Soil Risk Map (Murphy, 1997) indicated that the site lies within Class 5 area, which is defined to be 500 m from the 'high probability of occurrence' situated at Parramatta River. No Known Occurrence. In such cases, ASS are not known or expected to occur and "land management activities are not likely to be affected by ASS materials". Based on this information, an ASS investigation was not considered warranted.
Typical Soil Profile	**Pavements** – across the site (0.0-0.2m thickness); overlying **Fill** – Clayey SAND / Sandy CLAY / Silty CLAY/ Sandy SILT (ranged from 0.14-0.7m BGL); overlying **Natural** – Silty CLAY/ Sandy CLAY (up to 2.4m BGL); overlying **Bedrock** – Weathered SANDSTONE (from 2.4 -11.5m BGL).
Depth to Groundwater	Groundwater (standing water level, SWL) was recorded at 7.1m BGL during the groundwater investigation by EI (2021).
Groundwater Bore Records and	An online search for groundwater bores registered with WaterNSW was conducted by EI (2021), which revealed there were no registered bores within 500m of the site.

Attribute	Description
Groundwater Flow Direction	Inferred flow direction: Groundwater was inferred to be south into Parramatta River located approximately 230 m south of the southern site boundary.

3. Site Characterisation

3.1 Previous Investigations

Previous investigations of the subject site were recorded under the following reports:

- A.D. Envirotech Australia (2000). Stage II Environmental Investigation, 71-75 Victoria Road, Drummoyne NSW, Project No.0515, prepared for Mr J.B. O'Leary, dated 29 November 2000;
- Environmental Consulting Services (2003). Site Validation, 73 Victoria Road, Drummoyne NSW, Ref. unknown, prepared for Brecon Builders, dated 17 August 2003;
- EI (2021). Detailed Site Investigation, 71-75 Victoria Road, Drummoyne NSW, EI Australia Pty Ltd, Report No. E24806.E02_Rev1, dated 27 October 2021.

Reports for the adjacent site at 77-105 Victoria Road, Drummoyne NSW where reviewed and summarised in EI (2021)

- Aargus Australia (2008). Environmental Site Assessment, 77, 85, 87, 97, 101, 105 Victoria Road, Drummoyne NSW, Ref.E2191, prepared for EG Funds Management, dated May 2008;
- DLA Environmental Services (2015b). Remediation Action Plan, Victoria Road Development, 77-105 Victoria Road, Drummoyne NSW, Ref. DL3611_S003395, prepared for EG Pty Ltd, dated September 2015;
- DLA Environmental Services (2015c). Construction Environmental Management Plan, Victoria Road Development, 77-105 Victoria Road, Drummoyne NSW, Ref. DL3611_S003351, prepared for EG Pty Ltd, dated September 2015;
- JK Geotechnics (2015). Geotechnical Investigation, 77-105 Victoria Road, Drummoyne NSW, Report No. 28619Prpt, Rev0, prepared for EG Funds Management, dated 2 September 2015; and

EI was not provided with all reports for the site and adjacent properties, thus some reports were identified in council records and transcribed from DLA (2015b) RAP. No validation reports following DLA (2015b) RAP for the adjacent site were provided and/or reviewed.

A summary of the findings of reports for the subject site are presented in **Table 3-1**.

Table 3-1 Summary of Previous Investigations – Subject Site

Project Task	Findings
A.D. Envirotech Australia (2000) *Stage II Environmental Investigation*	
Objectives	The objective of the investigation was to provide sufficient information on the nature of subsurface material to allow proposed development to proceed. According to ADE (2000) the proposed development at that time was conversion of the site to accommodate a two storey commercial dwelling.
Findings	▪ Review of photos provided in ADE (2000) indicated that 73 Victoria Rd was vacant, with ground surface covered with concrete slab and pavers, and minor vegetation. There was a shed and car port at the rear and some parked cars. The adjacent property at 71 Victoria Rd (not investigated by ADE (2000)) was occupied by Zanzibar furniture retailers.

Project Task	Findings
	▪ ADE (2000) noted an underground storage tank at the rear of 77 Victoria Rd (then occupied by Bob Jane T-Marts). ‣ Intrusive investigation by ADE (2000) found the following: ‣ Lead and TPH (C10-C36) exceedances in soil at location BH2; ‣ Copper exceedances within a composite sample collected from locations BH4 to BH6 situated in the north-eastern portion of the site; ‣ The 95% Upper Confidence Limit (UCL) was adopted by ADE with a 95% UCL lead concentration of 1,540 mg/kg, a 95% UCL copper concentration of 2,770 mg/kg and a C10-C36 of 4,570 mg/kg; ‣ The maximum concentration for lead was 3,100 mg/kg at BH2 (sample id: 515-7 at 0.5m BGL), copper 3,300 mg/kg with composite sample collected from BH4 to BH6 (sample id: 515-40 at 0.1m BGL) and C10-C36 6,800 mg/kg at BH2 (sample id: 515-7 at 0.5m BGL); and ‣ No exceedances of BTEX, OCPs, PAHs, PCBs, VCH and cyanide were detected within the samples submitted for analysis.
Environmental Consulting Services (2003) *Site Validation*	
Objectives	The objectives of this investigation was to conduct a Site Validation to review previous investigation completed and provide conclusions on the site suitability at the property 73 Victoria Road, Drummoyne NSW following completion of bulk excavation activities resulting in removal of fill materials and underlying clay.
Findings	The letter report of ECS (2003) concluded the following: ▪ The soil materials situated at the building footprint were excavated and removed off-site to a receiving facility; ▪ Excavation activity had removed fill material and extended to a depth of greater than 2m depth into natural soil and rock; and ▪ The site was visually validated to not contain any fill materials. No validation samples were collected from the walls and base of the excavation.
EI Australia (2021) *Primary and Detailed Site Investigation*	
Objectives	The objectives of the PSI&DSI were to assess the site's environmental conditions to determine if the site is suitable for the proposed land use in accordance with the NSW environmental regulatory framework.
Findings	▪ Historical review determined that the subject site has been used for commercial / industrial purposes from pre-1930. The northern portion of the subject site (73 Victoria Road) may have been used as a service station in the 1950's to 1970's, before being redeveloped by construction of the current building and basement circa 2004. The current building on the southern portion (71 Victoria Rd) was constructed circa 1930 and use as a service station appears unlikely, though use as a mechanics workshop is feasible. The subject site was used as a boating services centre and a wholesale vehicle dealership. ▪ Part of the adjacent site north at 77-105 Victoria Road, Drummoyne NSW was a former service station and then a Bob Jane T-Mart. The adjacent property was investigated, remediated (including UPSS removal) and validated before construction of a multi-storey residential apartment/commercial building with basement car parking. ▪ The general site lithology encountered during this investigation was observed to be shallow fill materials (between 0.2 m to 0.8 m BGL), overlying a layer of residual (natural) soils (between 0.8m to 2.4m BGL) with sandstone bedrock encountered at approximately 2.4 mBGL and extending to at least the maximum depth of investigation of 11.50 mBGL. Ash and slag and some foreign materials (fragments of ceramic and plastic) were observed in samples of fill. No asbestos containing

Project Task	Findings
	materials were observed or detected in the three boreholes sampled on the site. ▪ Groundwater depth (standing water level) was approx. 7 mBGL at one monitoring well (BH1M). ▪ Copper marginally exceeded adopted ecological criterion in shallow fill at one location (BH1M). ▪ Petroleum hydrocarbons (TRH-F2, TRH-F3, toluene) were reported at low concentration in groundwater and were likely remnant from operation of a historic petrol service station on the adjacent property or possibly the subject site. ▪ Copper and zinc exceeded the marine aquatic ecosystem groundwater acceptance criteria (GAC) in monitoring well BH1M. The reported concentration of copper was a marginal exceedance of adopted ecological criterion. Zinc is ubiquitous in urban environments due to common sources such as galvanised iron roofing, panelling and fencing. Copper and zinc concentrations reported in groundwater are considered indicative of regional background conditions. In addition, these metal concentrations are expected to attenuate between the site and Parramatta River. ▪ Soil vapour constituents at two targeted sub-slab locations along the up-gradient north-western site boundary were found to be below the adopted human health criteria. Minor concentrations of petroleum hydrocarbons were detected and were likely to be remnant from historical service station operations reported on the adjacent property and possibly on site. ▪ No asbestos containing materials were observed or detected in soil recovered from the seven boreholes sampled on the site.

3.2 Conceptual Site Model

In accordance with NEPC (2013*) Schedule B2 - Guideline on Site Characterisation*, EI developed a conceptual site model (CSM) as part of the investigation phase assessing plausible linkages between potential contamination sources, migration pathways and receptors.

3.2.1 Summary of Site History

Based on the previous investigations (**Section 3.1**), the subject site has been used for commercial / industrial purposes from pre-1930. The northern portion of the subject site (73 Victoria Road) may have been used as a service station in the 1950's to 1970's, before being redeveloped by construction of the current building and basement circa 2004. The current building on the southern portion (71 Victoria Rd) was constructed circa 1930 and use as a service station appears unlikely, though use as a mechanics workshop is feasible. The subject site was used as a boating services centre and a wholesale vehicle dealership.

Safework NSW had no records on file regarding storage of hazardous chemicals at the site.

A petrol service station/Bob Jane T-Mart operated on the adjacent property (77 – 105 Victoria Road) north-west of the subject site. The Bob Jane T-Mart facility was demolished and remediated circa 2010 for a high density residential development which was completed circa 2018. The surrounding land use east and south of the site was low density residential and light commercial. The most recent commercial activities at the subject site were a gym (Anytime Fitness) and a party supply company (The Party People).

3.2.2 Subsurface Conditions

The general site lithology encountered during the previous EI (2021) investigation was a layer of shallow fill materials (between 0.2 m to 0.8 m BGL), overlying a layer of residual (natural) soils (between 0.8m to 2.4m BGL) with sandstone bedrock encountered at approximately 2.4 mBGL and extending to at least the maximum depth of investigation of 11.50 mBGL. Ash and slag and some foreign materials (fragments of ceramic and plastic) were observed in samples of fill. More details are provided in **Table 3-2**.

Table 3-2 Generalised Subsurface Profile (mBGL)

Layer	Description	Minimum and Maximum Depth
Hardstand	Concrete	0.0 – 0.2
Fill	Clayey Sand: fine to medium grained, brown to dark brown, with sub-angular to angular gravels, with ash, moist, no odour.	0.2-0.5
	Sandy Clay: medium plasticity, light brown to orange, with fine to coarse grained sub-angular to angular gravels, moist, no odour. Inclusions of ceramic and plastic fragments and slag.	0.14-0.6
	Silty Clay: medium plasticity, light brown to orange, with fine to coarse grained sub-angular to angular gravels, moist, no odours.	0.6-0.7
	Sandy Silt: pale yellow and grey, with sub-angular to angular gravels, moist, no odour.	0.2-0.4
Natural	Silty Clay: medium to high plasticity, orange with red mottling / orange to yellow, sub-rounded to rounded ironstone gravels, dry to moist, no odour.	0.5-2.4
	Sandy Clay: low to medium plasticity, yellow to orange, with sub-angular to angular gravels and iron stone, dry to moist, no odour	0.4 – 0.7
Bedrock	Weathered Sandstone: pale grey, no odour	2.4 -11.5 (observed)[1]

Note 1 Presumed to extend to greater depths

Groundwater (sanding water level) reported at 7m BGL

3.2.3 Existing Site Contamination

Intrusive investigations conducted by EI (2021) identified a localised area of impacted soils as follows (summary tables of results are tabulated in **Appendix D**):

Soil

- Carcinogenic PAHs (as B(α)P TEQ) in shallow fill at BH2_0.2-0.3 (26 mg/kg) and HA201_0.2-0.3 (8.2 mg/kg) which exceeded human health criterion (4 mg/kg). The next deeper sample at both locations was below the human health criterion. Leachability of PAHs (TCLP) was negligible.
  - TCLP testing of fill samples found that the leachability of lead was low, and leachability of PAHs, including benzo(α)pyrene was negligible. Lead and PAHs are likely to be associated with ash and slag that was reported in fill at the site. Ash and slag are common fill inclusions in the Drummoyne area and other inner west suburbs.
- Copper (BH1) in shallow fill marginally exceeded adopted ecological SAC; however, this sampling location was located within the proposed basement area and therefore the ecological SAC does not apply.. There was no exceedance of adopted human health criteria.

Groundwater:

Copper and zinc exceeded the marine aquatic ecosystem criteria in monitoring well BH1M. The reported concentration of copper was a marginal exceedance of adopted ecological criterion. Zinc is ubiquitous in urban environments due to common sources such as galvanised iron roofing, panelling and fencing. Copper and zinc concentrations reported in groundwater are

considered indicative of regional background conditions, rather than site specific impact. In addition, these metal concentrations are expected to attenuate between the site and the Parramatta River.

3.2.4 Potential Sources, Exposure Pathways and Receptors

Following on from the previous investigations (**Section 3.1**), the potential contamination sources, exposure pathways and human and environmental receptors that were considered relevant for this RAP are summarised in **Table 3-3**.

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Table 3-3 Conceptual Site Model

Potential Source	Impacted Media	CoPC	Transport Mechanisms	Exposure Pathway	Potential Receptor	Likelihood of complete exposure pathway
▪ Historic industrial / commercial on-site activities ▪ Imported fill soils of unknown origin and quality	Soil	Metals, TRH, BTEX, PAH, VOCs, OCP, OPP, PCB and asbestos	▪ Mobilising of contaminants into the site soils ▪ Wind disturbance of bare soils during construction	▪ Ingestion ▪ Dermal contact ▪ Inhalation (dust particulates / vapour) ▪ Plant root uptake	▪ Construction / demolition workers ▪ Adjacent site users ▪ Future site users (within landscaping areas) ▪ Planting within landscaping areas ▪ Current site occupiers	▪ 71 Victoria Road: **Low** - given soil and vapour findings and previous excavation and previously reported validation of building basement footprint. ▪ 73 Victoria Road: **Low** - given soil and vapour findings and previous redevelopment, excavation and previously reported validation of building basement footprint.
	Groundwater	Metals, TRH, BTEX, PAH, VOCs, OCP, OPP, PCB	▪ Spills from on-site activities leaching to soil and to groundwater			
	Vapour	TRH, VOC	▪ Volatilisation from impacted soils and/or groundwater			
Contamination from historic off-site commercial / industrial activities	Groundwater and vapour (soil and/or groundwater vapour)	TRH, BTEX, VOCs, PAHs and Phenols	▪ Groundwater migration from an onsite or up gradient source(s).	▪ Ingestion ▪ Dermal contact ▪ Inhalation of vapours	▪ Construction / maintenance workers ▪ Future site users ▪ Current site occupants	▪ 71 and 73 Victoria Road: **Low** - Limited soil vapour (north-west boundary) and groundwater investigation, found risk from petroleum hydrocarbon contamination to be low and acceptable. The adjacent development (former Bob Jane T-Marts at 77 Victoria Rd) included removal of UPSS sources as part of subsequent high density residential development.
Hazardous materials present within existing site structures or from demolition of historic structures	Building Materials and Soil	Asbestos, Lead and PCBs	▪ Mechanical disturbance during demolition works ▪ Wind disturbance during demolition	▪ Ingestion ▪ Dermal contact ▪ Inhalation (dust particulates / vapour)	▪ Construction / demolition workers ▪ Adjacent site users	▪ 71 Victoria Road: **Moderate** - due to age of building pre-1930's and earlier demolition of historic sheds. ▪ 73 Victoria Road: **Low** - given circa 2003 construction of current site building and site bulk excavations.

3.2.5 Data Gaps

The following data gaps were identified during the review of the previous investigation (EI 2021), requiring closure by further assessment:

- The lateral extent of PAH impacted fill reported at borehole locations BH2 and HA201.
- The quality of soil located in the retained deep soil in the southern corner of the site.
- Historical review and site investigation indicates that operation of a service station at 71 Victoria Road of the subject site was unlikely. Operation of a service station may have occurred at 73 Victoria Road of the subject site, however UPSS infrastructure including was likely to have been removed during redevelopment and construction of a basement which occurred circa 2004. The likelihood of USTs being present at the subject site is low. However, for due diligence purposes, it is recommended that following building demolition, GPR scanning is completed to verify that USTs are not present within the footprint of the subject site.
- Hazardous materials may be present in buildings at the site, particularly the older buildings at 71 Victoria Rd. Building demolition may have occurred in the past, and remnant building rubble may remain at the site.

4. Remediation Goal and Criteria

4.1 Remediation Goal

The remediation goal is to make the site suitable for the proposed mixed residential and commercial land uses, in line with SEPP 55 and Council's contaminated land policy.

4.2 Remediation Acceptance Criteria

Based on the proposed development (**Section 1.2**), the land use of the proposed development is equivalent a generic NEPC (2013) setting of residential with minimal opportunities for soil access. The development drawings provided (**Appendix B**) indicate deep soil in the southern corner of the site will be retained for a landscaped open space area. The following remediation acceptance criteria (RAC) are adopted for the site, as outlined in **Table 4-1**. These were selected from available Tier 1 NSW EPA statutory made or approved guidelines, or NSW EPA non-statutory published or endorsed guidelines (where necessary and justified), with due consideration of the exposure scenario that is expected for the site, the likely exposure pathways and the identified potential receptors.

Table 4-1 Remediation Acceptance Criteria

Assessed Value	Adopted Guidelines	Adopted Criteria and Rationale
Soil		
Human Health	NEPC 2013, Schedule B1, Section 6, Table 1A(1)	**Soil Health Investigation Levels (HILs)** are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of 3 m below the surface for residential use. Site-specific conditions should determine the depth to which HILs apply for other land uses. Adopted criteria are: ▪ Building footprint: HIL-B for residential with minimal soil access; and ▪ Deep soil area: HIL-C thresholds for public open space settings.
	NEPC 2013, Schedule B1, Section 6, Table 1A(3)	**Soil Health Screening Levels (HSLs)** have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to >4 m. For multistorey buildings where non-residential uses (e.g. car parking or commercial use) exist in a basement or at ground level, then land use category of commercial/industrial may be used for assessment of volatile petroleum hydrocarbons. The most conservative criteria are for a vapour source within a soil horizon of 0m to <1m in a Sand geology. Adopted criteria are: ▪ Building footprint: HSL-D, Sand, 0m to <1m (per Section 2.4.8 Schedule B1, NEPC (2013)); and ▪ Deep soil area: HSL-C thresholds for public open space area.

Assessed Value	Adopted Guidelines	Adopted Criteria and Rationale
	For asbestos: NEPC 2013, Schedule B1, Section 4, Table 7.	**Asbestos Health Screening Levels (HSLs)** are based on scenario-specific likely exposure levels and are adopted from the Western Australian Department of Health guidelines (WA DoH, 2009). The requirement for the soil surface to be free of visible asbestos applies to both assessment and remediation phases. Adopted criteria are: ▪ No visible asbestos on the soil surface; ▪ Building footprint: HSL-B for bonded ACM; ▪ Deep soil area: HSL-C for bonded ACM; and ▪ 0.001% w/w for Asbestos Fines (FA) and Fibrous Asbestos (FA) in soil.
Ecological	NEPC 2013, Schedule B1, Table 1B(1) to 1B(5) and NEPC EIL Worksheet	**Ecological Investigation Levels (EIL)** are published in NEPC 2013, Schedule B1 for selected metals and organic substances and are applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2 m of soil. EILs are also used in the assessment of soil leachability to groundwater. The soil physiochemical properties for use in the NEPC EIL Worksheet consisted of : ▪ pH = 5.3 (average pH reported in JK (2015)); ▪ CEC = 10 cmol/kg (ref. espade 2.1) ▪ Clay% = 40% (ref. espade 2.1) Adopted criteria are: ▪ EIL for urban residential and public open space, aged, NSW setting, high traffic EI notes that the only vegetation expected to be present based on the development plans is a small area of retained deep soil at the southern corner of the site and a small garden bed situated on a podium adjacent to Victoria Road (refer to **Appendix C**).
	NEPC 2013, Schedule B1, Table 1B(6)	**Ecological Screening Levels (ESLs)** have been developed for selected petroleum hydrocarbon compounds and total petroleum hydrocarbon (TPH) fractions and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse- and fine-grained soils and various land uses. They are generally applicable to the top 2 m of soil. Adopted criteria are: ▪ ESL for urban residential and public open space, fine grained soil
Ecological	CRC CARE (2017) High reliability ecological criteria for benzo(α)pyrene	**High reliability ecological criteria for Benzo(α)pyrene** CRC Care's high reliability derived ecological guideline for benzo(a)pyrene in urban residential and public open space was used to assess benzo(a)pyrene for protection of terrestrial ecosystems.

Prior to being removed from the site, any excavated soils must be classified in accordance with the EPA (2014a) *Waste Classification Guidelines*. Under these guidelines, waste soils are classified into the following groups: *General Solid Waste (including Virgin Excavated Natural Materials (VENM))*, *Restricted Solid Waste,* or *Hazardous Waste*, subject to chemical assessment. The chemical assessment must use NATA-registered laboratory methods for testing total contaminant concentrations and leachable contaminant concentrations using the

toxicity characteristics leaching procedure (TCLP) methodology. Any soils containing asbestos would additionally be classified as *Special Waste - Asbestos Waste*.

In accordance with the *NSW Waste Regulation 2014*, waste soils must only be disposed to a waste facility that is appropriately licenced to receive the incoming waste. It is therefore recommended that confirmation is obtained from the waste facility prior the materials being removed from the site. In the case of *Asbestos Waste*, special tracking requirements include entering relevant details of the waste transfer into the NSW EPA's Waste Locate Tracking System, as described in **Section 7.5.2**.

Should the importation of 'clean' materials be required, to backfill remedial voids and bring the site to the intended finished floor levels, imported materials must be previously classified as *virgin excavated natural material* (VENM) or *excavated natural material* (ENM), or deemed suitable under another EPA resource recovery exemption/order. In the absence of suitable validation information (as confirmed by the appointed environmental scientist), imported materials must be sampled and analysed to confirm suitability for on-site use. The corresponding methodology is outlined in **Section 9.1**.

No significant contamination was reported in groundwater or in soil vapour at the subject site. Groundwater SWL was reported at 7 m BGL and below the bulk excavation level (BEL) of the proposed development. Remedial management of these media is not required

5. Quality Objectives

5.1 Data Quality Objectives

In accordance with the US EPA (2006) *Data Quality Assessment* and the EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme* (3rd Edition), data quality objectives (DQO) will be defined by the EI team to determine the appropriate level of data quality needed for the specific requirements of the project. The DQO process to be applied for the proposed remediation is documented in **Table 5-1**.

Table 5-1 Data Quality Objectives

Step	Description
State the Problem	The site is to be rendered suitable for the construction of a multi-storey mixed retail/commercial and residential building overlying a double level basement carpark, as described in **Section 1.2**. The basements will cover the majority of the site area. Deep soil will be retained for landscaped open space within areas in the southern corner of the site. Based on the proposed land use, the majority of the site area has been assumed to be equivalent to a generic NEPC (2013) setting of residential with minimal opportunities for soil access, while the deep soil zones will be assessed against the NEPC (2013) thresholds for public open space. Previous investigations conducted by EI (2021; **Section 3.1**) indicated localised carcinogenic PAHs (BH2_0.2-0.3 (26 mg/kg) and HA201_0.2-0.3 (8.2 mg/kg) impacted soils. The tasks and procedures described in this RAP are to be undertaken, to achieve the remediation goal of making the site suitable for proposed land uses.
Identify the Decision	Based on the remediation objectives outlined in **Section 1.3**, the following decisions need to be made: ▪ Has the nature and extent of soil impacts on-site been defined? ▪ Does the level of impact, coupled with the fate and transport of identified contaminants, represent an unacceptable risk to identified human and/or environmental receptors on or offsite?; and ▪ Will further remediation and/or environmental management be required before the site is suitable for the intended land use?
Identify Inputs to the Decision	Inputs to the decision making process will include: ▪ Findings from previous site investigations; ▪ Details of the proposed site use; ▪ Understanding of current site use and historic activities that have occurred, including potential off-site sources of contamination; ▪ Geological and hydrogeological data relevant to the area; ▪ Field observations for the presence of visual/olfactory contamination indicators; ▪ Contaminant concentrations in soil and groundwater samples confirming effective removal of identified impacts; and ▪ Confirmation that data quality indicators (DQIs) were achieved for sample collection and handling, as well as field and laboratory QC samples.
Define the Boundary of the Remediation / Validation	**Lateral** – Works will be limited to the site boundaries (**Figure 2**, **Appendix A**). **Vertical** – From existing ground surface, underlying fill and natural soil horizons, to the base of contaminated soil and/or bulk excavation level. **Temporal** – Results will be valid on the day samples are collected and will remain valid if no changes to site use occur, and contamination (if present) does not migrate from off-site sources.

Step	Description
Develop a Decision Rule	The decision rules for validation are: ▪ Is the site suitable for the proposed land use? *If the concentrations of contaminants that remain are below the adopted remediation acceptance criteria for the intended land use (**Table 4-1**), then the site will be deemed suitable for the proposed development.* ▪ Is additional information required to determine the suitability of the site for its proposed use? *Should additional information be required, as determined by the updated CSM, then appropriate recommendations will be provided.* Decision criteria for analytical data are defined by the DQIs in **Table 5-2**.
Specify Acceptable Limits on Decision Errors	Specific limits for this project will be in accordance with NEPM, appropriate DQIs for assessing useability of the data and EI standard procedures for field sampling and handling. To assess the useability of data, pre-determined DQIs for accuracy, precision, representativeness and completeness will be applied (presented in **Table 5-2**). If any of the DQIs are not met, further assessment will be necessary to determine whether the non-conformance will significantly affect data useability. Corrective actions may include requesting further information from samplers and/or analytical laboratories, downgrading of the quality of the data and/or re-collection of samples.
Optimise the Design for Obtaining Data	Written instructions will be issued, to guide personnel during the required fieldwork activities. Remediation works are to be performed as per **Section 7**. Validation sampling to be completed as per **Section 9** methodology. All sampling procedures will be implemented to optimise data collection and achieve the DQOs. Review of the results will be undertaken to determine if further excavation and/or additional sampling are warranted. Additional investigations would be warranted where concentrations are found to exceed remediation criteria endorsed by the NSW EPA, relevant to the proposed land use(s).

5.2 Data Quality Indicators

To ensure that the validation data (including any additional assessment data) are of an acceptable quality, the results will be evaluated against the DQIs outlined in **Table 5-2**.

Table 5-2 Data Quality Indicators

QA/QC Component	Data Quality Indicator(s)
Precision A quantitative measure of the variability (or reproducibility) of data	Data precision assessed by reviewing the performance of blind field duplicate sample sets, through calculation of relative percentage differences (RPD). Data precision deemed acceptable if RPDs found to be less than 30%. RPDs that exceed this range are considered acceptable where: ▪ Results were less than 10 times the limits of reporting (LOR); ▪ Results were less than 20 times the LOR and the RPD was less than 50%; or ▪ Heterogeneous materials or volatile compounds were encountered.
Accuracy A quantitative measure of the closeness of reported data to the “true” value	Data accuracy assessed through the analysis of: ▪ Split field duplicate sample sets; ▪ Field and method blanks, analysed for the analytes targeted in the primary samples; ▪ Matrix spike sample sets; and ▪ Laboratory control samples.
Representativeness The confidence (expressed	To ensure the data produced by the laboratory is representative of conditions encountered in the field, the following measures will be taken:

QA/QC Component	Data Quality Indicator(s)
qualitatively) that data are representative of each medium present onsite	▪ Blank samples run in parallel with field samples, to confirm there were no unacceptable instances of laboratory artefacts; ▪ Review of relative percentage differences (RPD) values for field and laboratory duplicates to provide an indication that the samples were generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; and ▪ The appropriateness of collection methodologies, handling, storage and preservation techniques assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e., volatile loss during transport due to incorrect preservation / transport methods).
Completeness A measure of the amount of useable data from a data collection activity	Analytical data sets acquired during the investigation evaluated as complete upon confirmation that: ▪ Standard operating procedures (SOPs) for sampling protocols adhered to; and ▪ Copies of all chain of custody (COC) documentation are included and found to be properly completed. Consideration of whether the proportion of “useable data” generated in the data collection activities was sufficient for the purposes of the land use assessment.
Comparability The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Issues of comparability of separate data sets are reduced through adherence to SOPs and regulator-endorsed or published guidelines and standards on each data gathering activity. In addition the data are to be collected by experienced samplers and NATA-accredited laboratory methodologies will be employed for sample analysis.

6. Remediation Technology

6.1 Regulatory Overview

Under the NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Amendment Measure*, the preferred hierarchy for site remediation and/or management is:

- On-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated soil, so that the contamination is destroyed or the associated risk is reduced to an acceptable level, after which soil is returned to the site; or, if the above are not practicable:
- Consolidation and isolation of the soil on-site by containment with a properly designed barrier; and
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

When deciding which option to choose, the sustainability (environmental, economic, and social) of each should be considered, in terms of achieving an appropriate balance between the benefits and effects of undertaking the method.

For this site, a number of remediation options were reviewed to examine the suitability of each method, the surrounding properties, geological and hydrogeological limitations and the following considerations:

- Development requirements (mixed use, with basement facilities);
- Prioritisation of works in areas of most concern;
- Ability of remedial method to treat contamination with respect to material and infrastructure limitations;
- Remedial timetable;
- Defensible method to ensure the site is remediated to appropriate levels / validation criteria; and
- Regulatory compliance.

6.2 Remediation Technologies Review

Various soil remediation options were reviewed to examine the suitability of each method, with due regard for the surrounding land uses, as well as the (hydro) geological limitations. Each of the available remediation technologies is summarised in terms of its suitability in **Table 6-1**.

Table 6-1 Remedial Technology Review - Soils

Remediation Methodology	Description	Advantages	Disadvantages	Suitability
No Action	'No Action' can be considered if: ▪ There is no measurable contamination (i.e. contaminant concentrations are below adopted criteria); ▪ Exposure is unlikely; and/or ▪ Contaminants are not mobile.	No remediation costs. Creates minimal disturbance to the site. Retains material on-site.	Not applicable to the kind of contamination encountered at the site. Would pose limitations on land use options. May require an Environmental Management Plan (EMP) and ongoing monitoring.	Not Suitable – As the key objective of the remedial strategy is to make the site suitable for mixed use development without the need for ongoing monitoring.
On-site bioremediation	Excavated soils are thoroughly broken down and aerated, mixed with microorganisms and nutrients, stockpiled and aerated in above ground enclosures. Also known as land farming.	Cost effective if soils are utilised on-site. Lower disposal costs. Limited requirement to import fill material to site. Retains material on-site.	Significant area required. Undefined remediation timeframe. Potential for odour problems. Not suitable for metals or asbestos contamination.	Not suitable – May be utilised for (volatile) hydrocarbon impacted soils, but not suitable for carcinogenic PAHs.
In situ treatment	*In situ* treatment of impacted soils within the smear zone and saturated zone using treatment methods such as soil vapour extraction, injection of oxidising agents etc.	Minimal disturbance (no excavation). Cost effective for large scale site remediation of light to mid-weight petroleum hydrocarbons. Potential to simultaneously remediate groundwater (if contaminated).	Not applicable to the kind of contamination encountered at the site. Expensive establishment costs. Potential for odour problems. Requires detailed design and pilot trials.	Not suitable – Method designed for widespread hydrocarbon impacts. As the dataset does not indicate such, this is not considered to be a viable option.
Consolidation and/or capping	Risk minimisation approach where impacted soils are managed on-site by capping the ground surface with a clean, impermeable layer of fill material.	Effectively removes risk to human health by eliminating exposure pathways.	Importance of capping design and materials utilised in the construction of capping layer. Would pose limitations on land use. Typically requires EMP.	**Potentially suitable** – An environmental management plan (EMP) with ongoing monitoring would be required, due to the retention of contaminated materials on the site.
Excavation and off-site disposal	Excavate impacted materials. Transport directly to a licensed landfill facility. Reinstate site with imported clean fill material.	Fast – impacted material removed immediately, significantly reducing potential for impact to groundwater. No storage or treatment problems. Reduced vapour/odour issues as impacted materials removed from site. Minimal design and management costs.	Transfer of waste to another location (licensed waste facility). High costs associated with the disposal of waste soils and importation of clean backfill). Requires waste classification prior to disposal, keeping of thorough waste records, waste tracking and reporting. Sustainability issues related with disposal to landfill.	**Suitable** – For meeting the key project objective to make the site suitable for mixed use without the need for ongoing monitoring. Bulk excavation of surplus soil is required under the proposed (basement) development. Borehole locations BH2 and HA201 are located within the proposed basement boundary. Methodology will alleviate concern as part of the basement

Remediation Methodology	Description	Advantages	Disadvantages	Suitability
				excavation.
Natural attenuation	Allowing the contaminants to biodegrade naturally following removal of the contamination source.	No remedial excavation of site. Retains materials on site. Sustainable, cost effective remediation method.	Slow process. Potential for contamination to further impact on the groundwater aquifer and nearby environmental receptors. Typically requires EMP and ongoing monitoring.	Not Suitable – carcinogenic PAHs are a contaminant concern and are not amendable to natural attenuation.

6.3 Preferred Remediation Option

Based on the available remedial technologies, the proposed site development (mixed use, with basement facilities), the potential risks to human health and the environment, as well as the relative cost effectiveness of feasible remedial techniques, the preferred remedial option for the site is:

- Excavation then off-site disposal of impacted soils to licensed waste facilities.

All wastes shall be transported to appropriate, EPA-licensed facilities, after formal classification. All excavated (remediation) areas shall be validated by base and wall soil sampling. Where required, the site will be reinstated with validated, imported (or recovered) excavated natural materials.

Note that on-site consolidation (encapsulation) and/or capping of impacted materials will be considered a secondary option, where economic constraints dictate.

6.4 Remediation Works Category, Consent and Planning

6.4.1 Consent Requirements

In accordance with *SEPP 55 - Remediation of Land*, the category of the remediation works defines whether consent is required prior to commencement. Under *SEPP 55*, works where there is the potential for significant environmental impact are classed as *Category 1* and require development consent. *Category 2* works pose a low potential for environmental impact and do not therefore require prior consent. The determination for the subject site is outlined in **Table 6-2**.

Table 6-2 Remediation Works Category Determination

Significant Environment Impact	Yes/No	Category
Designated Development or State Significant Development	No	2
Critical or threatened species habitat	No	2
Impact on threatened species, populations, ecological communities or their habitats	No	2
In area identified environmental significance such as scenic areas, wetlands (see list*)	No	2
Comply with a policy made under the contaminated land planning guidelines by the council	Yes	2
Is work ancillary to designated development	Yes	2

Notes: * Environmental significance list -coastal protection, conservation or heritage conservation, habitat area, habitat protection area, habitat or wildlife corridor, environment protection, escarpment, escarpment protection or escarpment preservation, floodway, littoral rainforest, nature reserve, scenic area or scenic protection, or wetland.

Based on the above determination, the remediation works for the site are considered Category 2 and will not require development consent. Notification to the consent authority (City of Canada Bay Council) must be made 30 days prior to commencement of remediation.. Council has the right of intervention after that time for a breach of the *EPA Act 1997* or non-compliance with *SEPP 55*. The notification will also serve as the basis for updating Council records on properties in the local government area and will:

- Be in writing;
- Provide contact details for the notice;
- Briefly describe the remediation work;
- Show why the work is considered Category 2 remediation work;

- Specify the property description and street address on which the remediation work is to be carried out;
- Provide a location map; and
- Provide estimates for commencement and completion dates of the work.

Provision of this RAP, as well as an indication of commencement and completion dates of the works in writing, is usually sufficient to meet the requirements of this notification.

6.4.2 Development Consent and Control Plans

All works must be in accordance with *City of Canada Bay Development Control Plan (DCP) 2020* and any specific consent conditions issued for the development.

6.4.3 Planning Requirements

The appointed site contractor must prepare a site-specific Work Health and Safety Plan (WHSP) and Construction Environmental Management Plan (CEMP) for the project, covering human / environmental health and safety issues, as well as all measures required under Council's Development Application (DA) approval and DCPs.

Where asbestos removal is required, an asbestos management plan (AMP) should be drafted and the appointed contractor must be appropriately licensed to perform such works.

7. Remediation Works

7.1 Remediation Sequence

Site characterisation revealed the presence of localised carcinogenic PAHs impact in shallow filling soils at EI (2021) borehole locations BH2 and HA201 (at depth 0.2m to 0.3m BGL). BH2 and HA201 are located within the proposed basement boundary. The preferred remediation strategy involves excavation and off-site disposal of impacted soils to licensed waste facilities.

The site remediation works will therefore include (though not necessarily be limited to):

- **Stage 1** – Preliminaries / site establishment;
- **Stage 2** – Site walkover and Ground Penetrating Radar (GPR) (to verify that USTs are not present at the site);
- **Stage 3** – Remedial excavation of carcinogenic PAHs impacted soils at locations BH2 and HA201;
- **Stage 4** – Bulk excavation, waste classification and data gap closure;
- **Stage 5** – Site validation;
- **Stage 6** – Validation report preparation.

Contingent Action

Should additional impacted soils be encountered or unexpected finds be discovered during the course of the remediation program, or should any phase of the validation identify residual, gross contamination requiring additional remediation, then the procedures described under the Unexpected Finds Protocol (**Section 8.6**) and/or the validation plan (**Section 9**) will be implemented, until the remediation goals have been achieved and the site is deemed suitable for the intended land use.

7.2 Stage 1 – Preliminaries and Site Establishment

Council Notification

Notice must be given to Council at least 30 days prior to the commencement of remediation works as outlined in **Section 6.4.1**. A list of all required work permits must be obtained from Council and arrangements are to be made to obtain the necessary approvals from the relevant regulatory authorities.

Site Preparation and Planning

The site should be prepared in accordance with the general requirements of the site management details outlined in **Section 6**. Before site works commence, the site contractor will prepare site specific plans including a WHSP, CEMP and AMP (if required).

It will also be necessary to establish environmental controls, site access, security, fencing and any required warning signage prior to works commencement.

A project plan should also be developed to outline engineering design for excavation support (if required), water treatment requirements and design, staging of excavation works, stockpiling, waste stabilisation, waste material loading, traffic management and waste tracking.

The Project Plan should incorporate a staging plan that outlines the basic stages of the remediation works. The staging plan should include, but not be limited to:

- Staging of areas to be excavated;
- Areas designated for waste segregation, screening and storage (stockpiling), amenities, soil and groundwater treatment (if required);
- Truck movements to allow loading to mitigate impacts to surrounding land users and council infrastructure; and
- Details of any required environmental management measures such as, dust control.

Remediation Workshop

As part of the site preparation phase a remediation workshop should be conducted with the appointed contractor(s) to further develop required remedial measures, excavation plans, waste classifications, and environmental management requirements. It would be appropriate for the appointed environmental consultant to be present at the workshop to provide guidance in relation to environmental management measures to be applied during the remediation and site validation activities.

7.3 Stage 2 – Site Walkover Inspection and Ground Penetrating Radar (GPR)

Following the removal of all site features (including pavements), a site walkover is to be conducted by a qualified and experienced environmental consultant to assess any visual signs of contamination, such as supplementary asbestos contamination on surface soils following demolition, buried building waste (potentially containing asbestos) and foreign materials, and other features such as surface staining/discolouration and odour.

A GPR survey and visual inspection is to be conducted by a certified and experienced service locator, prior to or following pavement removal, to verify that UPSS and other subsurface infrastructure is not present at the site.

Should unexpected finds be discovered during the course of the site remediation programme, then the procedures described under the Contingency Management (**Section 8.4**) and Unexpected Finds Protocol (**Section 8.6**) are to be implemented until the site remediation goals have been achieved and the site is deemed suitable for the intended land use

7.4 Stage 3 – Remedial Excavation of Carcinogenic PAHs Impacted Soils at BH2 and HA201

Previous investigations identified localised carcinogenic PAHs impact in shallow fill at EI (2021) borehole locations BH2 and HA201 (at depth 0.2m to 0.3m BGL). Methods for excavation are as follows:

- Mark out the location and initial excavation extent. Segregate an area of approximately 5m x 5m centred on former sampling locations BH2 and HA201.
- Using onsite machinery, excavate all soil material from within the defined area beyond the known impact depths of 0.3m BGL to the depth of natural material (0.7m BGL at location BH2; 0.4m BGL at HA201) or to the next deeper sample below the human health criterion(0.6m BGL at location BH2; 0.5m BGL at HA201), whichever is the lesser.
- The stockpile is to be placed on hardstand or builders plastic and covered to prevent cross contamination. If impact observed or if validation is not achieved, then the excavation should be extended lateral or vertically in the direction of impact.
- Validation samples will be collected from excavation surfaces (walls and base) of the excavation pit and analysed for carcinogenic PAHs (i.e. 3 samples surrounding BH2 and 4 samples surrounding HA201), as shown in blue on **Figure 2**, **Appendix A**. During

sampling, the material will be visually assessed for the presence of ash or slag; if visually identified, the material should also be analysed for beryllium. If beryllium is detected, the natural ground suface should also be analysed for beryllium. Validation assessment requirements are detailed in **Section 9.1**.

- Waste classification of stockpiled soil shall be completed in accordance with the EPA (2014a) *Waste Classification Guidelines*.

7.5 Stage 4 – Bulk Excavation, Waste Classification and Data Gap Closure

Prior to or after demolition, further soil characterisation should be undertaken to address the identified data gap and shall include a test pit and/or borehole at least one location within the deep soil area (to be retained within the southern corner) to assess soil quality. The potential sampling location has been identified in **Figure 2**, **Appendix A**.

Analysis shall target fill and natural soil at this location, to be analysed for pesticides and asbestos, followed by a deeper fill sample and a natural sample analysed for heavy metals, TRHs, BTEX, PAHs, OC/OP pesticides, PCBs, and asbestos, with completion of TCLP as required. If further contamination of potential risk is identified, further remedial works may be required and will be addressed via an addendum to this RAP.

Material handling and management procedures will be implemented as detailed in **Section 8** for any excavated material. Any material designated for offsite disposal must be classified in accordance with EPA (2014a) *Waste Classification Guidelines*. The procedure for waste classification will occur as follows:

7.5.1 Waste Classification – Stockpile

- Stockpiled materials designated for waste classification will be collected at a rate of one sample per 25m^3 (minimum of three samples) up to 250m^3. For stockpiles exceeding 250m^3 but less than 2,500m^3, a minimum of 10 samples is required and 95% UCL statistical calculations of contaminant concentrations may be used for classification.
- The analytical suite for waste classification will include six priority metals (arsenic, cadmium, chromium, lead, mercury and nickel)., plus beryllium, and TPH, BTEX, PAH, OCP, OPP, PCB and asbestos (10L samples for quantification analysis according to NEPM 2013), with TCLP testing (as required) and any additional chemicals of potential concern that may be identified during site remediation.
- Preparation of a Waste Classification report detailing the interpreted soil waste classification for each stockpile, EPA (2014a) *Waste Classification Guidelines*, to enable appropriate off-site disposal.
- The reported presence of slag in fill at borehole BH2, and low leachability of lead and PAHs indicate that the remedially excavated material may be classifiable as general solid waste (non-putrescible) according to general approval of immobilisation of contaminants in waste for “metallurgical furnace slag contaminated natural excavated materials” (EPA Approval number 2009/07)
- Stockpiles from different remediation areas and different soil profiles shall be kept separate. Stockpiles should be placed on either intact hardstand pavement or high density polyethylene (HDPE) plastic liner and limited to a maximum height of 2m. Stockpiles should be surrounded by star pickets and marking tape, or other suitable material, to clearly delineate boundaries. Stockpiles shall be lightly conditioned by water sprinkler to prevent dust blow and/or covered with tarp if longer duration is required. Where stockpiles are to remain onsite for a period >24 hours, silt fences or hay bales should be erected around each stockpile to prevent losses from surface erosion (runoff).

7.5.2 Waste Management of Bulk Excavations

The general process for conducting appropriate waste characterisation, transport and disposal is as follows:

- Surplus fill and natural soil to be disposed from the site must be classified according to EPA (2014a) *Waste Classification Guidelines*.
- Waste Classification reports must be issued by the environmental consultant according to the assessed classification and quantity prior to off-site disposal.
- It is the responsibility of the appointed Site Manager to make arrangements for the Environmental Consultant to assess the need for additional sampling and analysis, to classify any additional spoil that is produced during the construction process.
- The earthworks contractor must identify suitably licenced waste landfill premises for disposal of waste materials and confirm that the premises will accept the waste in accordance with its Environmental Protection License.
- Waste classified soils for disposal shall be loaded onto EPA-licensed waste vehicles for transport to the designated landfill premises.
- Waste transport contractors must carry a copy of the relevant Waste Classification with every transported load.
- The waste must be transferred to the designated premises in accordance with applicable legislation.
- The earthworks contractor must supply the individual waste dockets for each waste load to the environmental consultant via the Site Manager, in a timely manner. The waste dockets are required for validation reporting purposes.

Other important requirements as part of the waste management are as follows:

- Additional waste classification may be necessary for suspicious materials which exhibit odours or appear stained or discoloured. The discovery of such soils should be treated as “unexpected finds” and will trigger application of the Unexpected Finds Protocol provided in **Section 8.6**. In this situation, the Environmental Consultant should be immediately consulted for evaluation and waste characterisation of the materials.
- A site log shall be maintained by the contractor for each discrete excavation (numbered locations) to enable the tracking of disposed loads against on-site origin and location of the materials.
- Transport of contaminated material should be via a clearly designated haul route from the site to the landfill premises that minimises exposure to sensitive communities. The proposed waste transport route should be notified to Council and truck dispatch shall be logged and recorded by the contractor for each load leaving the site.
- Each waste load should be disposed to a licensed waste facility authorised to accept the waste, in accordance with the relevant Waste Classification Reports, and documentation (waste dockets) confirming disposal must be maintained for reporting purposes.
- Environmental controls must be implemented to prevent exposure to workers and the public and are described further in **Section 8** of this RAP.
- Removal of asbestos materials (if found) from the site shall only be carried out by recognised asbestos contractors holding the appropriate SafeWork NSW and EPA licenses, consents and approvals.
- Generators and transporters of Asbestos Waste have a legal obligation to ensure their waste is transported to a lawful place under Clauses 76 and 79 of the *Protection of the Environment (Waste) Regulation 2014*. The NSW EPA 2015 Asbestos and Waste Tyres

Guidelines states that consignors and transporters of Asbestos Waste, and facilities receiving these wastes, must use "WasteLocate" to provide information to the EPA regarding their movement within NSW. The NSW EPA Website at: https://wastelocate.epa.nsw.gov.au/ provides further information about "WasteLocate".

7.5.3 Management of VENM

During site works, virgin excavated natural materials (VENM), as defined in the NSW EPA (2014a) *Waste Classification Guidelines,* may be identified as suitable for off-site re-use. Confirmation of the VENM waste classification must be made with the concurrence of appointed environmental consultant. The re-use of VENM at an off-site location must be approved in writing by the receiving site land owner before it is transported from the site.

The earthworks contractor must provide the following to the environmental consultant and client for reporting purposes:

- All approval documents and correspondence from the receiving site authority and approver;
- Details of VENM volumes excavated from the site, including the measured depth below existing ground level, or surveyed elevation of the VENM at the top and bottom excavation levels;
- Laboratory results from samples of designated material verifying a classification as VENM;
- A description of the VENM that was sent to the receiving site; and
- Copies of VENM weighbridge dockets, trip tickets and/or consignment disposal confirmation that confirms the date, exit time, and truck license plate and operator for each load.

In advance of VENM excavation, VENM must be protected from exposure to site contamination activities or materials. Measures to protect VENM from exposure to contamination may include:

- Covering VENM in-situ or in stockpile with plastic sheeting;
- Placing stockpiled VENM on top of protective plastic sheeting;
- Minimising time of exposure to the site environmental conditions; and
- Relocating contaminated soils and/or contaminating activities (i.e. plant refuelling) away from VENM.

7.5.4 Management of ENM

If the volume of natural soils to be removed includes up to 2% of foreign materials, then a classification of *excavated natural material* (ENM) may be achievable, subject to compliance with the ENM classification. This classification must be verified by sampling and laboratory analysis to confirm that the materials meet the specific chemical and other material requirements detailed in the NSW EPA *Excavated natural material order 2014;* and *The excavated natural material exemption 2014*.

7.5.5 Disposal of Contaminated Material and Waste Tracking

All contaminated materials excavated and removed from the site shall be disposed at an appropriately licensed landfill facility. Copies of all necessary approvals shall be provided to the environmental consultant prior to any contaminated material being removed from the site.

Details of all contaminated materials removed from the site shall be documented by the contractor including copies of weighbridge dockets, trip tickets and consignment disposal confirmation (where appropriate). Such information must be provided to the environmental consultant for reporting purposes.

7.6 Stage 5 – Site Validation

Validation assessment is required to confirm:

- The suitability of soil within remedial excavations;
- The suitability of natural soil surface after fill layer removal within the basement excavation;
- The suitability of soil within the proposed landscaped area; and
- The suitability of backfill soil that may be imported to reinstate any excavated areas.

Details of the required validation activities are presented in **Section 9**.

7.7 Stage 6 – Validation Report Preparation

All results shall be presented in a Site Validation Report, prepared by the Environmental Consultant in accordance with the EPA (2020) *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines.* The report will document all aspects of the remediation and site validation program, include an assessment of the environmental data for remaining site soils against the adopted remediation acceptance criteria and provide a clear conclusion that the site has been remediated to a suitable standard for the proposed land uses.

Further details on what will be included in the validation report are provided in **Section 9.2**.

7.8 Remediation Schedule

An estimated schedule for the remedial works is detailed below in **Table 7-1**. The proposed schedule is based on the remedial works being completed as outlined in this RAP.

Table 7-1 Indicative Site Remediation Schedule [1]

Timeframe (nominal)	Action
Start	Client Approval of Remediation Action Plan
Week 1-2	Stage 1 – Preliminaries and site establishment (including council notification, site preparation and planning, remediation workshop)
Week 3	Stage 2 – Site walkover and Ground Penetrating Radar (GPR)
Week 3-4	Stage 3 – Remedial excavation of carcinogenic PAHs impacted soils at BH2 and HA201
Weeks 5-8	Stage 4 – Bulk excavation, waste classification and data gap closure
Weeks 9-10	Stage 5 – Site validation
Week 11-13	Stage 6 – Validation report preparation

Note: [1] This schedule is indicative, may not include all items required by the Principal contractor and may be subject to external influences beyond EI's control.

7.9 Remedial Contingencies

It is anticipated that the proposed remedial technology will be effective in dealing with the identified contamination; however, remedial contingencies may be required should the scenarios detailed in **Table 7-2** arise.

Table 7-2 Remedial Contingencies

Scenario	Remedial Contingencies/Actions Required
Highly contaminated soils not identified during previous investigations are encountered, particularly at site boundaries	Work to be suspended until the Environmental Consultant can further assess impacted soils/ materials and associated risks. Follow the unexpected finds protocol as detailed in **Section 8.6** of this RAP.
Abandoned underground storage tanks (USTs) are encountered at the site	Systems to be removed and the excavations appropriately validated and backfilled by experienced contractor. Tank removal works reported by appropriate environmental consultant in accordance with EPA (2020b) *Guidelines for the implementation of the POEO (underground petroleum storage systems) Regulation 2019* and Australian Standard AS4976 (2008). Follow the unexpected finds protocol as detailed in **Section 8.6**.
Asbestos wastes are encountered	Work to be suspended and asbestos work removed by a suitably qualified contactor, in accordance with SafeWork NSW regulations. Follow the unexpected finds protocol as detailed in **Section 8.6**.
Residual soil impacts remain on-site between site boundary and basement excavation	Review/assess soil conditions. Carry out site specific second tier risk assessment (if required). Review/assess potential vapour hazard. If there is a vapour risk additional remedial measures may be required such as installation of a vapour barrier or passive or active vapour extraction system. Amendment to RAP required.
Contaminated groundwater (including LNAPL or DNAPL) encountered	Review groundwater conditions on site (if required) and determine need for further investigation/remediation and/or longer-term management plan. Any dewatering may require approval under the *Water Management Act 2000*. Remedial options may include natural attenuation, extraction, bio-remediation, phase-separated hydrocarbons (PSH) recovery using active pumping (including hydraulic control), installation of a groundwater permeability barrier, in situ oxidation or stabilisation. Amendment to RAP required.
Groundwater contaminant plume is identified and is migrating off-site, or there are increases in concentration due to increased infiltration	Review contaminant increase and analytes. Review active remediation alternatives (if necessary). Ensure down-gradient monitoring is undertaken. Carry out fate and transport modelling (if required) and assess the need for further action. Amendment to RAP required.
Contamination is identified near heritage items or significant trees (if identified)	Stop work. Review contaminant concentrations and risks to heritage items / flora. Assess human health and environmental risks if contamination remains in place. Review natural attenuation options.
Changes in proposed basement excavation depth or lateral extent	Review remediation works for the site.
Changes in proposed land use(s) at the site	Review remediation works for the site.

8. Site Management

8.1 Responsibilities and Contacts

The responsibilities for the various parties involved with the remediation program are outlined in **Table 8-1**.

Table 8-1 Site Management Responsibilities

Responsible Party	Details/Contacts	Responsible for:
Project Manager	Principal Contractor to be confirmed	▪ Overall management of the site remedial activities.
Property Owner and Site Contractor	Olter Investments Pty Ltd and/or Principal Contractor	▪ Notification of site conditions to the EPA under the duty to report contamination under the *Contaminated Land Management Act 1997.* ▪ Registration of details of Site Audit Statement (if Auditor engaged). ▪ Implementation of and compliance with the RAP. ▪ Notification to contractors of the existence of RAP. ▪ Provision of copies of the RAP.
Environmental Management Coordinator (EMC) / Remediation Supervisor	Olter Investments Pty Ltd (and/or Principal Contractor) and Environmental Consultant	▪ Ensuring site remediation works are carried out in an environmentally responsible manner. ▪ Liaison between the appointed Environmental Consultant and Council, providing regular updates and informing of any problems encountered. ▪ Ensuring all environmental protection measures are in place and functioning correctly during site remediation works. ▪ Reporting any environmental issues to owner.
Environmental Consultant	To be confirmed before remedial works are started	▪ Preparation of the RAP. ▪ On-site management and guidance of the remedial works. ▪ Coordination of validation works, documentation, notifications and permits required to conduct remedial works to a standard suitable of obtaining approval from the NSW EPA. ▪ Completing validation sampling and monitoring as requested by the Remediation Contractor and dictated by the RAP. ▪ Liaison between remediation contractor and the client. ▪ Preparation and submission of supporting documentation for Site Auditor review.
Earthworks or Remediation Contractor	Engaged by Olter Investments Pty Ltd and/or Principal Contractor	▪ Ensuring all operations are carried out as identified in the RAP (remediation), as directed by the Project Manager and EMC. ▪ Inducting all employees, subcontractors and authorised visitors on procedures with respect to site works, WHS and environmental management procedures. ▪ Reporting any environmental issues to EMC. ▪ Maintaining site induction, site visitor and complaint registers. ▪ Ensuring that fugitive emissions and dust potentially

Responsible Party	Details/Contacts	Responsible for:
		leaving the confines of the site are suitably controlled and minimised. ▪ Ensuring that water containing any suspended matter or contaminants is minimised, does not leave the site and is suitably controlled, so as not to pollute the environment. ▪ Ensuring that vehicles are cleaned and secured so that no mud, soil or water is deposited on any public roadways or adjacent areas. ▪ Ensuring that noise and vibration levels at the site boundaries comply with the legislative requirements. ▪ Preparation of site specific plans including WHSP and CEMP (and AMP if required) as stated in **Section 7.2**.
Local Council	City of Canada Bay Council	▪ Ensuring requirements of Development Consent and other planning instruments are met. ▪ Registration of details of a Site Audit Statement (if a requirement) on Planning Certificate.
Qualified Independent Consultant – NSW Accredited Site Auditor	Engaged by Olter Investments Pty Ltd and/or Principal Contractor	▪ Review of RAP, Site Validation Report. ▪ Preparation of Site Audit Statement and Site Audit Report. ▪ Review of updates, revisions or amendments as applicable. ▪ Provide interim audit advice of consultant or client submissions. ▪ Conduct inspections during remedial works.

8.2 Materials Handling and Management

Table 8-2 summarises the measures that should be implemented in respect of materials handling during remedial and bulk excavation works at the site.

Table 8-2 Materials Handling and Management Requirements

Item	Description/ Requirements
Earthworks contractors	Excavation of fill materials should be completed by a suitably qualified contractor to ensure: ▪ All employees and contractors are aware of the environmental and health and safety requirements to be adhered to. ▪ There is no discernible release of dust into the atmosphere as a consequence of the works. ▪ There is no discernible release of contaminated soil into any waterway as a consequence of the works. ▪ There are no pollution incidents, health impacts or complaints. ▪ All site specific management plans such as CEMP (and AMP if required) should be followed.
Stockpiling of materials	All stockpiles will be maintained as follows: ▪ Stockpiles must be located on sealed surfaces such as sealed concrete, asphalt, or high density polyethylene. ▪ Should stockpiles be placed on bare soils, which may occur adjacent to remediation areas, bare soil should be lined with builder's plastic before stockpile placement in locations that do not pose any environmental risk, and covered with builder's plastic. ▪ Excavated soils should be stored in an orderly and safe condition (≤2m height). ▪ Stockpiles should be battered with sloped angles to prevent collapse.

Item	Description/ Requirements
	▪ Stockpiles should be covered after being lightly conditioned by water sprinkler to prevent dust blow and control odours. ▪ Air emissions to be controlled by using a hydrocarbon mitigation agent, such as BioSolve®, Pinkwater®, Anotech® or an equivalent product selected by the contractor, in combination with the fine mist spraying. ▪ Should the stockpile remain *in situ* for over 24 hours, silt fences or hay bales should be erected around each stockpile to prevent losses from surface erosion (runoff). ▪ Stockpiles shall be strategically located to mitigate environmental impacts while facilitating material handling requirements.
Loading of material	Loading of stockpiles / materials will be as follows: ▪ Transport of contaminated material off the site is to be via a clearly distinguished haul route. ▪ Measures shall be implemented to ensure that no contaminated material is spilled onto public roadways or tracked off-site on vehicle wheels. Such measures should include the use of a wheel washing/cleaning facility, placed before the egress point on the site, and should be able to handle all vehicles and plant operating on-site. ▪ Residue from the cleaning facility should be collected and either dewatered on site in a contained / bunded area, or disposed as a slurry to an approved facility. Such residue will be deemed contaminated unless proven otherwise.
Transport of materials	Prior to being assigned to an appropriate waste disposal facility, all waste fill/soils will be classified in accordance with the EPA (2014a) *Waste Classification Guidelines*. If prior immobilisation treatment of the waste soils is required, disposal consent will be obtained from the NSW EPA prior to spoil transport. ▪ All trucks transporting soils from the site are to be covered with tarpaulins (or equivalent). ▪ All haulage routes for trucks transporting soil, materials, equipment and machinery shall comply with all road traffic rules, minimise noise, vibration and odour to adjacent premises, utilise state roads and minimise use of local road. ▪ All deliveries of soil, materials equipment or machinery should be completed during the approved hours of remediation and exit the site in a forward direction. ▪ Removal of waste materials from the site shall only be carried out by a recognised contractor holding the appropriate EPA NSW licenses, consents and approvals. ▪ Waste materials must be transported less than 150km from the source (POEO 1997, Waste 2014) and landfills are required to be licensed for the category of waste they are scheduled to receive. Additional conditions apply to material that is classified as Hazardous Waste.
Material tracking	Materials excavated from the site should be tracked from the time of excavation until disposal. Tracking of the excavated materials should be completed by recording the following: ▪ Origin of material; ▪ Material type; ▪ Approximate volume; and ▪ Truck registration number. Disposal locations will be determined by the remediation contractor. Disposal location, waste disposal documentation (weighbridge dockets) and the above listed information should be provided to the remediation consultant for reporting purposes. The NSW EPA 2015 Asbestos and Waste Tyres Guidelines state that consignors and transporters of Asbestos Waste, and facilities receiving these wastes, must use "WasteLocate" to provide information to the EPA regarding their movement within NSW. Further information about the "WasteLocate" system is available online from the NSW EPA Website at: https://wastelocate.epa.nsw.gov.au/.
Material visual inspection prior to validation sampling.	Following the completion of remedial works as specified within this RAP, the following applies: ▪ A suitably qualified environmental consultant should undertake a visual inspection of the work area. If visual observations indicate contamination, the earthworks

Item	Description/ Requirements
	contractors should rectify any issues arising from the inspection (i.e. further excavation or 'chasing out' until soils show no evidence of contamination based on visual inspection and/or odours). ▪ Following satisfactory completion of the visual inspection, validation sampling of soils should be completed. Validation sampling is discussed in **Section 9**. Only following satisfactory validation will remedial works be deemed as completed.

8.3 Environmental Management

All remediation work must be undertaken with due regard to the minimisation of environmental effects and meet all statutory environmental and safety requirements. The WHSP, and CEMP (and AMP if required) must therefore address the issues identified in **Table 8-3**. In addition, based on the proposed development, dewatering of the site is considered likely. A site Dewatering Management Plan (DMP) and dewatering licence application maybe required for submission to the NSW Office of Water (WaterNSW) for issue of a temporary dewatering licence application.

Table 8-3 Environmental Management Requirements

Category	Measure
Demolition (including Asbestos Management)	Appropriate measures shall be taken to ensure that demolition works are completed in accordance with SafeWork NSW Standards and Codes of Practice. Any asbestos identified should be managed in accordance with SafeWork NSW Codes of Practice and Australian Standards.
Site Stormwater Management and Control	Appropriate measures shall be taken to ensure that potentially contaminated water does not leave the site. Such measures should include, but not be limited to: ▪ Diversion and isolation of any stormwater from any contaminated areas; ▪ Provision of sediment traps including geotextiles or hay bales; and ▪ Discharge of any water to drains and water bodies must meet the appropriate effluent discharge consent condition under the *Protection of the Environmental Operations Act 1997*.
Soil Management	Appropriate measures shall be taken to ensure soils are excavated using an appropriate methodology to reduce nuisance dust and odours from leaving the boundary, and soils are disposed of in accordance with the NSW Government *Protection of the Environment Operations (Waste) Regulation 2014*.
Dust and Odour	Control of dust and odour during the course of the remediation works shall be maintained by the contractor to ensure no nuisance dust or odours are received at the site boundary according to requirements of the City of Canada Bay DCP. Action levels and specific control measures would be described in the site CEMP and may include, but not necessarily be limited to the following: ▪ Site wide water spraying, as and when appropriate, to eliminate wind-blown dust; ▪ Use of mist sprays, and/or sprinklers on stockpiles, fill screening areas and loaded fill to lightly condition the material; ▪ Use of tarpaulin or tack-coat emulsion or sprays to prevent dust blow from stockpiles or from vehicle loads; ▪ Covering of stockpiles or loads with polythene or geotextile membranes; ▪ Restriction of stockpile heights to 2m above surrounding site level; ▪ Ceasing works during periods of inclement weather such as high winds or heavy rain; and ▪ Regular checking of the fugitive dust and odour issues to ensure compliance with the CEMP requirements, undertaking immediate remedial measures to rectify any cases of excessive dust or odour (e.g. use of misting sprays or odour masking agent). It is advised that all site workers use adequate dust masks during soil excavation and that machine operators remain within an enclosed, air conditioned cabin.

Category	Measure
Noise and Vibration	Noise and vibration will be restricted to reasonable levels. All plant and machinery used on site will be noise muffled to ensure emissions do not breach statutory levels as defined within the City of Canada Bay DCP.
Hours of Operation	Working hours will be restricted to those specified in the site specific DA conditions.
Community Engagement	Community engagement should be carried out in accordance with Schedule B(8) of the NEPM (NEPC, 2013). Prior to the commencement of any remediation works at the site, every owner and occupier of any land located either wholly or partly within 100m of the boundary of the premises (including local council and the RMS) should be notified at least 30 days in advance. The notice should include: ▪ Advice of demolition and excavation work to be carried out on the premises; ▪ State the time and date such work is to commence; ▪ Indicate that the works are being conducted to minimise any risk of site contamination impacting on off-site receptors; ▪ Provide appropriate site signage at an easily readable location on the site fencing, including site contact name and phone number to be contacted should any matter arise; and ▪ Provide contact information and procedure for registering any complaints.
Incident Management and Community Relations	While various environmental management and occupational safety plans will be developed to protect human health and the environment, incidents may occur which pose a risk to the various stakeholders. To mitigate these risks and ensure that a suitable response is carried out quickly, a response plan to any incident that may occur on site should be prepared and various responsibilities assigned. The site health and safety plan and environmental management plan should document these procedures and responsibilities, and incident contact numbers should be maintained in an on-site register. All other relevant emergency contact numbers such as Police, Fire Brigade, and Hospital should be listed in the Health and Safety Plan and posted on-site for easy access.

8.4 Contingency Plan for Environmental Incidents

A contingency plan to deal with incidents that could arise during the proposed remediation works must form part of the site-specific plans: WHSP and CEMP (and AMP if required). Refer to **Table 8-4** for a selection of potential issues that may require specific management. The Unexpected Finds Protocol (**Appendix C**) should also be followed should an incident occur.

Table 8-4 Contingency Management

Anticipated Problems	Corrective Actions
Chemical / Fuel Spill	Stop work, notify above site project manager. Use accessible soil or appropriate absorbent material on site to absorb the spill (if practicable). Stockpile the impacted material in a secure location, sample and determine the appropriate disposal/treatment option.
Excessive Dust	Use water sprays to suppress the dust or stop site activities generating the dust until it abates.
Excessive Noise	Identify the source, isolate the source if possible, modify the actions of the source or erect temporary noise barriers if required.
Excessive Odours / Vapours	Stage works to minimise odours/vapours. If excessive organic odours/vapours are being generated, stop works and monitor ambient air across site for organic vapours with a Photo-ionisation Detector (PID) and odours at site boundaries. Implement control measures including respirators for on-site workers, use of odour suppressants, wetting down of excavated material. No nuisance odours shall be detected at any site boundary as part of the remedial works. Should odour emissions be detected at or beyond the site boundary, it is recommended, as part of the CEMP and community

	consultation, that the Remediation Contractor and the Project Manager notify the owners and occupiers of premises adjoining and across the road from the site regarding potential odour issues. Notification should be in writing. . In the notification, as well as on street signage, provide contact details of the site personnel for anyone who may be concerned by odour emission during the remediation. Temporarily pause site works to allow for excess odour to subside to a level acceptable by off-site receptors, should it be necessary, after implementation of the above-listed control measures. Record logs for volatile emissions and odours. Such records should be kept on-site and made available for inspection on request. In regard to off-site impact from petroleum vapour, odour is generally detected at concentrations much lower than what will constitute a health-based risk. Measures listed above for odour control (**Table 8-3**) may also be applied for vapour control.
Excessive Rainfall	Ensure sediment and surface water controls are operating correctly. If possible divert surface water away from active work areas or excavations.
Water in Excavations	Collect samples and assess against relevant POEO requirements to enable disposal options to be formulated.
Leaking Machinery or Equipment	Stop the identified leak (if possible). Clean up the spill with absorbent material. Stockpile the impacted material in a secure location, sample and determine the appropriate disposal/treatment option.
Failure of Erosion or Sedimentation Control Measures	Stop work, repair failed control measure.
Unearthing Unexpected Materials, Fill or Waste	Stop activities, contact the site project manager. Follow the unexpected finds protocol as detailed in **Section 8.6** of this RAP. Prepare a management plan if required, to address the issue.
Identification of Cultural or Building Heritage Items	Stop work and notify site project manager. Follow the unexpected finds protocol as detailed in **Section 8.6** of this RAP. Prepare action or conservation plan as required.
Equipment Failures	Ensure that spare equipment is on hand at site, or that the failed equipment can be serviced by site personnel or a local contractor.
Complaint Management	Notify Client, Project Managers and Environmental Consultant (if required) following complaint. Report complaint as per management procedures. Implement control measures to address reason of complaint (if possible). Notify complainant of results of remedial actions.

8.5 Work Health and Safety Plan

As required by the NSW *Work Health and Safety Act 2011* and associated regulations, a WHSP should be prepared, to manage the health and safety of site workers and nearby residents, and address such issues as site security, exclusion zones, excavation safety, vibration, noise, odour and dust levels. The plan should address the risks during the remediation works and cover site specific requirements associated with the contaminants present within the site soils and groundwater.

The site officer responsible for implementing health and safety procedures should induct all site personnel so that they are aware of and comply with, the requirements of this document. It is the contractor's responsibility, with assistance from client/owner(s) of the site to ensure that all other permits, approvals, consents or licences are current. The following hazards and mitigation measures relevant to the remedial works are summarised in **Table 8-5**.

Table 8-5 Remedial Hazards

Anticipated Problems	Corrective Actions
Chemical Hazards	Contaminated sites have chemical compounds, substances or materials that may present a risk to human health and the environment. Chemicals of concern and associated risks are as detailed within the Conceptual Site Model, within **Section 3.** The site specific WHSP should set out controls to mitigate any potential risks.
Physical Hazards	The following hazards are associated with conditions that may be created during site works: ▪ Heat exposure; ▪ Buried services; ▪ Noise, vibration and dust; ▪ Electrical equipment; and ▪ The operation of heavy plant equipment.
Personal Protective Equipment and Monitoring	Personnel should, wherever possible, avoid direct contact with potentially contaminated material. Workers are to ensure that surface waters or groundwater is not ingested or swallowed and that direct skin contact with soil and water is avoided. Standard PPE with the addition of disposable P2 dust masks as specified for the contractor will be sufficient for the prescribed remedial works. Standard PPE includes: ▪ Long sleeve shirt and trousers ▪ Steel-toe footwear ▪ Safety glasses (as required) ▪ Helmet (as required) ▪ Hi-vis vest/clothing (as required)

Asbestos Air Monitoring (if required)

Air monitoring is not required for the removal of non-friable (bonded) ACM. Should friable asbestos or asbestos fines be identified during the remediation program, appropriate air quality monitoring and other management measures may be required during the excavation and ground disturbance works.

In the case that asbestos air monitoring is required, it must be conducted in accordance with the *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres* [NOHSC: 3003 (2005)] and analysed by a NATA-accredited laboratory. The criteria and actions that will apply to this project are summarised in **Table 8-6.**

Table 8-6 Asbestos Criteria for Air Monitoring

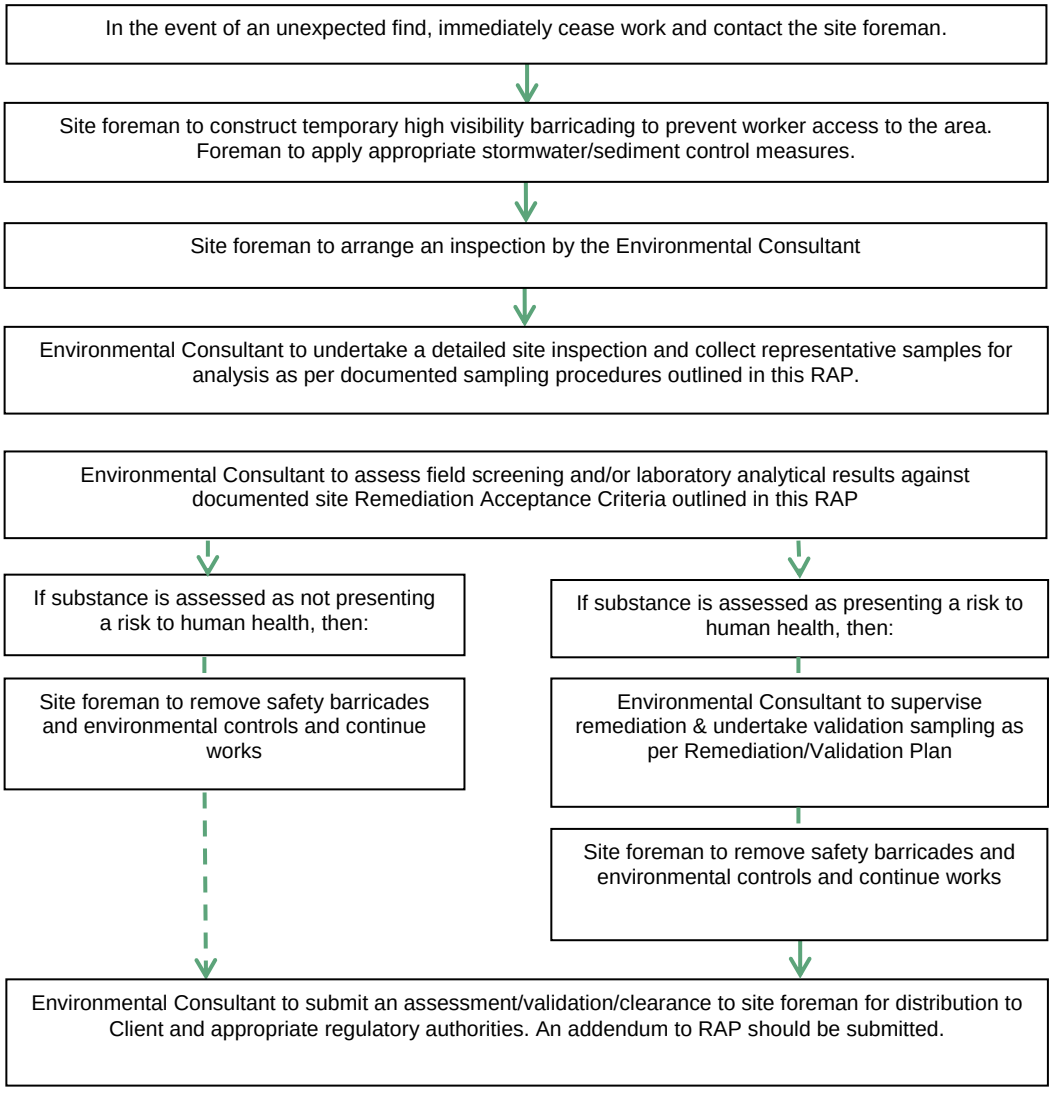
Control Level (fibres/mL)	Control / Action
< 0.01	No Action. Continue with existing control measures.
≥0.01	Asbestos Consultant to notify Project Manager of results as soon as practicable. Project Manager to notify/engage a Licensed Asbestos Removal Contractor. Asbestos Consultant and Project Manager to review current control measures and improve, where applicable. This may include improved work practices, use of further control measures (e.g. plastic screening or wet wiping techniques) or changing the work methodology.
≥0.02	Asbestos Consultant to notify Project Manager of results as soon as practicable. Asbestos Consultant to advise Licensed Asbestos Removal Contractor to stop work immediately. Asbestos Consultant to conduct investigations to establish cause of problem. Asbestos Consultant to advise Licensed Asbestos Removal Contractor on

Control Level (fibres/mL)	Control / Action
	necessary works to rectify problem. Asbestos air monitoring to be continued by Asbestos Consultant. Contractors will be allowed to return to works area after results are <0.01 fibres/mL.

8.6 Unexpected Finds Protocol

Should unexpected finds be encountered, the approach in **Table 8-7** should be followed.

Table 8-7 Unexpected Finds Protocol



Contingent asbestos assessment procedure is described below:

Asbestos Assessment Procedure (if required):

In addition to the above, should asbestos be suspected or identified in soil during the walkover inspections or remediation excavation, further assessment for asbestos, preferably using test pitting, should be carried out prior to disturbance of site soils. The assessment procedure is described below:

1. Follow the Unexpected Finds Protocol and notify the appointed Environmental Consultant.
2. The appointed consultant to design investigation program to delineate asbestos impacts in soil in accordance with relevant, EPA endorsed, asbestos assessment guidelines.
3. If not already prepared, an Asbestos Management Plan should be prepared by the appointed remediation contractor for the remedial works program.
4. Areas impacted by asbestos should be segregated from the remainder of the site, and marked by prominent features that withstand weathering (e.g. star picket and danger tape).
5. Undertake separate waste classification assessments for areas impacted by asbestos and the remainder of the site.
6. Soils from asbestos-impacted areas will need to be excavated and disposed of separately from the remainder of the site. Should temporary stockpiling be required, the material handling and management requirements in **Section 8.2** should be followed.
7. Validate underlying materials after complete removal of asbestos-impacted soils on site.
8. Asbestos Assessment:
    - Asbestos quantification analysis will be conducted in hot spot locations and other areas earmarked for excavation and disposal.
    - Asbestos analysis will be conducted from 10L samples according to NEPC (2013) protocol from areas where there will be exposed soil (landscaped areas) or for validation.

9. Validation Strategy

Validation sampling is required to confirm that the material remaining or retained for reuse at the site is suitable for the proposed use. Validation will be achieved when either:

- All requirements of the RAP are confirmed as completed;
- All concentrations of the contaminants of concern within material retained at the site are below the adopted validation criteria; or
- When the 95% upper confidence limit (95% UCL) of the average concentration for each analyte within retained material is below the adopted validation criteria.

The sampling and analysis quality plan (SAQP) will be crucial to the site validation phase. It must ensure that the data collected are representative and provide a robust basis for site decisions.

9.1 Validation Sampling Methodology

Validation sampling will be undertaken following the removal of identified contaminated material to ensure that the vertical and lateral extent of the contamination has been defined, as outlined in **Table 9-1**. Should additional contamination be identified, it would be "chased out" where appropriate until material exceeding the validation criteria has been removed. Soil sampling and handling of the collected samples will be as described in **Table 9-2**.

Table 9-1 Validation Sampling Design

Remediation Area	Sampling Density	Chemicals of Concern
Carcinogenic PAHs impacted area at BH2, HA201	Wall – 1 sampling location per wall or per 5m length of excavation wall Base – 1 sample per 25m^2	Carcinogenic PAHs If required (as discussed in **Section 7.4**) the material should also be analysed for beryllium
Stockpiled materials	Any soil material stockpiled on-site for off-site disposal (not pre-classified), will be sampled for waste classification purposes at a rate of one per 25m^3 (with a minimum of 3 samples for stockpiles <25m^3) up to 250 m^3. For stockpiles >250m^3 but <2,500m^3 in size, a statistical analysis approach may be used for classification, with the collection of at least 10 samples.	Priority metals, TRH, BTEX, PAH, OCP, OPP, PCB and asbestos Plus beryllium to satisfy requirements of immobilisation approval number 2009/07 (metallurgical furnace slag, or metallurgical furnace slag contaminated natural excavated materials)
Bulk excavation	Surplus soil materials to be disposed from the site must be classified according to EPA (2014a) *Waste Classification Guidelines.*	Priority metals, TRH, BTEX, PAH, OCP, OPP, PCB and asbestos
Natural ground surface	10 samples across the exposed natural ground surface.	Priority metals, TRH, BTEX, PAH, OCP, OPP, PCB and asbestos If required (as discussed in **Section 7.4**) the material should also be analysed for beryllium
Imported soil materials	If material is required to be sourced from off-site to reinstate excavations, it will be certified suitable for the intended use.	Priority metals, TRH, BTEX, PAH, OCP, OPP, PCB and asbestos

Excavation of identified contaminated material shall continue until the analytical results indicate compliance with the criteria (i.e. either the concentrations of all contaminants are within the criteria, or the 95% upper confidence limit (UCL) of the average concentration for each detected parameter is within the corresponding criterion). If results indicate that additional excavation is necessary, the excavation shall be extended until the excavation surface samples indicate that the location is validated as meeting the criteria for each respective contaminant.

Table 9-2 Validation Sample Collection and Handling Procedures

Action	Description of Required Works
Sample Collection	Soil validation sampling will be directly from the exposed (excavated) surface, or from the material brought to the surface by the backhoe / excavator bucket. Sampling data shall be recorded to comply with routine chain of custody requirements.
Sampling, Handling, Transport and Tracking	▪ The use of stainless-steel or disposable (one time use) equipment. ▪ All sampling equipment (including hand tools or excavator parts) to be washed in a 3% solution of phosphate free detergent (Decon 90), followed by a rinse with potable water prior to each sample being collected. ▪ Direct transfer of the sample into new glass jars, bottles, vials or plastic bags is preferred, with each plastic bag individually sealed to eliminate cross contamination during transportation to the laboratory. ▪ Label sample containers with individual and unique identification including Project No., Sample No., depth, date and time of sampling. ▪ Place sample containers into a chilled, enclosed, and secure container for transport to the laboratory. ▪ Provide chain of custody documentation to ensure that sample tracking and custody can be cross-checked at any point in the transfer of samples from the field to the laboratory.
Sample Containers and Holding Times	▪ Metals - 250g glass jar / refrigeration 4^{o}C / 6 months (maximum holding period). ▪ TRH/BTEX - 250g glass jar / refrigeration 4^{o}C / 14 days (maximum holding period). ▪ PAH/OCP/OPP - 250g glass jar / refrigeration 4^{o}C / 14 days (maximum holding period). ▪ Asbestos - up to a 10 Litre resealable plastic (polyethylene) bag / no refrigeration / indefinite holding time.
Field QA/QC	Quality assurance (QA) and quality control (QC) procedures will be adopted throughout the field sampling program, to ensure sampling precision and accuracy, which will be assessed through the analysis of 10% field duplicate/replicate samples. Appropriate sampling procedures will be undertaken to prevent cross contamination, in accordance with EI's Standard Operating Procedures Manual. This will ensure: ▪ Standard operating procedures are followed; ▪ Site safety plans are developed prior to works commencement; ▪ Split duplicate field samples are collected and analysed; ▪ Samples are stored under secure, temperature-controlled conditions; ▪ Chain of custody documentation is employed for the handling, transport and delivery of samples to the contracted environmental laboratory; and ▪ Contaminated soil, fill or groundwater originating from the site area is

Action	Description of Required Works
	disposed in accordance with relevant regulatory guidelines. In total, field QA/QC will include one in 10 samples to be tested as intra-laboratory, blind field duplicates, one in 20 samples to be tested as inter-laboratory, split field duplicates, as well as one VOC trip blank, one VOC spike sample per sample batch and one equipment wash blank (rinsate blank) per sample day.
Laboratory Quality Assurance and Quality Control	The contract laboratory will conduct in-house QA/QC procedures involving the routine analysis of: ▪ Reagent blanks; ▪ Matrix spike and surrogate recoveries; ▪ Laboratory duplicates; ▪ Calibration standards and blanks; ▪ Control standards; and ▪ Statistical analysis of each QC measure.
Achievement of Data Quality Objectives	DQOs (**Table 5-1**) are to be achieved and an assessment of the overall data quality should be presented in the final validation report, in accordance with the EPA (2017) *Guidelines for the NSW Site Auditor Scheme*.

9.2 Validation Reporting

Once validation assessment as listed in **Section 9.1** is achieved, all results shall be presented in a Site Validation Report, prepared by the Environmental Consultant in accordance with the EPA (2020) *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines.* The validation report will document all desk study findings, fieldwork, laboratory analyses, conceptual site model, the implementation of the RAP, investigation methodologies and results, data quality assessment, and conclusions and recommendations. It will be prepared in accordance with requirements described in:

- EPA (2020) *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines, Table 2.6 Site Remediation and Validation*; and
- EPA (2017) *Guidelines for the NSW Site Auditor Scheme*.

The site validation report should also:

- Provide a clear concluding statement that the site has been remediated to a suitable standard and the site is suitable for the proposed development; and
- Be submitted for Council and/or a Site Auditor (if engaged) at the completion of the remediation works program.

10. Conclusion

This RAP has been prepared to inform the remediation works at 71-75 Victoria Road, Drummoyne NSW. Remediation of identified carcinogenic PAHs-impacted soils is required in order to render the site suitable for the proposed development.

The purpose of this RAP is to establish a sequential process for remediation and validation works, to support the proposed site redevelopment in compliance with the *State Environment Protection Policy 55 – Remediation of Land* (SEPP 55).

The objectives of this RAP, as outlined in **Section 1.3**, have been addressed and the preferred remedial approach involves excavation of impacted materials, and then waste classification and off-site disposal according to NSW EPA (2014a) *Waste Classification Guidelines*. It is envisaged that the remediation works will be implemented in stages, as follows:

- **Stage 1** – Preliminaries / site establishment;
- **Stage 2** – Site walkover following demolition to assess for signs of contamination, GPR survey to verify that UPSS is not present;
- **Stage 3** – Remedial excavation of carcinogenic PAHs impacted soils at location BH2 and HA201;
- **Stage 4** – Bulk excavation, waste classification and data gap closure;
- **Stage 5** – Site validation;
- **Stage 6** – Validation report preparation.

This RAP provides protocols for the appropriate management of any unexpected finds that may be discovered during the course of the remediation works. In addition, should any phase of the validation assessment identify residual contamination requiring additional remediation, the procedures described under the validation plan (**Section 9**) will be implemented until the remediation goals have been achieved and the site is deemed suitable for proposed land use.

In conclusion, EI considers that the site can be made suitable for the proposed land use through the implementation of the site remediation and validation process described in this RAP.

11. Limitations

This report has been prepared for the exclusive use of Olter Investments Pty Ltd (the client), being the only intended beneficiaries of our work. The scope of the RAP is limited to that agreed with our client.

No other party should rely on the document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

EI has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices and attachments.

The methods and conclusions presented in this report are based on a limited investigation of conditions, with specific sampling locations chosen to be as representative as possible under the given circumstances.

EI's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data. EI may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified by EI.

EI's professional opinions contained in this document are subject to modification if additional information is obtained through further investigation, observations, or validation testing and analysis during remedial activities. In some cases, further testing and analysis may be required, which may result in a further report with different conclusions.

References

Chapman, GA and Murphy, CL (1989) *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, September 1989.

DMR (1983) *Sydney 1:100,000 Geological Series Sheet 9130* (Edition 1), Geological Survey of New South Wales, Department of Mineral Resources.

DUAP/EPA (1998) *Managing Land Contamination, Planning Guidelines SEPP 55 - Remediation of Land*, New South Wales Department of Urban Affairs and Planning / Environment Protection Authority, August 1998.

EI (2021) *Additional Site Investigation, 900 Pacific Highway, Gordon NSW*, Report Ref. E25354.E03_Rev0, dated 26 October 2021.

EPA (1995) *Sampling Design Guidelines*, Contaminated Sites Unit, Environment Protection Authority of New South Wales, EPA 95/59, September 1995.

EPA (2014a) *Waste Classification Guidelines – Part 1: Classifying Waste*, Environment Protection Authority of New South Wales, Doc. EPA 2014/0796, November 2014.

EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme* (3rd Edition), NSW EPA, October 2017.

EPA (2020) *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines*, NSW EPA, EPA 2020P2233, April 2020.

EPA (2020b) *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation*, NSW EPA, 2020P2700, December 2020.

Murphy CL (1997) *Acid Sulfate Soil Risk of the Prospect / Parramatta River Sheet (Second Edition)*, Department of Land and Water Conservation, Sydney (supplied by the Sydney South Coast, Geographical Information Systems Unit).

NEPC (2013) Schedule B1 *Guideline on Investigation Levels for Soil and Groundwater*, Schedule B2 *Guideline on Site Characterisation*, Schedule B4 *Guideline on Site-Specific Health Risk Assessments* and Schedule B6 *Framework for Risk-Based Assessment of Groundwater Contamination*, from the *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 1999*, National Environmental Protection Council, April 2013.

SES (2016a) *Phase 1 Contamination Assessment, 900 Pacific Highway, Gordon NSW*, Report Ref. SES_434, dated 27 January 2016.

SES (2016b) *Phase 2 Contamination Assessment, 900 Pacific Highway, Gordon, NSW*, Report Ref. SES_434, dated 27 October 2016.

Standards Australia (2001) *Australian Standard AS 2601-2001 The Demolition of Structures*, Standards Australia, 2001.

Standards Australia (2005) *Table E1 - Minimum Sampling Points Required for Site Characterisation. From Australian Standard AS4482.1-2005 Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil - Part 1: Non-volatile and Semi-volatile Compounds*, Standards Australia 2005.

Standards Australia (2017) *Australian Standard AS 1726-2017 Geotechnical Site Investigations*, Standards Australia AS 1726-2017, 2017.

USEPA (2000a) *Guidance for the Data Quality Objectives Process*, EPA QA/G-4, United States Environmental Protection Agency, EPA/600/R-96/055, August 2000.

USEPA (2000b) *Data Quality Objectives Process for Hazardous Waste Site Investigations*, EPA QA/G-4HW, United States Environmental Protection Agency, EPA/600/R-00/007, January 2000.

USEPA (2006) *Data Quality Assessment: A Reviewers Guide – EPA QA/G-9R*. USEPA Office of Environmental Information, EPA/240/B-06/002, February 2006.

WADOH (2021) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*, Western Australian Department of Health.

Abbreviations

ABC	Ambient Background Concentration
ACL	Added Contaminant Limit
ACM	Asbestos-Containing Materials
AHD	Australian Height Datum
AMP	Asbestos Management Plan
AS	Australian Standard
ASI	Additional Site Investigation
ASS	Acid Sulfate Soils
B(α)P	Benzo(α)Pyrene (a PAH compound)
BGL	Below Ground Level
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CBD	Central Business District
CEMP	Construction Environmental Management Plan
CLM	Contaminated Land Management
COC	Chain of Custody
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DA	Development Application
DCP	Development Control Plan
DMP	Dewatering Management Plan
DNAPL	Non-Aqueous Phase Liquid
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EMC	Environmental Management Coordinator
EMP	Environmental Management Plan
ENM	Excavated Natural Material
EPA	NSW Environment Protection Authority
ESL	Ecological Screening Level
TRH-F1	C_6-C_{10} TRH fraction, less sum of BTEX concentrations
TRH-F2	>C_{10}-C_{16} TRH fraction, less naphthalene
TRH-F3	>C_{16}-C_{34} TRH fraction
TRH-F4	>C_{34}-C_{40} TRH fraction
HA	Hand Auger
HDPE	High Density Polyethylene
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
LDPE	Low Density Polyethylene
LEP	Local Environmental Plan
LGA	Local Government Area
LNAPL	Light Non-Aqueous Phase Liquid (also referred to as PSH)
LOR	Limit of Reporting (of laboratory analytical method)
m	Metres
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticides

OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Poly-Chlorinated Biphenyls
PID	Photo-ionisation Detector
POEO	Protection of the Environment Operations Act
PPE	Personal Protective Equipment
PQL	Practical Quantitation Limit (limit of detection for laboratory method)
PSH	Phase-Separated Hydrocarbons (also referred to as LNAPL / DNAPL)
QA/QC	Quality Assurance / Quality Control
RAC	Remediation Acceptance Criteria
RAP	Remediation Action Plan
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SAR	Site Audit Report
SAS	Site Audit Statement
SEPP	State Environment Protection Policy
SOP	Standard Operating Procedure
SRA	Sample Receipt Advice
TCLP	Toxicity Characteristics Leaching Procedure
TEQ	Toxicity Equivalent Quotient
TRH	Total Recoverable Hydrocarbons (non-specific petroleum hydrocarbon fractions)
UCL	Upper Confidence Limit of the Mean
UPSS	Underground Petroleum Storage System
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compounds
WHSP	Work Health and Safety Plan

Appendix A - Figures

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Approved:	-
Date:	-
Scale:	Not To Scale

Olter Investments Pty Ltd
Remediation Action Plan
71-75 Victoria Road, Drummoyne NSW
Site Locality Plan

Figure:
1

Project: E24806.E06

LEGEND (All Locations are Approximate)

- Site boundary
- Basement 1 boundary
- Basement 2 boundary
- Previous hand auger location (EI, 2021)
- Previous borehole location (EI, 2021)
- Previous monitoring well location (EI, 2021)
- Previous Sub-slab soil vapour location (EI, 2021)

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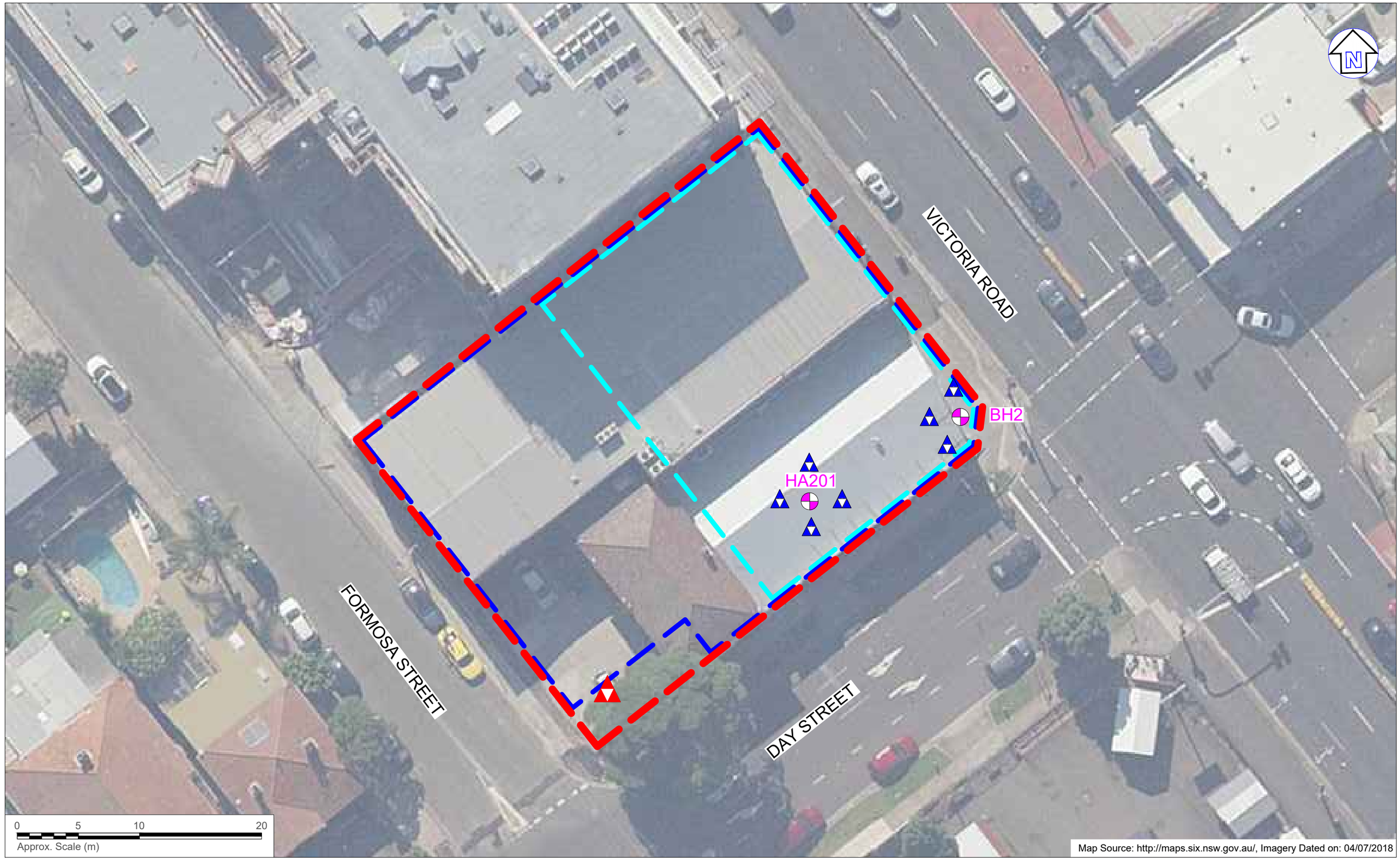
Drawn:	AM.H.
Approved:	E.S.
Date:	2-12-21

Olter Investments Pty Ltd
Remediation Action Plan
71-75 Victoria Road, Drummoyne NSW
Sampling Location Plan (EI 2021)

Figure: 2

Project: E24806.E06



LEGEND (All Locations are Approximate)

- Site boundary
- Basement 1 boundary
- Basement 2 boundary
- Proposed validation sampling location
- Proposed data gap closure sampling location
- Previous hand auger location (EI 2021)
- Previous borehole location (EI 2021)

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Date:	2-12-21

Olter Investments Pty Ltd
Remediation Action Plan
71-75 Victoria Road, Drummoyne NSW
Proposed Validation Sampling Location Plan

Figure: 3

Project: E24806.E06

Appendix B - Proposed Development Plans

PROJECT INFORMATION

71-75 Victoria Road, Drummoyne	
Site Area	1,340 m²
Height Control	20 m (6 Storeys)
Allowable FSR	2.5:1 (3,350 sqm GFA)
Proposed FSR	2.49:1 (GFA = 3,348.5 sqm)
Zoning	B4 - Shop Top Housing
Setbacks	N/A

UNIT MIX

Level	Studio	1 Bed	2 Bed	3 Bed	Total
GF	0	0	0	0	0
LEVEL 1	0	2	8	0	10
LEVEL 2	0	2	4	0	6
LEVEL 3	0	2	4	0	6
LEVEL 4	0	2	4	0	6
LEVEL 5	0	1	2	2	5
TOTAL	0	9	22	2	33
	0%	27%	67%	6%	100%

RETAIL m²

RETAIL	m²
1	223
2	40
Live / Work	188
TOTAL	451

CAR PARKING REQUIREMENTS

	Max. Rate (per unit)	No. of Units / Area	Required	Proposed
Residential				
Studio	0.6	0	0	0
1 Bed	0.6	9	5.4	5
2 Bed	0.9	22	19.8	20
3 Bed	1.4	2	2.8	3
		total residential	**28**	**28**
Visitor	1 per 5 dwellings	33	6.6	**7**
Retail	1 per 40 sqm	451	11	11
		TOTAL	**46**	**46**
OTHER PARKING REQUIREMENTS				
Car wash bay	N/A		0	0
Bycicle	(Residential) 1 per dwelling	33	33	33
	(Retail) 1 per 300 sqm	451	1.5	2

OTHER REQUIREMENTS

	DCP / ADG Req	Required	Proposed
Solar Access	70% of total number of apartments	23.1	15
			45%
Cross Ventilation	60% of total number of apartments	19.8	24
			73%
Communal Open Space	25% of the site area	335	280
Livable Housing	ADG Req. Min. 20% of all dwellings in residential flat buildings	6.6	7
Adaptable Housing	15% of total number of aparments	5.0	5

GENERAL NOTES:

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- AREA SCHEDULES SUPPLIED ARE APPROXIMATE ONLY - FUTURE ALLOWANCE FOR VERTICAL SERVICE DUCTS, STRUCTURAL WALL SYSTEMS AND CONSULTANT INPUT WILL BE REQUIRED

LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

SCALE 1:100 @ A1
SCALE 1:200 @ A3
0 1 2 5m

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Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
PROJECT SUMMARY

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA001	A

VICTORIA ROAD

SIX STOREY RENDERED
RESIDENTIAL & RETAIL
BUILDING
No.77-105

BOUNDARY

BOUNDARY

DAY STREET

FORMOSA STREET

RL 28.50 RL 28.25 RL 28.04 RL 27.75 RL 27.60 RL 27.50 RL 27.13 RL 27.00 RL 26.75 RL 26.54 RL 26.44 RL 26.33 RL 26.31

RL 28.26 RL 27.86 RL 27.75 RL 27.50 RL 27.25 RL 27.01 RL 26.75 RL 26.50 RL 26.23 RL 26.26 RL 26.16 RL 26.28

B DA301

A DA300

C DA302

FS-3 FH FHR

14

CAR PARK
18 RESIDENTIAL SPACES

RL 20.000

5800 AISLE WIDTH

STOP

WAITING BAY

RAMP UP TO B1
RL 20.000

2m @ 1:8

RL 20.250

12.5m @ 1:5

28 26 25 24 21 20

ST

STORAGE AREA

OB

LIFT

FS-2 FH FHR

CAR WASH BAY

B DA301

GENERAL NOTES:

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

N

SCALE 1:100 @ A1
SCALE 1:200 @ A3

0 1 2 5m

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Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT

71 - 75 VICTORIA ROAD
DRUMMOYNE

July 2020

DRAWING TITLE:
BASEMENT 2 PLAN

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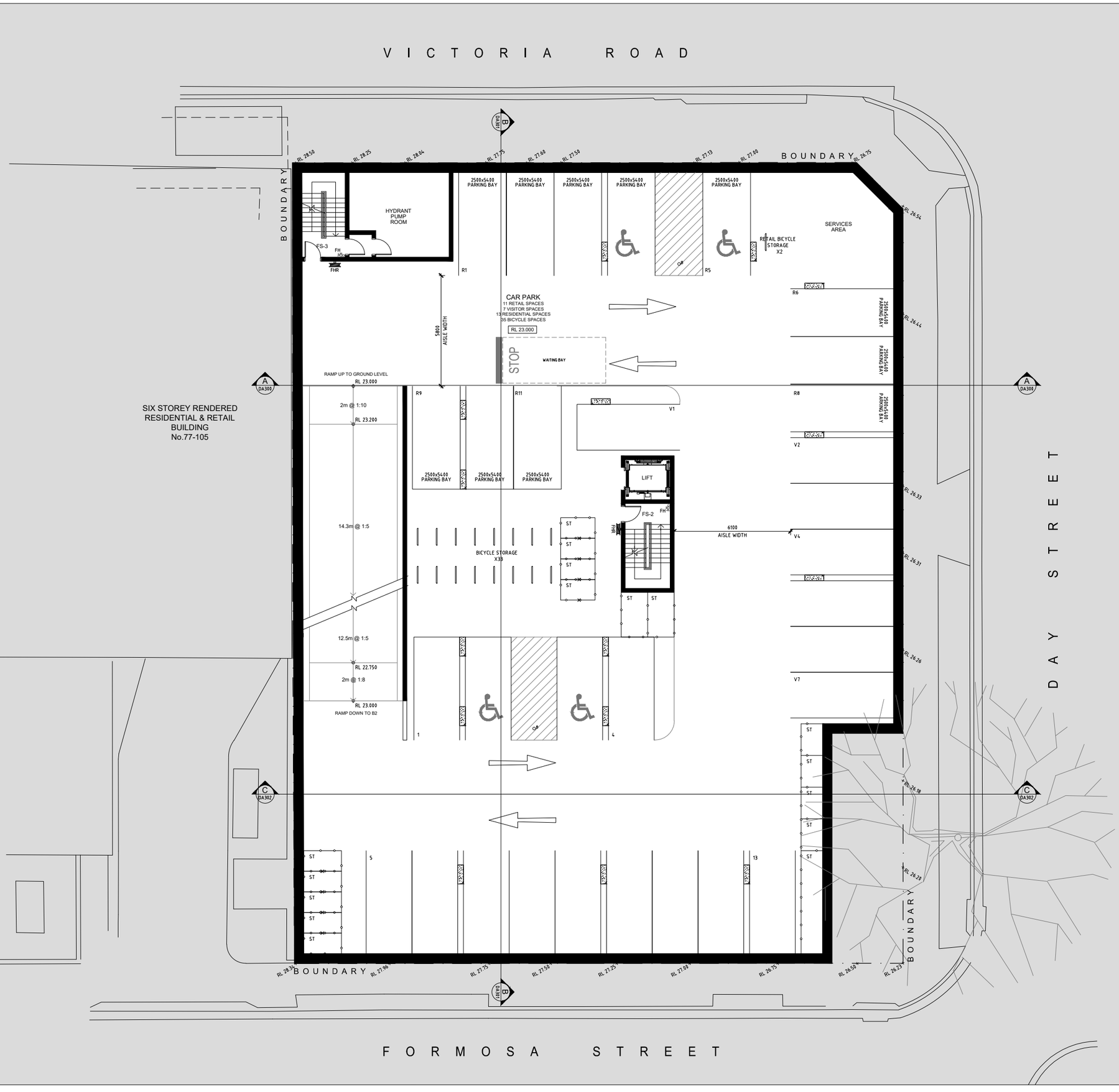
PROJECT NO: 2018	DA100	A



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SCALE 1:100 @ A1
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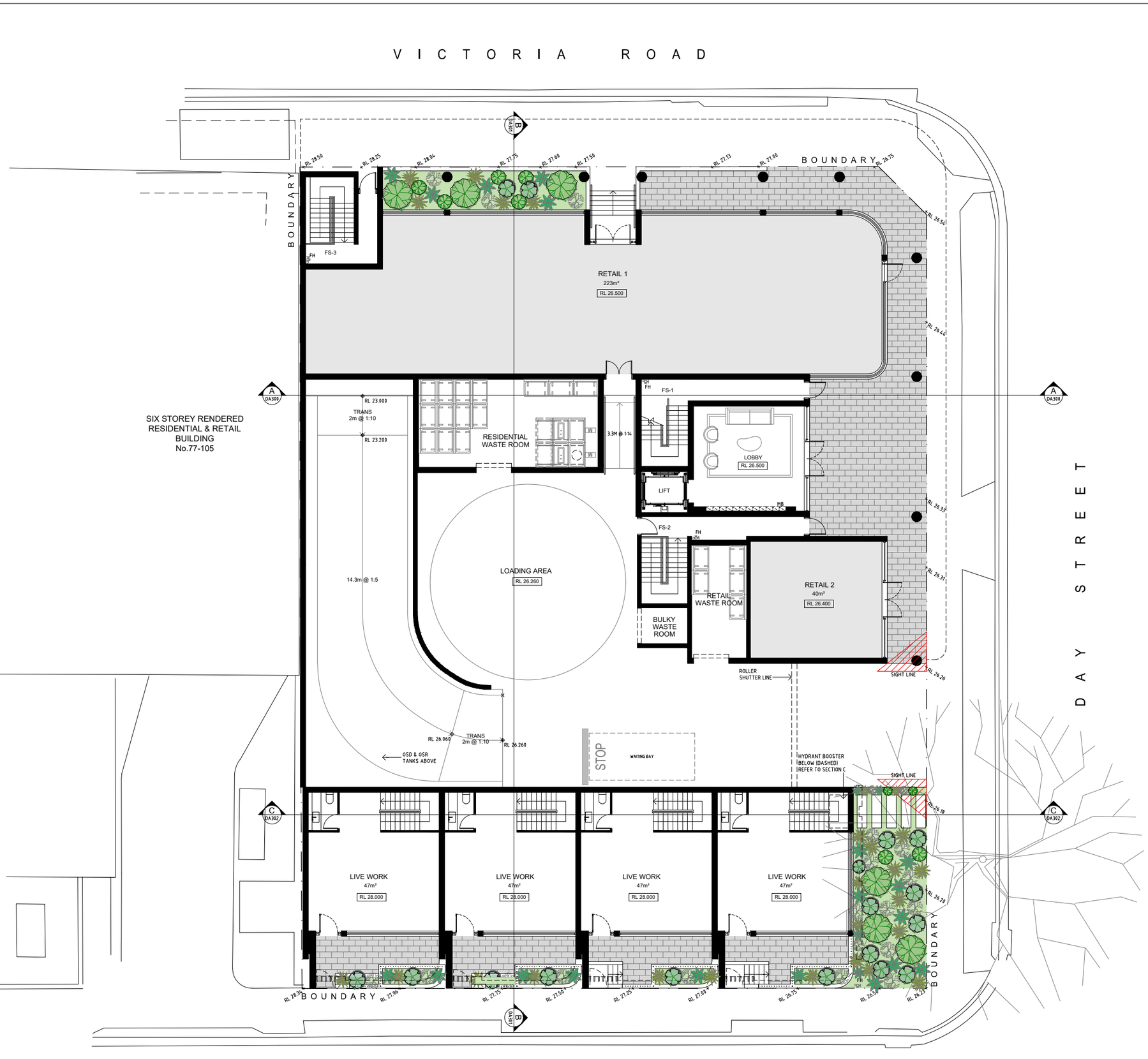
Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
BASEMENT 1 PLAN

DRAWN BY: 1:100@A1 / 1:200@A3	CHECKED BY:	
SCALE:	DRAWING NO: DA101	ISSUE: A
PROJECT NO: 2018		



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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

SCALE 1:100 @ A1
SCALE 1:200 @ A3

CLIENT:
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Level 2, 52 Albion Street, Surry Hills NSW 2010
Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
GROUND FLOOR PLAN

DRAWN BY: 1:100@A1 / 1:200@A3	CHECKED BY:	
SCALE:	DRAWING NO: DA102	ISSUE: A
PROJECT NO: 2018		

VICTORIA ROAD

SIX STOREY RENDERED
RESIDENTIAL & RETAIL
BUILDING
No.77-105

GENERAL NOTES:

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

N

SCALE 1:100 @ A1
SCALE 1:200 @ A3
0 1 2 5m

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Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT

71 - 75 VICTORIA ROAD
DRUMMOYNE

July 2020

DRAWING TITLE:
LEVEL 1 PLAN

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA103	A

GENERAL NOTES:

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

SCALE 1:100 @ A1
SCALE 1:200 @ A3

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Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
LEVEL 2 PLAN

DRAWN BY: 1:100@A1 / 1:200@A3	CHECKED BY:	
SCALE:	DRAWING NO: DA104	ISSUE: A
PROJECT NO: 2018		

VICTORIA ROAD

SIX STOREY RENDERED RESIDENTIAL & RETAIL BUILDING
No.77-105

GENERAL NOTES:

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
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PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

SCALE 1:100 @ A1
SCALE 1:200 @ A3
0 1 2 5m

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Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
TYPICAL LEVEL 3-4 PLAN

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA105	A

GENERAL NOTES:

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
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MV	MECHANICAL RISER TO FUTURE DETAIL
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SCALE 1:100 @ A1
SCALE 1:200 @ A3

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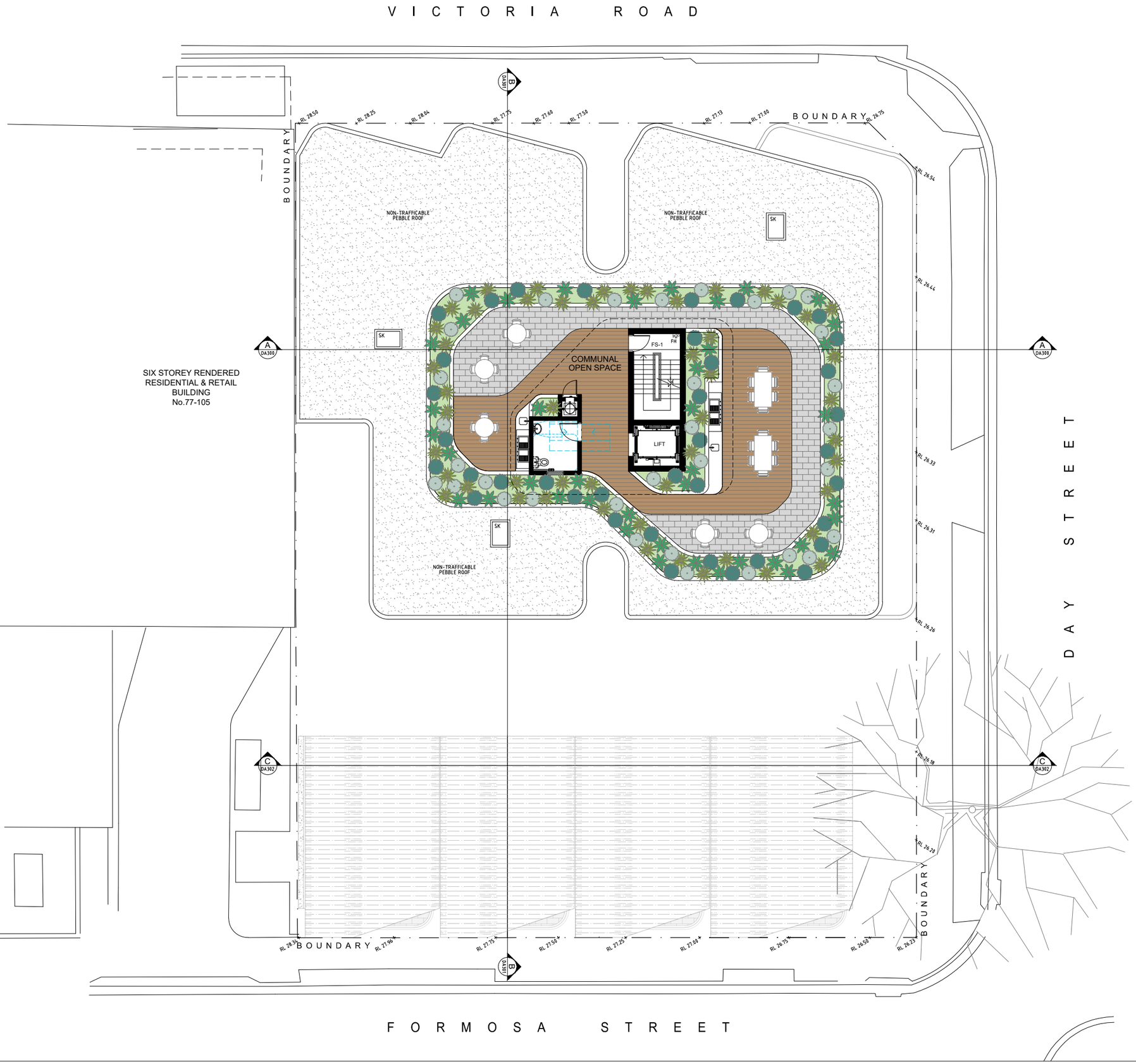
Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
LEVEL 5 PLAN

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA106	A



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WT	HOT WATER UNITS

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0 1 2 5m

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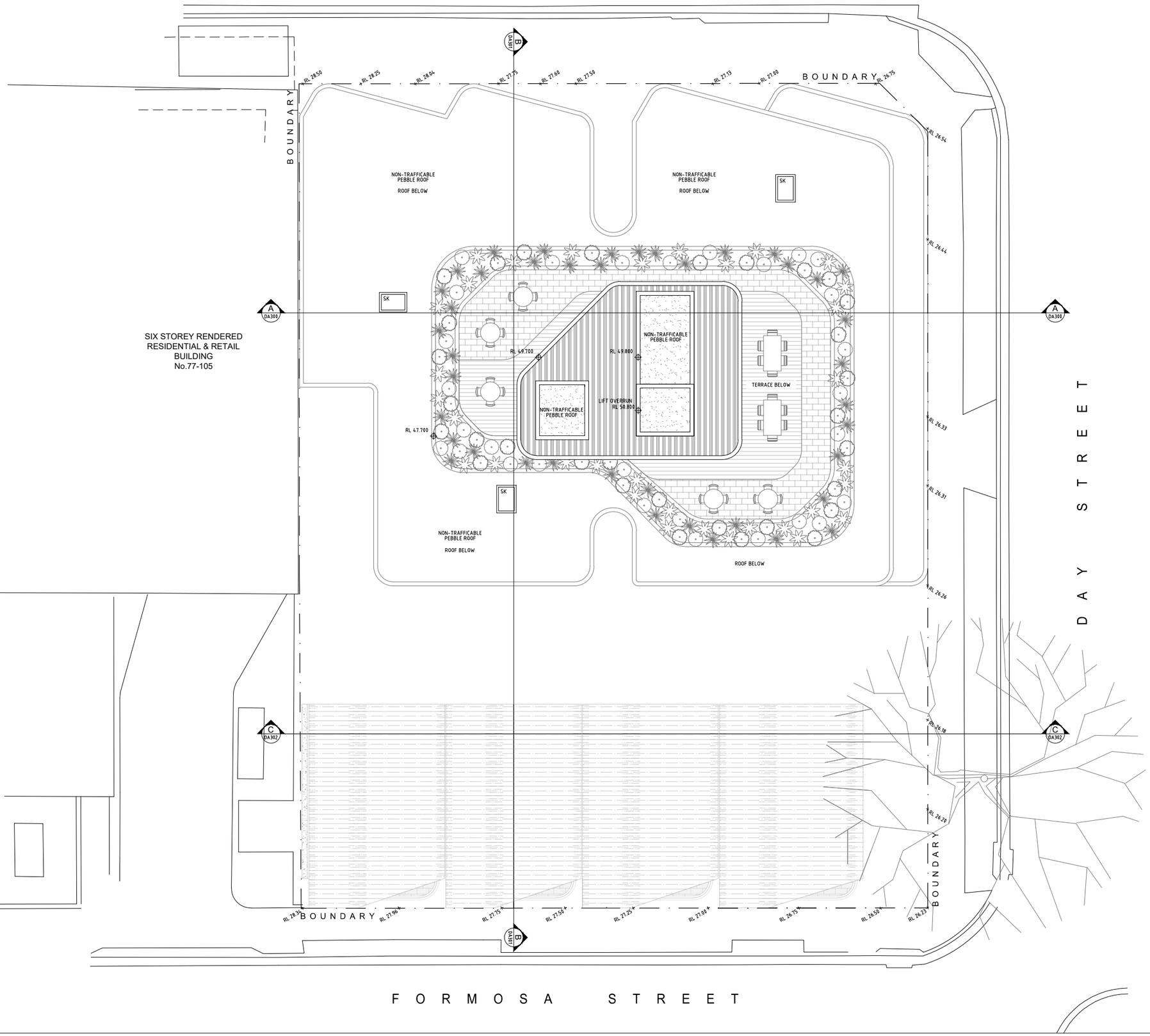
PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE

July 2020

DRAWING TITLE:
ROOF TERRACE

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA107	A



SIX STOREY RENDERED
RESIDENTIAL & RETAIL
BUILDING
No.77-105

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ISSUE	DATE	DESCRIPTION
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SCALE 1:200 @ A3
0 1 2 5m

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Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE

July 2020

DRAWING TITLE:
ROOF PLAN

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA108	A

1 NORTH ELEVATION (VICTORIA ROAD)
SCALE 1:100@A1 / 1:200@A3

2 EAST ELEVATION (DAY STREET)
SCALE 1:100@A1 / 1:200@A3

GENERAL NOTES:

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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
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SK	SKYLIGHT
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WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

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SCALE 1:200 @ A3
0 1 2 5m

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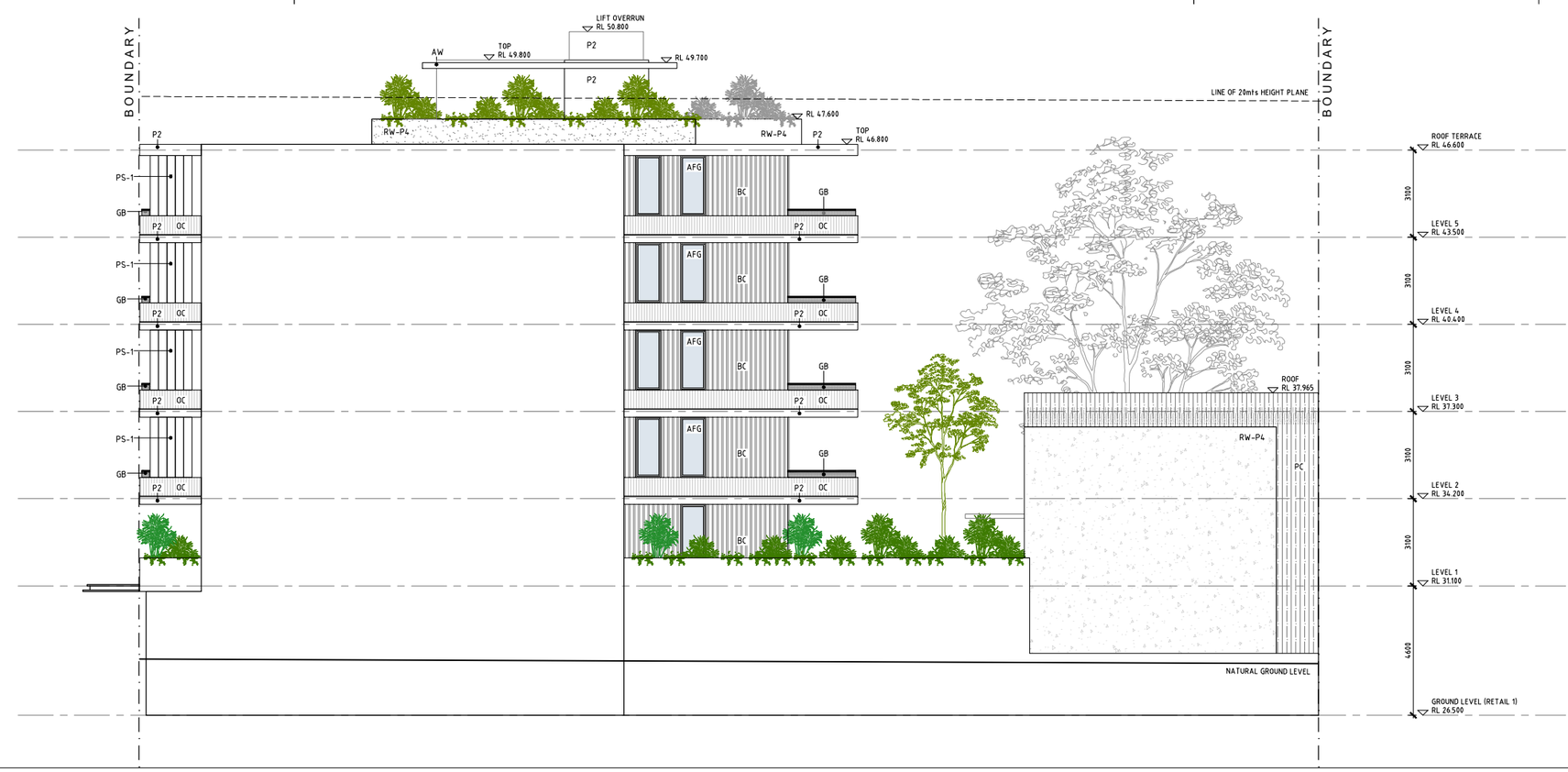
Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
ELEVATIONS - 01

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA200	A

1 SOUTH ELEVATION (FORMOSA STREET)
SCALE 1:100@A1 / 1:200@A3



2 WEST ELEVATION
SCALE 1:100@A1 / 1:200@A3

GENERAL NOTES:

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LEGEND:

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HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
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MV	MECHANICAL RISER TO FUTURE DETAIL
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ST	STORAGE
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ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

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SCALE 1:200 @ A3
0 1 2 5m

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Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
ELEVATIONS - 02

DRAWN BY:	CHECKED BY:	
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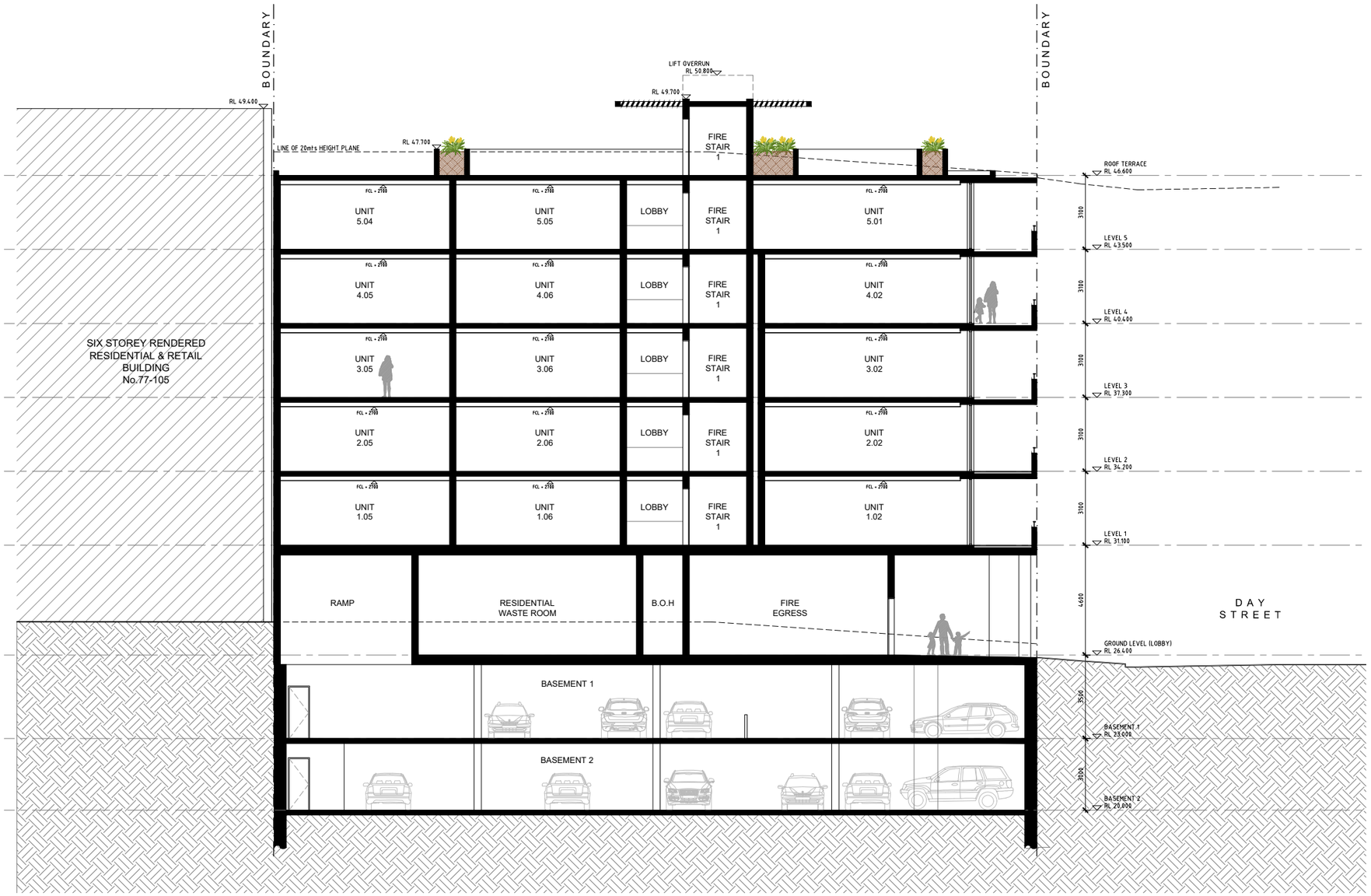
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA201	A



1 SECTION A
SCALE 1:100@A1 / 1:200@A3

GENERAL NOTES:

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CU	A/C CONDENSER UNITS
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ST	STORAGE
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ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

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SCALE 1:200 @ A3
0 1 2 5m

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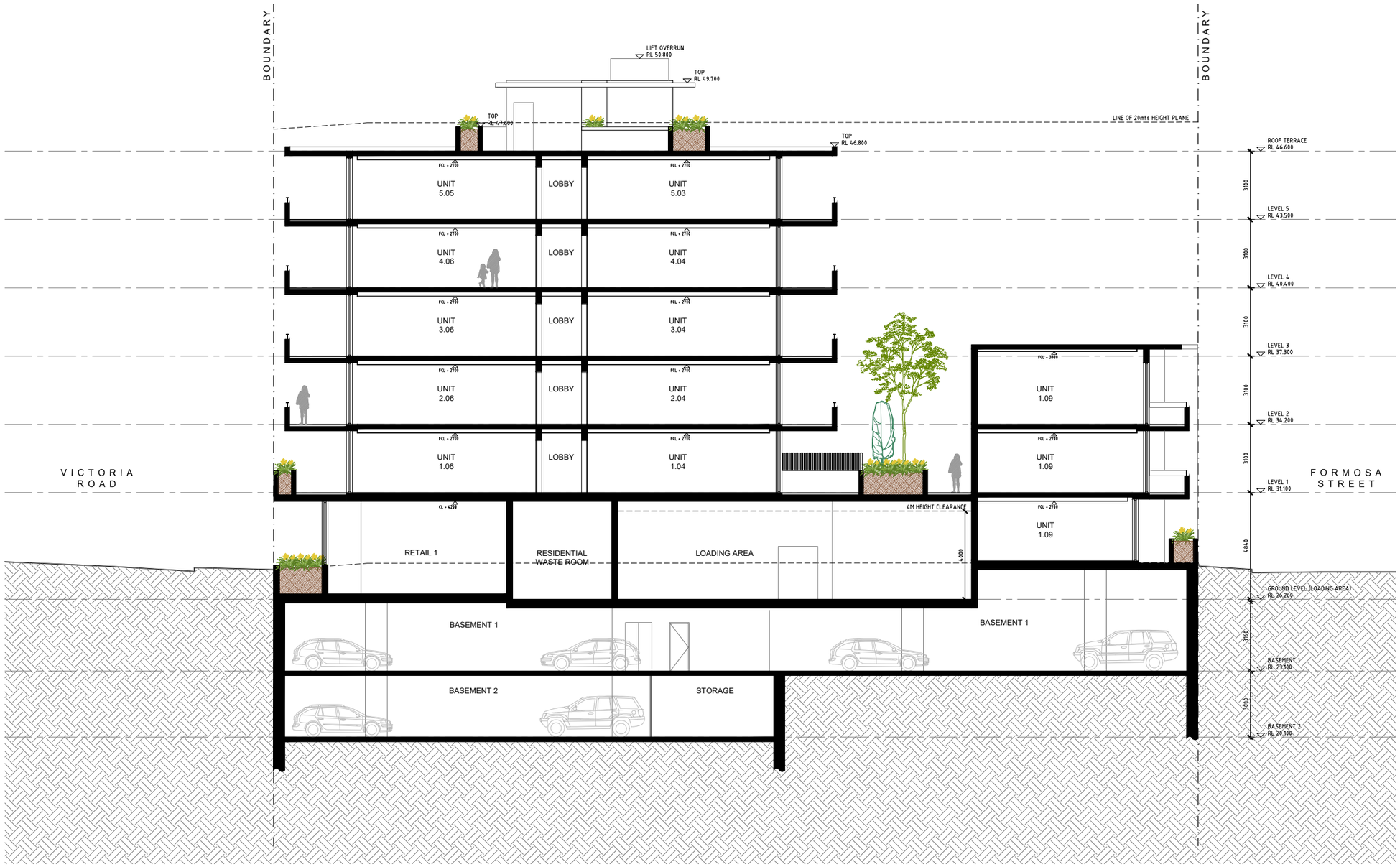
PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
SECTION A

DRAWN BY:	CHECKED BY:	
1:100@A1 / 1:200@A3		
SCALE:	DRAWING NO:	ISSUE:
PROJECT NO: 2018	DA300	A



1 SECTION B
SCALE 1:100@A1 / 1:200@A3

GENERAL NOTES:

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- ARCHITECTURAL PLANS TO BE READ IN CONJUNCTION WITH CONSULTANT'S DRAWINGS, SPECIFICATIONS & REPORTS
- COPYRIGHT OF DESIGN SHOWN HEREON IS RETAINED BY PBD ARCHITECTS AND AUTHORITY IS REQUIRED FOR ANY REPRODUCTION
- AREA SCHEDULES SUPPLIED ARE APPROXIMATE ONLY - FUTURE ALLOWANCE FOR VERTICAL SERVICE DUCTS, STRUCTURAL WALL SYSTEMS AND CONSULTANT INPUT WILL BE REQUIRED

LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

SCALE 1:100 @ A1
SCALE 1:200 @ A3
0 1 2 5m

CLIENT:
OLTER INVESTMENTS PTY LTD
Suite 26.04, Level 26, 25 Bligh St, Sydney NSW 2000
P: (02) 9223 0685 F: (02) 9223 8236 E: info@starryland.com.au

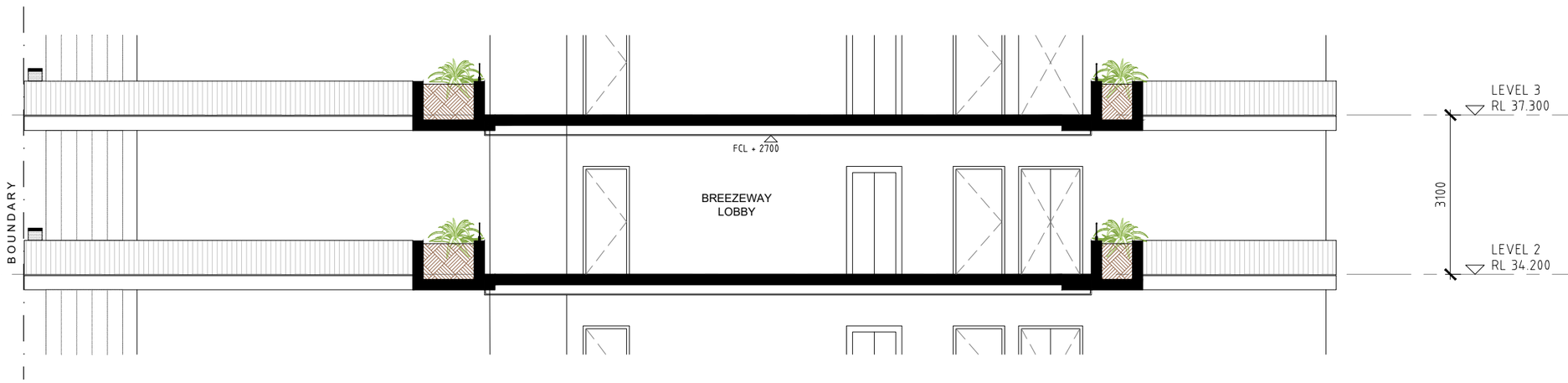
ARCHITECT:
PBD | ARCHITECTS
ABN 36 147 035 550
P - 02 9698 8140 E - info@pbdarchitects.com.au W - www.pbdarchitects.com.au
Level 2, 52 Albion Street, Surry Hills NSW 2010
Nominated Architect: Paul Buljevic NSW 7768

PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
SECTION B

DRAWN BY: 1:100@A1 / 1:200@A3	CHECKED BY:	
SCALE:	DRAWING NO: DA301	ISSUE: A
PROJECT NO: 2018		

1 SECTION C
SCALE 1:100@A1 / 1:200@A3



2 TYPICAL BREEZEWAY LOBBY SECTION
SCALE 1:50@A1 / 1:100@A3

GENERAL NOTES:

- ALL WORKS TO COMPLY WITH BUILDING CODE OF AUSTRALIA, REQUIREMENTS OF RELEVANT STATUTORY AUTHORITIES/ LOCAL GOVERNMENT & RELEVANT AUSTRALIAN BUILDING STANDARDS
- DRAWINGS FOR THE PURPOSES OF DA ONLY - FURTHER CONSULTANT/ AUTHORITY COORDINATION WILL BE REQUIRED AT CC STAGE WHICH MAY IMPACT ON DESIGN AND PLANNING LAYOUTS
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LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
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ISSUE	DATE	DESCRIPTION
A	21.02.16	DA LODGEMENT

SCALE 1:100 @ A1
SCALE 1:200 @ A3
0 1 2 5m

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Level 2, 52 Albion Street, Surry Hills NSW 2010
Nominated Architect: Paul Buljevic NSW 7768

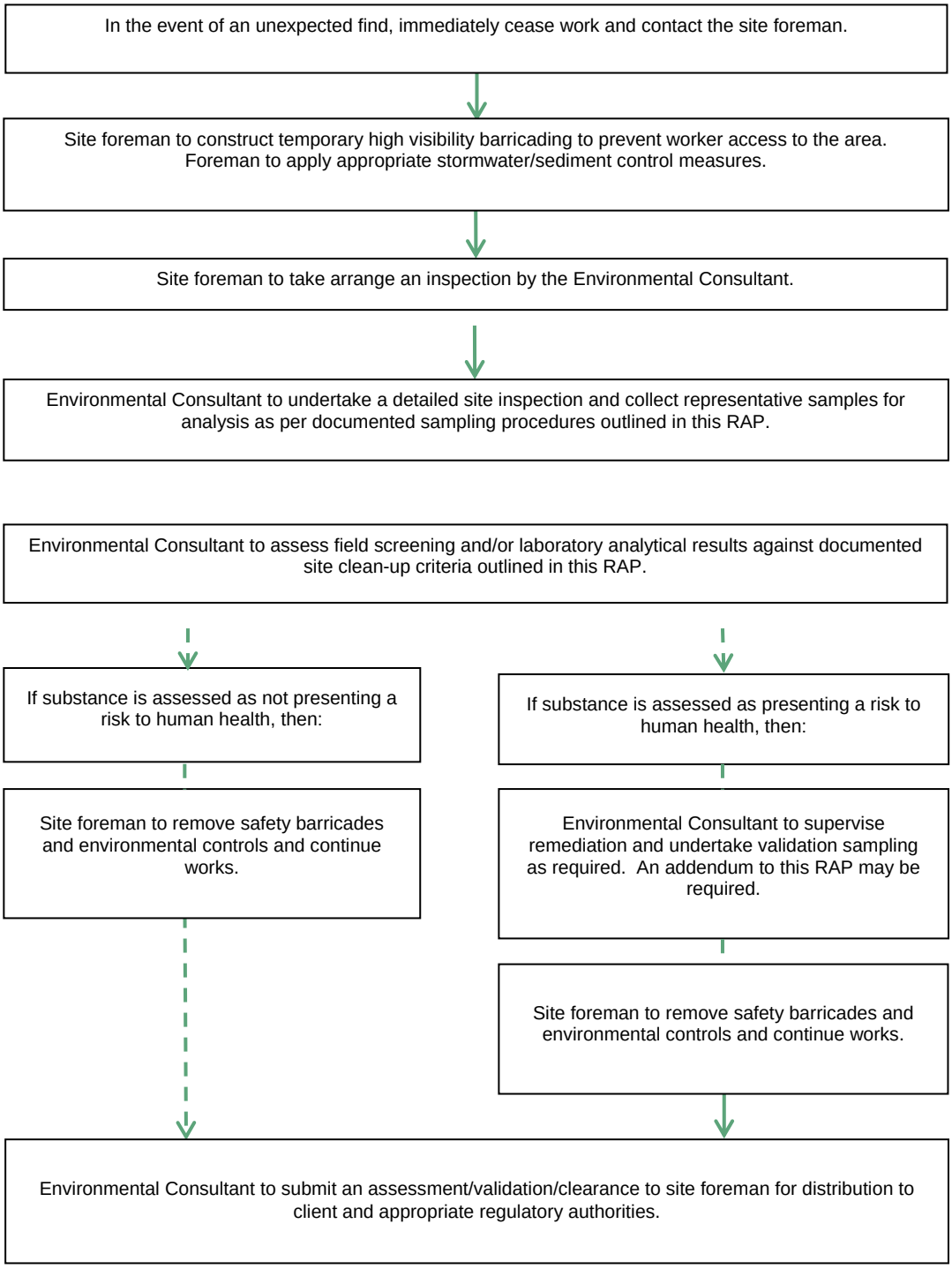
PROJECT:
PROPOSED SHOP TOP HOUSING DEVELOPMENT
71 - 75 VICTORIA ROAD
DRUMMOYNE
July 2020

DRAWING TITLE:
SECTION C

DRAWN BY: 1:100@A1 / 1:200@A3	CHECKED BY:	
SCALE:	DRAWING NO: DA302	ISSUE: A
PROJECT NO: 2018		

Appendix C - Unexpected Finds Protocol

Unexpected Finds Protocol



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Appendix D – Previous Investigation Tables (EI 2021)

Table B.1 - Summary of Soil Analytical Results

E24806.E06 - Drummoyne

Sample ID	Sampling Date	Material	Priority Metals									PAHs						BTEX				TRHs						VOCs			Pesticides		PCBs	Total Phenols	Asbestos		
			As	Cd	Cr#	Cu	Pb	TCLP-Pb (mg/L)	Hg	Ni	Zn	Carcinogenic PAHs (as B(a)P TEQ)	Benzo(a)pyrene	TCLP-B(a)P (mg/L)	Total PAHs	Benzo(g,h,i)perylene	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1	F2	F3	F4	C6-C9	C10-C36	n-propylbenzene	n-butylbenzene	Total VOCs	OCPs	OPPs			>7mm ACM (w/w%)	<7mm AF/FA (w/w%)	AS #964-2004
PREVIOUS INVESTIGATIONS																																					
EI 2021																																					
Fill Materials																																					
BH1M_0.2-0.3	17/09/2020	Clayey Sand	6	0.3	5.4	180	1000	0.04	1.2	1.9	120	0.5	0.3	NA	3.4	0.2	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	<1.0	<1.7	<1.0	NA	NA	NA	No
BH2_0.2-0.3		Sandy Clay	2	<0.3	4.5	65	200	NA	0.59	3.9	190	26	19	0.0001	140	12	0.6	<0.1	<0.1	<0.1	<0.3	<25	<25	730	170	<20	900	NA	NA	NA	<1.0	<1.7	<1.0	NA	NA	NA	No
BH2_0.6-0.7		Silty Clay	2	<0.3	3.9	28	110	NA	0.33	1.3	110	1.6	1.1	NA	11	0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	<1.0	<1.7	<1.0	NA	NA	NA	No
HA1-0.2-0.3	24/09/2020		2	<0.3	4.3	14	11	NA	<0.05	1.9	24	<0.3	<0.1	NA	<0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	<1.0	<1.7	<1.0	NA	NA	NA	No
HA201_0.2-0.3	30/09/2021	Sandy Silt	3	<0.3	6.4	51	110	0.04	0.74	2.5	91	8.2	5.7	NA	61		0.2	<0.1	<0.1	<0.1	<0.3	<25	<25	200	<120	<20	220	NA	NA	NA	<1.0	<1.7	<1.0	NA	NA	NA	No
HA203_0.3-0.4			2	<0.3	10	8.4	15	NA	<0.05	11	50	<0.3	<0.1	NA	<0.8		<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	<1.0	<1.7	<1.0	NA	NA	NA	No
HA204_0.3-0.4			4	<0.3	5.7	12	14	NA	<0.05	1.3	12	<0.3	<0.1	NA	<0.8		<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	<1.0	<1.7	<1.0	NA	NA	NA	No
Natural Materials																																					
BH1M_0.6-0.7	17/09/2020	Clayey Sand	<1	<0.3	1.3	<0.5	6	NA	<0.05	<0.5	<2.0	<0.3	<0.1	NA	<0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HA201_0.5-0.6	30/09/2021	Sandy Clay	2	<0.3	23	<0.5	15	NA	<0.05	<0.5	6.2	<0.3	<0.1	NA	<0.8		<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HA202_0.2-0.3			2	<0.3	19	<0.5	13	NA	<0.05	0.5	5.4	<0.3	<0.1	NA	<0.8		<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Quality Assurance and Quality Control																																					
QD1 (duplicate of BH1M_0.2-0.3)	17/09/2020	Clayey Sand	4	<0.3	2.9	87	430	NA	1.5	0.6	56	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
QT1 (triplicate of BH1M_0.2-0.3)			17	<0.4	23	140	990	NA	1.3	4	190	NA	NA	NA	NA	NA	NA	<0.2	<0.5	<1	<3	<25	<50	<100	<100	<25	<250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
QD2 (duplicate of HA201_0.2-0.3)	30/09/2021	Sandy Silt	4	<0.3	6.6	33	110	NA	0.54	2.5	94	NA	NA	NA	NA		NA	<0.1	<0.1	<0.1	<0.3	<25	<25	160	<120	<20	170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
QT2 (triplicate of HA201_0.2-0.3)			8	<0.4	13	33	120	NA	1.3	4	110	NA	NA	NA	NA		NA	<0.2	<0.5	<1	<3	<25	<50	520	150	<25	670	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Statistics																																					
Number of Primary Samples Analysed			10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0	0	0	10	10	10	0	0	0	7
Number of Detections			9	1	10	7	10	0	4	8	9	4	4	0	4	3	2	0	0	0	0	0	0	2	1	0	2	0	0	0	0	0	0	0	0	0	0
Maximum concentration			17	0.3	23	180	1000	0.04	1.5	11	190	26	19	0.0001	140	12	0.6	0	0	0	0	0	0	730	170	0	900	0	0	0	0	0	0	0	0	0	0
95% UCL			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Assessment Criteria																																					
HIL B - Residential with minimal soil access			500	150	500 Cr(VI)	30,000	1,200		120	1,200	60,000	4			400																10		1				
HSL D - Commercial / Industrial Soil texture classification – Sand		Source depths (0 m to <1 m. BGL)															NL	3	NL	NL	230	260	NL														
		Source depths (1 m to <2 m. BGL)															NL	3	NL	NL	NL	370	NL														
		Source depths (2 m to <4 m. BGL)															NL	3	NL	NL	NL	630	NL														
		Source depths (4 m + BGL)															NL	3	NL	NL	NL	NL	NL														
HSL C - Public open space Soil texture classification – Sand		Source depths (0 m to <1 m. BGL)															NL	NL	NL	NL	NL	NL	NL														
		Source depths (1 m to <2 m. BGL)															NL	NL	NL	NL	NL	NL	NL														
		Source depths (2 m to <4 m. BGL)															NL	NL	NL	NL	NL	NL	NL														
		Source depths (4 m + BGL)															NL	NL	NL	NL	NL	NL	NL														
Asbestos HSL B - Residential with minimal soil acess																																		0.04	0.001	
Asbestos HSL C - Public open space																																		0.02	0.001	
EILs / ESLs - *Urban Residential and Public Open Space* [1] [2]			100		590	140	1,100		170	350			33				170	65	105	125	45	180	120	1,300	5,600					180						

Notes:

	Highlighted value exceeds adopted human health criteria
	Concentration exceeds ecological criteria
	Concentration exceeds highlighted criteria

Results are recorded in mg/kg

HIL A	NEPC 1999 Amendment 2013 'HIL A' - Health based Residential with garden / accessible soil, also includes children's day care centres, preschools and primary schools.
HSL A & B	NEPC 1999 Amendment 2013 'HSL A & B' Health Based Screening Levels applicable for vapour intrusion values applicable for low-high density residential settings.
EIL	Ecological Investigation Level for urban residential and public open space land use.
ESL	Ecology Screening Level for urban residential and public open space land use.
#	Thresholds are for Chromium VI.
*	Results after retest
NA	Not analysed
NL	Not Limiting' If the derived soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical
NC	Not calculated
1	As strata is predominantly clay, fine grained soil assessment criteria values were applied.
2	EIL/ESL were calculated based on the average results of pH (5.5) and CEC (40 meq/100g) for a high traffic NSW suburb.
F1	To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.
F2	To obtain F2 subtract naphthalene from the >C10-C16 fraction.
F3	(>C16-C34)
F4	(>C34-C40)

Table B.2 - Summary of Groundwater Analytical Results **E24806.E06 - Drummoyne**

Sample ID	Date	Heavy Metals								TRH				PAHs							BTEX							Total Phenols	VOCs		
		As	Cd	Total Cr	Cu	Pb	Hg	Ni	Zn	F1	F2	F3	F4	Total PAHs	Benzo(a)pyrene	Naphthalene	Anthracene	Fluoranthene	Phenanthrene		Benzene	Toluene	Ethylbenzene	o-xylene	m-xylene	p-xylene	Total Xylene		Total VOCs	Acetone (2-propanone)	Chloroform
Limit of Reporting (LOR)		1	0.1	1	1	1	0.1	1	5	50	60	500	500	1	0.1	0.1	0.1	0.1	0.1		0.5	0.5	0.5	0.5	1	1	1.5	0.01	10	10	0.5
Round 1																															
BH1M-1	25/9/2020	1	<0.1	<1	4	<1	<0.1	34	81	<50	110	2500	<500	<1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<1.5	NA	25	15	5.9
Quality Assurance Quality Control																															
GWQT1 (triplicate of BH1M-1)	25/9/2020	<1	<0.1	<1	5	<1	<0.05	29	70	<10	<50	<100	<100	NA	NA	NA	NA	NA	NA		<1	<1	<1	<1	<1	<1	<3	NA	NA	NA	NA
Groundwater Assessment Criteria																															
Ecological - Aquatic Ecosystems [1]	ANZG (2018) Marine Water		5.5	Cr(III): 27	1.3	4.4	0.4	70	15	50 [5]	60 [5]	500 [5]	500 [5]		0.2	70	0.4	1.4	2.0		700	180	80	75				400			370
Human Health - Recreational Water [2]	NHMRC (2018) Health	70	20	500	20,000	100	10	200							0.1						10	8,000	3,000				6,000				250
	NHMRC (2018) Aesthetic				10,000				30,000													25	30				20				
Human Health - Groundwater Vapour [3]	NEPC 2013 - HSL D (sand) (Source depth 2m to <4m)									6,000	NL					NL					5,000	NL	NL				NL				
	NEPC 2013 - HSL C (sand) (Source depth 2m to <4m)									NL	NL					NL					NL	NL	NL				NL				
Screening Criteria from International Source [4]	US EPA VISL, Target Groundwater Concentration																													22,500,000	8.14

Notes:

	Highlighted cell indicates analyte concentration value exceeds Groundwater Assessment Criteria (GAC)
	Highlighted cell indicates criteria exceeded
All values are µg/L unless stated otherwise.	
NA = Not Analysed	
	Value not needed or no value available

1	Aquatic Ecosystems	ANZG 2018, 95% level of protection, Marine water
2	Recreational Criteria	ANZG 2018 refers to NHMRC 2008, Chapter 9, Table 9.3. Recreational Water Guidelines are based on current Australian Drinking Water Guidelines multiplied by a factor of 10. Current Drinking Water Guidelines are the NHMRC (2018) Australian Drinking Water Guidelines, Version 3.4 Updated. Total trihalomethane criteria adopted for chloroform.
3	Groundwater Vapour	NEPC (2013), Schedule B1, Table 1A(4), HSL D, Industrial/Commercial, Source depth 2m to <4m, SAND
		NEPC (2013), Schedule B1, Table 1A(4), HSL C, public open space/recreational, Source depth 2m to <4m, SAND
4	International criteria	In absence of Australian Federal or State screening criteria:
		Ontario Environmental Protection Act 1990 (Effective 1 July 2011) Soil, groundwater and sediment standards for use under part XV.1 of the Environmental Protection Act; Table 3, Full Depth Generic Site Condition Standards in a Non- Potable Groundwater Condition. The value is derived using a risk of 10^{-6} and a Hazard Quotient of 0.2.
		US EPA Vapour Intrusion Screening Levels (VISL), Target Groundwater Concentration, for risk 10^{-5} and Hazard Quotient of 1.
5	PQL Applied	Where a criteria was not available, the laboratory Practical Quanititation Limit (PQL) has been used as a Tier 1 screening value (DEC, 2007).

Table T2 - Summary of Soil Vapour Analytical Results: VOCs
EI Australia Job No. E24806

Sample Information				BTEX							VOCs					TRHs	
Sample ID	Soil vapour screen interval depth (mBGL)	Sampling method	Sampling date	Benzene	Toluene	Ethyl Benzene	m,p-Xylene	o-Xylene	Total Xylene	Naphthalene	Chloroform	Ethanol	Heptane	Hexane	Isopropanol	F1	F2
Samples																	
SV1	0.1m	1L Summa Canister	24/09/2020	4.4	9	<6	45	11	56	< 29	18	260	<5	<5	<132	1900	3900
SV2				4.5	23	36	180	35	210	< 29	78	620	310	77	130	20,000	4500
Quality Assurance / Quality Control																	
SVQD1 (Dulplicate of SV1)	0.1m	1L Summa Canister	24/09/2020	3	9.5	<6	19	6.7	25	< 29	<7	200	<5	<5	<132	1400	2200
Statistics																	
Maximum Concentration				4.5	23	36	180	35	210	< 29	78	620	310	77	130	20000	4500
Adopted Tier 1 Soil Vapour Acceptance Criteria (µg/m^3)[1]				**4,000**	**4,800,000**	**1,300,000**	**840,000**			**3,000**	**NV**	**NV**	**NV**	**NV**	**NV**	**680,000**	**500,000**
Soil vapour HSL-C - Sand (recreational / open space)[2]				**360,000**	**NL**	**NL**	**NL**			**410,000**	**NV**	**NV**	**NV**	**NV**	**NV**	**86,000,000**	**NL**
Soil vapour HSL-D - Sand (Commercial / Industrial)[2]				**4,000**	**4,800,000**	**1,300,000**	**840,000**			**3,000**	**NV**	**NV**	**NV**	**NV**	**NV**	**680,000**	**500,000**

Notes:

Units	All units are in µg/m^3
NV	No value derived or adopted.
1	Adopted Soil Vapour Acceptance Criteria - soil vapour concentration for Tier 1 level screening purposes.
2	NEPC 2013, Table 1A(5), Soil vapour HSLs for vapour intrusion, HSLD, Commercial Industrial. Note: Although the land use is high density residential, the basement levels will be used for non-residential use (i.e. car parking). It is assumed that there are no other sensitive uses such as a childcare centre.

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