Sydney Metro West:

Planning Proposal Hunter Street Over Station Development Aeronautical Impact Assessment

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Author	Sciences Engineer	Daniel Ong	04/04/2022
Technical Checker	Sciences Engineer	Ben Malin	04/04/2022
Technical Reviewer	Technical Director	Neil Mackenzie	04/04/2022
Coordinator	Technical Director - Environmental	Lucy Baker	04/04/2022
Approver	Rail Systems Practice Leader ANZ	Adrian Garnero	04/04/2022

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Contents

Glossary

Term	Definition
AHD	Australian Height Datum
AGL	Above Ground Level
AIP	Aeronautical Information Publication
ALS	Approach Lighting System
ALT	Altitude
CASA	Civil Aviation Safety Authority
CBD	Central Business District
CSSI	Critical State Significant Infrastructure
DAP	Departure and Approach Procedures
DER	Departure End of Runway
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications
DPE	Department of Planning and Environment
EP&A	Environmental Planning and Assessment Act 1979
HIAL	High Intensity Approach Lights
ILS or LOC	Instrument Landing System or Localiser
GBAS	Ground Based Augmentation System
GLS	GBAS Landing System
GNSS	Global Navigation Satellite System
MOC	Minimum Obstacle Clearance
MVA	Minimum Vector Altitudes
MSA	Minimum Sector Altitudes
NDB	Non-Directional Radio Beacon
OLS	Obstacle Limitation Surface
OHS	Outer Horizontal Surface
OSD	Over Station Development
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations ICAO Doc 8168 Vol I and II
PAPI	Precision Approach Path Indicator
SHLS	Strategic Helicopter Landing Site
SSD	State Significant Development
RNP	Required Navigation Performance
RWY	Runway
RTCC	Radar Terrain Clearance Charts
RLSAT	Radar Lowest Sector Altitude

Executive summary

This aeronautical assessment report is part of the Sydney Metro West Hunter Street Over Station Development (OSD) Planning Proposal Request. The report has been prepared to support an amendment to the *Sydney Local Environmental Plan (LEP) 2012*, consistent with the City of Sydney's Central Sydney Planning Strategy 2016-2036. The proposed Hunter Street OSD comprises two buildings, one at the eastern site on the corner of O'Connell (Hunter Street East) and another at the western site on the corner of George and Hunter streets (Hunter Street West).

Within this aeronautical assessment, the proposed height of each building has been assessed against the prescribed airspace limitations imposed by relevant legislation and guidelines for each site. The OSD's were assessed for aeronautical compliance of various airspace regulations due to its proposed height and proximity to the Sydney Airport and Royal Prince Alfred Hospital Heliport.

The proposed maximum height for the Hunter Street East OSD is currently 269.1m AHD. At this height, the proposed development penetrates the Sydney Airport Obstacle Limitation Surface's (OLS) Outer Horizontal Surface (OHS) by 113.1m as well as the Royal Prince Alfred Hospital Heliport OLS by 48.1m. Cranes required for OSD construction would penetrate each OLS. The development does not penetrate PANS-OPS surfaces.

The proposed maximum height for the Hunter Street West OSD is currently 220m AHD. At this height, the proposed development penetrates the Sydney Airport Obstacle Limitation Surface's (OLS) within the Outer Horizontal Surface (OHS) by 64m and cranes required for OSD construction would penetrate the Royal Prince Alfred Hospital Heliport OLS. The development does not penetrate PANS-OPS surfaces.

As the proposed OSDs' infringe upon the Sydney Airport OHS, aviation approval will be required from the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC). Approval is considered likely, as there are existing tall buildings which penetrate the Sydney Airport OHS near the Hunter Street OSD sites, such as the Citigroup Centre building, which has an elevation of approximately 260m AHD. Construction of additional tall buildings near existing obstacles is unlikely to be perceived as negatively impacting aeronautical safety.

Additionally, as the OSDs' infringe upon the Royal Prince Alfred Hospital Heliport OLS, approval will be required from the asset owner (Sydney Local Health District) and the Civil Aviation Safety Authority (CASA). As above, approval is considered likely, as there are existing tall buildings surrounding the Hunter Street OSD sites and construction of additional tall buildings near existing obstacles is unlikely to be perceived as negatively impacting aeronautical safety.

Height approval applications should be submitted in parallel with future Development Approval (DA) processes, as additional project detail including temporary crane heights and overall building envelope inclusive of services plant, exhausts, towers, masts, building maintenance units and other ancillary features must be included.

1 Introduction

The Sydney Metro West Hunter Street Station Over Station Development (OSD) Planning Proposal Request seeks to amend the *Sydney Local Environmental Plan 2012*. This aeronautical assessment report forms part of the planning proposal submitted for the Sydney Metro Hunter Street Station OSD. The future OSD would comprise two commercial office buildings positioned above the two main entrances to the Hunter Street Station (Eastern site and Western site).

1.1 Objectives and intended outcomes

1.1.1 Planning proposal

The planning proposal seeks to amend the *Sydney Local Environmental Plan 2012* to enable development on the site(s) as follows:

- Establish a maximum Height of Buildings control and maximum FSR control on the identified land, being the Hunter Street Station East and West sites.
- Enable the development of a commercial office building on the Hunter Street Station East and West sites
- Integration with the Hunter Street Station, the subject of a separate application process
- Adaptive reuse of the existing Former Skinners Family Hotel within the overall development on the West site
- Include site-specific controls which ensure the provision of employment and other non-residential land uses only on both the Hunter Street Station East and West sites.
- Include site-specific control allowing the provision of up to a maximum of 70 car parking spaces maximum total across both the Hunter Street Station East and West sites.
- Include a site-specific design guideline within the site-specific controls to guide future development sought under a State Significant Development Application process.
- Establish an alternative design excellence process for the Hunter Street Station East and West sites that responds to the integration of the development with the Sydney Metro West project and specifically the Hunter Street Station.

A summary of the key development outcomes resulting from the Planning Proposal is set out in Table 1-1 below.

Table 1-1: Proposed concept built form outcomes

Built Form Component	Proposed Development Outcome
East Site	**Based on a Site Area of 3,666 sqm**
Height	Building height of 257.7m (RL 269.10)

Built Form Component	Proposed Development Outcome
FSR	22.82:1
GFA	Up to 84,287 sqm of GFA
Land Use(s)	Non-residential land uses only
West Site	**Based on a Site Area of 3,735 sqm**
Height	Building height of 213.0m (RL 220.00), including a setback interface from the heritage-listed Skinner Family Hotel
FSR	18.71:1
GFA	Up to 69,912 sqm of GFA
Land Use(s)	Non-residential land uses only
Cl 7.6 – Carparking for Office and Business premises	Up to 70 car parking spaces, maximum total across both the Eastern and Western sites

1.1.2 Aeronautical assessment

The proposed Hunter Street Station developments (permanent and temporary structures) are subject to various regulations under the Airports Act 1996, the Airports (Protection of Airspace) Regulations 1996 and the National Airports Safeguarding Framework Guidelines. These regulations and guidelines define prescribed airspaces for airports and helipads to ensure aircraft and helicopters can fly in and out obstacle-free and that air navigation equipment can operate without interference.

Under the Airports Act 1996 and the Airports (Protection of Airspace) Regulations 1996, activities that result in intrusions into prescribed airspace are controlled activities. Undertaking controlled activities (such as the construction of a building or other structure that intrudes into the prescribed airspace) requires approval from the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC). The Civil Aviation Safety Authority (CASA) will provide input as part of DITRDC's review and their endorsement is required for DITRDC to grant approvals.

Under Guideline H of the National Airports Safeguarding Framework, developments exceeding heights provided within the Guideline must be referred to strategic helicopter landing site (SHLS) asset owner and the Civil Aviation Safety Authority (CASA).

1.2 Background and planning context

1.2.1 State significant infrastructure

Sydney Metro West was declared as State significant infrastructure (SSI) and critical State significant infrastructure (CSSI) under sections 5.12(4) and 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) respectively on 23 September 2020.

Sydney Metro West is being assessed as a staged infrastructure application under section 5.20 of the EP&A Act. The approved Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the CSSI planning approval process- application number SSI-10038) were approved on 11 March 2021.

Stage 2 of the CSSI planning approval process (application number SSI-19238057) includes all major civil construction work, including station excavation and tunnelling, between The Bays and Sydney CBD (An Environmental Impact Statement for this application was exhibited between 3 November and 15 December 2021). This application is relevant for this request for a Planning Proposal as it seeks approval for bulk excavation and tunnelling at the Hunter Street (Sydney CBD) Station sites.

Stage 3 of the CSSI planning approval process (application number SSI-22765520, being the application for the tunnel fit-out, construction of stations, ancillary facilities and station precincts, and operation and maintenance of the Sydney Metro West line. This application is notably relevant for this request for a Planning Proposal, as it seeks approval for the construction of the Hunter Street Station, including above and below ground structures, public domain works, and spatial provisioning and works to facilitate the construction and operation of an over station development (OSD) above the two station entries which are described further in this report.

1.2.2 Over station development

The OSD components of the Hunter Street (Sydney CBD) integrated station development is not declared as SSI or CSSI under *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). As such, separate development consent is required to be granted for the construction and operation of development above the Hunter Street (Sydney CBD) Station.

The primary land use of the OSD is anticipated to be 'commercial premises' which have a capital investment value of more than $30 million, and which are located within a rail corridor and/or are associated with railway infrastructure. As such the future OSD will be classified as State Significant Development (SSD). The Sydney LEP 2012 is a relevant environmental planning instrument for the future development, though the Sydney Development Control Plan 2012 (Sydney DCP 2012) will not apply to the OSD.

To inform the planning controls relevant for a staged SSD application for the OSD, amendments are proposed to the Sydney LEP 2012 to provide additional Maximum Height of Building and floor space ratio (FSR) controls. Further, as the Sydney DCP 2012 does not apply to the land, the Proponent will prepare a site-specific design guideline to support the planning proposal to inform the future built form on the site including details such as street frontage heights, setbacks, massing and tapering, development adjacent to heritage items, building exteriors, and managing wind impact.

The inter-relationship of the scope of Sydney Metro EIS 3 (part of CSSI) and this planning proposal is illustrated in Figure 1-1.

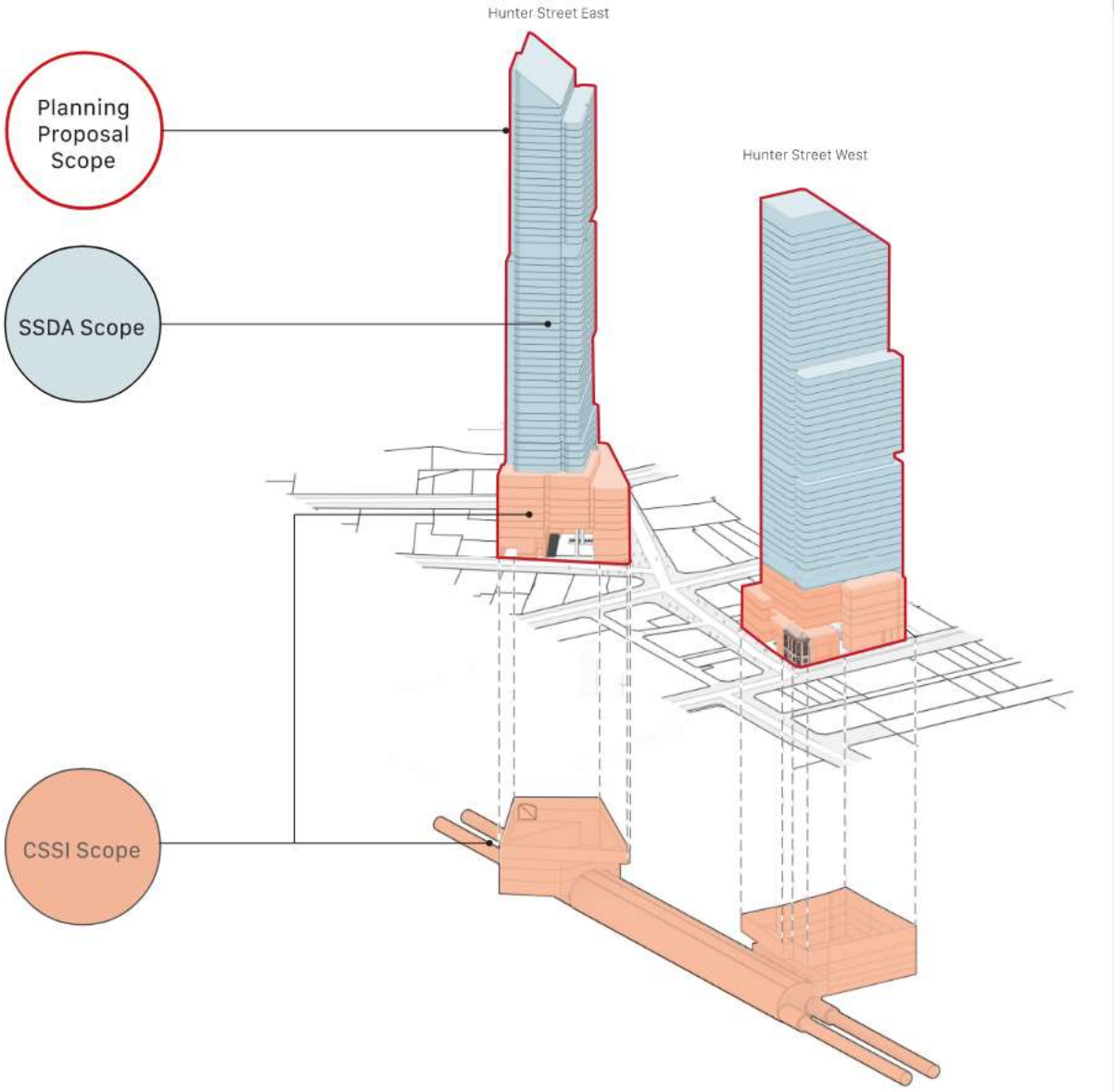


Figure 1-1: Hunter Street Station and proposed OSD

1.3 Site context

1.3.1 The Site

The Hunter Street (Sydney CBD) integrated station development is located in the northern part of the Sydney CBD, within the commercial core precinct of Central Sydney, within the Sydney local government area.

The east site is located on the corner of O'Connell Street, Hunter Street and Bligh Street adjacent to the existing CBD and South East Light Rail that extends from Circular Quay to Moore Park, Kensington and Kingsford. The east site is adjacent to the new Martin Place metro station which forms part of the Sydney Metro City and Southwest line, Australia's biggest public transport project connecting Chatswood to Sydenham and extending to Bankstown.

The west site is located on the corner of George and Hunter Street, including De Mestre Place and land predominantly occupied by the existing Hunter Connection retail plaza.

Refer to Figure 1-2 below which illustrates the location of the Hunter Street Station (Sydney CBD) within its regional context.

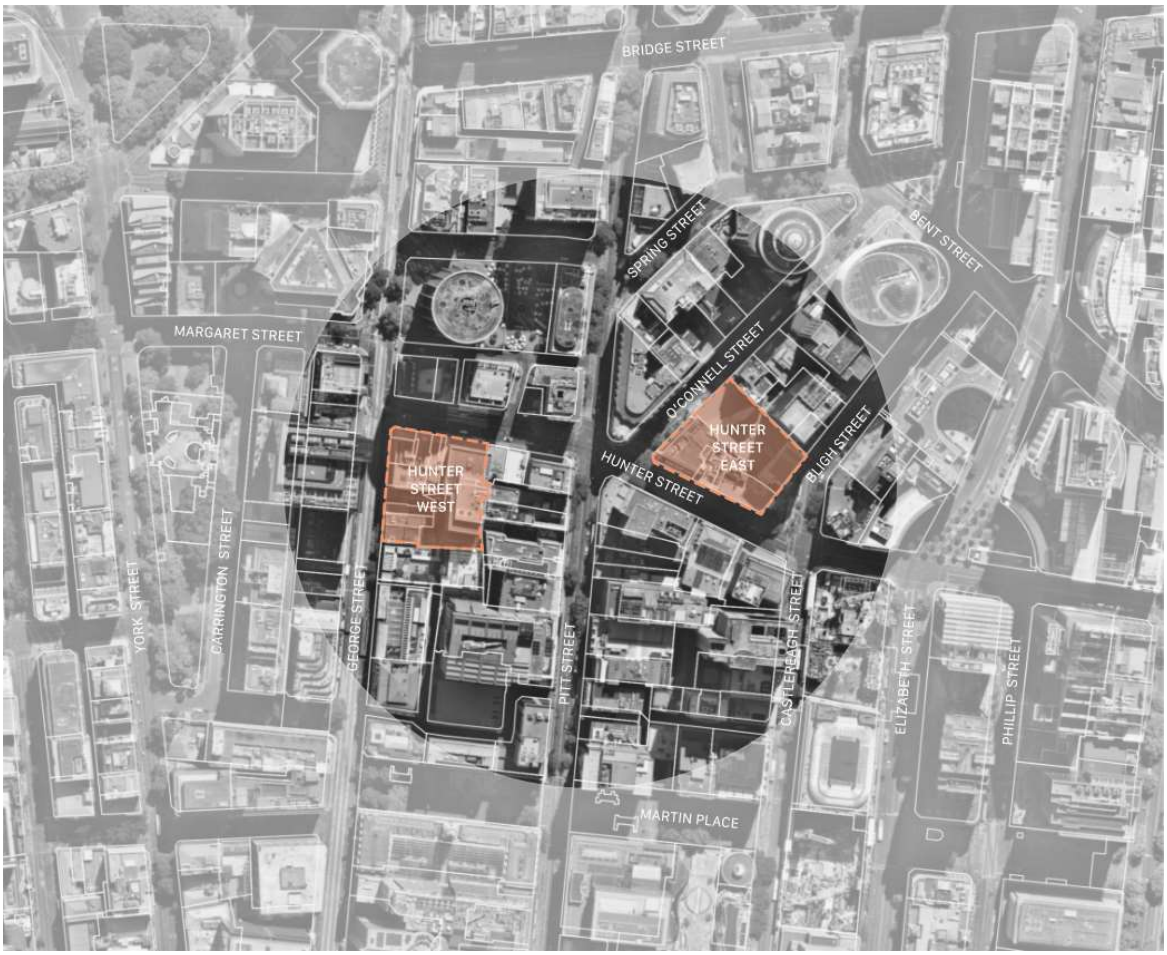


Figure 1-2: Location of New Metro Stations at Hunter Street (Sydney CBD)

1.3.2 Local context

The Sydney CBD is a highly developed commercial core with a ride range of commercial, retail, health, government and community-based uses, as well as high density residential developments.

A number of key commercial buildings are located in or around the Sydney CBD, including educational facilities, historic buildings and structures, law courts, public gathering spaces and places of worship. Significant areas of open space, such as the Botanical Gardens, the Domain and Hyde Park are also located within or near the Sydney CBD area, as well as the World Heritage Sydney Opera House and iconic Sydney Harbour Bridge.

Land uses surrounding the Hunter Street Station (Sydney CBD) sites include:

- North of the sites is a major commercial area comprising high density commercial towers along George Street, Pitt Street, and Bridge Street, including the MetCentre and Australia Square buildings. The area also comprises tourism and entertainment related uses including hotels, shops, restaurants, cafes, nightclubs and bars, with the area around Circular Quay and the Rocks a major tourism precinct and providing significant support for the night time economy.

- East of the sites are major commercial towers along Hunter Street, including Chifley Tower, 8 Chifley Square, Aurora Place and Deutsche Bank Place. Beyond Hunter Street, the State Library of NSW and the NSW Parliament House front onto Macquarie Street, and beyond that lies the public open space of The Domain.
- South of the sites, the land use remains predominantly multi-storey commercial offices but also includes cafes, bars and nightclubs. Martin Place is a significant east–west pedestrian thoroughfare which contains many culturally significant buildings and structures including the Cenotaph memorial and the General Post Office building, as well as Martin Place Station. Beyond Martin Place the Sydney CBD continues towards Town Hall, Haymarket and the Central Station precinct.
- West of the sites, the land use remains predominantly high-density commercial offices, anchored by Wynyard Station. George Street contains the Sydney Light Rail (L2 Randwick Line and L3 Kingsford Line) and is a major north–south axis through the CBD, and along with Pitt Street connects Circular Quay, Wynyard, Town Hall and Central. East of Wynyard, the CBD continues towards the major commercial and entertainment areas around King Street Wharf and Barangaroo, which also contain significant high density residential apartment buildings.

1.3.3 Site description

The Hunter Street (Sydney CBD) integrated station development relates to the following properties:

- 28 O'Connell Street, 48 Hunter Street, and 37 Bligh Street, Sydney (East Site); and
- 296 George Street, 300 George Street, 312 George Street, 314-318 George Street, 5010 De Mestre Place (Over Pass), 5 Hunter Street, 7-13 Hunter Street, 9 Hunter Street and De Mestre Place, Sydney (West Site).

2 Methodology

2.1 Aeronautical assessment sites

The proposed Hunter Street West OSD building has an elevation of 220m AHD (Australian Height Datum). Figure 2-1 shows the location of the Hunter Street (West) OSD with respect to Sydney Airport and the Royal Prince Alfred Hospital Heliport.

The proposed Hunter Street East OSD building has an elevation of 269.1m AHD (Australian Height Datum). Figure 2-2 shows the location of the Hunter Street (East) OSD with respect to Sydney Airport and the Royal Prince Alfred Hospital Heliport.

While there are other airports and helipads in NSW, they were deemed too distant from the proposed site and were therefore excluded from this assessment.

The south western corner of each site was used as the reference point for each respective site.

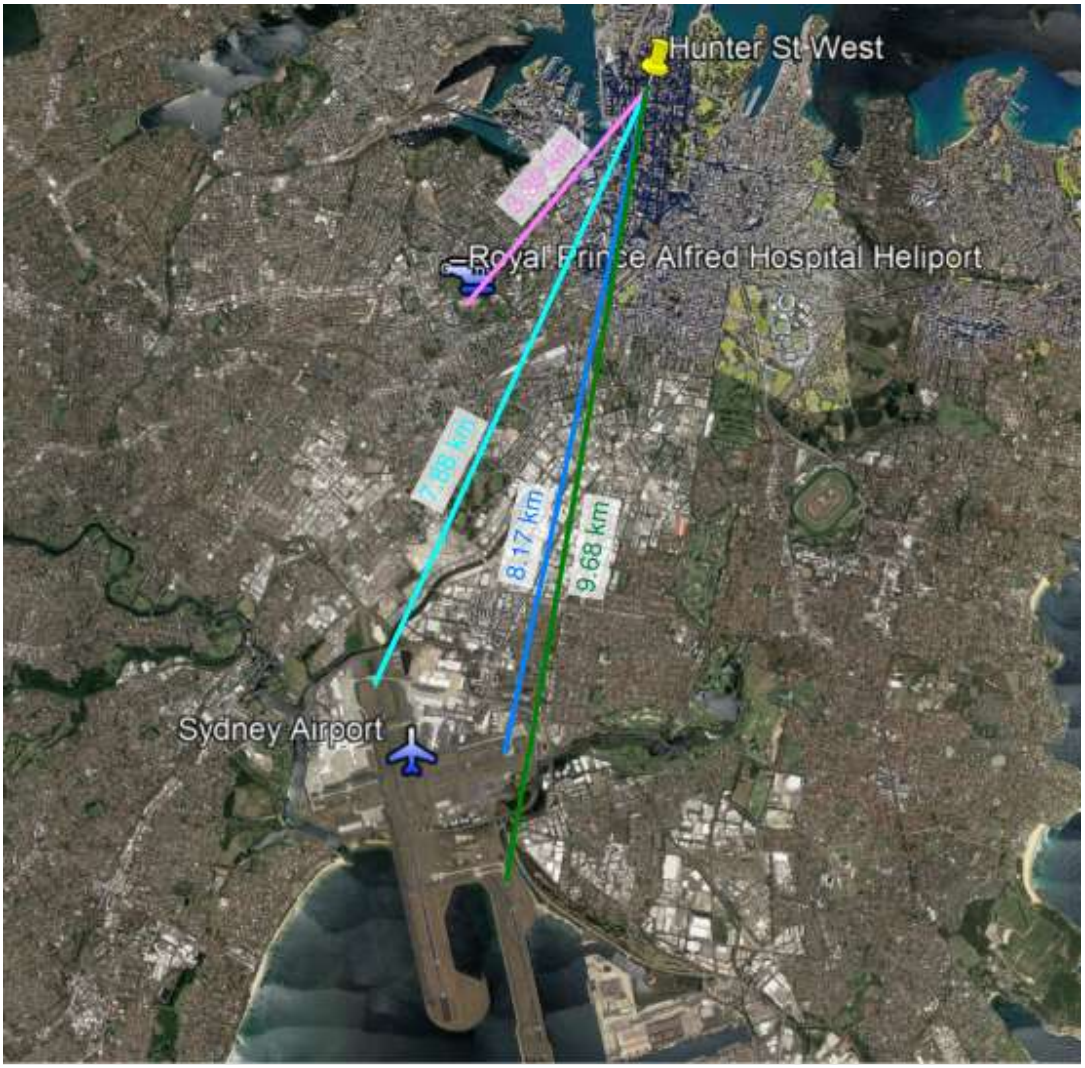


Figure 2-1: Project site (West) with respect to Sydney Airport and Royal Prince Alfred Hospital Heliport.

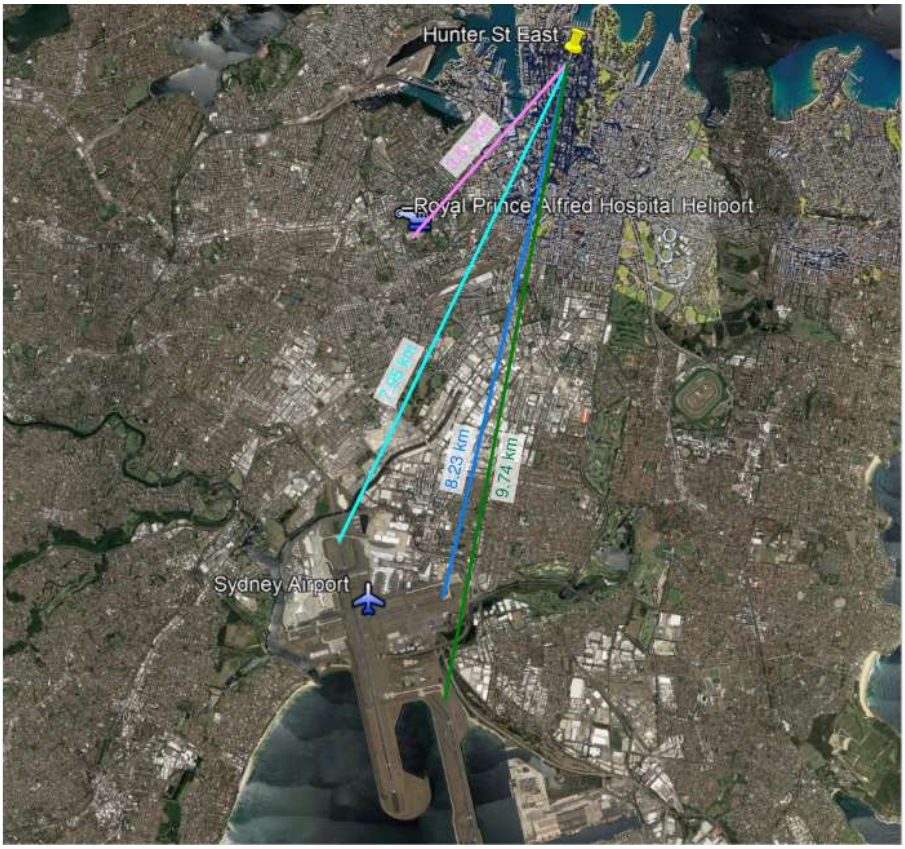


Figure 2-2: Project site (East) with respect to Sydney Airport and Royal Prince Alfred Hospital Heliport

Table 2-1: Hunter Street (West) in relation to Sydney Airport and Royal Prince Alfred Hospital Heliport.

Reference Point	Distance		Hunter St (West) Reference Point
	Metre (m)	Nautical Mile (nm)	
With respect to Sydney Airport			
RWY 34L DER	7,880	4.3	33.5157 º E, 151.1226 º S
RWY 25 DER	8,170	4.4	
RWY 34R DER	9,680	5.2	
With respect to Royal Prince Alfred Hospital Heliport			
YRPA	3,390	1.8	33.5157 º E, 151.1226 º S

Table 2-2: Hunter Street (East) in relation to Sydney Airport and Royal Prince Alfred Hospital Heliport.

Reference Point	Distance		Hunter St (East) Reference Point
	Metre (m)	Nautical Mile (nm)	
With respect to Sydney Airport			
RWY 34L DER	7,950	4.3	33.5156 º E, 151.1232 º S
RWY 25 DER	8,230	4.4	
RWY 34R DER	9,740	5.3	
With respect to Royal Prince Alfred Hospital Heliport			
YRPA	3,510	1.9	33.5156 º E, 151.1232 º S

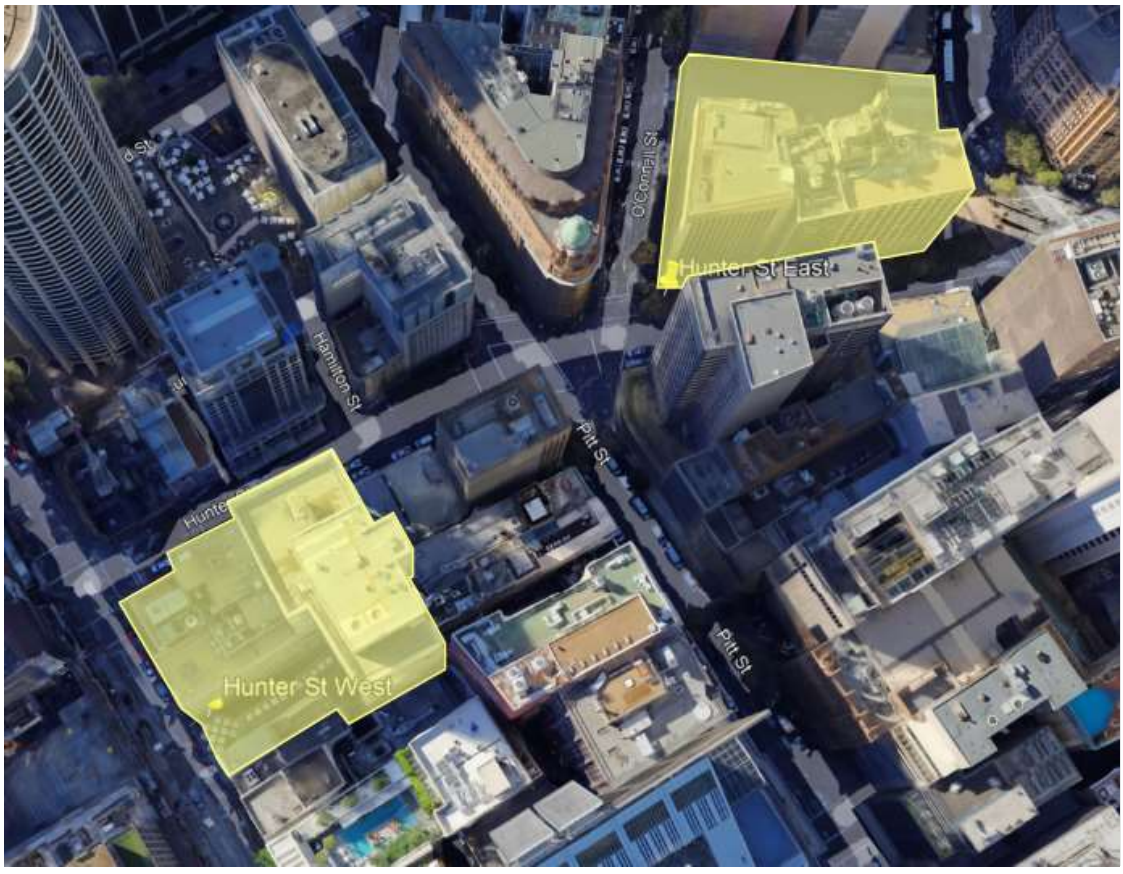


Figure 2-3: Proposed Hunter Street Station OSD reference points.

2.2 Assessment criteria

The prescribed airspaces investigated include:

Obstacle limitation surface (OLS)

- Obstacle limitation surfaces (OLS) are designed to protect aircraft flying in good visual conditions from structures in close proximity to aerodromes. OLS charts were obtained from individual airports for this assessment.

Procedures for air navigation - systems operation (PANS-OPS)

- PANS-OPS surfaces are designed to ensure published instrument flight procedures would not be affected by penetrating obstacles, permanent or temporary, in poor visual conditions. In these cases, it is important that radio and satellite navigation aids would not be interfered with, and that airspaces for departure, arrival, and missed approach procedures would be free from obstacles.
- Airservices is the organisation responsible for the aviation industry within the Australian Flight Information Region and may change flight procedures from time to time. As such, latest PANS-OPS charts published by Airservices were used for this assessment, as compared to those published by Sydney and Bankstown Airports, to ensure the latest charts were used. At the time of preparation of this report, the PANS-OPS charts were listed as effective until 1 December 2021.

Radar terrain clearance charts (RTCC)

- The RTCC governs the area and height limits related to Minimum Vector Altitudes (MVAs) used by Air Traffic Controllers when vectoring aircraft. RTCCs were obtained from individual airports for this assessment.

Other surfaces

- Other protection surfaces are defined to ensure off-airport obstacles don't interfere with signals from ground-based air navigation equipment or obscure airport safety lights. Some examples of these include *Precision Approach Path Indicator (PAPI),* System Protection Surfaces and *High Intensity Approach Lights (HIAL)* Protection Surfaces.
- Depending on the navigation technologies used at different airports, protection surfaces may differ. Appropriate surface charts were obtained from both Airservices and individual airports for these assessments.

3 Analysis

This section presents the maximum permissible building/structure height assessed against various prescribed airspace limitations. These height limits are applicable to the building structures, including all rooftop furniture, plant buildings, lift risers, antennae, etc, as well as temporary crane structures during construction. Given that crane height information is unavailable at the time of this document preparation, separate applications for temporary crane erection will be necessary should the required crane height exceed the specified maximum permissible building/structure heights.

All height limits are presented in true elevations in the form of the Australian Height Datum (AHD) as required by regulation. Note that these differ from heights above ground level (AGL).

3.1 OLS analysis

Table 3-1 presents the analysis of the proposed sites with respect to the OLS of the Sydney Airport. Both Hunter Street development sites are located within the Sydney Airport OLS Outer Horizontal Surface (OHS) and are therefore subjected to a maximum development height of 156m AHD.

The proposed Hunter Street West OSD penetrates the Sydney Airport OHS by 64 metres. The proposed Hunter Street East OSD penetrates the Sydney Airport OHS by 113.1 metres.

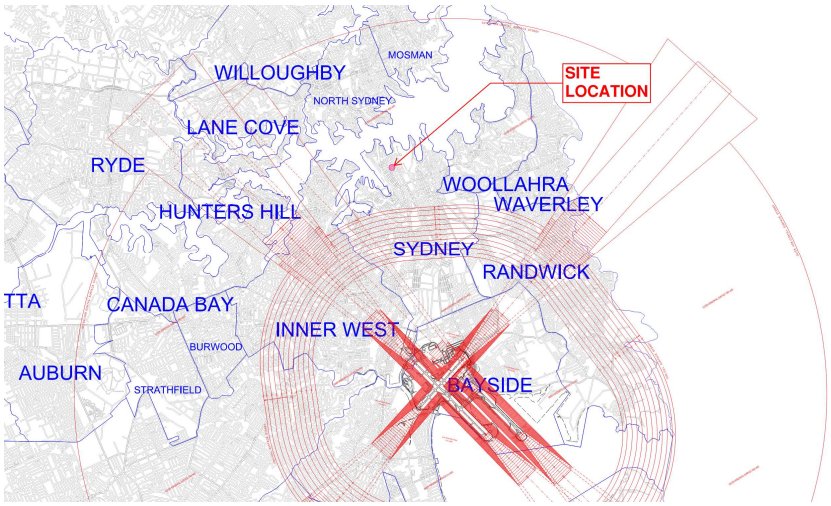
As the OSDs' penetrate the Sydney Airport OHS, construction and operation of the OSDs' are controlled activities under the Airports Act 1996 and the Airports (Protection of Airspace) Regulations 1996. An application for development approval must be submitted to the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC), via Sydney Airport.

Approval is considered likely, as there are existing tall buildings which penetrate the Sydney Airport OHS near the Hunter Street OSD sites, such as the Citigroup Centre building, which has an elevation of approximately 260m AHD. Construction of additional tall buildings near existing obstacles is unlikely to be perceived as negatively impacting aeronautical safety.

Height approval applications should be submitted in parallel with future Development Approval (DA) processes. Additional project detail including temporary crane heights and overall building envelope inclusive of services plant, exhausts, towers, masts, building maintenance units and other ancillary features must be included within the application.

The height approval application process may take up to 6 months, as multiple stakeholders are required to review the proposed obstacles under the Airports (Protection of Airspace) Regulations 1996. Following approval of the planning proposal, it is recommended that a pre-application consultation be undertaken with Sydney Airport and the Civil Aviation Safety Authority.

Table 3-1: OLS height impact of Sydney Airport.

	Sydney Airport
OLS Charts with respect to proposed Hunter Street ODS sites	
Surface Height Limitation	156m (AHD)

3.2 PANS-OPS analysis

Assessments of instrument procedures were conducted using information published in the Australian Aeronautical Information Publication (AIP) Departure and Approach Procedures (DAP) 168[1] (effective 9 September 2021 to 1 December 2021). This includes:

- Minimum Sector Altitude (MSA)
- Instrument Approach and Missed Approach Procedures
- Departure Procedures

3.2.1 Minimum sector altitudes (MSA)

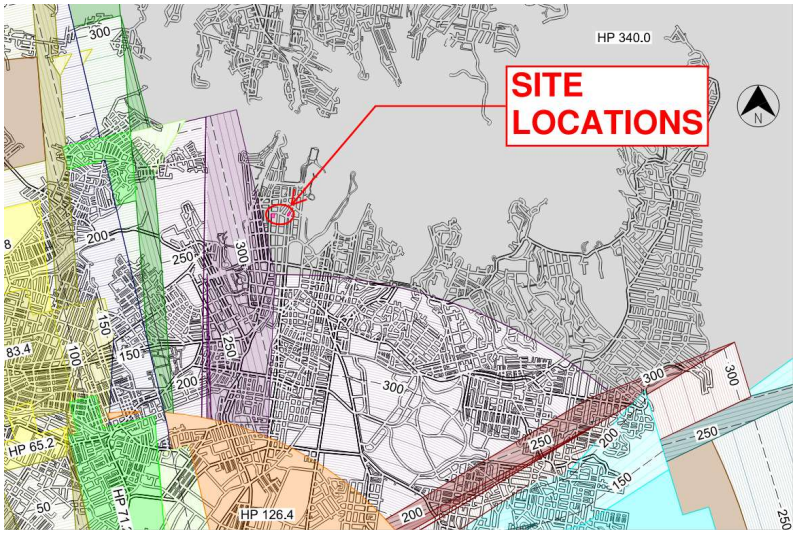
The minimum sector altitude (MSA) refers to:

> *"the lowest altitude that will provide a minimum clearance of 1000 ft above all objects located in an area contained within a sector of a circle of 25 NM or 10 NM radius centred on a radio aid to navigation or, where there is no radio navigation aid, the aerodrome reference point."*

Table 3-2 presents the analysis of the proposed sites with respect to the PANS-OPS surfaces of Sydney airport. The Hunter Street OSD sites are located within a 10NM radius of Sydney airport, hence the 10NM MSA of 2100ft applies. Based on this, the most conservative height limit of 335m AHD (1000ft below 2100ft) applies.

[1] *Airservices Australia AIS - DAP 168 - Aerodrome & Procedure Charts, accessed 1 November 2021.*

Table 3-2: Proposed site with respect to the procedures for air navigation - systems operation (PANS-OPS) surfaces.

	Sydney Airport
PANS-OPS Charts with respect to proposed Hunter Street OSD Sites	
Surface Height Limitation	335m (AHD)

3.2.2 Instrument approach and missed approach procedures

Assessment of the Sydney Airport instrument approach and missed approach procedures was undertaken and the results detailed in Table 3-3 for Hunter Street West and Table 3-4 for Hunter Street East. Greyed out cells represent procedures that are not expected to be the limiting height for the project.

The most restrictive height limit for the Hunter Street West OSD is from RWY 34R at 387m. The most restrictive height limit for the Hunter Street East OSD is from RWY 34R at 388m.

Table 3-3: Assessment of Sydney Airport instrument approach and missed approach procedures for Hunter Street (West).

Procedure	Height Limitation (AHD)	Comment
ILS Approaches		
RWY 07 **RWY 25** **RWY 16R** **RWY 34L** **RWY 16L**	N/A	The proposed development is outside the lateral extent of ILS surface. The proposed development is within the no circling area for missed approaches.
RWY 34R	287m (missed approach turn)	Using current published missed approach procedure with 2.5% climb gradient. Approximate distance to edge of turn initiation area = 6187m. Surface height = 182.9 + 6187 * 0.025 – 50 = 287m

Procedure	Height Limitation (AHD)	Comment
RNP Approaches		
RWY 07 **RWY 25** **RWY 16R** **RWY 34L** **RWY 16L**	N/A	The proposed development is outside the lateral extent of RNP surface. The proposed development is within the no circling area for missed approaches.
RWY 34R	287m (missed approach turn)	Using current published missed approach procedure with 2.5% climb gradient. Approximate distance to edge of turn initiation area = 6187m. Surface height = 182.9 + 6187 * 0.025 – 50 = 287m
GLS Approaches		
RWY 07 **RWY 25** **RWY 16R** **RWY 34L** **RWY 16L**	N/A	The proposed development is outside the lateral extent of GLS surface. The proposed development is within the no circling area for missed approaches.
RWY 34R	287m (missed approach turn)	Using current published missed approach procedure with 2.5% climb gradient. Approximate distance to edge of turn initiation area = 6187m. Surface height = 182.9 + 6187 * 0.025 – 50 = 287m

Table 3-4: Assessment of Sydney Airport instrument approach and missed approach procedures for Hunter Street (East).

Procedure	Height Limitation (AHD)	Comment
ILS Approaches		
RWY 07 **RWY 25** **RWY 16R** **RWY 34L** **RWY 16L**	N/A	The proposed development is outside the lateral extent of ILS surface. The proposed development is within the no circling area for missed approaches.
RWY 34R	288m (missed approach turn)	Using current published missed approach procedure with 2.5% climb gradient. Approximate distance to edge of turn initiation area = 6236m. Surface height = 182.9 + 6236 * 0.025 – 50 = 288m

Procedure	Height Limitation (AHD)	Comment
RNP Approaches		
RWY 07 **RWY 25** **RWY 16R** **RWY 34L** **RWY 16L**	N/A	The proposed development is outside the lateral extent of RNP surface. The proposed development is within the no circling area for missed approaches.
RWY 34R	288m (missed approach turn)	Using current published missed approach procedure with 2.5% climb gradient. Approximate distance to edge of turn initiation area = 6236m. Surface height = 182.9 + 6236 * 0.025 – 50 = 288m
GLS Approaches		
RWY 07 **RWY 25** **RWY 16R** **RWY 34L** **RWY 16L**	N/A	The proposed development is outside the lateral extent of GLS surface. The proposed development is within the no circling area for missed approaches.
RWY 34R	288m (missed approach turn)	Using current published missed approach procedure with 2.5% climb gradient. Approximate distance to edge of turn initiation area = 6236m. Surface height = 182.9 + 6236 * 0.025 – 50 = 288m

3.2.3 Departure procedures

Assessment of the Sydney Airport instrument departure procedures was undertaken, and the results detailed in

Table 3-5 and Table 3-6. Greyed out cells represent procedures that are not expected to be the limiting height for the project.

The most restrictive height limitation for the Hunter Street West OSD is from Sydney Airport RWY 07 at 312m AHD. The most restrictive height limitation for the proposed Hunter Street East OSD is from Sydney Airport RWY 07 at 314m AHD.

Table 3-5: Assessment of Sydney Airport departure procedures for Hunter Street (West)

Procedure	Height Limitation (AHD)	Comment
Sydney Airport Two Departure (Radar)		
RWY 07	312m	Climb gradient: 4.7% Approximate distance from RP W to turn init area = 4,677m MOC = 8,177 * 0.008 = 65.5, use MOC = 90 Height limitation = 182.9 + 4,677 * 0.047 – 90 = 312 m
RWY 25	491m	Climb gradient: 5.6% Approximate distance from RP W to turn init area = 6,023m MOC = 9,523 * 0.008 = 76.2, use MOC = 90 Height limitation = 243.8 + 6,023 * 0.056 – 90 = 491m
RWY 16R	453m	Climb gradient: 4.7% Approximate distance from RP W to turn init area = 7,669m MOC = 11,169 * 0.008 = 89.4, use MOC = 90 Height limitation = 182.9 + 7,669 * 0.047 – 90 = 453m
RWY 34 L	359m	Climb gradient: 6.1% Approximate distance from RP W to turn init area = 4,369m MOC = 7,769 * 0.008 = 63.0, use MOC = 90 Height limitation = 182.9 + 7,69 * 0.061 – 90 = 359m
RWY 16L	443m	Climb gradient: 4.7% Approximate distance from RP W to turn init area = 8,185m MOC = 11,685 * 0.008 = 93.5 Height limitation = 152.4 + 8,185 * 0.047 – 93.5 = 474m
RWY 34 R	359m	Climb gradient: 4.8% Approximate distance from RP W to turn init area = 6,187m

Procedure	Height Limitation (AHD)	Comment
		MOC = 9,687 * 0.008 = 77.5, use MOC = 90 Height limitation = 152.4 + 6,187 * 0.048 – 90 = 359m

Table 3-6: Assessment of Sydney Airport departure procedures for Hunter Street (East)

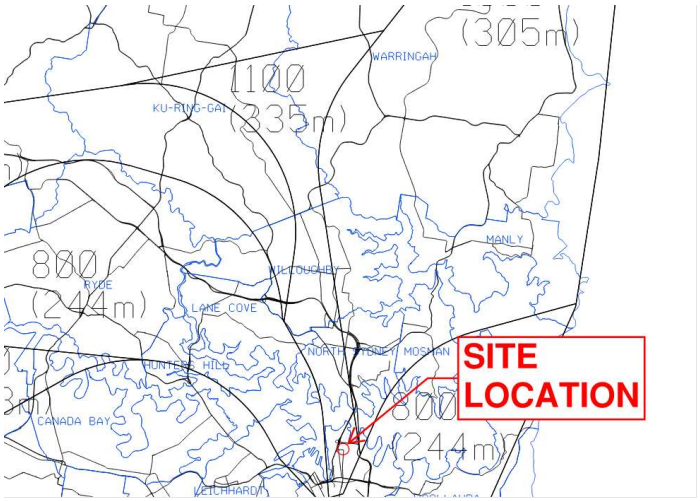
Procedure	Height Limitation (AHD)	Comment
Sydney Airport Two Departure (Radar)		
RWY 07	314m	Climb gradient: 4.7% Approximate distance from RP E to turn init area = 4,719m MOC = 8,219 * 0.008 = 65.7, use MOC = 90 Height limitation = 182.9 + 4,719 * 0.047 – 90 = 314 m
RWY 25	496m	Climb gradient: 5.6% Approximate distance from RP E to turn init area = 6,114m MOC = 9,614 * 0.008 = 76.9, use MOC = 90 Height limitation = 243.8 + 6,114 * 0.056 – 90 = 496m
RWY 16R	455m	Climb gradient: 4.7% Approximate distance from RP E to turn init area = 7,723m MOC = 11,223 * 0.008 = 89.8, use MOC = 90 Height limitation = 182.9 + 7,723 * 0.047 – 90 = 455m
RWY 34 L	365m	Climb gradient: 6.1% Approximate distance from RP E to turn init area = 4,464m MOC = 7,964 * 0.008 = 63.7, use MOC = 90 Height limitation = 182.9 + 7,694 * 0.061 – 90 = 365m
RWY 16L	444m	Climb gradient: 4.7% Approximate distance from RP E to turn init area = 8,219m MOC = 11,719 * 0.008 = 93.8 Height limitation = 152.4 + 8,219 * 0.047 – 93.8 = 444m
RWY 34 R	361m	Climb gradient: 4.8% Approximate distance from RP E to turn init area = 6,235m MOC = 9,735 * 0.008 = 77.9, use MOC = 90 Height limitation = 152.4 + 6,235 * 0.048 – 90 = 361m

Other surfaces

Table 3-7 presents the results of other height limitations at Sydney Airport assessed for the proposed development. The proposed site is within the 1100 feet (335m) MVA sector and is as such, subjected to the RTCC surface height limit of 335m AHD. It is not

expected that the development will have any impact on the Precision Approach Path Indicator (PAPI) at Sydney Airport.

Table 3-7: Assessment of other height limitations at Sydney Airport.

Procedure	Height Limitation (AHD)	Comment
Radar lowest Sector Altitude (RLSALT)	335 m	Based on Radar Terrain Clearance Chart (RTCC) 2015 from Sydney Airport 
Precision Approach Path Indicator (PAPI)	N/A	The proposed development is outside the lateral extent of the PAPI system protection surfaces. Based on the PAPI chart (2015) from Sydney Airport.

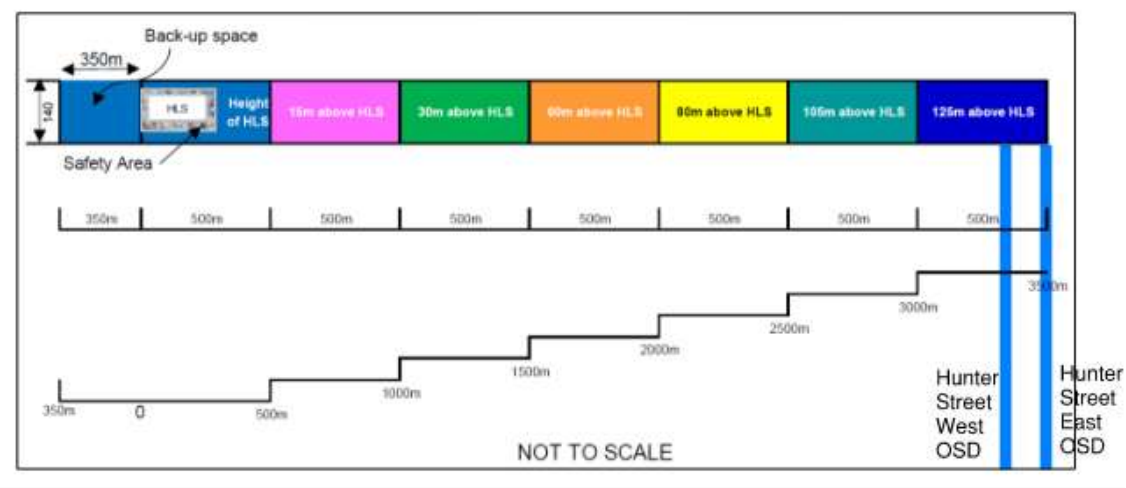
3.3 Heliport OLS

The closest strategically important helicopter landing site to the proposed Hunter Street development site is the Royal Prince Alfred Hospital Heliport, which has an elevation of 96m AHD. The proposed Hunter Street West OSD is located approximately 3.4km from the Royal Prince Alfred Hospital Heliport. The proposed Hunter Street East OSD is located approximately 3.5km from the Royal Prince Alfred Hospital Heliport (refer to Figure 7-1 below). Guideline H of the National Airports Safeguard Framework requires that any development between 3000 and 3500m has a height limitation of 125m above HLS, resulting in a maximum development height of 221m AHD.

The proposed Hunter Street West OSD proposed height of 220m AHD does not penetrate the SHLS OLS. Information on crane structures is currently unavailable at the time of this assessment, however it is likely that the cranes required to construct the proposed building would penetrate the SHLS OLS based past experiences of similar sized developments. As such, a temporary height approval application will likely be required by CASA and the SHLS asset owner. In this case, the SHLS asset owner is the Sydney Local Health District. Given that there are other tall buildings in close vicinity to the Hunter Street West OSD and SHLS OLS penetrations for this development are temporary, an exemption approval is likely to be obtained.

The proposed Hunter Street East OSD is on the borderline of 3500m from the Royal Prince Alfred Hospital Heliport. As the proposed height of 269.1m AHD would penetrate the SHLS OLS by 48.1m, height approval by CASA and the SHLS asset owner should be sought. The SHLS asset owner is the Sydney Local Health District. Given that there are other tall buildings penetrating this SHLS height limitation in close vicinity to the proposed Hunter Street East OSD (such as the Citigroup Centre building, which has an elevation of approximately 260 m AHD), an exemption approval is likely to be obtained.

Figure 3-1: Referral Trigger for SHLS, where HLS has not been surveyed/survey has not been provided (adapted from National Airports Safeguard Framework 2018).



3.4 Summary

Table 3-8 presents the impact summary of the proposed Hunter Street West OSD on applicable surfaces. Table 3-9 presents the impact summary of the proposed Hunter Street East OSD on applicable surfaces. Greyed out cells represent procedures that are not expected to be the limiting height for the project.

For the proposed Hunter Street West OSD, the most conservative height limitation is 156m AHD, resulting from the development penetrating the Sydney Airport OHS. For the proposed Hunter Street East OSD, the most conservative height limitation is 156m, resulting from the development penetrating the Sydney Airport OHS.

As the OSDs' penetrate the Sydney Airport OHS, an application for development approval must be submitted to DITRDC, via Sydney Airport. Approval is considered likely, as there are existing tall buildings which penetrate the Sydney Airport OHS near the Hunter Street OSD sites. Following approval of the planning proposal, it is recommended that pre-application consultation be undertaken with Sydney Airport and the Civil Aviation Safety Authority. Height approval applications should be submitted in parallel with future Design Approval (DA) processes with additional project detail, including temporary crane heights and overall building envelope inclusive of services plant, exhausts, towers, masts, building maintenance units and other ancillary features.

The proposed Hunter Street East and West OSDs' also penetrate the Royal Prince Alfred Hospital Heliport OLS of 221m. A prior height approval by CASA and the SHLS asset owner would be required, though an exemption approval is likely given other buildings penetrating the SHLS OLS nearby the project site. In this case, the SHLS owner is the Sydney Local Health District. Temporary approvals would also need to be sought for cranes during construction.

Table 3-8: Hunter Street West impact summary.

Procedure	Project impact	Height Limitation (AHD)	Comments
OLS	Penetration by 64m.	156m	Proposed development penetrates the Sydney Airport OLS OHS. Application for project development approval required.
MSA	No impact	335m	Proposed development heights are below all minimum sector altitude protection surfaces.
All Approach and Missed Approach Procedures	No impact	287m	Proposed development heights are below all approach procedure height limitations.
All Departure procedures	No impact	312m	Proposed development heights are below all departure procedure height limitations.
Other surfaces	No impact	335m	Proposed development would be below height restrictions of Sydney Airport's RTCC and outside the lateral extents of PAPI height limitations.

Procedure	Project impact	Height Limitation (AHD)	Comments
SHLS OLS	Proposed building height 1m below OLS	221m	Cranes required to construct the proposed development would penetrate the SHLS OLS and would thus require prior height approval by CASA and the SHLS asset owner.

Table 3-9: Hunter Street East impact summary.

Procedure	Project impact	Height Limitation (AHD)	Comments
OLS	Penetration by 113.1m.	156m	Proposed development penetrates the Sydney Airport OLS OHS. Application for project development approval required.
MSA	No impact	335 m	Proposed development heights are below all minimum sector altitude protection surfaces.
All Approach and Missed Approach Procedures	No impact	288m	Proposed development heights are below all approach procedure height limitations.
All Departure procedures	No impact	314m	Proposed development heights are below all departure procedure height limitations.
Other surfaces	No impact	335m	Proposed development would be clear of Sydney Airport's RTCC and PAPI height limitations at the maximum proposed height.
SHLS OLS	Penetration by 48.1m	221m	Proposed development would penetrate the SHLS OLS and would thus require prior height approval by CASA and the SHLS asset owner.

4 Conclusion

A preliminary aeronautical impact assessment for the construction and operation of a future Hunter Street Over Station Development (OSD) has been prepared. a The potential future development of the sites in line with the Planning Proposal request has been considered, to assess a future development's compliance to height limitations imposed by proximity to Sydney Airport and Royal Prince Alfred Hospital Heliport (two airspaces nearest to the OSD) were investigated.

The Hunter Street West proposed development height of 220m AHD penetrates the Sydney Airport OLS OHS. The proposed development height is below the Royal Prince Alfred Hospital Heliport OLS, however cranes required to construct the development would penetrate the SHLS OLS.

The Hunter Street East proposed development height of 269.1m AHD penetrates the Sydney Airport OLS OHS and the Royal Prince Alfred Hospital Heliport OLS.

OLS penetrations do not preclude development approvals. An application for development approval must be submitted to DITRDC, via Sydney Airport, for each OSD, including any temporary penetrations for cranes etc. Approval is considered likely, as there are existing tall buildings which penetrate the Sydney Airport OHS near the Hunter Street OSD sites, such as the Citigroup Centre building, which has an elevation of approximately 260m AHD. Construction of additional tall buildings near existing obstacles is unlikely to be perceived as negatively impacting aeronautical safety.

The proposed Hunter Street East OSD penetrates the Royal Prince Alfred Hospital Heliport OLS of 221m. The proposed Hunter Street West OSD is 1m below the SHLS OLS, hence cranes required to construct the development will penetrate the SHLS OLS. A height approval by CASA and the SHLS asset owner would also be required, though an exemption approval is likely given other buildings penetrating the SHLS OLS nearby the project site.

Height approval applications should be submitted in parallel with future Design Approval (DA) processes and include additional project detail such as temporary crane heights and overall building envelope inclusive of services plant, exhausts, towers, masts, building maintenance units and other ancillary features.

Following approval of the planning proposal, it is recommended that a pre-application consultation be undertaken with Sydney Airport and the Civil Aviation Safety Authority.

5 References

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