

Transport
for NSW

Central Precinct Renewal Program

State Significant Precinct
Study – Aeronautical Report

July 2022

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Acknowledgement of Country

We respectfully acknowledge the Traditional Custodians of the Central Precinct, the Gadigal and recognise the importance of place to Aboriginal people and their continuing connection to Country and culture. We pay our respect to Elders past, present and emerging.

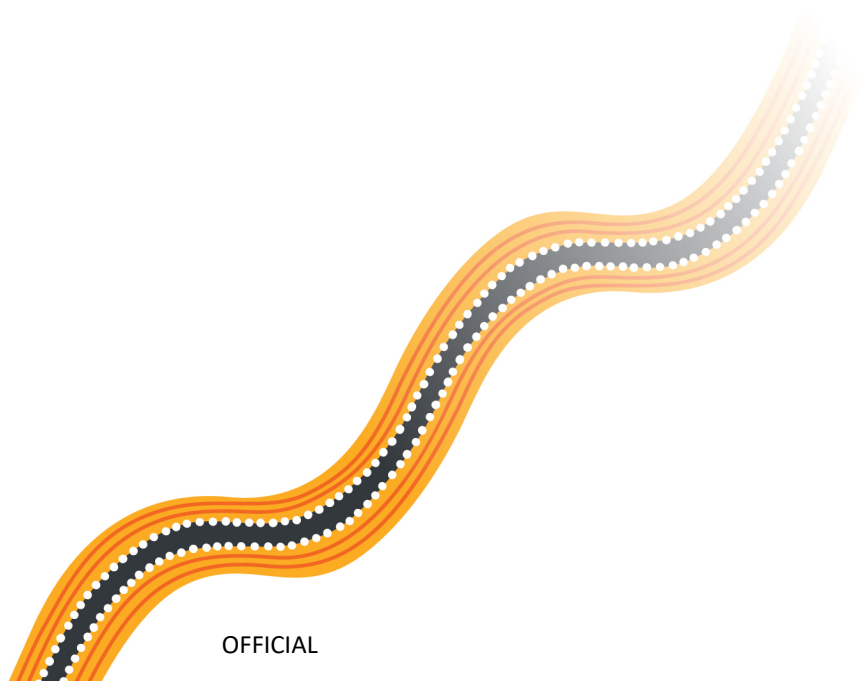


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1. Abbreviations

Abbreviation	Definition
ABS	Australian Bureau of Statistics
AC	Advisory Circular (document supporting CAR 1998)
ACFT	Aircraft
AD	Aerodrome
AGL	Above Ground Level (Height)
AHD	Australian Height Datum
AHT	Aircraft Height
AIP	Aeronautical Information Publication
Airports Act	Airports Act 1996, as amended
Airservices	Airservices Australia
AIS	Aeronautical Information Services
ALARP	As Low As Reasonably Practicable
ALC	Airport Lease Company
Alt	Altitude
AMSL	Above Mean Sea Level
ANEF	Australian Noise Exposure Forecast
Annex 14	ICAO Standards for Aerodromes and OLS
ANSP	Airspace and Navigation Service Provider (eg, Airservices)
APAR / APARs	Airports (Protection of Airspace) Regulations, 1996 as amended, pursuant to the Airports Act 1996 as amended
APCH	Approach
ARP	Aerodrome Reference Point
ATC	Air Traffic Control(ler)
ATM	Air Traffic Management
BAU	Business as usual
BCA	Building Code of Australia
CAAP	Civil Aviation Advisory Publication
CAO	Civil Aviation Order
CAR	Civil Aviation Regulation
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulation
Cat	Category
CBD	Central Business District
CG	Climb Gradient

Abbreviation	Definition
CIV	Capital investment value
CMP	Construction Management Plan
CNS/ATM	Communications, Navigation, Surveillance / Air Traffic Management
CoS	City of Sydney Council
CSPS	Central Sydney Planning Strategy
DA	Development application
DA (Aviation)	Decision Altitude (Aviation)
DAH	Designated Airspace Handbook
DAP	Departure and Approach Procedures (published by Airservices)
DCP	Development control plan
DEP	Departure
DER	Departure End of Runway
DH	Decision Height
DITRDC	Department of Infrastructure, Transport, Regional Development, Communications (Commonwealth) (former abbreviations include DIRD, DIRDC, DITCRD)
DME	Distance Measuring Equipment (navigation aid; also used to express distances in Nautical Miles – see nnDME)
Doc nn	ICAO Document Number nn
DoD	Department of Defence
DPE	NSW Department of Planning and Environment
DPIE	Department of Planning, Industry & Environment (NSW)
EIS	Environmental Impact Study
ELEV	Elevation (above mean sea level)
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPI	Environmental planning instrument
ERSA	EnRoute Supplement Australia
ESD	Ecologically sustainable development
FSR	Floor space ratio
Ft	Feet
GANSW	Government Architect NSW
GFA	Gross floor area
GLS	GNSS Landing System – a precision landing system like ILS but based on augmented GNSS using ground and satellite systems.

Abbreviation	Definition
GNSS	Global Navigation Satellite System
GSC	Greater Sydney Commission
HLS	Helicopter Landing Site
HOB	Height of Buildings (Map)
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IHS	Inner Horizontal Surface, an Obstacle Limitation Surface
ILS	Instrument Landing System, a precision approach landing system
IMC	Instrument Meteorological Conditions
Km	Kilometres
Kt	Knot (one nautical mile per hour)
LAT	Latitude
LEP	Local environmental plan
LGA	The City of Sydney local government area
LNAV	Lateral Navigation
LOC	Localizer
LONG	Longitude
LSALT	Lowest Safe ALTitude
LSPS	Local strategic planning statement
M	Metres
MAPt	Missed Approach Point
MDA	Minimum Descent Altitude
MDH	Minimum Descent Height
MDP	Major Development Plan
MGA2020	Map Grid Australia 2020
MGA94	Map Grid Australia 1994
MOC	Minimum Obstacle Clearance
MOCA	Minimum Obstacle Clearance Altitude
MOS	Manual Of Standards, published by CASA
MOS Part 139	Australian Manual of Standards for OLS, based on ICAO Criteria
MOS Part 173	Australian Manual of Standards for PANS-OPS, based on ICAO criteria
MSA	Minimum Sector Altitude
MVA	Minimum Vector Altitude

Abbreviation	Definition
NABERS	National Australian Built Environment Rating System
NASF	National Airports Safeguarding Framework
NM	Nautical Mile (= 1.852 km)
nnDME	Distance from the DME (in Nautical Miles)
NOTAM	NOTice to AirMen
OAR	Office of Airspace Regulation
OCA	Obstacle Clearance Altitude (in this case, in AMSL)
OCH	Obstacle Clearance Height
OLS	Obstacle Limitation Surface, defined by ICAO Annex 14; also refer CASR MOS Part 139
OSD	Over Station Development
PANS-OPS	Procedures for Air Navigation – Operations, ICAO Doc 8168; also refer CASR MOS Part 173
PBN	Performance Based Navigation
PRP	Project Review Panel
REF	Reference
RL	Relative Level
RNAV	aRea NAVigation
RNP	Required Navigation Performance
RNP AR	Required Navigation Performance – Authorisation Required
RTCC	Radar Terrain Clearance Chart (refer also MVA)
RWY	Runway
SACL	Sydney Airport Corporation Limited
SCA	Special character area
SDCP2012	Sydney Development Control Plan 2012
SDRP	State Design Review Panel
SEPP	State Environmental Planning Policy
SHLS	Strategic Helicopter Landing Site
SID	Standard Instrument Departure
SLEP2012	Sydney Local Environmental Plan 2012
SSDA	State significant development application
SSP	State Significant Precinct
STAR	STandard Arrival
THR	THReshold (of Runway)
TMA	TerMinal Area

Abbreviation	Definition
UTM	Universal Transverse Mercator (Map Coordinates – eg, in MGA94 or MGA2020)
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
WGS84	World Geodetic System 1984 (Geographic Coordinates in Latitude & Longitude)

2. Definitions

Term	Definition
Accessibility	The ability for everyone, regardless of age, disability or special needs or where they live, to use and benefit from the transport system
Active transport	Transport that is human powered, such as walking or cycling
Amenity	The extent to which a place, experience or service is pleasant, attractive or comfortable. Improved features, facilities or services may contribute to increase amenity.
Bradfield Flying Junctions	Series of flyover tracks between the Cleveland Street bridge at Redfern and Central Stations that allow trains to move from any one line to another without crossing a line in the opposing direction
Camperdown-Ultimo Collaboration Area	The Health and Education Precinct which includes the Royal Prince Alfred Hospital, TAFE NSW, University of Notre Dame, University of Sydney and University of Technology Sydney, and medical and research institutions and other health services facilities and educational establishments
Catchment	Area from which a location or service attracts people
CBD and South East Light Rail	means to the light rail network extending from Randwick and Kingsford to Circular Quay
Central Precinct	Central Precinct State Significant Precinct
Central Sydney	Land identified as Central Sydney under the Sydney Local Environmental Plan 2012 and represents the Metropolitan Centre of Sydney. Central Sydney includes Sydney’s Central Business District
Central Walk	The underground paid pedestrian connection, currently under construction, that is to be delivered by Sydney Metro City and South West. Once complete, it will be a link between the new station entrance on Chalmers Street, the Eastern Suburbs Railway concourse, suburban platforms 16-23 (via escalators and lifts) and the new Sydney Metro north-south concourse
Character	The combination of the attributes, characteristics and qualities of a place (GANSW, 2021, Draft Urban Design Guide)
City Plan 2036	City of Sydney local strategic planning statement

Term	Definition
Community	Particular types of stakeholder and refers to groups of people in particular places who are both affected by our work and experience the outcomes and benefits of our activities
Control	A numerical standard that is applied in a prescriptive manner
Corridor	A broad, linear geographical area between places
Council	The City of Sydney Council
Customer interface	The point at which transport services interact with their customer
Customers	Those who use transport networks and services. They include car drivers, heavy vehicle operators, public transport and point to point passengers, pedestrians, cyclists and freight and goods providers
Department	The Department of Planning and Environment
Determination	The approval made in accordance with the <i>Environmental Planning and Assessment (EP&A) Act 1979</i> . In relation to Central Precinct SSP, a determination will be made by the Minister for Planning and Public Spaces
Devonshire Street Tunnel	The official name of the pedestrian tunnel connecting Chalmers and Lee Streets
District Plan	means the Eastern City District Plan
Future Transport Strategy	Transport for NSW's approach to planning transport and engaging customers, to address future technological, economic and social changes. Future Transport Strategy comprises two focus areas – planning ('Future Transport Planning') and technology ('Future Transport Technology' and 'Technology Roadmap')
Gateway	Cities that provide state level services and facilities to support a broad population catchment while also having international connections through their cities airport and/or port.
Goods Line	The official name for the partly elevated walkway from Central Station to Darling Harbour following the route of a disused railway line
Grand Concourse	Part of Central Station
Greater Sydney's Green Grid	The link between parks, open spaces, bushland and walking and cycling paths
Interchange	A facility to transfer from one mode of transport or one transport service to another. For example, a station with an adjoining light rail stop
Local streets	Places that are part of the fabric of suburban neighbourhoods where we live our lives and facilitate local community access
Merit based assessment	An assessment of a matter that allows for reasonable flexibility to consider a range of possible solutions
Minister	The Minister for Planning
Mixed-use	A building or area containing more than one type of land use
Mobility	The ability to move or be moved easily and without constraints

Term	Definition
Mortuary Station	The building formerly used as a railway station on the Rookwood Cemetery railway line, now disused
NABERS	A national rating system that measures the environmental performance of Australian buildings and tenancies
Objective	A statement of a desired future outcome, generally expressed in a qualitative manner that enables merit based assessment
Over rail corridor development or Over Station Development	Development of air space over railway corridors
Place	An intersection of transport infrastructure with social infrastructure and commercial activity. These are the areas within and around transit stops where people live and commute. Places can be created as an outcome of Placemaking
Placemaking	Scoping and delivering places for the community, beyond the immediate transport infrastructure. Successful placemaking either preserves or enhances the character of our public spaces, making them more accessible, attractive, comfortable and safe
Planning instrument	Means any of the following: <ul style="list-style-type: none"> • strategic plan (comprising regional strategic plans and district strategic plans) and local strategic planning statements • environmental planning instrument (comprising State environmental planning policies and local environmental plans) • development control plan
Planning Secretary	The Secretary of the Department of Planning
Precinct	Geographical area with boundaries determined by land use and other unique characteristics. For example, an area where there is an agglomeration of warehouses may be termed a freight precinct
Principal development standards	Matters addressed in Part 4 of the Standard Instrument
Proponent	Transport for NSW
Proposal	Proposed amendments to the planning framework
Provisions	means a broad term covering objectives and controls
Public spaces	means areas that are publicly accessible where people can interact with each other and make social connections
Rail network	means the rail infrastructure in NSW
Railway corridor	The land within Central Precinct on which a railway is built; comprising all property between property fences, or if no fences, everywhere within 15m from the outermost rails. Under planning legislation rail corridor is defined as land: a) that is owned, leased, managed or controlled by a public authority for the purpose of a railway or rail infrastructure facilities; or b) that is zoned under an environmental planning instrument predominately or solely for development of the purpose of a railway or rail infrastructure facilities

Term	Definition
Railway Square	The area between Lee Street and Broadway, comprising a plaza, bus stands and underground access/uses
Reference Master Plan	A non-statutory document that shows one way in which the precinct may develop in the future in accordance with the proposed amendments to the planning framework Note: Refer to the GANSW Advisory Note v2, dated 12/09/2018 for further guidance
Region Plan	The Greater Sydney Region Plan - A Metropolis of Three Cities
Rezoning	Amendments to environmental planning instruments, in particular for land use zones and principal development standards such as height of buildings and floor space ratio
Shocks and stresses	The acute short term damaging events or long term trends causing inequity impacting a city's resilience
Siding	A short stretch of rail track used to store rolling stock or enable trains on the same line to pass
Social procurement	Purchasing decisions based on good social outcomes
Standard Instrument	The Standard Instrument – Principal Local Environmental Plan
State	The state of New South Wales
State-led rezonings	A focus on precincts where there is a strategic imperative for the Department of Planning to lead the process, including places that benefit from current or future city-shaping infrastructure or investment, and where we can create great public spaces in collaboration with councils and communities. These rezonings generally occur under a SEPP
State Significant Precinct	The areas with state or regional planning significance because of their social, economic or environmental characteristics
Strategic Framework	The document prepared by Transport for NSW for Central Precinct in 2021 that addresses key matters including vision, priorities, public space, strategic connections, design excellence, identify sub-precincts for future detailed planning and also outlines the next steps in the State Significant Precinct process for Central Precinct
Strategic plan	The regional strategic plan, district strategic plan or a local strategic planning statement
Sub-precinct	The definable areas within Central Precinct SSP due to its unique local character, opportunities and constraints, either current or future. The Western Gateway is a sub-precinct
Sydney Metro	A fully-automated, high frequency rail network connecting Sydney
Tech Central	The State government initiative as set out in The Sydney Innovation and Technology Precinct Panel Report 2018. Previously known as the Sydney Innovation and Technology Precinct. Tech Central is located south of the Sydney central business district, surrounded by the suburbs of Redfern, Ultimo, Haymarket, Camperdown, Chippendale, Darlingtown, Surry Hills and Eveleigh

Term	Definition
Transport for NSW	The statutory authority of the New South Wales Government responsible for managing transport services in New South Wales.
Transport interchange	A facility designed for transitioning between different modes, such as a major bus stop or train station
Transport modes	The five public transport modes are metro, trains, buses, ferries and light rail. The two active transport modes are walking and cycling
Urban renewal	A planned approach to the improvement and rehabilitation of city areas with new infrastructure, new commercial/mixed uses, improved services and renovation or reconstruction of housing and public works
Vibrant streets / places	Places that have a high demand for movement as well as place with a need to balance different demands within available road space

This report addresses Study Requirement Item 14: Aeronautical. Note that the assessment of aeronautical impact for the purposes of certification is based on the Reference Master Plan (see Section 6.5, p32, and Figure 6-3, p35). This approach enables potential airspace impact to be documented against specific proposed building envelopes, which is more precise than if blocks defined in a proposed Height of Buildings map (Figure 13-3, p81) — which is overlaid by different height constraints imposed by the Sun Access Planes for Prince Alfred Park (Figure 13-5, p83) and Belmore Parks — were to be assessed.

Further to the key objective of ensuring that the precinct does not have an adverse impact on the operations of Sydney Airport, this report examines the current and forecast regulated airspace height limits above the site as well as other non-height related assessment criteria that are related to aviation airspace protection requirements under the Airports (Protection of Airspace) Regulations (APAR), and which would:

- trigger the requirement to apply for an airspace height approval,
- constrain the maximum building envelope height, and
- for advance information, limit the maximum heights for the cranes that will be required for construction.

Mitigation measures to reduce the risk of any potential impact on the safety of aircraft operations are also considered.

The critical airspace height limitations over the site are summarised in Table 3-1 below and depicted in Figure 3-2 and Figure 3-3.

Table 3-1 — Summary — Airspace Height Constraints

Height Limits (m AHD)	Height Limit Detail	Comment
164.3	Max Tower Building Height	The is the top height of the tallest of the tower buildings in the Central Precinct SSP masterplan proposal. Refer Section 7.5 (p37) and Table 7-1 (p38)
127.1 - 156.0	Obstacle Limitation Surface (OLS) — Conical Surface & Outer Horizontal Surface	APAR THRESHOLD HEIGHT The OLS is the airspace assessment surface which is used for determining if a building (or crane) requires a height approval under the APAR. For more information on the OLS, see Section 7.7.2.1 (p42). The OLS conical surface slopes upwards from the south-west to north-east over the site with heights over the SSP ranging from approximately 127.1m AHD in the south to approximately 156.0m AHD in the north. Beyond that, the OLS surface is level at 156.0m AHD. Refer Section 8.2 (p45) and Figure 8-1 (p46). Apart from the 3 tallest tower buildings in the reference masterplan, all other buildings are below the OLS and would not require prior airspace height approval.

Height Limits (m AHD)	Height Limit Detail	Comment
		<p>By contrast, the 3 tallest tower buildings which would infringe the OLS would require a height application under the APAR to be approved by the Commonwealth Department of Infrastructure, Transport, Regional Development & Communications (DITRDC). Infringement of the OLS in this case is not considered a barrier to approval of an application under the APAR. Note that an approval under the APAR would be required before approval of a Development Application.</p>
<p>South: 152.4 North: 243.8</p>	<p>Radar Terrain Clearance Chart (RTCC) Surfaces</p>	<p>MAXIMUM EFFECTIVE BUILDING HEIGHT CONSTRAINTS</p> <p>The Central Precinct SSP lies within the lateral limits of two RTCC surfaces, which protect airspace sectors used by Air Traffic Controllers (ATCs) to vector (ie, direct) aircraft. As these surfaces are lower than the PANS-OPS surface over the site, the RTCC surfaces define the most constraining height limits for building developments.</p> <p>All buildings in the masterplan are below these surfaces, and so would be considered approvable under the APAR.</p> <p>Typically, this surface cannot be breached by any permanent obstacle, or any temporary obstacle at night or during times of low visibility – hence any approval for temporary obstacles is subject to conditions to minimise impact on operational airspace.</p> <p>Cranes operating above this height, if approved, would be subject to various operational constraints, including a maximum duration of 3 contiguous months.</p>
<p>≥ 259.1</p>	<p>PANS-OPS ILS RWY 34R Missed Approach Surface</p>	<p>MAXIMUM EFFECTIVE CRANE HEIGHT CONSTRAINT</p> <p>Whilst PANS-OPS surfaces normally define the maximum permissible building height, in this case the lowest of the PANS-OPS surfaces (that related to the ILS RWY34R Missed Approach) is higher than the RTCC and therefore less restrictive.</p> <p>However, the PANS-OPS surface heights would define the maximum permissible crane heights.</p>

The figures below depict the OLS and maximum limiting surface heights over the precinct.

Figure 3-2 — Building Height Limitation Surfaces – OLS – APAR Threshold
(Small Format)

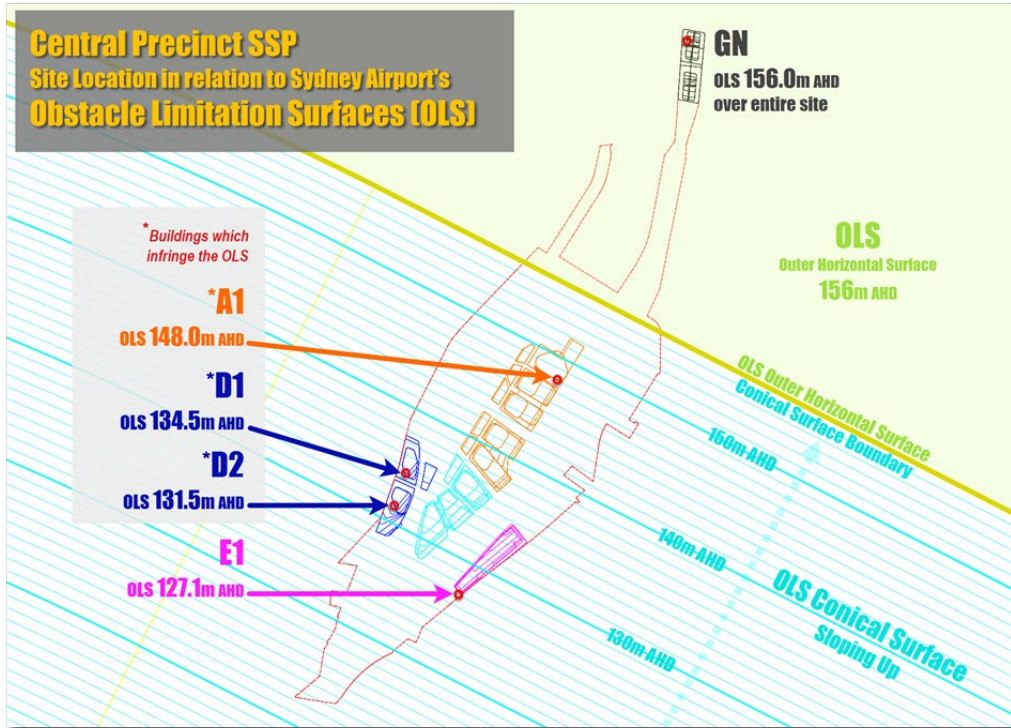
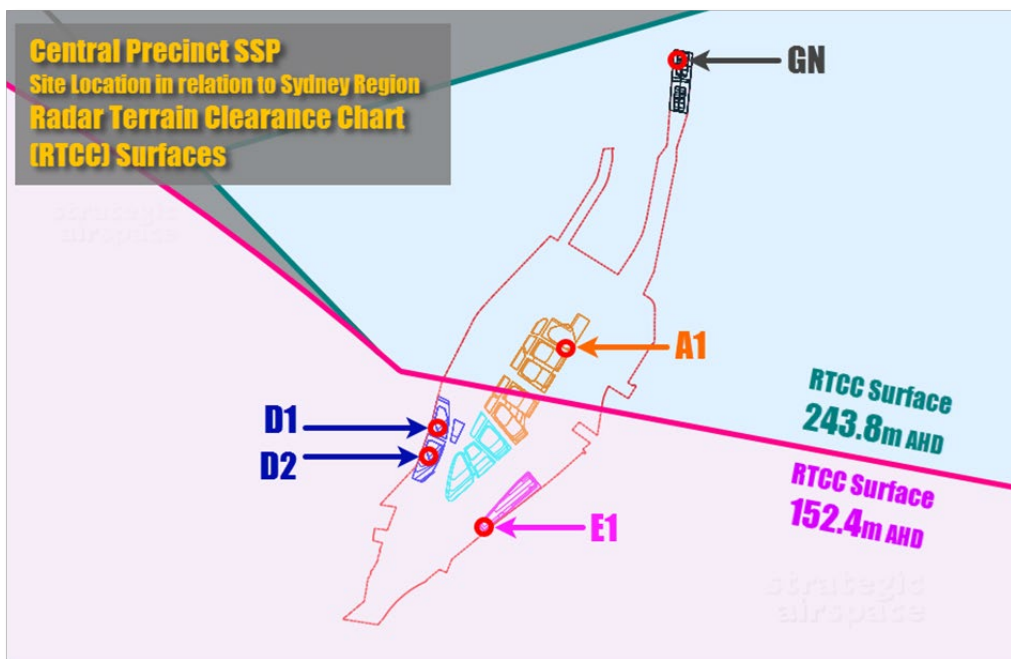


Figure 3-3 — Building Height Limitation Surfaces - RTCC – Maximum Effective
Building Heights (Small Format)



Based on the current masterplan, all low and mid-rise buildings would be below the OLS and therefore would not require prior height approvals under the APAR. The taller of the proposed tower buildings, and any tall cranes required for

construction, would however infringe the OLS and so would require prior height approvals.

The maximum permissible building height for all buildings is defined by two separate RTCC surfaces. The higher RTCC surface, at a height of 243.8m AHD, covers the bulk of the precinct north of building D1. The lower RTCC surface, at a height of 152.4m AHD, covers the southern portion of the precinct.

All buildings in the masterplan proposal are below the respective limiting RTCC surface heights and so would be considered approvable.

Figure 3-4 — 3D View (from the West) of the Masterplan & Limiting RTCC Surfaces



Crane heights, crane type choices and construction programs may be affected for the taller buildings which have height clearances (between the top of the building to the relevant RTCC surface) of less than 60m. Buildings in this category include B1, B2, C1, C2, C3, D1 and D2. For these buildings, once cranes exceed the relevant RTCC surface height they would be limited to a maximum 3-month operating duration and be subject to specific operational procedures at night and during times of low visibility.

There are no other prescribed airspace surfaces or other operational factors that would be adversely affected by the masterplan proposal.

In conclusion, based on the maximum heights of the building envelopes in the masterplan proposal, the proximity of the Central Precinct SSP to existing tall buildings in the Sydney CBD, and subject to the potential requirement for obstacle lights to be installed and operated on some of the taller of the tower buildings (subject to CASA recommendations at the time of any applications for height approval under the APAR), we certify that the masterplan proposal will not have an

adverse impact on the safety, regularity or efficiency of air transport operations to/from Sydney Airport.

It is recommended that the proposed maximum building height controls of the proposed planning framework largely align with proposed building heights of the masterplan. This is to avoid potential implications in securing airspace height approval from relevant airspace agencies and authorities prior to or as part of subsequent development applications processes.

That said, where planning controls will permit buildings up to proposed maximum heights which exceed the current airspace limits — eg, as per the draft Height of Buildings map or Sun Access Plane (refer section 13.8.1 Building Airspace Height Limits versus LEP & Development Approval Heights (p80) — it is strongly recommended that site-specific provisions ensure consultation with Sydney Airport, the relevant airspace authorities and the Commonwealth airspace consent body to ensure that there will be no objections to the maximum height. Alternatively, any Stage 1 Concept DAs or similar must ensure that airspace approvals are gained prior to DA consent.

Additionally, recommendations to developers and designers, and guidelines on how to address any differences in planning height controls and airspace height limits are also provided in the Appendices.

4. Introduction

Located within the heart of Eastern Harbour City, Central Precinct is Australia's busiest transport interchange. The precinct currently holds latent potential with all its inherent advantages of location and transport connections to revitalise Central Sydney. Capitalising on Central Precinct's prime location within Tech Central, a NSW Government commitment to create the biggest technology hub of its kind in Australia, Central Precinct presents the ultimate transformative opportunity to deliver a connected destination for living, creativity and jobs. The renewal of Central Precinct will provide a world-class transport interchange experience, important space for jobs of the future, improved connections with surrounding areas, new and improved public spaces and social infrastructure to support the community.

4.1 Tech Central

4.1.1 Overview

The NSW Government is committed to working with the local community to develop the biggest innovation district of its kind in Australia. Bringing together six neighbourhoods near the Sydney CBD (Haymarket, Ultimo, Surry Hills, Camperdown, Darlington North Eveleigh and South Eveleigh), Tech Central is a thriving innovation ecosystem that includes world-class universities, a world-leading research hospital, 100 + research institutions, investors and a wide range of tech and innovation companies. The vision for Tech Central is for it to be a place where universities, startups, scaleups, high-tech giants and the community collaborate to solve problems, socialise and spark ideas that change our world. It is also for it to be place where centring First Nations voices, low carbon living, green spaces, places for all people and easy transport and digital connections support resilience, amenity, inclusivity, vitality and growth.

Tech Central is an essential component of the Greater Sydney Region Plan's Eastern Harbour City Innovation Corridor. It aims to leverage the existing rich heritage, culture, activity, innovation and technology, education and health institutions within the precinct as well as the excellent transport links provided by the Central and Redfern Station transport interchanges.

The Central Precinct is located within the Haymarket neighbourhood of Tech Central. Planned to become the CBD for Sydney's 21st century, this neighbourhood is already home to The Quantum Terminal (affordable coworking space in the iconic Central Station Sydney Terminal Building) the Scaleup Hub (affordable and flexible workspace for high-growth technology scaleups) and is soon to be the home of Atlassian's headquarters. It is also in close proximity to a number of important education and research institutions.

The planned urban renewal of the Central Precinct has been identified as a key project to achieving the vision for Tech Central.

4.1.2 Background & Context to Tech Central

In August 2018, the NSW Government established the Sydney Innovation and Technology Precinct Panel (the Panel) comprising representatives from various industry, health, education, government agencies and key community members. In December 2018 'The Sydney Innovation and Technology Precinct Panel Report' was

produced, setting out the Panel's recommendations for a pathway to delivering a successful innovation and technology district at Tech Central. In February 2019, the NSW Government adopted the Panel's report and committed to delivering the following:

- 25,000 additional innovation jobs
- 25,000 new STEM and life sciences students
- 200,000 m² for technology companies, and
- 50,000 m² of affordable space for startups and scaleups

In February 2019, the Greater Sydney Commission released a Place Strategy for the area that is now known as Tech Central (Camperdown-Ultimo Collaboration Area Place Strategy, GSC). The Place Strategy, developed collaboratively by a range of stakeholders involved in planning for Tech Central's future, was prepared to inform public and private policy and investment decisions by identifying and recognising the complex, place-specific issues inhibiting growth and change. The strategy identifies shared objectives for the place and sets out priorities and actions to realise the vision for the area under the key themes of Connectivity, Liveability, Productivity, Sustainability and Governance.

Both the Panel Report and Place Strategy recognise the importance of the Central Precinct to Tech Central's future.

TECH CENTRAL

-  Institutions and innovation anchors
-  Major government projects
-  Opportunity Site
-  Immediate development pipeline
-  Public Open Space
-  Precinct boundary
-  Light rail -existing
-  Metro station
-  Train station
-  Light rail station

* CHERP: Camperdown Health Education and Research Precinct



www.tc.sydney



In July 2019, Central Precinct was declared a nominated State Significant Precinct (SSP) in recognition of its potential to boost investment and deliver new jobs. The SSP planning process for Central Precinct will identify a new statutory planning framework for Central Precinct. This involves two key stages:

- **Stage 1:** Development of a draft Strategic Vision which has since evolved into the Central Precinct Strategic Framework
- **Stage 2:** Preparation of an SSP study with associated technical analysis and community and stakeholder consultation.

In March 2021, the [Central Precinct Strategic Framework](#) was adopted representing the completion of Stage 1 of the planning process to develop a new planning framework for Central Precinct. The Strategic Framework outlines the vision, planning priorities, design principles, and the proposed future character of sub-precincts within Central Precinct. This is intended to inform and guide further detailed planning and design investigations as part of this SSP Study (Stage 2 of the SSP planning process).

This SSP Study intends to amend the planning controls applicable to Central Precinct under the Sydney LEP 2012 to reflect the vision and planning priorities set for the Precinct under the Strategic Framework. Study Requirements were issued in December 2020 to guide the investigations and the proposed new planning controls.

4.2 Central Precinct vision

Central Precinct will be a vibrant and exciting place that unites a world-class transport interchange with innovative and diverse businesses and high-quality public spaces. It will embrace design, sustainability and connectivity, celebrate its unique built form and social and cultural heritage and become a centre for the jobs of the future and economic growth.

4.3 Case for change

Over the coming years, Central Station will come under increasing pressure as technological innovations progress, investment in transport infrastructure increases and daily passenger movements increase.

Sydney Metro, Australia's biggest public transport project, will result in the delivery of a new generation of world-class, fast, safe, and reliable trains enabling faster services across Sydney's rail network. In 2024, Sydney Metro's Central Station will open with daily passenger movements forecast to increase from 270,000 persons to 450,000 persons over the next 30 years.

In its current state, Central Station is underperforming as Australia's major transport interchange – it's currently a hole in the heart of Sydney's CBD, lacking connectivity, activation and quality public spaces.

The renewal of Central Precinct will expand and revitalise Central Station and transform this underutilised part of Sydney from a place that people simply move through to one where they want to visit, work, relax, connect and socialise. Its renewal also presents the potential to deliver on the strategic intent and key policies of regional, district and local strategic plans, providing for a city-shaping opportunity that can deliver economic, social and environmental benefit. Specifically, it will:

- make a substantial direct and indirect contribution to achieving the Premier's Priorities by facilitating upgrades to Sydney's largest and most significant public transport interchange, improving the level of service for users and visitors, and supporting the creation of new jobs and housing

- implement the recommendations of the NSW State Infrastructure Strategy 2018-2038, in particular the upgrading of the major transport interchange at Central to meet future customer growth
- contribute to key 'Directions' of the Greater Sydney Region Plan, to deliver 'a city supported by infrastructure', help create 'a city of great places', support 'a well connected city', deliver new 'jobs and skills for the city' and create 'an efficient city'
- implement the outcomes envisaged within the Eastern City District Plan including reinforcing the Harbour CBD's role as the national economic powerhouse of Australia and supporting its continued growth as a Global International City
- deliver on the shared objectives and priorities for Tech Central, the future focal point of Sydney's innovation and technology community, which aims to boost innovation, economic development and knowledge intensive jobs while creating an environment that foster collaboration and the exchanging of ideas
- deliver an outcome that responds to the overarching vision and objectives of the Central Sydney Planning Strategy. In particular it will assist with implementing a number of 'key moves' outlined in the strategy, including to 'ensure development responds to its context', 'ensure infrastructure keeps pace with growth', 'move people more easily', 'protect, enhance and expand Central Sydney's heritage, public places and spaces', and to 'reaffirm commitment to design excellence.'

5. About this report

The purpose of this report is to provide a detailed aeronautical impact assessment of the planning proposal — which, for aeronautical impact purposes, entails assessment of the masterplan for the Central Precinct SSP.

This report addresses Study Requirement Item 14: Aeronautical. The relevant study requirements, considerations and consultation requirements, and reference to where in this report these have been responded to is outlined in Table 5-1 below.

Further to the key objective of ensuring that the precinct does not have an adverse impact on the operations of Sydney Airport, this report examines the current and forecast regulated airspace height limits above the site as well as other non-height related assessment criteria that are related to aviation airspace protection requirements under the APAR, and which would:

- trigger the requirement to apply for an airspace height approval for the proposed building development,
- constrain the maximum permissible building envelope height, and
- for advance information, limit the maximum heights for the cranes that will be required for construction.

Mitigation measures to reduce the risk of any potential impact on the safety of aircraft operations are also considered.

5.4 SSP Study Requirements (14.1 Aeronautical)

Table 5-1 — Study Requirements, Considerations and Consultation Requirements

Ref	Requirement	Summary Response	Section Reference (This Report)
Scope and Requirement — Prepare an Aeronautical Study that:			
14.1 A	1. Identifies any constraints associated with the operations of Sydney Airport.	The critical constraints are the airspace surfaces — which are intended to protect normal aircraft operations — that define the maximum heights that can be considered approvable under the Airports (Protection of Airspace) Regulations. These are described and mapped in the report.	Section 7 Aeronautical Impact Context (p36) Section 8 Analysis (p45), Section 8.1 Sydney Airport's Prescribed Airspace & the Master Plan 2039 (p45) & 8.5 Airspace Heights Summary (p57) Section 9 Crane Considerations (p60) Section 12 Conclusion (p68)
14.1 B	2. Advises on measures, if necessary, to ensure the precinct does not have an adverse impact on the operations of Sydney Airport.	The main considerations are the potential impact of cranes required for construction and strategies for minimising impact, and the probability that some of the taller	Section 9 Crane Considerations (p60) Section 10 Obstacle Lighting Considerations (p63) Section 12 Conclusion (p68)

Ref	Requirement	Summary Response	Section Reference (This Report)
		towers will require obstacle lighting to be installed (subject to CASA recommendations at the time of evaluation of airspace height applications for buildings).	
14.1 C	3. Certifies that, subject to any recommended measures, the proposal will not have an adverse impact on the operations of Sydney Airport.	The author of this report certifies that the masterplan proposal will not have an adverse impact on the operations of Sydney Airport, subject to probable conditions for the installation of obstacle lighting on some of the taller towers (conditions which would only be imposed at the time of the relevant airspace height approval for subject building(s)).	Section 12 Conclusion (p68) Section 12.3 Certification (p69) Section 12.4 Recommendations (p69)
Considerations – The Study is to demonstrate consideration of:			
14.1 D	<ul style="list-style-type: none"> Appropriate mapping to demonstrate the OLS, PANS OPS and other relevant Sydney Airport height limitation layers. 	The report contains diagrams which illustrate the various airspace surface height constraints over the site.	Section 8 Analysis (p45). Section 8.1.1 Sydney Airport's Prescribed Airspace Charts (p45) Figure 8-1 – Site in relation to the OLS (p46) Figure 8-3 – Site in relation to the Limiting PANS-OPS Procedure Surfaces (p49) Figure 8-5 – Site in relation to Sydney 2020 Radar Terrain Clearance Chart (RTCC) (p54)
14.1 E	<ul style="list-style-type: none"> Pathways required to secure approval from relevant bodies as part of subsequent development applications processes. 	<p>The primary pathway is to make applications for approval under the Airports (Protection of Airspace) Regulations. Such applications should be submitted as soon as possible in the development planning and final design processes to help secure early approval and confidence that the heights sought in any DA are achievable.</p> <p>It is strongly recommended that the developer make their own application (supported by qualified aviation consultants) so</p>	Section 7.7.1.1 Pathways to Approval under the APAR (p40) Section 11.4.2 Consultation regarding the APAR Sunsetting (p66) Section 12 Conclusion (p68) Appendix Section 13.8 Guiding Principles for Design & Construction: Section 13.8.2 Pathway to Secure Airspace Approvability for Buildings Approvable under Planning Heights but Higher than Airspace Heights (p83)

Ref	Requirement	Summary Response	Section Reference (This Report)
		<p>as to retain control over the application and the retain the ability to consult with the aviation agencies and approval authority during the application process. An airspace height approval is generally a precondition of a Development Approval.</p> <p>If an application has not been submitted independently, the planning authority evaluating the DA (DPE or CoS) will automatically refer it to Sydney Airport which will then raise a height application. This pathway does not ensure that the applicant retains control over the application.</p>	
<p>Consultation – The Study is to demonstrate that:</p>			
<p>14.1 F</p>	<ul style="list-style-type: none"> It has been informed by consultation with the Sydney Airport to ensure the precinct will not have an adverse impact on the operations of Sydney Airport and demonstrate that consultation informs the preparation of the proposed planning framework including any recommended planning controls or DCP/Design Guideline. 	<p>Sydney Airport’s view is that whilst they do not wish to see any new buildings infringe their OLS (the lowest threshold for buildings that require airspace approval), they must defer to the opinions of the key aviation stakeholders, the Civil Aviation Safety Authority (CASA) and Airservices Australia, and that final airspace approvals are the responsibility of the Commonwealth Department of Infrastructure.</p> <p>No recommended planning controls were highlighted as being required as part of the planning framework. That said, it is recommended that the proposed maximum building height controls of the proposed planning framework largely align with proposed building heights of the masterplan. This is to</p>	<p>Section 11 Consultation, Section 11.1 (p64)</p> <p>Refer also Appendices, Section 13.7 Masterplan Building Heights & Airspace Impact (p77) and Section 13.8.1 Building Airspace Height Limits versus LEP & Development Approval Heights (p80)</p>

Ref	Requirement	Summary Response	Section Reference (This Report)
		avoid potential implications in securing airspace height approval from relevant airspace agencies and authorities prior to or as part of subsequent development applications processes.	
Author			
14.1 G	<ul style="list-style-type: none"> The study is to be prepared by a suitably qualified professional(s) with the necessary experience and expertise to undertake the required works. 	<p>The certifying author is a qualified aviation professional with decades of relevant experience and specialist expertise in aeronautical impact and risk assessment studies for major urban planning projects and singular development projects.</p> <p>The other study team consultants include qualifications and experiences as former chief PANS-OPS procedure designers, OLS experts, international standards advisors and pilots.</p>	Section 5.5 below
Guidance Documents – The following documents provide guidance for this Study:			
14.1 H	<ul style="list-style-type: none"> Airports Act 1996 Airports (Protection of Airspace) Regulations 1996 (APAR) 	The APAR are considered as the primary guidance because they provide the key framework for determining the threshold height below which buildings would not require prior approval, and the maximum heights up to which buildings could gain airspace approvals under the Regulations.	Section 7.7.1 Airspace Regulations (p40)
	<ul style="list-style-type: none"> Sydney Airport Master Plan 2033 	This report refers to the more recent Sydney Airport Master Plan 2039.	Section 7.7.2 Prescribed Airspace (p42) Section 8.1 Sydney Airport's Prescribed Airspace & the Master Plan 2039 (p45)

5.5 Certifying Author

The Certifying Author of this report, Cathy Pak-Poy, has 30 years' experience as a specialist airspace consultant, including 9 years' experience as a Technical Advisor for Australia to the International Civil Aviation Organisation's Instrument Flight Procedures Panel, which was responsible for the international OLS, PANS-OPS and Performance Based Navigation (PBN) standards. She has also consulted to Airservices, CASA and the Royal Australian Air Force (and trained some of their personnel), and has consulted to and trained civil and military aviation agencies, airports and airlines overseas. She held a Delegation for the Civil Aviation Safety Authority of PNG for two years and is the designated Chief Procedure Designer for the Part 173 design and validation approvals held by Strategic Airspace in the Republic of South Africa.

6. Study Area

Central Precinct is located at the south-east edge of Central Sydney (refer to Figure 6-1). Central Precinct is surrounded by a number of suburbs including, Haymarket to the north, Chippendale to the south and Surry Hills to the south-east. It is located within the City of Sydney local government area (LGA) with an approximate gross site area of 24 hectares of Government owned land. The precinct comprises land bounded by Pitt Street and Regent Street to the west, Cleveland Street to the south, Eddy Avenue, Hay Street and Goulburn Street to the north and Elizabeth Street and Chalmer Street to the east.

Central Precinct has been an important site for transport operations for over 150 years. Today, Central Station is Australia’s busiest transport interchanges and is the anchor of New South Wales’s (NSW) rail network. It provides 24 platforms for suburban and Intercity and Regional train connections as well as a direct link to Sydney Airport. The broader transport interchange also caters for light rail, bus, coach and point to point connections such as taxis. The transport interchange will also form part of the Sydney Metro network, with new underground platforms to be provided for Sydney Metro services under Platform 13, 15 and 16 at Central Station. Sydney Metro services will begin in 2024. The precinct also comprises several significant heritage items including the state-heritage listed Sydney Terminal Building and the Clock Tower.

Figure 6-1 — Location plan of Central Precinct

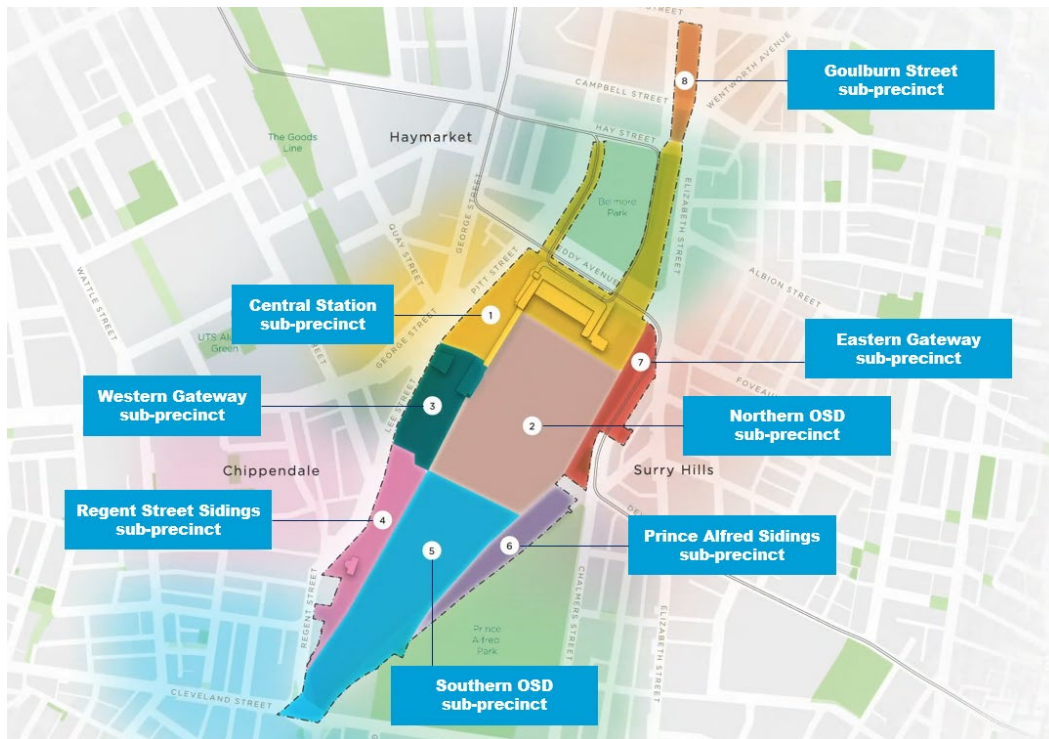


As part of the Strategic Framework, eight sub-precincts have been defined that reflect and positively respond to the varying character of the surrounding areas. These sub-precincts are:

- Central Station
- Northern Over Station Development
- Western Gateway
- Regent Street Sidings
- Southern Over Station Development
- Prince Alfred Sidings
- Eastern Gateway
- Goulburn Street.

The location of these sub-precincts and relevant boundaries is illustrated in Figure 6-2.

Figure 6-2 — Central Precinct and sub-precincts



6.4 Planning priorities

To help realise the vision of Central Precinct and the desired local character of the sub-precincts, the following planning priorities have been developed and are grouped into five key themes as outlined in Table 6-1 below.

Table 6-1 – Central Precinct planning priorities

Theme	Planning priorities
Place and destination	<ul style="list-style-type: none"> • Unite the city by reconnecting with the surrounding suburbs • Shape a great place that is vibrant, diverse, active, inclusive and has a high level of amenity • Deliver a precinct which responds to its urban context and embeds design excellence Improve existing and providing additional connected public space in the precinct of high environmental amenity and comfort • Protect and celebrate the Precinct’s heritage values • Create a people focussed precinct through a focus on public transport, cycling and walkability • Facilitate the precinct’s focus on transport and economic diversity in tourism and across commercial sectors including office, business and retail.
People and community	<ul style="list-style-type: none"> • Design public spaces that promote health, equality and well-being • Promote social cohesion by providing spaces for gathering, connection, exchange, opportunity and cultural expression • Honour and celebrate the cultural heritage and identity of the Precinct’s past and present Aboriginal community • Create a safe and intuitive precinct that promotes social access and inclusion • Support programs and initiatives that benefit communities and people • Create a precinct that responds to the current and future needs of transport customers, workers, residents and visitors, including those of the broader local community.
Mobility and access	<ul style="list-style-type: none"> • Provide a world class, integrated and seamless transport interchange • Maintain the precinct’s role as NSW’s main transport interchange • Improve the transport customer experience, including wayfinding, pedestrian flows and interchange between different transport modes • Facilitate and enhancing connections within and towards key locations in southern Central Sydney • Deliver a people focussed precinct that is walkable, well connected, safe and puts people first • Design infrastructure that will adapt to future changes in transport and mobility.
Economy and innovation	<ul style="list-style-type: none"> • Advance Sydney’s status as a global city • Support the creation of jobs and economic growth including new and emerging industries such as innovation and technology and explore the provision of space for cultural and creative uses and start-ups • Provide an active and diverse commercial hub with a rich network of complementary uses that nurture and support business • Support both the day and night economies of the precinct through diverse complementary uses, promoting liveability and productivity • Foster collaboration between major institutions in the precinct including transport, education, health and business • Create a smart precinct that incorporates digital infrastructure to support research and innovation.

6.5 Reference Master Plan

Architectus and Tyrrell Studio have prepared a Place Strategy, Urban Design Framework and a Public Domain Strategy which establishes the Reference Master

Plan for Central Precinct. The Urban Design Framework and Public Domain Strategy provides a comprehensive urban design vision and strategy to guide future development of Central Precinct and has informed the proposed planning framework of the SSP Study.

The Reference Master Plan includes:

- Approximately 22,000 sqm of publicly accessible open space comprising:
 - Central Green – a 6,000 square metre publicly accessible park located in immediately south of the Sydney Terminal building
 - Central Square – 7,000 square metre publicly accessible square located at the George Street and Pitt Street junction
 - Mortuary Station Gardens – a 4,470 square metre publicly accessible park (excluding Mortuary Station building) located at Mortuary Station
 - Henry Deane Plaza – a publicly accessible plaza located in the Western Gateway sub-precinct
 - Eddy Avenue Plaza – a 1,680 square metre publicly accessible plaza located in the north-eastern portion of the Sydney Terminal building
 - Western Terminal Extension Building Rooftop – a 970sqm publicly accessible space above the Western Terminal Extension Building Rooftop.
- Approximately 269,500 square metres of office gross floor area (GFA)
- Approximately 22,850 square metres of retail GFA
- Approximately 53,600 square metres of hotel GFA
- Approximately 84,900 square metres of residential accommodation GFA, providing for approximately 850 dwellings (assuming 1 dwelling per 100sqm GFA) - including a minimum 15% for the purposes of affordable housing.
- Approximately 47,250 square metres of education/tech space GFA
- Approximately 22,500 square metres of student accommodation GFA
- Approximately 14,300 square metres of community/cultural space GFA.

The key features of the Indicative Reference Master Plan, include:

- A network of new and enhanced open spaces linked by green connections. This will include:
 - A Central Green (Dune Gardens) at the north of Central Precinct that will create a new civic public realm extension of the Sydney Terminal building and a new vantage point for Central Sydney
 - A new Central Square which will deliver on the vision for a new public square at Central Station, as one of three major public spaces within Central Sydney connected by a people-friendly spine along George Street
 - Mortuary Station Park at Mortuary Station that will be a key public domain interface between Chippendale and the over-station development. that will draw on the story of Rookwood Cemetery and the Victorian Garden context with the established rail heritage of the Goods Line and the rail lines

- Henry Deane Plaza which will prioritise the pedestrian experience, improving connectivity and pedestrian legibility within the Western Gateway sub-precinct and provide clear direct links to and from the State heritage listed Central Station and its surrounds
- Eddy Avenue Plaza –will transform into a high-amenity environment with significant greening and an enhanced interface with the Sydney Terminal building.
- A new network of circulation that will establish a clear layer of legibility and public use of the place. This will include:
 - A 15-24 metre wide Central Avenue that is laid out in the spirit of other street layouts within Central Sydney and which responds to the position of the Central clocktower, providing new key landmark views to the clocktower. Central Avenue will be a place for people to dwell and to move through quickly. It brings together the threads of character from the wider city and wraps them
 - Three over-rail connections to enhance access and circulation through Central Precinct, as well as provide pedestrian and bicycle cross connections through the precinct
 - The extension of public access along the Goods Line from Mortuary Station Gardens, offering a new connection to Darling Harbour
 - New vertical transportation locations throughout the precinct allowing for seamless vertical connections
 - An active recreation system supports health and well-being through its running and cycling loops, fitness stations, distributed play elements, informal sports provision, and additional formal recreation courts.

The proposed land allocation for Central Precinct is described in Table 6-2 below.

Table 6-2 – Breakdown of allocation of land within Central Precinct

Land allocation	Proposed
Open-air rail corridor	101,755 sqm
Developable area	119,619 sqm
Public open space	19,185 sqm / 16% of Developable area
Other publicly accessible open space (Including movement zones, streets and links)	41,733 sqm / 35% of Developable area
Building area	58,661 sqm / 49% of Developable area
Central SSP total area	23.8 ha

The Indicative Reference Master Plan for Central Precinct is illustrated in Figure 6-3 below.

Figure 6-3 — Reference Master Plan
Source: Architectus and Tyrrell Studio

Built form illustrative GFA and land use mix

Central Precinct has the potential to deliver considerable floorspace to support a range of uses. An illustrative built form concept including land use mix and potential Gross Floor Area (GFA) is described adjacent.

Land use*	%
Commercial	52 %
Retail	4.5 %
Education/tech	9 %
Community/Cultural	3 %
Residential	16.5 %
Student housing	4.5 %
Hotel	10.5 %

*Excluding WGP

Sub-precinct	Total GFA per sub-precinct (sqm)*
ⓐ Station (terminal building)	15,800
ⓐ OSD Block A	165,400
A1	66,900
A2	48,900
A3	39,400
A4	4,100
A5	3,000
A6	3,100
ⓑ OSD Block B	88,900
B1	42,700
B2	37,200
B3	4,000
B4	5,000
ⓒ OSD Block C	109,700
C1	32,700
C2	28,500
C3	42,800
C4	3,400
C5	2,300
ⓓ Regent Street Sidings Block D	65,000
D1	33,300
D2	31,700
ⓔ Prince Alfred Sidings Block E	20,900
ⓕ Goulburn St Car Park	49,200
Total GFA (excluding Western Gateway)	514,900
ⓖ Western Gateway	275,000



176 Building numbers key plan

Central Precinct | Urban Design Framework | OFFICIAL



7. Aeronautical Impact Context

7.4 Scope & Extent of Aeronautical Assessment

The Central Precinct stretches from south to north along and around the rail corridor at Central Station at the southern end of the Sydney CBD, extending almost 500m to the north of the station on the eastern side to Goulburn Street (refer Figure 6-2 above). The aeronautical assessment covers the seven distinct sub-precincts:

- Central Station sub-precinct
- Northern OSD sub-precinct
- Southern OSD sub-precinct
- Regent St Sidings sub-precinct
- Prince Alfred Sidings sub-precinct
- Eastern Gateway sub-precinct
- Goulburn Street Car Park sub-precinct

In order to identify critical heights across the site, the aeronautical impact is assessed against the Reference Master Plan¹ — specifically, the top heights (RLs) of the taller building envelopes represented in the masterplan at key reference points.

In addition to providing a mapping of airspace height limits across the site, this approach also allows the documentation of specific height limits at various points around the site and height clearances available for cranes required for construction. This information can then be used by future developers, in conjunction with the proposed zoning heights indicated in the Draft Height of Buildings map and the constraints of the Sun Access Planes, for design development and construction planning (more details can be found in the Appendices in Section 13.7 Masterplan Building Heights & Airspace Impact, p77 and Section 13.8 Guiding Principles for Design & Construction, p79).

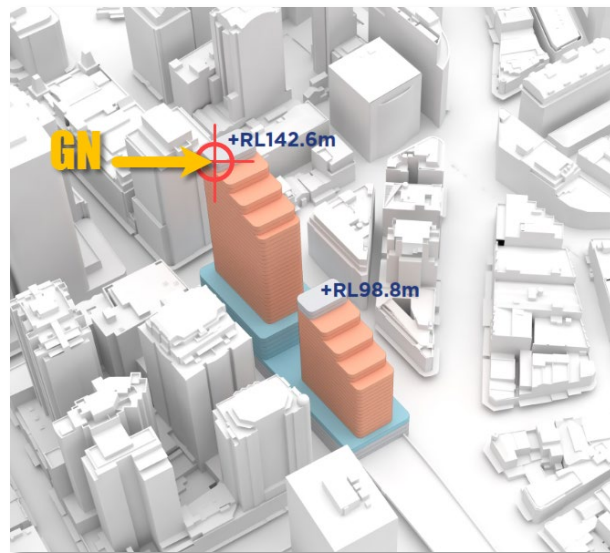
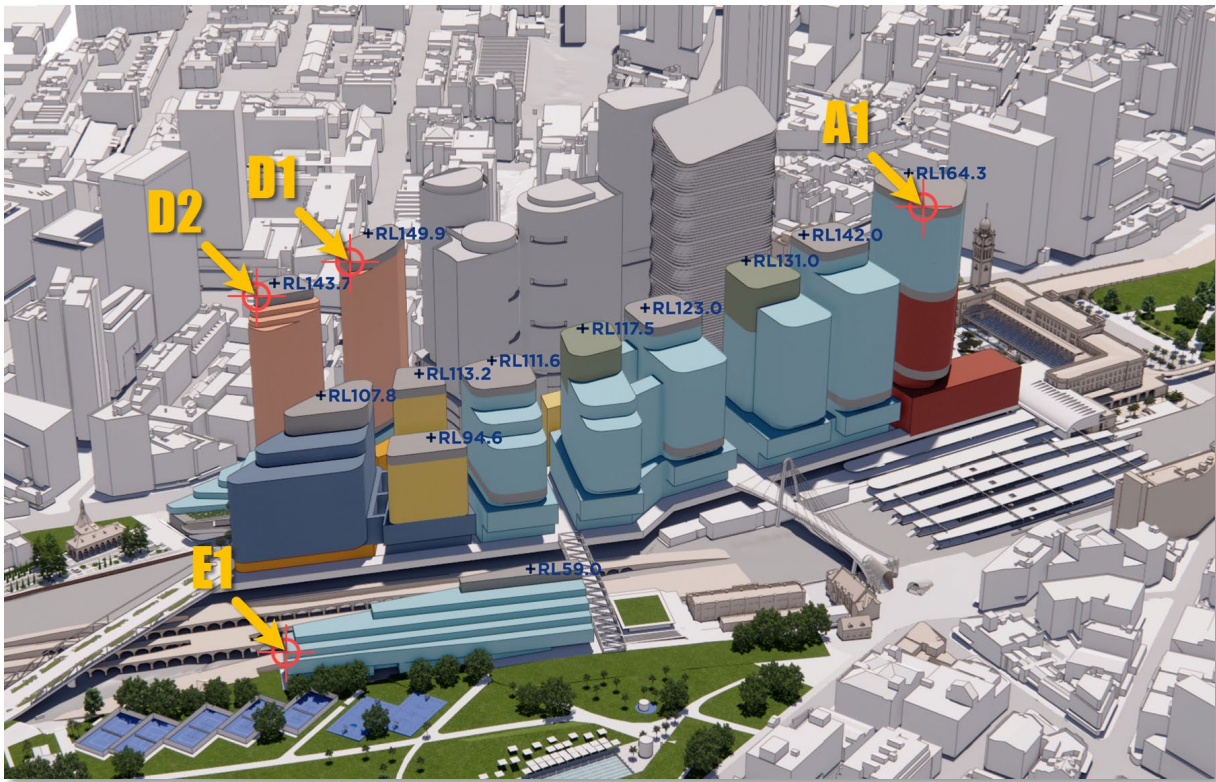
In terms of potential airspace impact on future development of the site, the focus of the aeronautical impact is on the taller buildings — ie, the tower buildings with more than 30 storeys — because these are the buildings identified as most likely to infringe the OLS and therefore requiring prior airspace approvals. These tower buildings are identified as A1, D1, D2 and the GN (the northern Goulburn Car Park building), are depicted in the masterplan proposal in Figure 7-1 below.

As the point closest to Sydney airport the corner point of building E1 is also included to represent the most restrictive location on the site.

¹ The maximum heights of the Reference Master Plan were informed by a baseline aeronautical impact assessment which examined the airspace height constraints of the Central Precinct, as well as other constraints such as the Sun Access Planes and inputs (eg, Floor Square Ratios) from other studies.

Figure 7-1 — Key Reference Points Used for Assessment of the Master Plan

Source: Architectus and Strategic Airspace



7.5 Key Reference Points used for Analysis

Not all buildings are individually assessed, as the differences in surface heights would be minimal and insignificant. For the purposes of assessment, reference points were established that will give an indication of the aeronautical constraints as they apply across the site. These points include the Building E1 rooftop at the point nearest to Sydney airport, the three tallest tower buildings (A1, D1 and D2) which surround the Western Gateway sub-precinct tower buildings, and the tallest point of Goulburn St Car Park building.

The reference points for each of the tower buildings have been set at the closest point of each tower building footprint to Sydney Airport. These reference points are illustrated in Figure 7-1 above and detailed, together with top heights of the building envelopes presented in the masterplan proposal, in Table 7-1 below.

As the closest of the buildings to the airport, the reference point for building E1 is also used as the general reference point for the overall precinct.

Table 7-1 – Assessment Reference Points, Coordinates & Heights (Tower Buildings)

Key Reference Points	Point	No of Floors	Assessment Heights (m AHD)*	WGS84 Geographic Coordinates	GDA94 Coordinates (Zone 56)
SW corner of plant room, max height of tallest building in Goulburn Car Park precinct	GN	37	142.6	33° 52' 42.98" S 151° 12' 31.62" E	334339.871 S 6249860.020 E
SW corner of tower envelope, max height of tallest building overall	A1	36	164.3	33° 53' 02.43" S 151° 12' 21.97" E	334102.261 E 6249256.605 S
SW corner of plant room, max height of tallest building in Regent Street Sidings precinct	D1	39	149.9	33° 53' 07.65" S 151° 12' 11.44" E	333834.512 E 6249091.169 S
SW corner of plant room, max height of high rise building nearest to YSSY	D2	37	143.7	33° 53' 09.51" S 151° 12' 10.69" E	333816.244 E 6249033.627 S
SW corner of roof, & Site Reference Point	E1	4	42.1	33° 53' 14.80" S 151° 12' 15.24" E	333935.964 S 6248872.560 E

* Assessment Heights – Indicative Max RLs of the Proposed Tower Envelopes

- It is assumed that the top heights of the masterplan proposal are top of building envelope heights, inclusive of all lift and plant overruns, rooftop furniture and vegetation, signage and antennae.
- Heights expressed in Metres Australian Height Datum (AHD)

7.6 Site Location relative to Sydney Airport

At its closest point, the precinct is located approximately 7 km (3.8 Nautical Miles (NM)) north-north-east of the Aerodrome Reference Point (ARP) of Sydney Airport, as shown in Figure 7-2 below.

The distance and bearing to the ARP and the northern ends of Runways 07/25 and 16L/34R are detailed in Table 7-2 below. Procedures to/from the western parallel runway, RWY 16R/34L, are considered irrelevant because those procedures must stay safely to the west of those for the eastern parallel runway – and therefore remain clear of the precinct.

Figure 7-2 — Central Precinct SSP in relation to Sydney Airport (Large Format)



Table 7-2 — Site Reference Point (E1) — Location in Relation to Sydney Airport

Airport Feature	Distance (Km)	Dist (NM)	Bearing (°T)	Bearing (°M)
Aerodrome Reference Point (ARP)	6.96	3.8	021.1	008
RWY16L Threshold	7.26	3.9	011.3	359
RWY25 Threshold	5.76	3.1	014.2	002

7.7 Methodology

The report considers the airspace of the closest major airport, Sydney International Airport.

With regard to the influence on the proposed development, the following elements of the airport's prescribed airspace have been considered.

7.7.1 Airspace Regulations & Pathways to Approval

The proposed development precinct is subject to the Airports (Protection of Airspace) Regulations (APAR), under the Commonwealth's Airports Act, 1996², because of its proximity to Sydney Airport and because of its proposed maximum height. These regulations define both: how building height limitations due to airspace safety can be determined; and the process for gaining approval of the proposed development under the regulations.

Regulation 2 of the APAR refers to Prescribed Airspace, and their impact upon building height limitations, are described below.

Further, Regulation 4 "*Ascertainment of OLS and PANS-OPS surfaces*" of the APAR refers to the source standards published by the International Civil Aviation Organisation (ICAO) that are fundamental standards used for determining OLS (ICAO Annex 14) and PANS-OPS (ICAO Doc 8168) protection surfaces. In Australia, reference to these standards should also include reference to any relevant Australian modifications or specifications made in the Civil Aviation Safety Regulations (CASR) Manual of Standards (MOS) Parts 139 and 173.

Where a proposed development would infringe the Prescribed Airspace, a height approval must be obtained from the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) prior to the intrusion into the airspace. A permanent intrusion, such as a building, is termed a *controlled activity*, and temporary intrusions that are not expected to continue longer than 3 months, such as cranes, are termed *short-term controlled activities*. The height restrictions for controlled and uncontrolled activities are different.

Height approvals under the APAR are not required for rezoning applications. They are required for buildings which would infringe the OLS and are required by local planning authorities prior to, or as consent conditions of, approval of Development Applications (DAs). Height approvals are usually not required prior to the time a crane would infringe the OLS, except where stipulated otherwise as a condition of a DA (of, on rare occasions, where required by the aviation authorities as a condition of an airspace height approval for a building).

7.7.1.1 Pathways to Approval under the APAR

Applications for height approval of a proposed development — for the entire sub-precinct or for individual tower buildings — under the APAR may be lodged at any time prior to the commencement of construction or, if necessary, prior to determination of a DA.

2 Further information on the Commonwealth's protection of airspace can be found at: <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation/aviation-safety/aviation-environmental-issues/protection-airspace>

Earlier-than-required applications (eg, even during evaluation of the SSP planning proposal) can be lodged — for the entire Central Precinct, or by tower building — to gain the certainty of attainable building heights in advance of proceeding to DA planning and submission stages. An early approval essentially secures the heights for future use.

This approach has been adopted for some urban redevelopment projects (eg, the Waterloo Metro Quarter Over Station Development) — with the advantage that the APAR approvals help to increase the marketing value of proposed development projects for sale to or in partnership with commercial developers.

Approval for a crane must be granted prior to the erection of the crane. Applications for approval under the APAR can be made at any time during the normal planning and approval processes.

An approval can be amended and re-submitted to obtain a new approval for a new height or for a building with a different footprint.

The usual steps for obtaining an approval are as follows:

- Lodge an application with the nearest airport — in this case, Sydney Airport.
 - Attach an Aeronautical Impact Statement (AIA) which has been prepared based on the proposal and then current airspace.
 - Attach summary application form(s).
- The evaluation process by Sydney Airport and stakeholders.
 - *The Airport:*
Makes its own evaluation and may make comments on a building application and/or request further information.
Forwards applications to: CASA, Airservices Australia and, if considered relevant to key airline stakeholders, for evaluation and formal responses — which are ultimately forwarded to DITRDC for their assessment of the application.
With crane applications the airport has the authority to approve or disallow an application, but in practice it will forward applications to the Department and the aviation agencies that have specialist expertise to evaluate an application.
 - *CASA:*
Assesses the OLS impact and safety implications.
If CASA responds that the proposal would in their opinion adversely affect the safety of air transport operation then DITRDC must refuse the application.
CASA may impose conditions on approval such as obstacle warning lights being installed on buildings or limitations on the operation of cranes.
 - *Airservices:*
Evaluates the proposal in relation to PANS-OPS procedures maintained by them, potential impact on communication, navigation and surveillance facilities as well as on air traffic control operations.
 - *Key Airline Operators:*
Assess the proposal for potential impact on their One-Engine Inoperative (OEI) contingency procedures.
- The airport must refer the application to DITRDC no later than 21 calendar days after its receipt.

- **DITRDC:**
Assesses the responses from Sydney Airport, the referral agencies and stakeholder airlines.
Under the APAR, they must make a determination on the application no later than 28 calendar days after referral from Sydney Airport (49 days from date of application), with the exception that the determination date may be pushed back if they have requested further information from the Proponent of the application. If a response from Airservices has not been received by the regulated determination date, DITRDC must refuse the application. However, that application can be reopened for a revised determination upon request of the Proponent once the Airservices response has been received by DITRDC.

Strategic Airspace is frequently engaged by Proponents to prepare and submit the application, and to manage the process for and on their behalf — including facilitating responses to technical queries, and handling liaison between the airport, CASA, Airservices, DITRDC and the Proponent — during the application process until a final determination is received.

7.7.1.2 Sunsetting of the Airports (Protection of Airspace) Regulations

The APAR are one of the set of regulations pursuant to the Airports Act 1996 that are due to sunset on 1st April 2024³. There is no clear information available at this time that describes the process that will replace the APAR, however DITRDC has provided an update on the legislative review process — see section 11.4 (p66).

7.7.2 Prescribed Airspace

Prescribed airspace, under these regulations, includes at minimum the following.

7.7.2.1 Obstacle Limitation Surfaces (OLS)

- The OLS surfaces are used to identify buildings and other structures that may have an impact upon the safety or regularity of aircraft operations at an airport. This impact depends upon both the type of operations at the aerodrome and which OLS surfaces are penetrated by a (proposed) building or structure.
- The OLS are flat and rising (invisible) surfaces around the airport. They are based on the geometry of the airport and its runways and therefore they rarely change.
- If a permanent building development (or temporary crane) that is proposed at a height that will penetrate (exceed) the height limit of an OLS surface, then an application must be made to DITRDC — via the closest airport, and with copies to any other potentially affected airport — for an airspace height approval prior to construction of the permanent development &/or erection of the temporary crane obstacle. Such applications should demonstrate the proposed building does not penetrate or adversely affect surfaces protecting the instrument flight procedures (PANS-OPS surfaces); radar vectoring; navigation infrastructure; or anything else that might affect the safety or regularity of operations at the airport.

³ <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation/aviation-legislation-regulation-policy/sunsetting-aviation-legislation>

7.7.2.2 PANS-OPS Surfaces

- PANS-OPS surfaces represent the protection surfaces for published instrument flight procedures to and from the airport. These surfaces comprise flat, sloping and complex surface components.
- PANS-OPS surfaces must not be penetrated by permanent buildings or structures. However, for a variety of reasons, PANS-OPS surfaces can and do change over time. Approval may be granted, under certain conditions, for temporary obstacles (such as cranes) which at their maximum height would infringe the limiting PANS-OPS surface, and in such cases operation at such heights would most likely be capped by the RTCC surface constraint (see below) and limited to 3 months duration.
- As flight procedures are changed from time to time (usually by Airservices), the PANS-OPS Surfaces Chart published by an airport may not reflect the current situation — which is why we not only reference the airport's plans but also review the published charts for current (or pending) instrument flight procedures and evaluate the associated PANS-OPS height limits. In this case analysis of the most recently published or known planned PANS-OPS instrument procedures is conducted using the PANS-OPS criteria published by ICAO and, where relevant, as modified or specified otherwise under the Australian MOS Part 173.

The regulations also make a provision for any factor which may be deemed to adversely affect the safety, regularity or efficiency of aircraft operations at an airport. In light of this, it is also necessary to consider the other factors.

7.7.2.3 Other Considerations

- **Sydney Airport's Declared Airspace Plans**
Once approved as Declared Airspace by DITRDC, become part of their Prescribed Airspace (refer also Section 8.1.1, p45).
In addition to the OLS and PANS-OPS charts, these additionally include:
 - Radar Terrain Clearance Charts (RTCC), which depict the areas and height limits related to the Minimum Vector Altitude (MVA) sectors used by Air Traffic Controllers when vectoring aircraft. The extent and heights of RTCCs may also be changed from time to time by Airservices. Where RTCC surface heights are lower than the PANS-OPS surfaces, they may be considered the applicable height restriction for permanent structures.
 - Lighting and visual guidance protection plans — used for approach guidance by aircraft, especially at night and in times of poor visibility.
 - Navaid and radar evaluation / protection surface plans.

Note: Airspace that is approved by DITRDC as Declared Airspace is considered part of an airport's Prescribed Airspace.

- **Sydney Airport's 2039 Master Plan**
As the most recent Master Plan, this is evaluated for changes to the airport and/or airspace infrastructure which are included in the approved Master Plan, and which may potentially supersede the published Declared

Airspace plans.
See also Section 8.1.2 (p45).

- Other Factors
 - Airline One-Engine Inoperative (OEI) (Contingency) Take-Off Splays
(as per Civil Aviation Order (CAO) 20.7 1b)
These are generally assessed independently by the airlines as part of their own evaluations of any given airspace height application, but in certain cases it may be prudent to evaluate any potential impact in advance.
 - As per the National Airports Safeguarding Framework (NASF⁴) – Guideline H: Proximity to the critical parts of flight paths to/from Strategic Helicopter Landing Sites (SHLS), which are usually limited to the helipads used by Helicopter Emergency Management Services (HEMS) at major trauma hospitals.
 - Other miscellaneous factors that may be considered as potential safety issues by any of the key stakeholders, and the Civil Aviation Safety Authority (CASA) in particular.

7.7.3 Note about Heights: Australian Height Datum (AHD) vs Above Ground Level (AGL)

All “heights” provided in this document are elevations expressed in metres in the Australian Height Datum (AHD) — and thus they are true elevations, and NOT heights above ground level (AGL).

For estimating maximum development heights AGL, the ground elevation^{AHD} should be subtracted from the airspace height limits^{AHD}.

Note also for aviation-related airspace height limits, any building height approval under the Airports (Protection of Airspace) Regulations is regarded as inclusive of the building itself, plus all rooftop furniture and overruns (plant buildings, lift risers, building management units, rooftop furniture and vegetation, antennae, signage, etc).

4 <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation/aviation-safety/aviation-environmental-issues/national-airports-safeguarding-framework/national-airports-safeguarding-framework-principles-and-guidelines>

8. Analysis

8.1 Sydney Airport's Prescribed Airspace & the Master Plan 2039

8.1.1 Sydney Airport's Prescribed Airspace Charts

Other than Sydney Airport's OLS Chart (Feb-2021), the airport's other declared airspace charts are outdated.

The PANS-OPS Protection Surfaces (Combined Current IALs and STARs) chart (effective Mar-2017, published by the airport in 2019) no longer fully reflects the PANS-OPS instrument flight procedures in use and planned for Sydney Airport. The PANS-OPS Omnidirectional Departure Critical Assessment Surfaces chart (Mar-2015) is obsolete because the underlying standards for height clearances for departure procedures has since changed, and the operational PANS-OPS departure procedures have also changed. Thus, the assessment of PANS-OPS surfaces herein is based on the latest PANS-OPS Instrument Flight Procedures (IFPs) published by Airservices. See also Section 8.3 (p48) and PANS-OPS Procedures.

All other published charts are date from 2015 and 2017. The navaid chart is obsolete by virtue of changes to the navigational aids and radar since publication. The Radar Terrain Clearance Chart (RTCC) should also be superseded because RTCC surface areas have since changed — but the sector overhead the site remains the same (refer Figure 8-5, p54).

8.1.2 Master Plan 2039

Sydney Airport's current approved Master Plan has a planning horizon to 2039. This supersedes the 2033 Master Plan that was referenced in the Study Requirements.

The 2039 Master Plan does not forecast any changes that would result in changes to the OLS or more constraining airspace over the site.

8.2 OLS Analysis

The location of the proposed re-development, with respect to the OLS⁵ of Sydney Airport, is shown in Figure 8-1 below. The image shows that the site is largely located under the Conical Surface, which slopes upwards (from the direction of the airport) across the site and levels off at 156.0m ADH before it passes over the Goulburn St car park. The OLS Conical Surface heights range from 127.1 - 156.0m AHD (where it becomes the Outer Horizontal Surface) as indicated by the 1m contours shown in Figure 8-1.

All but the tallest towers remain below the OLS, with only the A1, D1 and D2 towers penetrating the surface — Table 8-1 below provides an indication of the extent of

⁵ *Technical Note:* The OLS Conical Surface starts from the edge of the OLS Inner Horizontal Surface. The Inner Horizontal Surface has been generated by Strategic Airspace using the ICAO Annex 14 parameters, with distances from the Runway Ends (as specified in ICAO Doc 9137 Airport Services Manual, Part 6 Control of Obstacles).

infringement of the OLS (the numbers being based on the proposed heights of the towers in the Masterplan proposal).

The towers infringing the OLS would require height approval under the APAR prior to construction. In fact, under planning regulations height approval would be required prior to determination of a Development Application (DA) for the buildings (singularly or as a group). Infringement of the OLS in the general vicinity of the central station precinct is not unusual – existing developments in the Western Gateway precinct also infringe the OLS (ref Figure 8-2).

The low and mid-rise buildings will not infringe the OLS and therefore would not require approval under the APAR.

Figure 8-1 — Site in relation to the OLS for Sydney Airport with surface heights indicated for Key Points

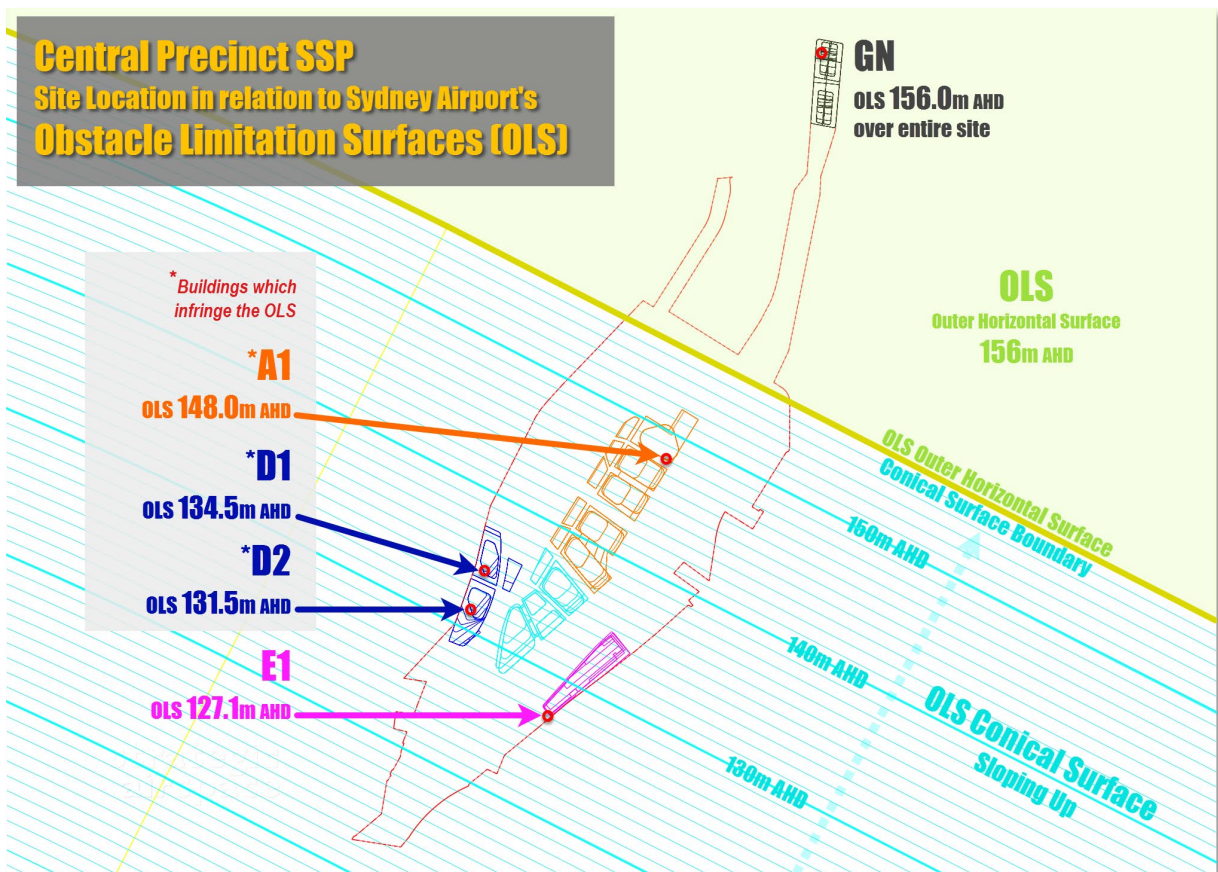


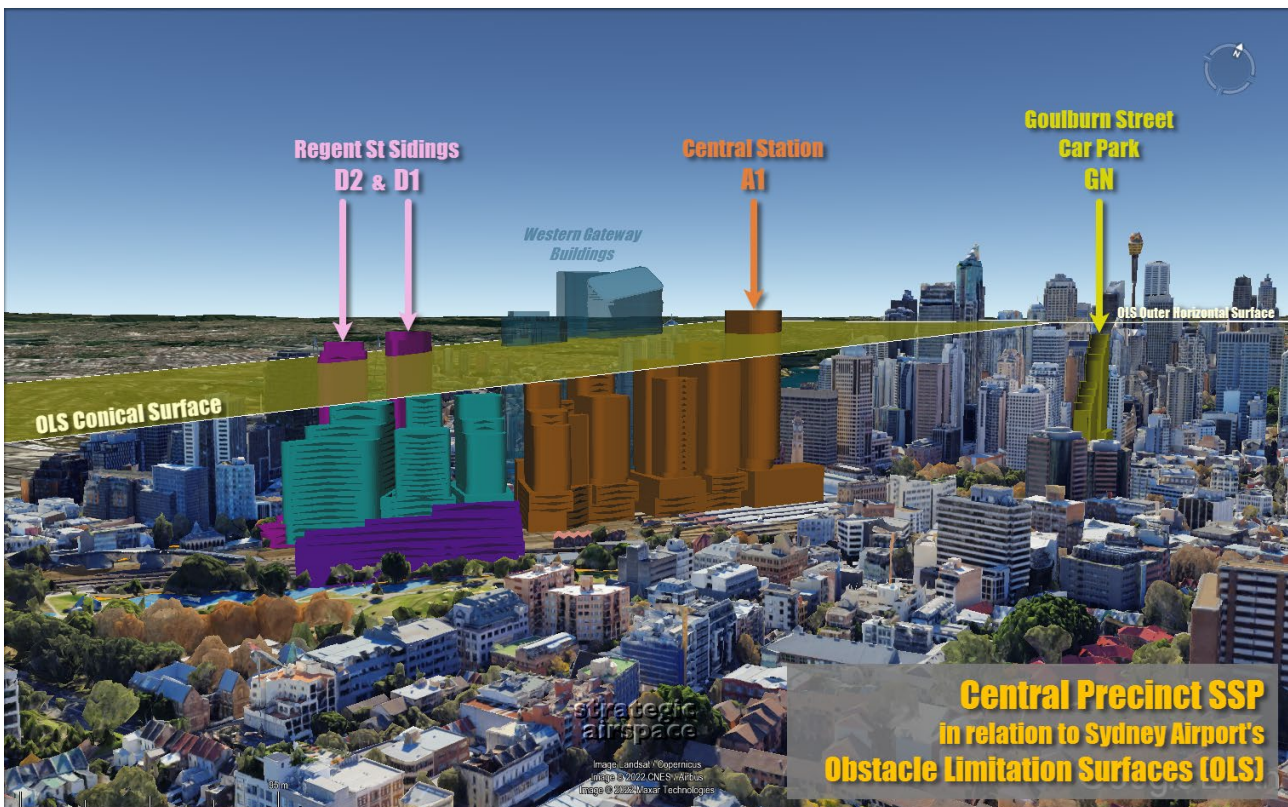
Table 8-1 – OLS Height Impact & APAR Application Implications

Location	Assessment Height (m AHD)	OLS Height		Approvability Comment
		Surface Height (m AHD)	Clearance / Infringement	
Central Precinct SSP		Range	-16.30 or lesser infringement	The infringing towers require prior approval under APAR because they infringe the OLS; approval is subject to the maximum building height not exceeding the lowest of the PANS-OPS and RTCC surfaces.
		127.1		
		-156.0		

The 4 Tallest Towers

GN	142.6	156.00	13.40	
A1	164.3	148.00	-16.30	Largest infringement of OLS
D1	149.9	134.55	-15.35	
D2	143.7	131.55	-12.15	

Figure 8-2 – Masterplan Proposal in 3D and the OLS Overlay (Viewed from the South-East)



8.3 PANS-OPS Analysis

In addition to reviewing the PANS-OPS (Approach) Surfaces chart of Sydney Airport's Prescribed Airspace (current at 2017, but published by the airport in 2019), assessment was conducted of the following instrument procedure types for Sydney Airport, as published in the Australian Aeronautical Information Publication (AIP) Departure and Approach Procedures (DAP), up to Amendment 169 (effective 02-Dec-2021 to 21-Mar-2022). Following items were checked against applicable criteria in ICAO PANS-OPS Doc 8168 Vol II (Construction of Visual and Instrument Flight Procedures):

- The Circling Minima and Minimum Sector Altitudes (MSAs) for existing PANS-OPS procedures
- The discrete minima for the Instrument Approach and Missed Approach Procedures.
- Standard Instrument Departure Procedures (SIDs)

Due to the changes in PANS-OPS procedures since the publication of Sydney Airport's PANS-OPS (Approach) Surfaces chart, and the fact that their Departure Surfaces chart is totally obsolete, imagery of the site location within the context of these charts is not shown.

Table 8-2 contains an overview of the key PANS-OPS surface heights over the site, and the details of assessment of the various PANS-OPS surfaces is contained in the following sub-sections. Figure 8-3 below depicts the height contours of the limiting PANS-OPS surfaces over the site.

Figure 8-3 — Site in relation to the Limiting PANS-OPS Procedure Surfaces

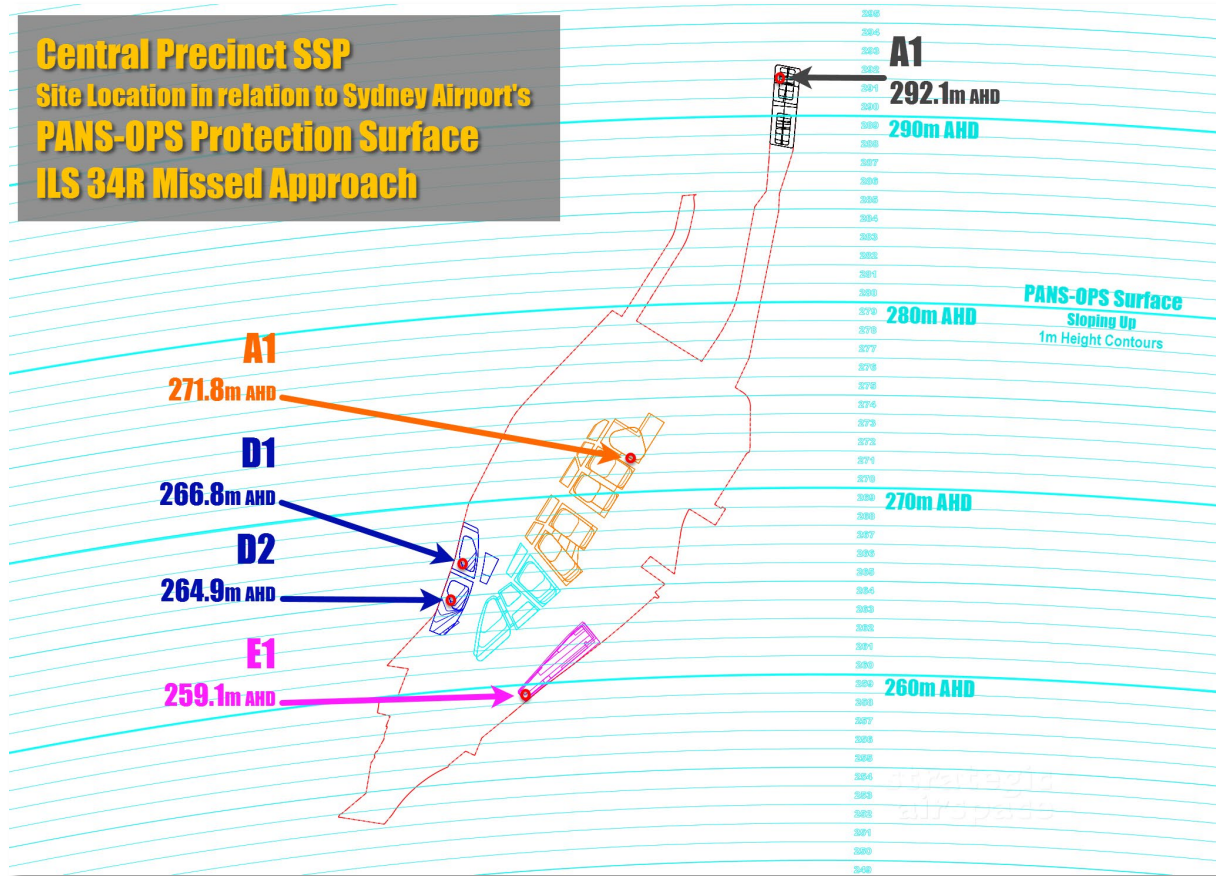


Table 8-2 — Sydney (YSSY) PANS-OPS Height Limit Summary

Procedure	Height Limit (m AHD) at E1	Description
Approaches and Missed Approaches to all Runways	≥ 259.1	Under the protection area for the turn in the missed approach procedures coming off the approach procedures for RWY 34R ⁶ . The most restrictive of these is the RWY34R ILS CAT I SA missed approach, which is a sloping surface with its lowest point over the site at assessment point E1.
Departures	≥ 261.5	Under the protection surfaces for the Omnidirectional Radar Departure from RWY07 and RWY34R — the latter being the most restrictive, which is a sloping surface with its lowest point over the site at assessment point E1.

⁶ *Technical Note:* The RWY34R missed approach Basic ILS, ILS OAS and PAOAS surfaces, as shown in the Sydney Airport's 2017 PANS-OPS chart, are considered irrelevant now as the missed approaches now rely on GNSS navigation. This is because of the requirement (effective from AIP DAP Amdt 169) for all RWY34R missed approaches to use a turning waypoint SSYST before continuing to waypoint SSYSH to the north-east.

Procedure	Height Limit (m AHD) at E1	Description
Circling Area	N/A	The precinct is in an area where the circling procedure is explicitly forbidden.
Minimum Sector Altitude (MSA)	340	The 10 NM Minimum Sector Altitude of 2100 ft imposes this surface height constraint across the entire site.
STARs	≥ 340	Outside the lateral protection areas or too high overhead to have any impact on the proposed development.

8.3.1 “Area” Procedures

A Minimum Sector Altitudes (MSAs)

The relevant sector is the inner 10 NM sector around the airport which has a 2100ft (~640m) minimum flight altitude.

Table 8-3 — Summary of MSA Surface Heights over the Key Reference Points

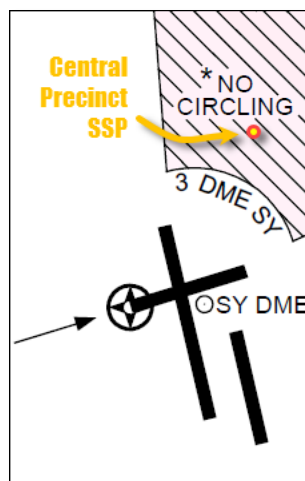
Procedure	Height Limit (m AHD)	Description
10NM MSA	Horizontal Surface: 340m	Covers the entire site. This surface height is based on the ICAO minimum obstacle clearance of 300m, giving a calculated value of 340.08m AHD. The value published in Sydney Airport’s PANS-OPS chart is 340m AHD.

8.3.1.1 Circling Minima

Not applicable: the site is in an area where circling procedure is explicitly forbidden (the north-eastern sector outside 3NM from SY DME).

Figure 8-4 — Site in relation to the No Circling Area

Source: Airservices Australia, Australian AIP DAP Amdt 169



8.3.1.2 STARs

The minimum segment altitude on any of the STARs surrounding Sydney Airport is 2,100ft, which would have a protection surface of 340m AHD or higher. A detailed study of the extent of impact by STARs is not included.

8.3.2 Instrument Approaches & Missed Approaches

The impact of each of the relevant PANS-OPS protection surfaces for current approach and departure procedures for Sydney Airport were evaluated.

The site is laterally clear of the protection surfaces of all approach procedures, except for the missed approach segment of the RWY34R approach procedures. Under the protection area for the right-hand turn in the missed approach, the most restrictive of the surfaces is that related to the ILS SA Cat I procedure missed approach which slopes up across the site. The lowest point of this protection surface is at E1. Analysis of the heights of the buildings against the sloping protection surface shows that the smallest clearance margin (between the top of the building envelope and the PANS-OPS surface at that point) is above building A1.

The limiting heights and the impact in relation to the key tall buildings are summarised in Table 8-4 below. Clearance information for all buildings can be found in the Appendices, Section 13.7 (p77).

Table 8-4 – Summary of Limiting PANS-OPS APPROACH Surface Heights & Height Clearances

		PANS-OPS Approach Surfaces		
Reference Point	Assessment Height (m AHD)	Procedure	Surface Height	Clearance / Infringement
GN	142.6	RWY 34R ILS MA	292.1	149.5
A1	164.3	RWY 34R ILS MA	271.8	107.5
D1	149.9	RWY 34R ILS MA	266.8	116.9
D2	143.7	RWY 34R ILS MA	264.9	121.2
E1	42.1	RWY 34R ILS MA	259.1	217.0
Other Tower Buildings		RWY 34R ILS MA		> 128.9

8.3.3 Departures

The departure procedures from RWY 07 and RWY 34R were evaluated for potential impact. Based on the data published in the Omnidirectional Radar Departures All Runways chart, the RWY 34R departure procedure was determined to be the most limiting of the PANS-OPS departure procedures. The limiting departure surface heights and the impact in relation to the masterplan are depicted in Table 8-5 below.

Table 8-5 – Summary of Limiting PANS-OPS DEPARTURE Surface Heights & Height Clearances

		PANS-OPS Departure Surfaces		
Location	Assessment Height (m AHD)	Procedure	Surface Height	Clearance / Infringement
GN	142.6	Radar Dep RWY34R	312.3	169.7
A1	164.3	Radar Dep RWY34R	281.4	117.1
D1	149.9	Radar Dep RWY34R	270.6	120.7
D2	143.7	Radar Dep RWY34R	267.7	124.0
E1	42.1	Radar Dep RWY34R	261.5	219.4
Other Tower Buildings		Radar Dep RWY34R		> 137.5

8.4 Other Assessment Considerations

The following table provides a brief assessment of other considerations.

Table 8-6 – Other Assessable Height Limitations – including the RTCC MVA Limit

Procedure	Height Limit (m AHD)	Description
Radar Terrain Clearance Chart (RTCC)	South: 152.4 North: 243.8	These height constraints are applicable over the Central Precinct. Refer Section 8.4.1 and Figure 8-5 below, and additionally Figure 8-8 below (p59).
Communications & Navigation Infrastructure Surfaces	N/A	The proposed development is too far from the airport to affect any ground-based navigation infrastructure. Refer Section 8.4.2 below.
Approach Lighting & VGSI Surfaces	N/A	The site is outside the lateral extent of published approach lighting surfaces.

Procedure	Height Limit (m AHD)	Description
Airline One-Engine Inoperative Procedures	N/A	<p>The OEI contingency procedures from RWY 34R (the most relevant take-off runway end), are designed and maintained by each of the passenger transport aircraft operators in accordance with CAO 20.7 1b, and other relevant regulations and operational approvals. These procedures are not part of the Prescribed Airspace. Airlines must ensure that their company procedures (which are specific to the performance of aircraft type, configuration, take-off weights, and so forth) have predetermined paths to follow in the event of engine-out incidents on and after take-off which will remain appropriately clear (vertically and laterally) from obstacles.</p> <p>The site is outside the straight splay area that is defined by the regulations for obstacle assessment. Further, the taller previously approved Western Gateway buildings are likely to be more demanding on the EOI procedures than the masterplan proposal for the Central Precinct.</p> <p>As such this proposal will not adversely affect any contingency procedures.</p>
External Lighting & Façade Reflectivity	N/A	<p>The Central Precinct is outside the defined vicinity from the airport where restrictions on external lighting are imposed.</p> <p>Further, reflectivity of the external façade of the tower buildings is not a concern because of the distance of the site from the airport.</p>
Wind Shear & Turbulence	N/A	<p>The masterplan proposal will not have any adverse turbulence and windshear impact on aircraft operations due to the distance of the site from the airport.</p>
Helicopter Procedures related to the Nearest Strategic Helicopter Landing Site (SHLS)	N/A	<p>There are no SHLS nearby the Central Precinct. The Harbour Bridge Five helicopter transit route to/from Sydney Airport via Central Station is to be flown at an altitude high enough so as to not be affected by the proposed development.</p> <p>Refer Section 8.4.4 (p55)</p>

There are no other considerations that might limit the building height at the project site.

8.4.1 Radar Terrain Clearance Chart (RTCC) Surfaces

The Radar Terrain Clearance Chart (RTCC) surfaces overhead the site protect airspace used by air traffic controllers as the lowest Minimum Vector Altitudes (MVA) they can use for vectoring aircraft. The RTCC surfaces are based on the

MVA sectors, but with large safety tolerances (the surface heights are 1000 feet (~305m) below the sector altitudes, and the extent of the surfaces are 5556m (3 NM) outside the MVA sector boundaries).

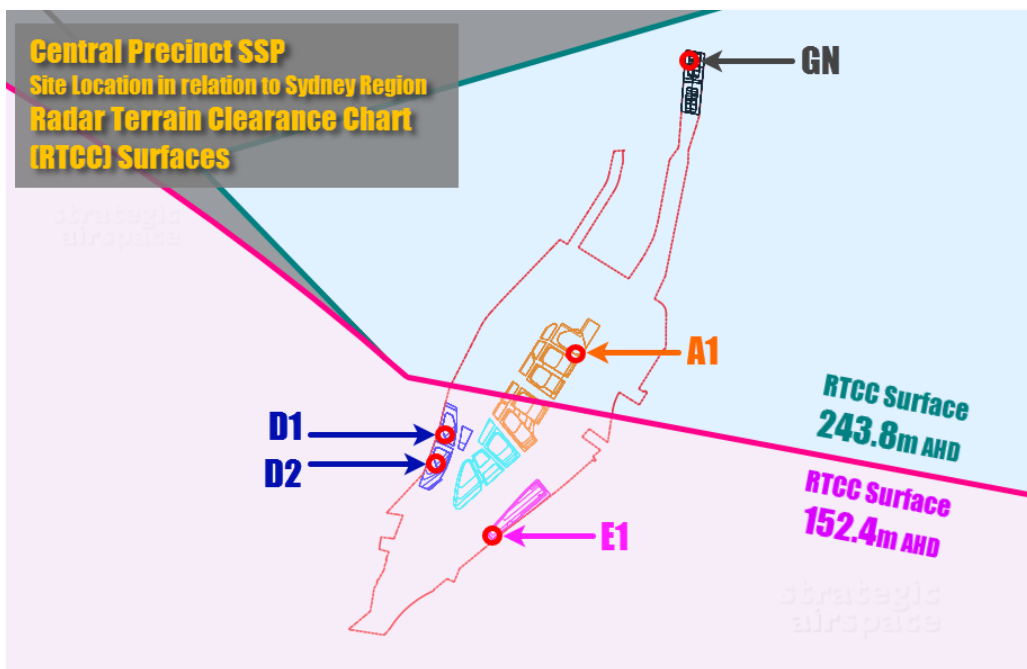
The lowest of the RTCC protection surfaces, with a height of only 152.4m AHD, covers all of the Regent Street Sidings, Prince Alfred Sidings and Southern OSD sub-precincts, and also covers some of the southern block of buildings in the Northern OSD sub-precinct.

The remainder of the Northern OSD sub-precinct as well as the Goulburn Car Park area are subject to a less restrictive RTCC surface with a height of 243.8m AHD (detail depicted below in Figure 8-5).

Table 8-7 – RTCC Surface Height & Tower Building Height Clearances

Location	Assessment Height (m AHD)	RTCC Surface	
		Surface Height	Clearance / Infringement
GN	142.6	243.8	101.2
A1	164.3	243.8	79.5
D1	149.9	152.4	2.5
D2	143.7	152.4	8.7
E1	42.1	152.4	110.3
Other Tower Buildings			> 36.6

Figure 8-5 – Site in relation to Sydney 2020 Radar Terrain Clearance Chart (RTCC) Surfaces



The RTCC is the lowest constraining surface over the site. Buildings and other permanent structures are not normally approvable at heights exceeding this surface.

As documented in Table 8-7 above, all buildings in the master plan proposal are below the relevant RTCC surface heights. The masterplan in relation to the RTCC surfaces are illustrated in a 3D view in Figure 8-8 below (p59).

8.4.2 Communication/Navigation/Surveillance (CNS) Facilities

Based on the location and maximum planned heights of the planning proposal, it is considered that there will be no adverse impact on the performance of any Airservices Australia's Precision and Non-Precision Navigation Aids, Anemometers, HF/VHF/UHF Communications, A-SMGCS, Radar, PRM, ADS-B, WAM or Satellite links required for safe and efficient operations at Sydney Airport.

8.4.3 Shielding

There are no taller existing developments in a location that would provide shielding to the masterplan proposal. The nearby buildings in the Western Gateway sub-precinct are planned for heights taller than adjacent buildings in the Central Precinct SSP, when built they may not provide significant shielding for the tower buildings in this proposal.

8.4.4 Helicopter Flight Paths

The National Airports Safeguarding Framework (NASF) requires that new developments do not adversely impact helicopter flight paths to/from Strategic Helicopter Landing Sites (SHLS), which includes hospital helipads. There are no SHLS nearby the proposed developments.

There is however a published helicopter route which passes directly over the Central Precinct, the Harbour Bridge Five helicopter route associated with Sydney Airport's controlled airspace. Helicopters flying along that route would pass overhead the site at an altitude of no less than 1000ft above mean sea level (305m AHD).

The route is one of the transit routes published for Sydney Airport to allow helicopter traffic to transit through controlled airspace between Sydney Airport and Sydney Harbour — using Central Station, Redfern Station and Erskineville Oval as key turning points. To avoid excessive overflight of central Sydney, the airport air traffic controllers generally prefer to route helicopter traffic via the less intrusive coastal routes. The Harbour Bridge Five route, though published, is an infrequently used route for helicopters transiting the area.

The Harbour Bridge Five route is to be flown visually and it is the helicopter pilot's responsibility to maintain suitable lateral and vertical clearance from obstacles (ie, buildings). As a visual route, there may be variance in the actual ground tracks (ie, the precise paths of where the pilots fly and turn). The published route itself is included for information in Helicopter Routes. In Figure 8-6 below, the nominal flight track is shown as a more solid line, and the surface area shown either side of the nominal flight path in represents a reasonable variation for helicopters traversing the route.

The proposed CPRP master plan will not have any adverse impact on this helicopter route in any case, especially as all proposed building envelopes will be lower than the Atlassian building which has already been approved as part of the Western Gateway sub-precinct and which is closer to the nominal helicopter turning point above Central Station than the tallest of the CPRP buildings (A1).

Figure 8-6 — Site in relation to Harbour Bridge Five Coded Helicopter Route – Top View

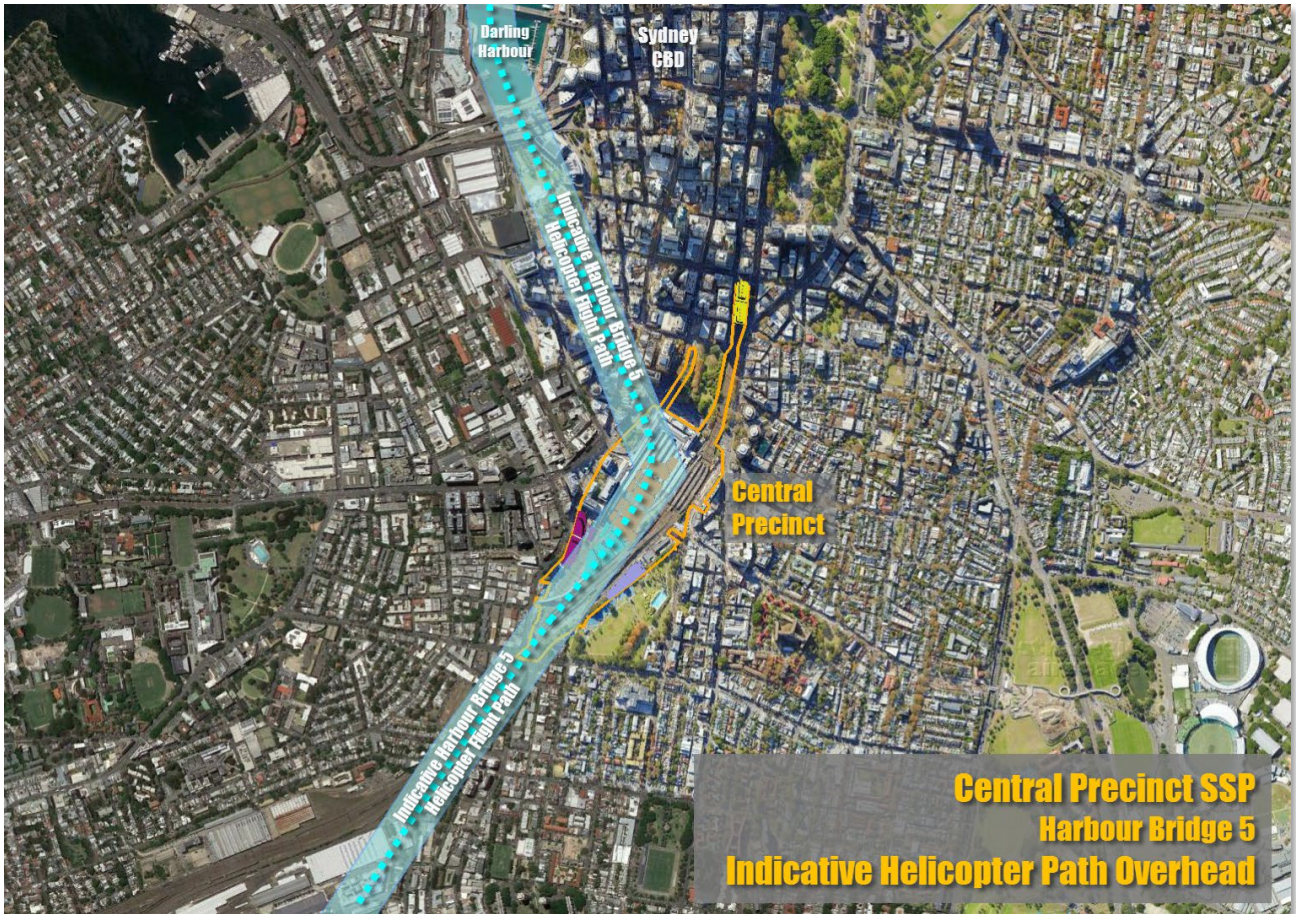
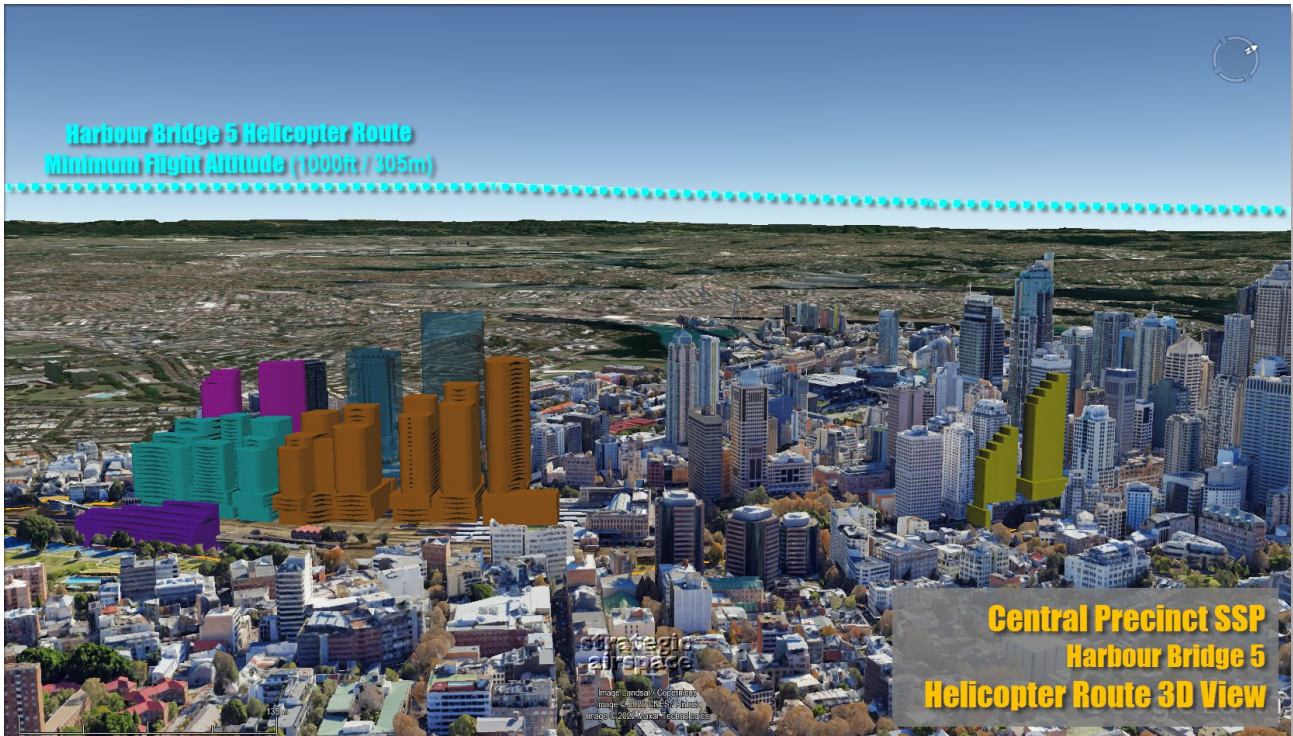


Figure 8-7 — 3D View of the Harbour Bridge Five Helicopter Route over the Central Precinct



8.5 Airspace Heights Summary

The key airspace heights over the Central Precinct, from lowest to highest, and their relevance to building height approvability under the APAR are summarised in the following table.

Table 8-8 — Analysis Summary — Airspace Height Constraints

Height Limits (m AHD)	Height Limit Detail	Comment
127.1 - 156.0	Obstacle Limitation Surface (OLS) — Conical and Outer Horizontal Surfaces	<p>APAR THRESHOLD HEIGHT</p> <p>The 3 tallest proposed tower buildings proposed would infringe the OLS, and thus would require height approval under the APAR by DITRDC.</p> <p>Infringement of the OLS in this case is not considered a barrier to approval of an application under the APAR.</p>
<p>South: 152.4</p> <p>North: 243.8</p>	Radar Terrain Clearance Chart (RTCC) / Minimum Vector Altitude (MVA) 1500 and 1800 Sector	<p>MAXIMUM EFFECTIVE BUILDING HEIGHT CONSTRAINTS</p> <p>As the RTCC surfaces are lower than the PANS-OPS surfaces over the site, these surfaces define the most constraining height limit for building developments.</p>

Height Limits (m AHD)	Height Limit Detail	Comment
		<p>The 3 towers which infringe the OLS would remain below this surface and are therefore considered technically approvable under the APAR.</p> <p>Cranes operating above this height, if approved, would also be subject to various operational constraints, including a maximum duration of 3 contiguous months.</p>
≥ 259.1	PANS-OPS Approach Surface — ILS RW34R Missed Approach	<p>MAXIMUM EFFECTIVE CRANE HEIGHT CONSTRAINT</p> <p>Whilst PANS-OPS surfaces normally define the maximum permissible building height, in this case the lowest of the PANS-OPS surfaces (that related to the ILS RWY34R Missed Approach) is higher than the RTCC and therefore less restrictive.</p> <p>The missed approach of the RWY 34R ILS procedure is the lowest PANS-OPS approach surface which slopes upward from its lowest point at E1, at the south of the Prince Alfred Sidings sub-precinct. See Table 8-4 (p51) for details.</p> <p>However, the PANS-OPS surface heights would also define the maximum permissible crane heights.</p>
≥ 261.5	PANS-OPS Departure Surface — Radar Departure RWY 34R	<p>The lowest of the PANS-OPS surfaces related to departures (most restrictive being the RWY34R Radar Departure) is higher and therefore less restrictive than the PANS-OPS approach surface mentioned above.</p>
N/A or Higher	Other Surfaces	<p>The site is outside the extent of other protection surfaces or the height limits are higher, and so are considered Not Applicable.</p>

Figure 8-8 — 3D View of the Masterplan & Limiting RTCC Surfaces (Large Format)



9. Crane Considerations

9.1 Potential Impact on Crane Heights

Crane types, the maximum height of cranes and crane operation duration limits (which may be imposed as part of crane height approvals) are likely to influence the length of the construction program and therefore cost and economic feasibility of constructing the tower buildings.

In this regard, the determining factor will be the heights at which cranes would be permitted to operate without an operations duration limit, and the height at which cranes may be permitted to operate but with a range of other operational conditions.

As with buildings, any crane that would infringe the OLS would require a prior height approval under the APAR. The RTCC surface will be the maximum height at which cranes would be approved without any special operational conditions or operating duration limit (see also section 9.2 below). Cranes would not be permitted to infringe the PANS-OPS surfaces (which are higher than those of the RTCC).

Table 13-4 in the Appendices, Section 13.7 (p77), summarises the height clearances of all buildings in relation to the RTCC surface heights and potential crane height impact. Figure 13-2 (p80) in the Appendices, Section 13.8 Guiding Principles for Design & Construction provides a visual reference for the approvability of cranes in relation to airspace surface types.

An extract from Table 13-4, Table 9-1 below shows only the buildings for which clearances between the top of the building envelopes (roof and overruns) and the limiting RTCC surfaces are $\leq 60\text{m}$, and therefore flagged as cases where crane operations will or may be subject to approval constraints.

Table 9-1 – Buildings for which Crane Operations will or may be Constrained

Building ID & Assessment Location			RTCC Surface		Crane Impact
			RTCC Surface Hgt	Hgt Clearance	Potential Crane Impact*
B1: SW corner of Tower	B1r	109.9	152.4	42.5	Potentially limited
B1: SW corner of Plant Room	B1p	123.0	152.4	29.4	YES
B2: SW corner of Tower	B2r	94.7	152.4	57.7	Probably limited
B2: SW corner of Plant Room	B2p	117.5	152.4	34.9	YES
C1: SW corner of Tower	C1r	90.9	152.4	61.5	Probably limited
C1: SW corner of Plant Room	C1p	111.6	152.4	40.8	Potentially limited
C2: SW corner of Tower	C2r	94.6	152.4	57.8	Probably limited
C2: SW corner of Plant Room	C2p	113.2	152.4	39.2	YES

Building ID & Assessment Location			RTCC Surface		Crane Impact
			RTCC Surface Hgt	Hgt Clearance	Potential Crane Impact*
C3: SW corner of Plant Room	C3p	107.8	152.4	44.6	Potentially limited
D1: SW corner of Tower	D1r	144.4	152.4	8.0	YES
D1: SW corner of Plant Room	D1p	149.9	152.4	2.5	YES
D2: SW corner of Tower	D2r	132.0	152.4	20.4	YES
D2: SW corner of Plant Room	D2p	143.7	152.4	8.7	YES

* Cranes which exceed the RTCC would likely be subject to a 3-month time limit & other operating conditions

It is assumed that a clearance of more than 60m will be sufficient for operating luffing cranes in almost all cases. In the table above, where the clearance is in the 50-60m range, the potential impact has been classified as ‘Probably limited’; in the 40-50m range, ‘Potentially limited’; and under 40m, ‘YES’ (it is assumed that cranes would have to infringe the RTCC surface and therefore be subject to duration and operating conditions).

Other items to consider:

- Hammerhead cranes require less space overhead the roof of buildings, but they have less lifting power than luffing cranes and therefore may be required for longer. Thus, for construction efficiency, the use of luffing cranes may be preferred, which means higher maximum heights.
- Staging of cranes and the use of self-climbing cranes can be used to minimise the time that a crane would exceed the RTCC surface (if ultimately an approval for infringement of the RTCC surface is accepted by Airservices Australia).

9.2 Background on Crane Approval Conditions

Because the RTCC surface protects the Minimum Vector Areas which are used by air traffic control (ATC) for manually vectoring (ie, directing) air traffic, a crane which infringes the RTCC surface is in the vertical safety zone of that MVA for which ATC has legal liability. It is for this reason that Airservices Australia seeks to minimise the duration of such infringements, where considered acceptable by them. Cranes which infringe the RTCC surface may be approved as *short-term controlled activities*, wherein the approved duration would be limited to no more than three contiguous months⁷.

⁷ An application for a crane which infringes the lowest AHD RTCC surface (152.4m AHD) but is well below the PANS-OPS surface height may include a proposal for relief of the 3-month operating duration constraint. This could be done on the basis of the close proximity of the building(s) to the edge of that RTCC surface (eg, for D1 and D2, approximately 40-170m) and arguably a safe operational distance from the edge of the actual 1500ft MVA sector boundary protected by that RTCC surface (eg, 5.4km / 2.9NM, the equivalent of 3% inside the outer edge of the 3NM buffer), and therefore of arguably acceptable low risk to ATCs when

Airservices Australia may also consider tower cranes on the site, even if for different tower buildings, as closely located cranes, in which case they may regard all cranes which have planned overlapping durations as a single instance of an infringement of the RTCC surface — which means that they would request the approving authority to limit all such cranes to the same 3-month contiguous period. Whilst not a key issue during the SSP planning process, it is a factor to consider in relation to the timing of building construction (refer also to the Appendices, Section 13.8 Guiding Principles for Design & Construction, p79).

Further, where a crane infringes the RTCC surface, an approval would contain a range of special operational conditions, including for example:

- The site supervisor being responsible for contact with Airservices Australia's designated ATC contact by radio and/or telephone.
- Lowering the crane at night and at times of low visibility (eg, low fog). In the case of low visibility occurring during the day, the operator would be required to lower the crane within 30 minutes of instruction from ATC).

Given the proximity of the Central Precinct to the CBD, it is likely that applications for cranes to operate at heights which would infringe the RTCC would be permitted, providing that the cranes at their maximum operating heights did not infringe the PANS-OPS surfaces above, with the operating conditions noted above.

In the case where infringements of the RTCC surface may not be approved, development plans for the tower buildings would have to take into account building and materials technologies, and craneage plans (range, type and staging of cranes), to be employed for construction of the upper levels of the taller buildings.

Airspace height approvals for cranes are not required for DA consent. They are only required prior to the time the crane would infringe the relevant OLS limit. However, for the taller tower buildings that have maximum elevations near the maximum permitted building height (ie, those identified in Table 9-1 above) it is advisable that any Aeronautical Impact Assessment reports in support of a height application for buildings demonstrates the feasibility of the buildings' construction by including consideration of airspace limits applicable to cranes.

vectoring aircraft in the 1500ft MVA. Airservices Australia would assess each such application on a case-by-case basis and provide their advice to DITRDC at the relevant times. Given the Regulations, one should plan on the basis that such a proposal may not be considered acceptable.

10. Obstacle Lighting Considerations as Safety Mitigations

The installation of obstacle lights on tall structures are a means of hazard reduction because they serve to enhance visibility of tall obstacles against the backdrop of other urban features to pilots of aircraft (including helicopters) whose top-down perspective would otherwise make it near impossible to identify such obstacles.

Any building which infringes the OLS and any building taller than 100m AGL may be subject to an approval condition that requires the installation and operation of obstacle warning lights on the building as a safety mitigation. Obstacle lights would most likely be required for the tallest tower buildings.

The actual requirement for obstacle lighting will be determined by CASA in accordance with MOS Part 139, Division 4 (Obstacle Lighting) when an application for a height approval under the APAR is assessed.

CASA has indicated that it is probable that not all tower buildings would require obstacle lights, but which ones cannot be determined in advance. The need for obstacle lighting for any given tower building would be assessed in relation to existing and approved tall buildings within the immediate vicinity for which obstacle lighting is already required.

11. Consultation

From the consultation undertaken, no recommended planning controls were highlighted as being required as part of the planning framework. That said, it is recommended that the proposed maximum building height controls of the proposed planning framework largely align with proposed building heights of the masterplan. This is to avoid potential implications in securing airspace height approval from relevant airspace agencies and authorities prior to or as part of subsequent development applications processes.

11.1 Sydney Airport

Consultation was undertaken with Sydney Airport Corporation Limited (SACL) on 21st January 2022. The airport representatives included the Head of Government and Community Relations, the Manager Airfield Spatial & Technical Planning, the Manager Airspace, and the Senior Airspace Protection Officer. A briefing presentation was provided to them before the consultation meeting.

Sydney Airport's policy is to not support the development of a permanent structure that infringes the airport's OLS. They also wish to protect against increasing encroachment of their airspace to maintain safety of current and future aircraft operations and also to preserve sufficient airspace to allow flexibility for potential future aircraft operations. At the same time, they accept that many of the tall buildings in the Sydney CBD already breach the OLS and understand that future height applications — for the precinct as a whole, or for sub-precincts or individual buildings — may be approved by DITRDC.

Sydney Airport defers to the advice of CASA (regarding safety impact and obstacle lighting conditions) and Airservices Australia (regarding operational safety and maximum permissible heights). It is this advice, together with feedback from stakeholder airlines, which is relied upon by DITRDC when making their determinations on height applications under APAR.

Sydney Airport suggested that one or more height applications under the APAR for the tower buildings could be lodged in advance — in which case any positive determination would provide certainty on the maximum development heights for the tower buildings (the approved heights and locations would in fact be reserved for future use within the conditions of the approval).

SACL additionally noted that any cranes or other equipment that would intrude into prescribed airspace would also require approval, and that it should not be assumed such approval will be granted. Any future application for such short-term controlled activities would be assessed on a case-by-case basis in accordance with the APAR and such cranes that potentially penetrate PANS-OPS should not be intended to remain in place for more than three months.

11.2 CASA

Consultation was undertaken with the two representatives of the Air Navigation, Airspace and Aerodromes Branch of the Civil Aviation Safety Authority — the Manager Communications, Navigation, Surveillance / Air Traffic Management (CNS/ATM) and an Aerodrome Specialist – Developments — on 24th January 2022. A briefing presentation was provided before the consultation meeting.

CASA does not take exception to tall buildings in the Sydney CBD, providing that they do not breach the limiting surfaces and that this information is confirmed by Airservices, and so the proposed scheme wherein all buildings remain lower than the limiting RTCC surface heights would likely be considered acceptable, subject to further detailed analysis.

Their recommendations on obstacle lighting for proposed developments subject to airspace height applications under APAR are made in accordance with the relevant Regulations (refer section 10, p63). Given the nature of the proposed masterplan and its location in relation to the CBD, they forecast that, when applications for height approvals are received, they would assess each building in relation to others already approved in the development and nearby and only recommend the installation of obstacle lights on key buildings (ie, the tallest within a certain vicinity of other tall buildings).

Regarding Sydney Airport's suggestion that one or more applications for the tower buildings in the CPRP masterplan be submitted early for advance approval, CASA noted that the DITRDC preferred applications on a building-by-building basis, rather than a single one for a set of buildings within the precinct or sub-precincts.

11.3 Airservices Australia

Airservices provided current RTCC sector data (as a CAD file) in early December 2021 for use for the baseline assessment of existing conditions and for the SSP study.

Consultation was undertaken with the Senior Advisor, Customer Engagement on 21st January 2022. A briefing presentation was provided before the consultation meeting.

Based on the briefing information provided, it was agreed that the maximum permissible airspace height limit for the planning proposal would be the RTCC surfaces over the site.

It was also considered likely that the RTCC surface height may be the limiting factor for cranes. However, if a future application for cranes for the site was considered acceptable by Airservices, they would normally be subject to a maximum operational period of 3 contiguous months (without extension) and other operational conditions. The potential for applications requesting relief of the 3-month operation duration constraint for cranes operating just inside the lowest RTCC surface area was discussed (as per Footnote 7, p61) was also canvassed. It was noted that the Airservices CNS/ATM specialists would review all information provided in the crane applications when making their assessments, but also that it is not possible to forecast what options they may consider acceptable for each given application at the relevant time.

It was also suggested that the planning proposal could be forwarded to Sydney Airport, CASA and Airservices for formal review and feedback — which would result in non-binding opinions. The alternative option suggested was to lodge a height application under the APAR for the tower buildings in the CPRP masterplan in advance — in which case a positive determination would provide certainty on the maximum development heights for the tower buildings (the approved heights and locations would in fact be reserved for future use within the conditions of the approval).

11.4 Department of Infrastructure (DITRDC)

11.4.1 Query re confirmed Height Approvals in the Central and Western Gateway Precincts

DITRDC was contacted to obtain firm information on existing height approvals for tall buildings in the Central and Western Gateway Precincts in November 2021, which could potentially be different from the maximum approved heights in the LEP. They have acknowledged the request but have been unable to respond yet due to a heavy workload.

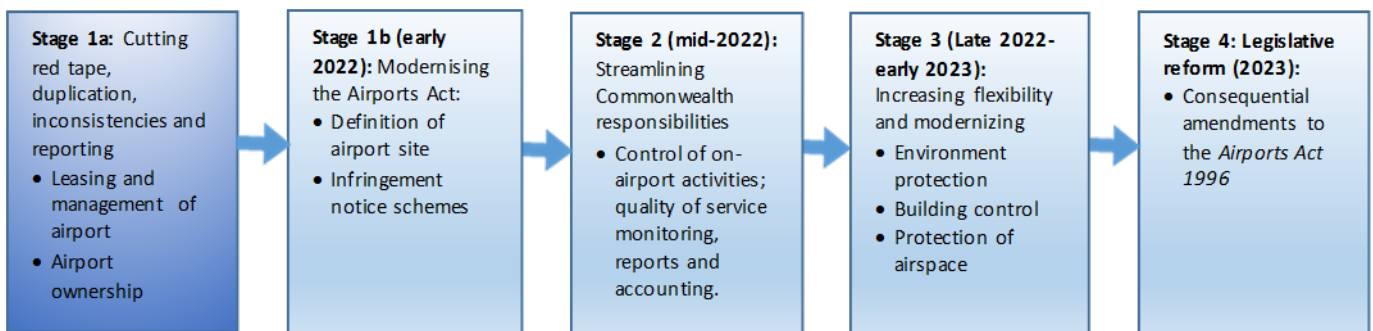
11.4.2 Consultation regarding the APAR Sunsetting

In response to a query regarding the sunseting process for the Airports (Protection of Airspace) Regulations and the underlying Airports Act 1996, what superseding regulations may look like, and how they might affect planning and application processes for developments requiring airspace height approvals beyond the sunset date, DITRDC provided the following information⁸:

The Australian Government is reviewing six legislative instruments under the *Airports Act 1996* due to sunset on 1 April 2024. The review presents an opportunity to examine the regulations thematically and streamline and modernise the current framework to reduce regulatory burden on the airports and their tenants, particularly as the sector emerges from, and adapts to, the impacts of COVID 19.

The regulations under review are: The Airports (Building Control) Regulations 1996, Airports (Control of On-Airport Activities) Regulations 1997, Airports (Environment Protection) Regulations 1997, Airports (Ownership—Interests in Shares) Regulations 1996, Airports (Protection of Airspace) Regulations 1996, and Airports Regulations 1997. Legislative changes to the *Airports Act 1996* will be considered in due course.

The review will be staged as follows and each stage will have an associated period of consultation:



⁸ Email 29th October 2021

For all stages of legislative review, we will notify key stakeholders when the department releases a discussion paper with further detail on proposed amendments and how to respond.

It is anticipated the consultation process on airspace protection issues will commence from mid-2022.

Previous conversations with the Department have indicated that the objective is to have a revised scheme which is able to better cater for major long-term projects (such as the CPRP), provides more flexibility, and overall is more holistic — ie, considers environmental and other aspects which are currently included as considerations in the National Airports Safety Framework (noted as an ancillary consideration in section 3.4.2C, p16) but which are not encoded in the current legislative and regulatory framework. Height approvals already granted under the APAR prior to the implementation of any superseding regulations will remain active.

[Consultant's Note: Given the verbally stated objective, the location of the Central Precinct SSP in relation to Sydney Airport and its airspace and flight procedures (and the technical basis upon which they are designed), it is considered that the risk of airspace-related height restrictions being made more constraining after the sunseting process is extremely low. However, gaining a height approval under APAR for the entire scheme based on the current master plan, before the sunset date, would however obviate any such risk.]

12. Conclusion & Recommendations

The masterplan proposal was assessed in relation to the approvability criteria set out in the Airports (Protection of Airspace) Regulations and with respect to the prescribed airspace and 2039 Master Plan of Sydney Airport.

12.1 Building Envelope Clearances & Airspace Approvability

The limiting OLS across the Central Precinct SSP is the Conical Surface which has a height sloping up from 127.1m AHD in the south-west to 156.0m AHD in the north-east. The taller of the proposed tower buildings and any cranes required during construction would infringe the OLS. Consequently, prior airspace-related height approvals under the APAR would be required for all buildings and ultimately any associated cranes that would penetrate that OLS.

By contrast, all low and mid-rise buildings in the masterplan proposal will be below the OLS, and therefore would not require prior height approvals under the APAR.

The most restrictive surfaces which define the maximum heights for building heights are the RTCC Surfaces. The higher RTCC surface, at a height of 243.8m AHD, covers the bulk of the precinct north of building D1. The lower RTCC surface, at a height of 152.4m AHD, covers the southern portion of the precinct. All buildings in the masterplan proposal are below the respective limiting RTCC surface heights. The height clearances of the three tallest towers are detailed in Table 12-1 below; all shorter buildings have increasingly larger clearance margins.

There are no other prescribed airspace surfaces or other operational factors that would be adversely affected by the masterplan proposal.

The general Pathways to Approval under the APAR are described in section 7.7.1 (p40).

Table 12-1 — Summary of Constraining Surface Heights over the Central Precinct SSP for Buildings which Require Approval under the APAR

Location	Assessment Height (m AHD)	OLS Surface Impact		Maximum Permissible Building Heights	
		Conical Surface Height (m AHD)	Clearance / Infringement	RTCC Surface Height (m AHD)	Clearance / Infringement
The 3 Tallest Towers					
A1	164.3	148.00	-16.3	243.8	79.5
D1	149.9	134.55	-15.3	152.4	2.5
D2	143.7	131.55	-12.1	152.4	8.7

12.2 Crane Heights & Airspace Approvability

Cranes operating below the RTCC surface heights would be given height approvals, but where approvals are granted for cranes which infringe the RTCC

surfaces they would be subject to limited durations and operational conditions. This potentially affects some of the taller buildings — B1, B2, C1, C2, C3, D1 and D2 — as discussed in section 9 (p60) and highlighted in Table 9-1 (p60). The use of cranes desired for optimal construction programmes may be affected by the height clearances between some of the taller buildings and the RTCC surfaces.

12.3 Certification

Based on the maximum heights of the building envelopes in the masterplan proposal, the proximity of the Central Precinct SSP to existing tall buildings in the Sydney CBD, and subject to the potential requirement for obstacle lights to be installed and operated on some of the taller of the tower buildings (subject to CASA recommendations at the time of any applications for height approval under the APAR), we certify that the masterplan proposal will not have an adverse impact on the safety, regularity or efficiency of air transport operations to/from Sydney Airport.

12.4 Recommendations

It is recommended that the proposed maximum building height controls of the proposed planning framework largely align with proposed building heights of the masterplan. This is to avoid potential implications in securing airspace height approval from relevant airspace agencies and authorities prior to or as part of subsequent development applications processes.

That said, where planning controls will permit buildings up to proposed maximum heights which exceed the current airspace limits — eg, as per the draft Height of Buildings map or Sun Access Plane (refer section 13.8.1 Building Airspace Height Limits versus LEP & Development Approval Heights (p80) — it is strongly recommended that site-specific provisions ensure consultation with Sydney Airport, the relevant airspace authorities and the Commonwealth airspace consent body to ensure that there will be no objections to the maximum height. Alternatively, any Stage 1 Concept DAs or similar must ensure that airspace approvals are gained prior to DA consent.

Section 13.8 Guiding Principles for Design & Construction (p79) in the Appendices also provides recommendations to developers and designers, and guidelines on how to address any differences in planning height controls and airspace height limits.

13. Appendices

13.4 Evidence of consultation

A common presentation which summarised the key findings was used as the basis of consultation discussions with Sydney Airport, CASA and Airservices Australia. Summaries of each meeting were provided to each agency to provide them with the opportunity to amend or add to the text proposed to be included in the report. Copies of responses from Sydney Airport and CASA are included herein. Airservices accepted the proposed text by phone, but a copy of the email sent to them is included for the record.

13.4.1 Consultation Response from Sydney Airport

From: [Peter Bleasdale](#)
To: [Cathy Pak-Poy](#); [Ted Plummer](#); [Ken Allcott](#); [Robert King](#)
Cc: [Hugh Thornton \(Hugh.Thornton@transport.nsw.gov.au\)](#)
Subject: RE: THANK YOU - Consultation: TfNSW/Sydney Airport - Central Precinct Renewal Project (CPRP) [21.019]
Date: Thursday, 27 January 2022 3:36:47 PM
Attachments: [image006.png](#)
[image007.png](#)
[image003.wmx](#)
[image004.png](#)

Thanks Cathy,

There's one point regarding tower cranes:

SACL noted that approval for any cranes or other equipment that would intrude into prescribed airspace would also be required and that it should not be assumed such approval will be granted. Any future application for such short-term controlled activities would be assessed on a case-by-case basis in accordance with the APAR and such cranes that potentially penetrate PANS-OPS should not be intended to remain in place for more than three months.

Regards

Peter Bleasdale
Manager, Airfield Spatial & Technical Planning

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sydneyairport.com.au



SYD Classification: Confidential

From: Cathy Pak-Poy <Cathy.PakPoy@strategicairspace.com>
Sent: Thursday, 27 January 2022 12:06 PM
To: Peter Bleasdale <peter.bleasdale@syd.com.au>; Ted Plummer <Ted.Plummer@syd.com.au>; Ken Allcott <Ken.Allcott@syd.com.au>; Robert King <robert.king@syd.com.au>
Cc: Hugh Thornton (Hugh.Thornton@transport.nsw.gov.au) <hugh.thornton@transport.nsw.gov.au>
Subject: THANK YOU - Consultation: TfNSW/Sydney Airport - Central Precinct Renewal Project (CPRP) [21.019]

Hi Peter, Ted, Ken and Rob

On behalf of our TfNSW and our team, I'd like to thank you for taking the time for the consultation meeting last week.

FYI, the results of your feedback have been summarised in the Draft SSP Study Report as follows:

Consultation was undertaken with Sydney Airport Corporation Limited (SACL) on 21st January 2022. The airport representatives included the Head of Government and Community Relations, the Manager Airfield Spatial & Technical Planning, the Manager Airspace, and the Senior Airspace Protection Officer. A briefing presentation was provided to them before the consultation meeting.

13.4.2 Consultation Response from CASA

From: [Parker, Brad](#)
To: [Cathy Pak-Poy](#)
Cc: [Hugh Thornton \(Hugh.Thornton@transport.nsw.gov.au\)](mailto:Hugh.Thornton@transport.nsw.gov.au); [Airspace Protection](#); [Aiezza, Tony](#)
Subject: RE: THANK YOU - Consultation: TfNSW/CASA - Central Precinct Renewal Project (CPRP), Sydney [21.019]
[SEC=OFFICIAL]
Date: Thursday, 27 January 2022 1:15:15 PM
Attachments: [image001.png](#)

OFFICIAL

Hi Cathy,

You are very welcome. We only have minor edits included in red below please:

Consultation was undertaken with the two representatives of the Air Navigation, Airspace and Aerodromes Branch of the Civil Aviation Safety Authority — the Manager Communications, Navigation, Surveillance / Air Traffic Management (CNS/ATM) and an Aerodrome Specialist – Developments — on 24th January 2022. A briefing presentation was provided before the consultation meeting.

CASA does not take exception to tall buildings in the Sydney CBD, providing that they do not breach the limiting surfaces and that this information is confirmed by Airservices, and so the proposed scheme wherein all buildings remain lower than the limiting RTCC surface heights would likely be considered acceptable, **subject to further detailed analysis**.

Their recommendations on obstacle lighting for proposed developments subject to airspace height applications under APAR are made in accordance with the relevant Regulations (refer section 6, p32). Given the nature of the proposed masterplan and its location in relation to the CBD, they forecast that, when applications for height approvals are received, they would assess each building in relation to others already approved in the development and nearby and only recommend the installation of obstacle lights on key buildings (ie, the tallest within a certain vicinity of other tall buildings).

Regarding Sydney Airport's suggestion that one or more applications for the tower buildings in the CPRP masterplan be submitted early for advance approval, CASA noted that the DITRDC preferred applications on a building-by-building basis, rather than a single one for a set of buildings within the precinct or sub-precincts.

Regards,

Brad

From: Cathy Pak-Poy <Cathy.PakPoy@strategicairspace.com>
Sent: Thursday, 27 January 2022 12:15
To: Aiezza, Tony <Tony.Aiezza@casa.gov.au>; Parker, Brad <Brad.Parker@casa.gov.au>
Cc: Hugh Thornton (Hugh.Thornton@transport.nsw.gov.au)
<hugh.thornton@transport.nsw.gov.au>
Subject: THANK YOU - Consultation: TfNSW/CASA - Central Precinct Renewal Project (CPRP), Sydney [21.019]

Hi Brad and Tony

On behalf of TfNSW and our team, I'd like to thank you for taking the time for the consultation meeting last week.

13.4.3 Consultation Summary for Airservices Australia

This was accepted verbally by Airservices Australia.

From: [Cathy Pak-Poy](#)
To: [Richard Tomlinson \(Richard.Tomlinson@airservicesaustralia.com\)](#)
Cc: [Hugh Thornton \(Hugh.Thornton@transport.nsw.gov.au\)](#)
Subject: THANK YOU - Consultation: TfNSW/Airservices - Central Precinct Renewal Project (CPRP), Sydney [21.019]
Date: Thursday, 27 January 2022 12:10:00 PM
Attachments: [image001.png](#)

G'day Richard

On behalf of TfNSW and our team, I'd like to thank you for taking the time for the consultation meeting last week.

FYI, the results of your feedback have been summarised in the Draft SSP Study Report as follows:

Airservices provided current RTCC sector data (as a CAD file) in early December 2021 for use for the baseline assessment of existing conditions and for the SSP study.

Consultation was undertaken with the Senior Advisor, Customer Engagement on 21st January 2022. A briefing presentation was provided before the consultation meeting.

Based on the briefing information provided, it was agreed that the maximum permissible airspace height limit for the planning proposal would be the RTCC surfaces over the site.

It was also considered likely that the RTCC surface height may be the limiting factor for cranes. However, if a future application for cranes for the site was considered acceptable by Airservices, they would normally be subject to a maximum operational period of 3 contiguous months (without extension) and other operational conditions. The potential for applications requesting relief of the 3-month operation duration constraint for cranes operating just inside the lowest RTCC surface area was discussed (as per the option discussed in Footnote 4, p32) was also canvassed. It was noted that the Airservices CNS/ATM specialists would review all information provided in the crane applications when making their assessments, but also that it is not possible to forecast what options they may consider acceptable for each given application at the relevant time.

It was also suggested that the planning proposal could be forwarded to Sydney Airport, CASA and Airservices for formal review and feedback — which would result in non-binding opinions. The alternative option suggested was to lodge a height application under the APAR for the tower buildings in the CPRP masterplan in advance — in which case a positive determination would provide certainty on the maximum development heights for the tower buildings (the approved heights and locations would in fact be reserved for future use within the conditions of the approval).

If I have missed or misstated anything, please advise by return email so that Airservices Australia's position and feedback can be corrected in the next version of the report.

Again, your time and input has been appreciated.

Regards,
Cathy

Cathy Pak-Poy Cathy.PakPoy@StrategicAirspace.com
Joint CEO

13.5 PANS-OPS Procedures Referenced

The versions of the IFPs consulted were from the AIP Amendment 169, effective from 02-Dec-2021 to 21-Mar-2022, current as of the date of commencement of this study — as indicated in Table 13-1 below. The charts shaded in light grey are not applicable to, or have been determined to be inconsequential, to the project site.

Table 13-1 — Appendix: PANS-OPS Instrument Flight Procedure Charts for Sydney Airport (AIP Amendment 169 – Effective 02-Dec-2021 to 21-Mar-2022)

SYDNEY (YSSY)

Chart	Effective Date	(Amdt No)
AERODROME CHART PAGE 1	2-Dec-2021	(Am 169)
AERODROME CHART PAGE 2	2-Dec-2021	(Am 169)
APRON CHART -INTERNATIONAL PAGE 1	2-Dec-2021	(Am 169)
APRON CHART -INTERNATIONAL PAGE 2	2-Dec-2021	(Am 169)
APRON CHART -DOMESTIC PAGE 1	7-Nov-2019	(Am 161)
APRON CHART -DOMESTIC PAGE 2	13-Aug-2020	(Am 164)
APRON CHART -DOMESTIC PAGE 3	13-Aug-2020	(Am 164)
STANDARD DOMESTIC TAXI ROUTES -ARRIVALS	7-Nov-2019	(Am 161)
STANDARD DOMESTIC TAXI ROUTES -DEPARTURES	7-Nov-2019	(Am 161)
NOISE ABATEMENT PROCEDURE PAGE 1	7-Nov-2019	(Am 161)
NOISE ABATEMENT PROCEDURE PAGE 2	2-Dec-2021	(Am 169)
NOISE ABATEMENT PROCEDURE PAGE 3	7-Nov-2019	(Am 161)
NOISE ABATEMENT PROCEDURE PAGE 4	21-May-2020	(Am 163)
NOISE ABATEMENT PROCEDURE PAGE 5	21-May-2020	(Am 163)
NOISE ABATEMENT PROCEDURE PAGE 6	7-Nov-2019	(Am 161)
NOISE ABATEMENT PROCEDURE PAGE 7	7-Nov-2019	(Am 161)
NOISE ABATEMENT PROCEDURE PAGE 8	7-Nov-2019	(Am 161)
NOISE ABATEMENT PROCEDURE PAGE 9	7-Nov-2019	(Am 161)
NOISE ABATEMENT PROCEDURE PAGE 10	7-Nov-2019	(Am 161)
AIRPORT EFFICIENCY PROCEDURES	7-Nov-2019	(Am 161)
IVA USER GUIDE PAGE 1	7-Nov-2019	(Am 161)
IVA USER GUIDE PAGE 2	7-Nov-2019	(Am 161)
PRM USER INSTRUCTIONS	17-Jun-2021	(Am 167)
SID SYDNEY TWO DEPARTURE (RADAR)	21-May-2020	(Am 163)
SID RWY 34L SOUTH WEST DEP (JET)	7-Nov-2019	(Am 161)
SID RWY 16R DEENA SEVEN (JET) (RNAV)	7-Nov-2019	(Am 161)
SID RWY 34R ENTRA FIVE (JET) (RNAV)	7-Nov-2019	(Am 161)
SID RWY 07 FISHA EIGHT (JET) (RNAV)	7-Nov-2019	(Am 161)
SID RWY 16R KAMPI FIVE (RNAV)	7-Nov-2019	(Am 161)
SID RWY 16L KEVIN SIX (RNAV)	21-May-2020	(Am 163)
SID RWY 16L ABBEY THREE (JET) (RNAV)	7-Nov-2019	(Am 161)
SID RWY 34R MARUB SIX (JET) (RNAV)	7-Nov-2019	(Am 161)
SID RWY 34L RICHMOND FIVE DEP (JET)	7-Nov-2019	(Am 161)
STAR BOREE THREE A ARRIVAL (RNAV)	5-Nov-2020	(Am 165)
STAR BOREE THREE P ARRIVAL (RNAV)	5-Nov-2020	(Am 165)

Chart	Effective Date	(Amdt No)
STAR MEPIL THREE ARRIVAL (RNAV)	21-May-2020	(Am 163)
STAR MARLN FIVE ARRIVAL (RNAV)	9-Sep-2021	(Am 168)
STAR ODALE SEVEN ARRIVAL (RNAV)	21-May-2020	(Am 163)
STAR RIVET THREE ARRIVAL (RNAV)	21-May-2020	(Am 163)
ILS OR LOC RWY 07	7-Nov-2019	(Am 161)
ILS OR LOC RWY 16L PAGE 1	9-Sep-2021	(Am 168)
ILS RWY 16L PAGE 2	9-Sep-2021	(Am 168)
ILS OR LOC RWY 16R PAGE 1	9-Sep-2021	(Am 168)
ILS RWY 16R PAGE 2	9-Sep-2021	(Am 168)
ILS OR LOC RWY 25	17-Jun-2021	(Am 167)
ILS OR LOC RWY 34L PAGE 1	9-Sep-2021	(Am 168)
ILS RWY 34L PAGE 2	9-Sep-2021	(Am 168)
ILS OR LOC RWY 34R PAGE 1	2-Dec-2021	(Am 169)
ILS RWY 34R PAGE 2	2-Dec-2021	(Am 169)
RNP RWY 07	9-Sep-2021	(Am 168)
RNP RWY 16L	9-Sep-2021	(Am 168)
RNP RWY 16R	9-Sep-2021	(Am 168)
RNP RWY 25	9-Sep-2021	(Am 168)
RNP RWY 34L	9-Sep-2021	(Am 168)
RNP RWY 34R	2-Dec-2021	(Am 169)
GLS RWY 07	7-Nov-2019	(Am 161)
GLS RWY 16L	9-Sep-2021	(Am 168)
GLS RWY 16R	9-Sep-2021	(Am 168)
GLS RWY 25	17-Jun-2021	(Am 167)
GLS RWY 34L	9-Sep-2021	(Am 168)
GLS RWY 34R	2-Dec-2021	(Am 169)

Last Modified: 2021-09-10

Source: AIP Book (02-Dec-2021 to 21-Mar-2022) via <http://www.airservicesaustralia.com/aip/aip.asp>

13.6 Helicopter Routes

The version of the relevant helicopter route consulted is from the AIP Amendment 169, effective from 02-Dec-2021 to 21-Mar-2022, current as of the date of this report.

The Helicopter Harbour Bridge Five route is published in the YSSY FAC:

AIP Australia

02 DEC 2021

FAC YSSY - 14

HARBOUR BRIDGE 5 - INBOUND (for arrival from R405B)

TR South Pylon of the Harbour Bridge to Darling Harbour thence Central Railway thence via the railway line to Redfern Railway Station, thence via Erskineville Oval; ALT 1,000FT; thence DCT to The Stamford on descent to 500FT.

Clearance Limit: The Stamford.

Contact TWR 124.7 at Erskineville Oval.

HARBOUR BRIDGE 5 - OUTBOUND (for entry to R405B)

TR via The Stamford to Erskineville Oval thence via Redfern Railway Station and the railway line to Central Railway thence DCT to Darling Harbour thence over water to South Pylon of the Harbour Bridge to enter R405B; ALT 1,000FT. FREQ change at Central Railway approved, control service terminated at Central Railway.

13.7 Masterplan Building Heights & Airspace Impact

The tables below detail the heights of identified buildings in the masterplan and the amount by which they infringe or are clear of (below) the OLS threshold, the lowest PANS-OPS surface and the upper limiting RTCC surfaces.

Table 13-2 – Critical Height Impacts: Key Buildings

Building ID & Assessment Location	No Floors	Height m AHD	MIN HGT & Clearance (APCHs & DEPs)			OLS Surface		RTCC Surface		
			Surface	MIN SFC HGT	Hgt Clearance	Hgt OLS SFC	Hgt Clearance	RTCC Surface Hgt	Hgt Clearance	
GN: GoulburnCarPark N High	GNp	37	142.60	ILS 34R MA SA CAT I	292.12	149.52	156.00	13.40	243.84	101.24
A1: SW corner of Tower	A1r	36	164.30	ILS 34R MA SA CAT I	271.82	107.52	148.00	-16.30	243.84	79.54
D1: SW corner of Plant Room	D1p	39	149.90	ILS 34R MA SA CAT I	266.77	116.87	134.55	-15.35	152.40	2.50
D2: SW corner of Plant Room	D2p	37	143.70	ILS 34R MA SA CAT I	264.88	121.18	131.55	-12.15	152.40	8.70
E1: SW corner of Podium	E1r	4	42.10	ILS 34R MA SA CAT I	259.10	217.00	127.10	85.00	152.40	110.30

Table 13-3 – Critical Height Impacts: All Buildings

Building ID & Assessment Location	No Floors	Height m AHD	MIN HGT & Clearance (APCHs & DEPs)			OLS Surface		RTCC Surface		
			Surface	MIN SFC HGT	Hgt Clearance	Hgt OLS SFC	Hgt Clearance	RTCC Surface Hgt	Hgt Clearance	
A1: SW corner of Tower	A1r	36	164.30	ILS 34R MA SA CAT I	271.82	107.52	148.00	-16.30	243.84	79.54
A2: SW corner of Tower	A2r	25	128.90							
A2: SW corner of Plant Room	A2p	28	142.00	ILS 34R MA SA CAT I	270.93	128.93	145.65	3.65	243.84	101.84
A3: SW corner of Tower	A3r	23	119.60							
A3: SW corner of Plant Room*	A3p	26	131.00	ILS 34R MA SA CAT I	269.67	138.67	143.40	12.40	243.84	112.84
B1: SW corner of Tower	B1r	20	109.90							
B1: SW corner of Plant Room	B1p	23	123.00	ILS 34R MA SA CAT I	267.86	144.86	140.15	17.15	152.40	29.40
B2: SW corner of Tower	B2r	16	94.70							
B2: SW corner of Plant Room	B2p	22	117.50	ILS 34R MA SA CAT I	266.65	149.15	137.90	20.40	152.40	34.90
C1: SW corner of Tower	C1r	15	90.90							
C1: SW corner of Plant Room	C1p	20	111.60	ILS 34R MA SA CAT I	265.12	153.52	135.05	23.45	152.40	40.80
C2: SW corner of Tower	C2r	18	94.60							
C2: SW corner of Plant Room	C2p	24	113.20	ILS 34R MA SA CAT I	264.35	151.15	133.20	20.00	152.40	39.20
C3: SW corner of Tower	C3r	15	89.20							
C3: SW corner of Plant Room	C3p	19	107.80	ILS 34R MA SA CAT I	263.15	155.35	130.60	22.80	152.40	44.60
D1: SW corner of Tower	D1r	38	144.40							
D1: SW corner of Plant Room	D1p	39	149.90	ILS 34R MA SA CAT I	266.77	116.87	134.55	-15.35	152.40	2.50
D2: SW corner of Tower	D2r	34	132.00							
D2: SW corner of Plant Room	D2p	37	143.70	ILS 34R MA SA CAT I	264.88	121.18	131.55	-12.15	152.40	8.70
E1: SW corner of Podium	E1r	4	42.10	ILS 34R MA SA CAT I	259.10	217.00	127.10	85.00	152.40	110.30
E1: SW corner of Plant Room	E1p	8	59.00	ILS 34R MA SA CAT I	262.49	203.49	133.55	74.55	152.40	93.40
GS: GoulburnCarPark S Low	GSr	16	74.00							
GS: GoulburnCarPark S High	GSp	24	98.80	ILS 34R MA SA CAT I	289.76	190.96	156.00	57.20	243.84	145.04
GN: GoulburnCarPark N Low	GNr	29	117.80							
GN: GoulburnCarPark N High	GNp	37	142.60	ILS 34R MA SA CAT I	292.12	149.52	156.00	13.40	243.84	101.24

The following table documents the potential feasibility of cranes to operate without infringing the RTCC surface, based on the height differences between the

top of the building envelope (roof top and plant overrun). 'No Impact' is assumed where there is a clearance of more than 60m.

Table 13-4 — Assessment of Potential Crane Height Impact: All Buildings

Building ID & Assessment Location				RTCC Surface		Crane Impact
				RTCC Surface Hgt	Hgt Clearance	Potential Crane Impact*
No Floors	Height m AHD					
A1: SW corner of Tower	A1r	36	164.30	243.84	79.54	No
A2: SW corner of Tower	A2r	25	128.90	243.84	114.94	No
A2: SW corner of Plant Room	A2p	28	142.00	243.84	101.84	No
A3: SW corner of Tower	A3r	23	119.60	243.84	124.24	No
A3: SW corner of Plant Room*	A3p	26	131.00	243.84	112.84	No
B1: SW corner of Tower	B1r	20	109.90	152.40	42.50	Potentially limited
B1: SW corner of Plant Room	B1p	23	123.00	152.40	29.40	YES
B2: SW corner of Tower	B2r	16	94.70	152.40	57.70	Probably limited
B2: SW corner of Plant Room	B2p	22	117.50	152.40	34.90	YES
C1: SW corner of Tower	C1r	15	90.90	152.40	61.50	No
C1: SW corner of Plant Room	C1p	20	111.60	152.40	40.80	Potentially limited
C2: SW corner of Tower	C2r	18	94.60	152.40	57.80	Probably limited
C2: SW corner of Plant Room	C2p	24	113.20	152.40	39.20	YES
C3: SW corner of Tower	C3r	15	89.20	152.40	63.20	No
C3: SW corner of Plant Room	C3p	19	107.80	152.40	44.60	Potentially limited
D1: SW corner of Tower	D1r	38	144.40	152.40	8.00	YES
D1: SW corner of Plant Room	D1p	39	149.90	152.40	2.50	YES
D2: SW corner of Tower	D2r	34	132.00	152.40	20.40	YES
D2: SW corner of Plant Room	D2p	37	143.70	152.40	8.70	YES
E1: SW corner of Podium	E1r	4	42.10	152.40	110.30	No
E1: SW corner of Plant Room	E1p	8	59.00	152.40	93.40	No
GS: GoulburnCarPark S Low	GSr	16	74.00	243.84	169.84	No
GS: GoulburnCarPark S High	GSp	24	98.80	243.84	145.04	No
GN: GoulburnCarPark N Low	GNr	29	117.80	243.84	126.04	No
GN: GoulburnCarPark N High	GNp	37	142.60	243.84	101.24	No

* Cranes which exceed the RTCC would be subject to a 3-month time limit & other operating conditions

13.8 Guiding Principles for Design & Construction

Key issues to observe and consider during the design process and construction planning are:

- The maximum airspace heights considered approvable for the building(s).
- The fact that planning height approvals may not be consistent with maximum airspace heights.
- Crane heights in relation to various airspace limits and the consequential impact on crane plans and construction timing and costs.

The following diagrams provide a quick visual reference as to the relationship between airspace heights and approvability implications for buildings and cranes.

As noted in Section 9 Crane Considerations (p60), knowing the airspace height constraints can be used to advantage during construction planning and costing — especially when cranes will be required to exceed the RTCC surface height for completion of upper levels of tall tower buildings and therefore result in a 3-month duration limit and other operational conditions as part of a crane approval. Crane type selection, staging cranes, use of self-climbing tower cranes, and even use of roof-top mini mobile cranes should all be considered to facilitate the length of time cranes can be used whilst also minimising impact on airspace.

Figure 13-1 — Visual Reference Guide: Airspace Surfaces & Building Approvability

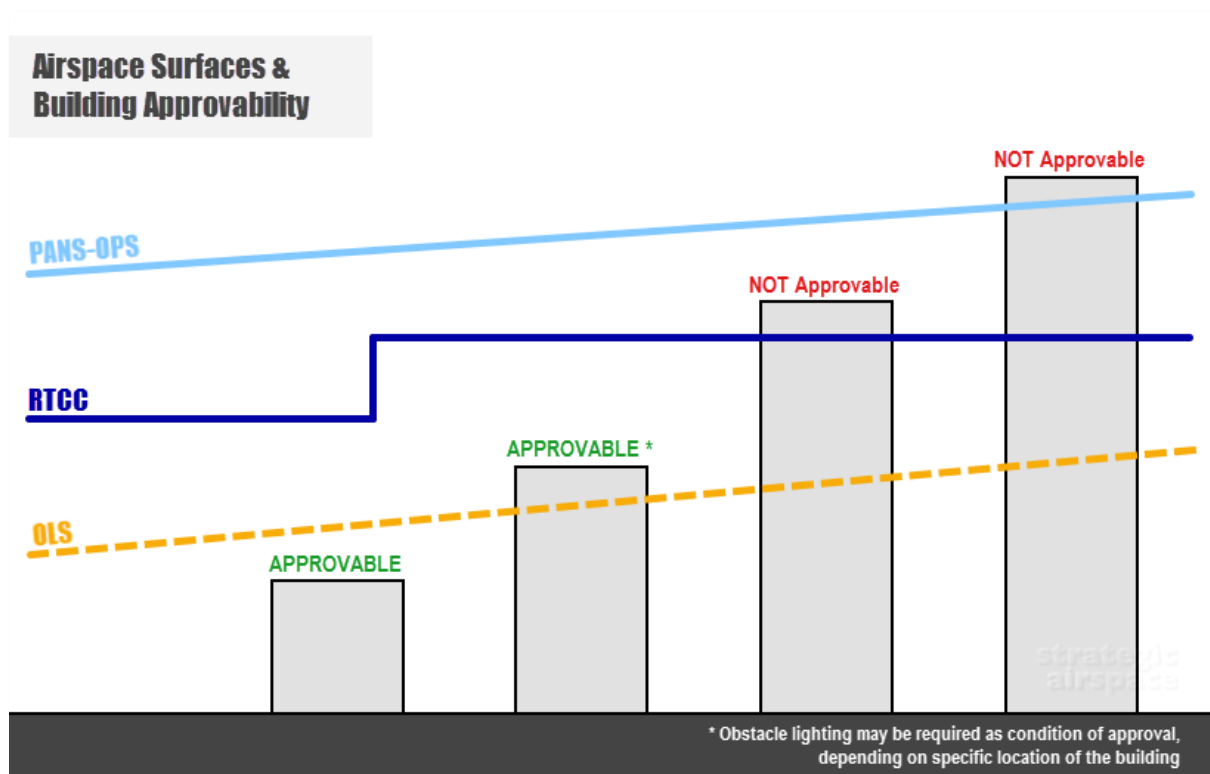
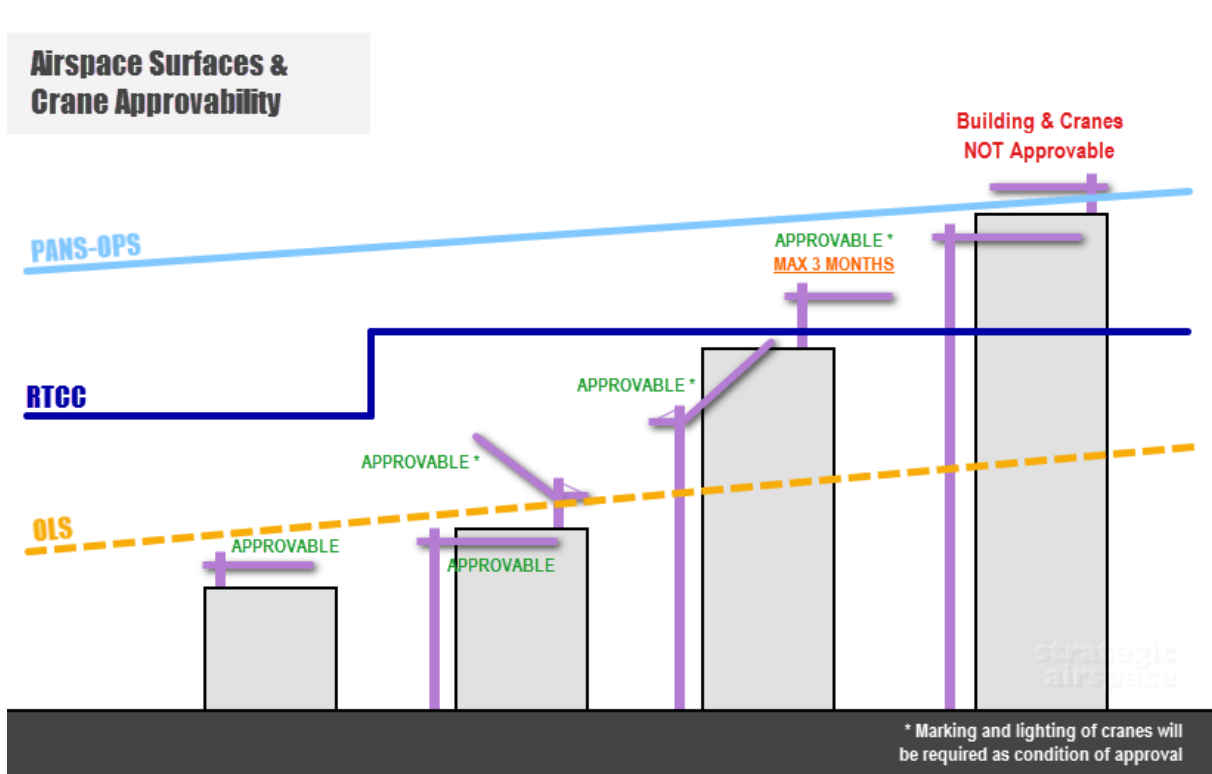


Figure 13-2 — Visual Reference Guide: Airspace Surfaces & Crane Approvability



13.8.1 Building Airspace Height Limits versus LEP & Development Approval Heights

The LEP may state that development consent may not be granted to a building that exceeds the relevant height specified in the Height of Buildings (HOB) Map. It must be noted however that despite the mapped height or any other planning height condition (eg, a sun protection plane), approval may not be granted for a building that causes adverse impact on the operational safety of Sydney Airport.

For example, in the draft Central Precinct SSP Height of Buildings Map shown in Figure 13-3 below, the building height limit in the area encompassing buildings D1 and D2 in the masterplan proposal is higher than the assessed airspace height limit.

The same applies to the RL160 sun protection plane covering part of the same area (refer Figure 13-4 below). The height differences between the masterplan proposal and the sun access planes are well illustrated in the 3D image in Figure 13-5.

The other key point to note is that a development height approval is usually to top of roof height — it does not necessarily include rooftop structures such as plant and lift overruns, rooftop furniture and vegetation, building maintenance units (BMUs), signage, antennae and so forth. By contrast, all such rooftop structures must be no higher than the relevant airspace height limit if the building is to be granted an airspace height approval under the APAR.

Figure 13-3 — Central Precinct SSP Height of Buildings Map (Draft)

Source: Ethos Urban



Central Precinct SSP

Height of Building Map

DRAFT

LEGEND

Subject Land

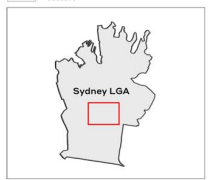
Maximum Building Height (m)

A	3	Y	35
E	6	W1	40
H	7.5	W2	42
I	8	X	45
J	9	Y	50
K	11	Z	55
L	12	AA1	60
M	15	AA2	65
N	18	AA3	70
O	22	AB1	80
P	23	AB2	85
Q	24	AC	110
R	25	AD	130
S	27	AE	150
T	28	AF	235
U	29	Area 1	
V	30	Area 2	
W	33	Area 3	

Maximum Building Height (m)

RL 35	RL 134
RL 39	RL 140.2
RL 55	RL 148
RL 66	RL 180
RL 67	RL 204

Cadastre



Scale 1:5000@A3

Projection: MGA Zone66
Datum: GDA84

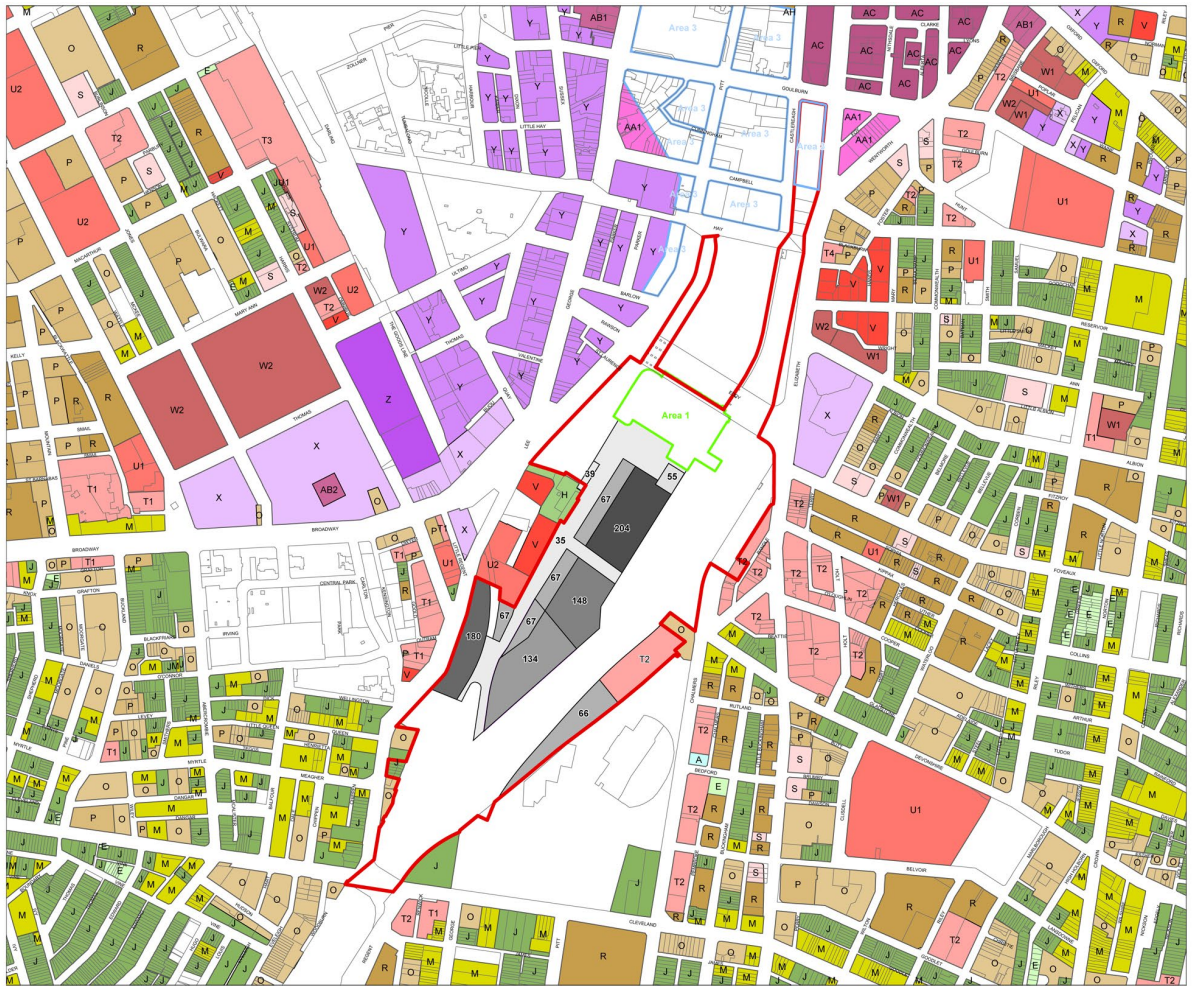


Figure 13-4 — Prince Alfred Park Sun Access Plane Map

Source: Architectus

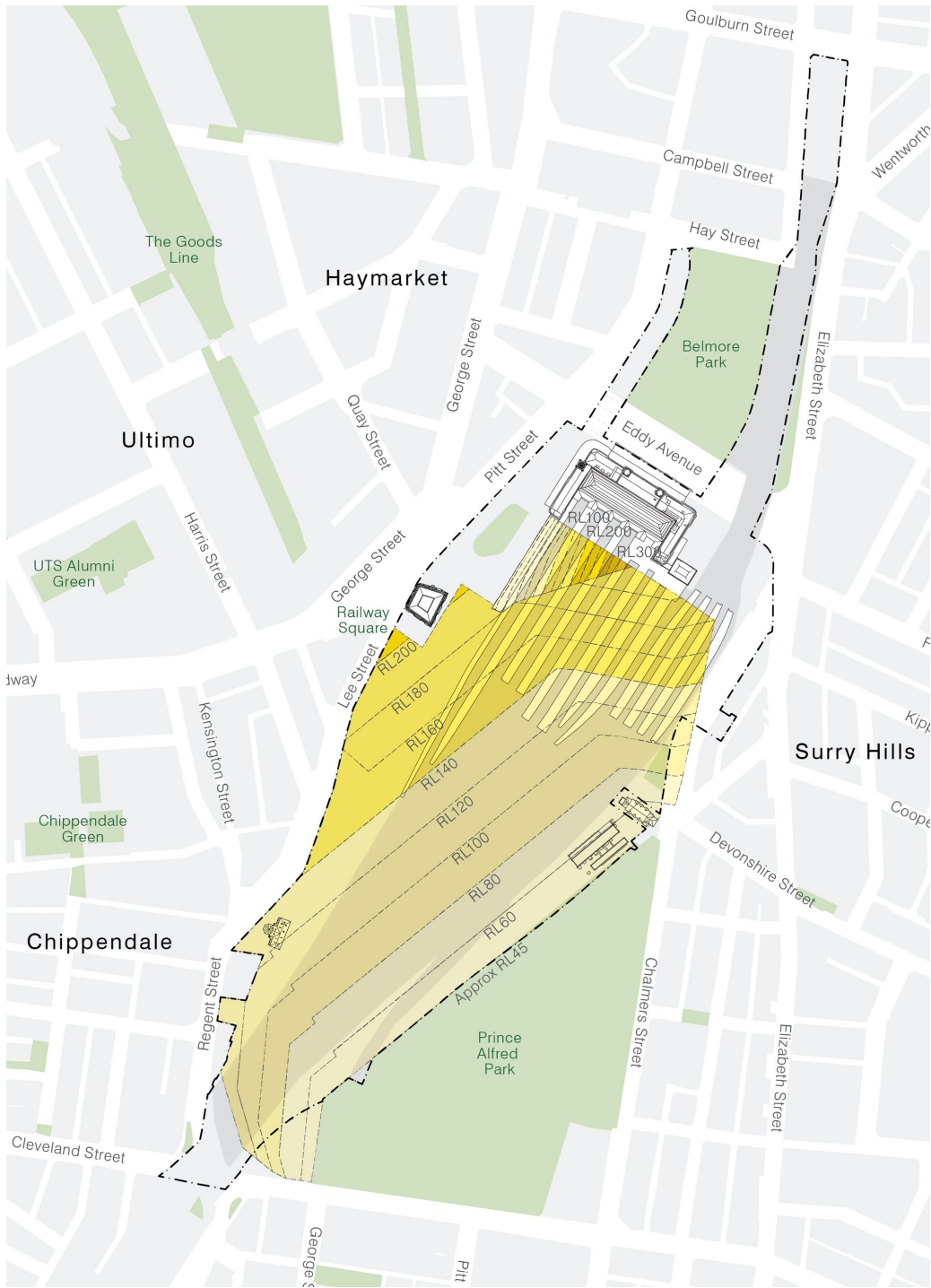
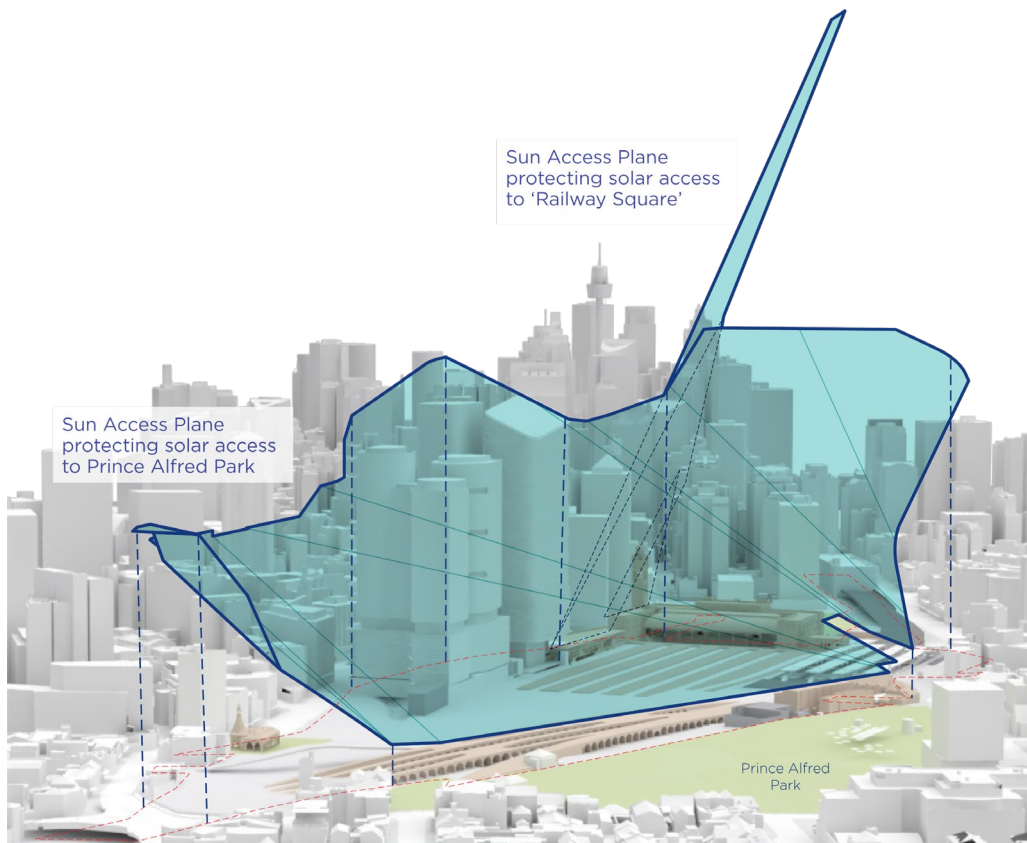


Figure 13-5 — Sun Access Planes & the Master Plan Proposal in 3D

Source: Architectus



13.8.2 Pathway to Secure Airspace Approvability for Buildings Approvable under Planning Heights but Higher than Airspace Heights

The general Pathways to Approval under the APAR are described in section 7.7.1 (p40). As noted in section 7.7.2 Prescribed Airspace, subsection 7.7.2.3 Other Considerations (p43), a development cannot be approved if it infringes the limiting surface of the prescribed airspace.

However, should a developer seek to gain development consent for a building to a height that would exceed the current airspace height limits, there is a provision for proposing a change if it can be demonstrated that such a change would not adversely affect the safety and regularity of existing and future air transport operations at Sydney Airport.

There are two possible ways to do this.

The first is by making an Airspace Change Proposal (ACP) through CASA⁹. This process is aimed more at changes to changes of formal airspace structure and communications, rather than the MVA sectors and RTCC surfaces themselves which are administered and used for operational purposes by Airservices

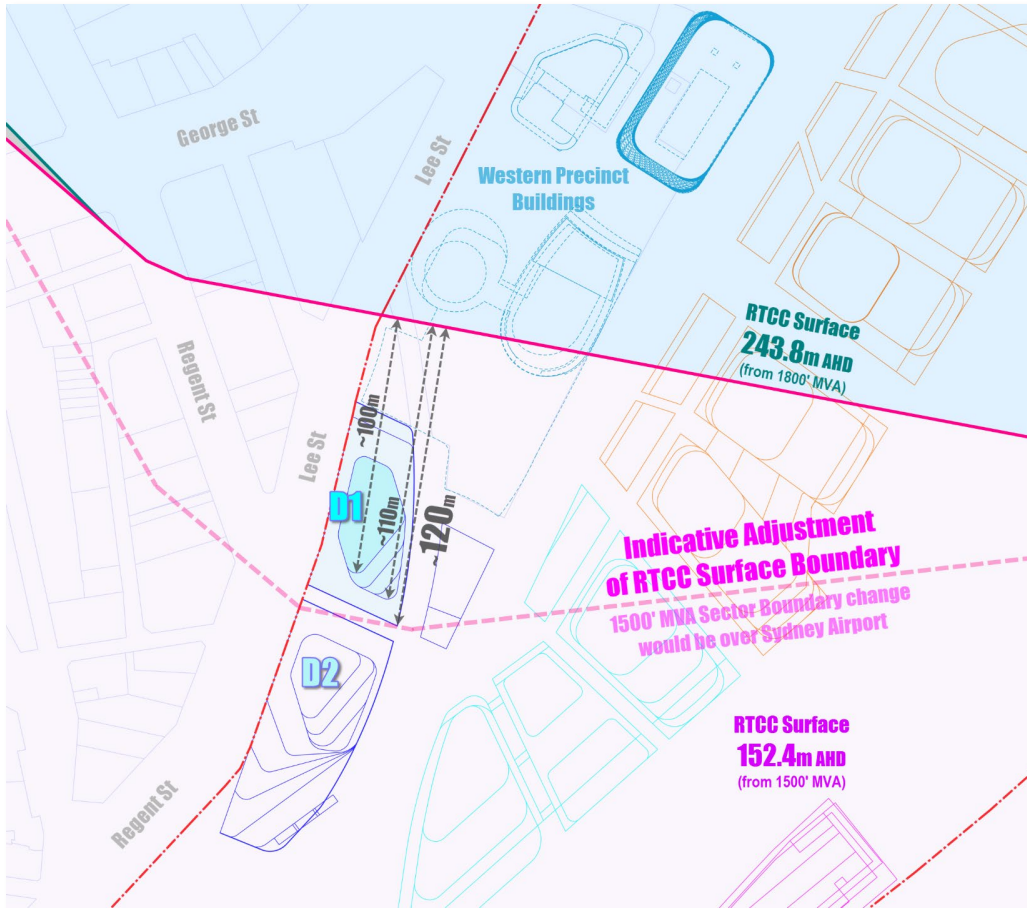
9 For further information on the airspace change process, refer <https://www.casa.gov.au/operations-safety-and-travel/airspace/airspace-regulation/airspace-change-process>

Australia's air traffic management units. Further, this is a complicated process which entails a wide-reaching and long duration consultation period before a decision is reached.

The alternative option — the recommended method — is to submit an application under the APAR for airspace height approval of the proposed building envelope, in advance of final approval of the planning proposal and/or well in advance of proceeding to exploitation of its development. A key part of the application would be a supporting airspace impact assessment which includes a detailed proposal for change of the limiting surface (eg, the lower RTCC surface boundary) so that proposed taller building would be included in the area covered by the higher RTCC surface. The intent of the change proposal would be to provide guidance to Airservices as to the extent of change required and estimated lack of measurable impact on safety and ATM operations. Airservices would then make their own detailed assessment and, if they agree to the proposal, would determine the actual changes to the RTCC surface and fundamental MVA sector boundaries. If Airservices were to accept the change proposal, it is highly likely that the other key aviation agencies would also find the proposal as acceptable, clearing the way for DITRDC to provide a positive determination. Note also that the evaluation period for any such application would take far longer than a standard airspace height application — instead of say 7 weeks, it would not be unreasonable to expect that the evaluation and consultation process before a determination of a non-standard application could be made would extend to at least 4-6 months from time of lodgement.

A worked example of such a proposal is provided below — for information only. Any such change would require a detailed aeronautical impact assessment (based on then current airspace) and advice by a suitably qualified and experienced aviation consultant, and close consultation with Airservices and other potentially other aviation stakeholders, in advance of finalising and submitting such an application.

Figure 13-6 — Indicative Adjustment of RTCC Surface Boundaries for Building D1



13.8.2.1 Example Airspace Change Proposal as part of an APAR Application

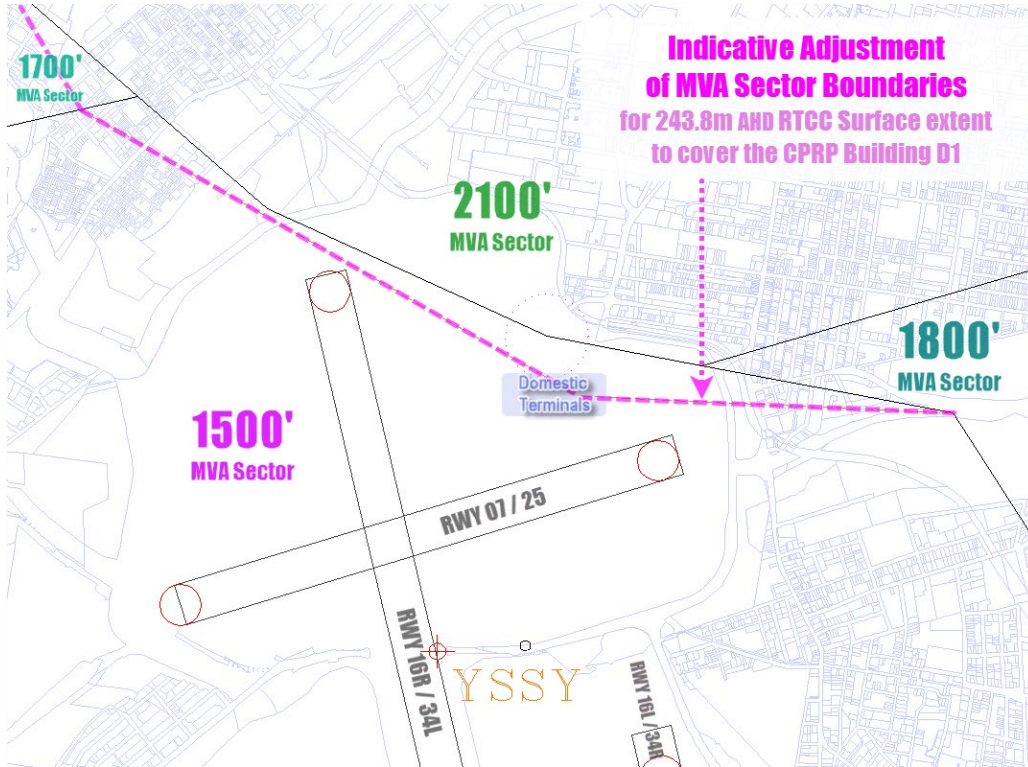
This section provides guidance on a way that an increased airspace height may potentially be achievable for a building that is currently limited in height by the lower RTCC Surface but has a higher Height of Buildings allowance.

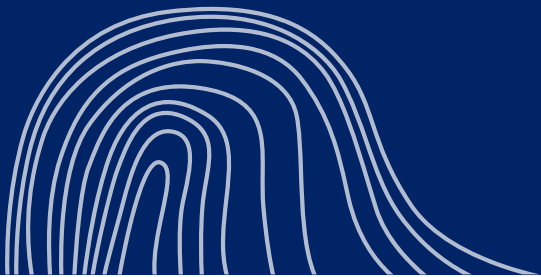
If for example a developer wanted to seek approval of a DA to building D1 up to a maximum height permitted by the Height of Buildings map and the sun access plane — say up to RL160 or higher — one would not be able to get an airspace height approval without seeking a change to the restrictive airspace (in this case, the lower RTCC surface at a height of 152.4m AHD).

Figure 13-6 above provides a preliminary indication of the nature and extent of change to the RTCC surface boundaries that would be required to enable the taller building D1 “to be under the higher RTCC surface height of 243.8m AHD”, in which case the building could be considered approvable under the APAR.

An indication the extent of change of the underlying MVA sector boundaries that would be required to achieve the example change to the RTCC surface boundaries is depicted, for information only, in Figure 13-7 below.

Figure 13-7 — Indicative Adjustment of MVA Sector Boundaries to Facilitate RTCC Surface Higher than Building D1





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