

Aviation Safeguarding Assessment

601 Pacific Highway, St Leonards

18 March 2026



PUBLICATION TITLE:

Aviation Safeguarding Assessment: 601 Pacific Highway, St Leonards

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VERSION NO.	DATE	PREPARED BY	CHANGE DESCRIPTION
V1 DRAFT	9/11/2025	Dave Race	First draft for review
V2 DRAFT	18/11/2025	Amin Hamzavian	Building and crane heights corrected throughout report Updated site aerial inserted as Figure 1 Standard text added to Sections 2.1 and 2.2 SEARs added as Section 2.3 Comprehensive updates to Sections 5 and 6 Conclusions updated to reflect edits above Appendix A inserted
V1 FINAL	21/11/2025	Amin Hamzavian	Figure titles reviewed and updated Figure cross-references reviewed and updated
V2 FINAL	24/11/2025	Amin Hamzavian	LEP year reference corrected in 2.2 Figure 5 scaling corrected
V3 FINAL	18/03/2026	Amin Hamzavian	Standard Text updated in 2.1 and 2.2 Figure 5 updated

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1

Executive Summary

Executive Summary

This Aviation Safeguarding Assessment has been prepared by Avlaw Aviation Consulting Pty Ltd (Avlaw) on behalf of Stockland Development Pty Ltd (the Applicant). It is submitted to the Department of Planning, Housing and Infrastructure (DPHI) to supplement a State Significant Development Application (SSDA) (SSD-85848713) and concurrent rezoning proposal, in support of the redevelopment of land at 601 Pacific Highway in St Leonards, New South Wales (the site).

The scope of Avlaw's engagement has been defined by guidelines which are applicable to a proposed development at the site that are contained in the National Airports Safeguarding Framework (NASF) and all associated aviation legislation and regulations. This by default address the site-specific Secretary's Environmental Assessment Requirements (SEARs), which includes an item (#25) titled "Aviation Considerations", stating the following:

- The proposed development will exceed 100 metres Above Ground Level (AGL), and due to its height and proximity to the Royal North Shore Hospital (RNSH), CASA is likely to recommend the installation of aviation hazard lighting at the top of the building when the formal application is referred.
- The development will infringe the Outer Horizontal Surfaces of the Obstacle Limitation Surfaces (OLS) for Sydney Airport. A such a formal application to the Department of Infrastructure Transport, Regional Development, Communications, Sports and the Arts (Department) will be required.

The proposed redevelopment at the site will consist of the demolition of the existing building and the construction of one (1) multi-level tower complex, being developed up to a height of 264.50m AHD, which includes all ancillary plant equipment, such as lift shaft overruns, vents, handrails, and communications antennas. A detailed Construction Management Plan (CMP), including tower crane locations and key lift dates, will be developed when detailed design has been finalised. However, preliminary advice in relation to the construction methodology indicates that two luffing tower cranes will be used during development, reaching a maximum height of 332.0m AHD when weathervaning and at a height of 282.50 m AHD when in use/operation.

Avlaw's assessment has found that the critical (i.e. lowest) airspace protection surface covering the site is the Outer Horizontal Surface of the Obstacle Limitation Surfaces (OLS) for Sydney (Kingsford Smith) Airport (SYD). The proposed built structure (264.50m AHD) and two luffing jib cranes (332.0m AHD) will all intrude this surface by 126.5m and 176m respectively. Each will require controlled activity approval prior to being erected, which should be issued.

Above the SYD OLS, other airspace protection surfaces calculated by Avlaw are as follows:

- Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS):
 - 278.28m AHD, when applying International Civil Aviation Organisation (ICAO) PANS-OPS Doc 6168 criteria
 - This surface relates specifically to a Standard Instrument Departure (SID) for aircraft departing from RWY 34L and climbing straight ahead
 - 340.15m AHD, when applying Airservices Australia (AsA) criteria

- Radar Terrain Clearance Chart (RTCC) protection surface is a horizontal plane across the site at 335.28m AHD

At 264.50m AHD, the proposed building at the site will not intrude any of the PANS-OPS or RTCC protection surfaces, irrespective of which criteria are applied. However, during construction, two luffing tower cranes are proposed to be erected at the site and will reach a height of 332.0m AHD. Both will therefore result in an intrusion of the PANS-OPS, specifically when ICAO PANS-OPS Doc 6168 criteria is applied. Such intrusions are possible in some circumstances, however, they must be limited to a total of three contiguous months. AsA will be tasked with assessing the proposed permanent and temporary structures at the site once controlled activity applications are lodged and will advise the Applicant if the proposed crane activity does or does not impact IFP or PANS-OPS surfaces.

The building at the finished height of 264.50 m AHD will also be required to be reported to the Department of Defence (AIS-AF) for entry into their national obstacle database, noting that no approval is required from the Department of Defence.

The site is also located approximately 450m SE of the rooftop helipad at the RNSH and west of the Harbour Lane helicopter transit lane. With respect the RNSH helipad, the site is clear of the operational airspace boundary associated with the established flight paths to/from the helipad. With respect the transit lane, the site is in close proximity to other existing tall structures and with mitigations in the form of markings, obstacle lighting and Notice to Airmen (NOTAM), Avlaw does not believe these proposed obstacles will adversely impact the safety, efficiency and regularity of aircraft and helicopter operations and should therefore be approved.

No other aviation compliance issues or hazards to aircraft operations have been identified by Avlaw. The rationale for reaching this conclusion is detailed throughout this report.

2

Introduction

Introduction

2.1 Description

The site is located on Cammeraygal country at 601 Pacific Highway, St Leonards within North Sydney (LGA). The site is legally described as Lot 71 in DP749690 and has a total area of 2,844m². The site is 4.5 km north of the Sydney CBD, 3 km from the North Sydney CBD, and within proximity to the centres of St Leonards, Chatswood, and Macquarie Park. The site is located 350 metres (walking distance) from St Leonards train station and approximately 400m (walking distance) from the Crows Nest Metro station. A site aerial and location plan is provided at **Figure 1** below.



Figure 1: Aerial photo showing the site area and boundary title

Source: Urbis

2.2 Proposal

This Aviation Safeguarding Assessment has been prepared by Avlaw and is submitted to DPHI in support of a SSDA (SSD-85848713) and concurrent rezoning proposal for a new mixed-use development at 601 Pacific Highway, St Leonards (the site). The proposal seeks consent for the following:

- An amendment to the North Sydney Local Environmental Plan 2013 (NLEP 2013) to rezone the site from E2 Commercial Centre to MU1 Mixed Use and to amend the minimum non-residential floor space ratio development standard under Clause 4.4A from 20:1 to 1:1.
- Demolition of the existing 14 storey commercial office building that is currently on the site.
- Site excavation, remediation and other preparatory works.
- Construction and operation of a new 52 storey (RL264.50) mixed use shop top housing development, with a FSR of 20:1 (maximum GFA of 56,880m²), comprising of:
 - 538 dwellings including 508 Build-to-Sell apartments and 30 Affordable Housing apartments across a mix of apartment typologies.
 - A contribution of 5% of the residential GFA toward Affordable Housing.
 - Retail and commercial land uses at the ground and podium levels.
 - Internal and external residential amenities provided throughout the building.
 - Six levels of basement carparking, comprising a total of 300 car spaces, bicycle parking, loading bays, waste areas, plant, and back of house.
- Vehicular access to the basement via Atchison Street.
- Landscaping and Public Domain works.
- Reticulation of site services and infrastructure (electricity, telecommunication, water, and sewer connections).

2.3 SEARs

This Aviation Safeguarding Assessment has been prepared to address the following relevant Secretary's Environmental Assessment Requirements (SEARs) set out in the **Figure 2** below.

Item	SEARS Requirement	Relevant Section of Report
25	The proposed development will exceed 100 metres Above Ground Level (AGL), and due to its height and proximity to the Royal North Shore Hospital (RNSH), CASA is likely to recommend the installation of aviation hazard lighting at the top of the building when the formal application is referred	Section 5.7 Section 6
	The development will infringe the Outer Horizontal Surfaces of the Obstacle Limitation Surfaces (OLS) for Sydney Airport. A such a formal application to the Department of Infrastructure Transport, Regional Development, Communications, Sports and the Arts (Department) will be required.	Section 5.5 Section 6

Figure 2: Aviation-related site-specific SEARs

Avlaw notes that the SEARS do not make reference to applicable aviation regulations (Airports (Protection of Airspace) Regulations 1996) and legislation (Airports Act 1996) which must be taken

into consideration before built or temporary structures are erected around airports. The scope of Avlaw's assessment in this report has been expanded to take into account said requirements, which will satisfy the expectations of aviation stakeholders that will be invited to review the proposal and ensure a comprehensive aeronautical assessment is completed.

3

Aviation Regulatory Framework

Aviation Regulatory Framework

3.1 Airspace Height Controls

Protection of airspace surrounding an airport is a critical component of maintaining requisite safety standards that facilitate the efficient use of runways, whilst also managing the associated impacts of their use on other critical infrastructure (e.g. taxiways), the environment and the general public. As a signatory to the *Chicago Convention 1944*, Australia adopts International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPs) with respect to airspace, which define sets of invisible surfaces above the ground around an airport. The airspace above these surfaces forms the airport's prescribed airspace.

The airspace associated with Sydney Airport comprises two (2) types:

- airspace associated with visual flight rules (VFR); and
- airspace associated with instrument flight rules (IFR).

With regards to Sydney Airport, both the OLS associated with VFR operations and the PANS-OPS surfaces associated with IFR operations will require assessment and any penetration, permanent or temporary, will require a referral to the Department, as Sydney Airport is a federally leased airport. Federally leased airports are regulated by Chapter 12 of the Airports Act 1996 (the Act), and the Airports (Protection of Airspace) Regulations 1996 (Regulations) establish a framework for the protection of airspace at and around airports. The Act defines any activity resulting in an intrusion into the airport's prescribed airspace to be a "controlled activity" and requires that controlled activities cannot be carried out without approval. As such, controlled activities through the department are referred to the Civil Aviation Safety Authority (CASA) for their technical assessment. If the PANS-OPS surfaces are penetrated temporarily, noting permanent penetrations are not allowed at federally leased airports, the department/CASA will refer to Airservices Australia, the Instrument Flight Procedure (IFP) designer, who will need to assess any operational impact on the IFPs.

Avlaw has completed an airspace assessment based on Sydney Airport's OLS data and the ICAO PANS-OPS design requirements outlined in Doc 6168, which are explained later in this report.

Development that infringes on an airport's prescribed airspace is called a "controlled activity" and can include, but is not limited to:

- permanent structures such as buildings intruding into protected airspace;
- temporary structures such as cranes intruding into protected airspace;
- or any activities causing intrusions into the protected airspace through glare from artificial light or reflected sunlight, air turbulence from stacks or vents, smoke, dust, steam or other gases or particulate matter.

Of those listed above, the final built form and the temporary construction cranes are proposed to intrude into the prescribed airspace of Sydney Airport, and therefore will require a referral to the Department.

3.2 Airspace Approval Process

The aviation approval processes for penetrations of Sydney Airport's airspace and those which apply to helicopter operations at hospital helipads are covered by different regulations and legislation and are also subject to separate administrative processes. Each has been described below separately.

Sydney Airport

Sydney Airport is a Federal government-leased airport and, as such, is subject to the Commonwealth's Airport Act 1996 and the Airports (Protection of Airspace) Regulations 1996, and it needs to comply with the Civil Aviation Safety Authority (CASA) Manual of Standards Part 139 – Aerodromes (MOS 139) in relation to obstacles and obstacle assessments.

MOS 139 outlines the following:

Chapter 7, Obstacle Restriction and Limitation

para 7.19 Objects or structures that could become obstacles in the OLS

(1) If a proposed object or structure is identified as likely to be an obstacle, details of the relevant proposal must be referred to CASA for CASA to determine, in writing:

- (a) whether the object or structure will be a hazard to aircraft operations; and*
- (b) whether it requires an obstacle light that is essential for the safety of aircraft operations.*

(2) A runway must not be made available for night use for the first time until:

- (a) the aerodrome operator has informed CASA of obstacles within the OLS; and*
- (b) CASA has determined that the obstacles will not adversely affect the safety of night operations.*

Temporary and transient obstacles

(3) A temporary or transient obstacle:

- (a) in close proximity to an aerodrome; and*
- (b) that infringes the OLS; must be referred to CASA to determine whether the obstacle will be a hazard to aircraft operations.*

Note Transient obstacles would include, for example, road vehicles, rail carriages and ships

In addition to the controlled activity approval process detailed above, any infringement or proposed infringement of the PANS-OPS, CASA will refer the application to AsA, which is responsible for the IFP's. AsA will determine if a temporary modification to the IFP is required for temporary obstacles, a modification for permanent obstacles or may even object to the proposed obstacle based on safety grounds.

It is also worth noting that during recent discussions with Sydney Airport with respect to another development (specifically applications relating to cranes), a proposed installation date in 2027 led Sydney Airport to withhold progressing the controlled activity approval process, citing two main reasons:

- The *Airports (Protection of Airspace) Regulations 1996* are sunseting in 2026 and will be replaced with new regulations; and
- The rolling out of the modernisation of the OLS was announced by the ICAO earlier this year, which at some point in the years to come will impact airspace design around Sydney Airport.

Avlaw does not expect any of the changes above to introduce any additional risk to the likelihood of controlled activity approvals being issued at the site or for more restrictive criteria to be adopted by

Sydney Airport that would impact the conclusions in this report. However, this will need to be re-assessed as and when sufficient details relating to the changes described above become available, alongside the final CMP.

The "Airspace Protection Form" and "Crane Enquiry Form", both of which can be downloaded through [this link](#), should be populated and emailed to airspaceprotection@syd.com.au to commence the controlled activity application process. Approvals for intrusions into prescribed airspace are issued with specific conditions, which may include a combination of marking and lighting requirements, as well as specific dates of activity. This will need to be considered as the project progresses towards commencement of construction, as the staging of lifts and associated dates will need to be included on the application forms, and be submitted with enough lead time (nominally 3-4 months) for approvals to be issued prior to the installation of cranes.

Carrying out a controlled activity without approval is an offence under Section 183 of the Act 1996 and is punishable by a fine of up to 250 penalty units. It is an offence under Section 185 of the Act to contravene any conditions imposed on an approval. Under Section 186 of the Act it is an offence not to give information to the airport operator that is relevant to a proposed controlled activity.

Hospital Helipads

The triggers for assessment of proposed development activities with respect to airspace surrounding hospital HLSs are not captured within the regulations and legislation described above for Sydney Airport. Applications for aviation approval for developments in close proximity to hospital HLSs are instead lodged with the asset owner (i.e. RNSH in this instance) who in turn refer the application to their aviation advisors and Helicopter Emergency Medical Services (HEMS) operators that fly to/from the HLS in question for assessment.

In order to assess if there will be any adverse impact on hospital helipads by the proposed development at the site, Avlaw has applied the operational airspace dimensions defined by ICAO as relevant to the activities at RNSH i.e. HEMS operations operating in Performance Class 1. This aligns with advice contained in CASA AC139.R-01 v3.0 which serves to inform such assessments within Australia. Avlaw's findings based on this criteria can be found in Section 5.7.

4

Proposed Development

Proposed Development

4.1 Site description

Figure 3 below is a plan view of the site and includes the MGA 94 coordinates for each of the corners/extremities. Also included are the MGA 94 coordinates for the centre of the tower sections of each crane (indicative), which are assessed in more detail later in this report.

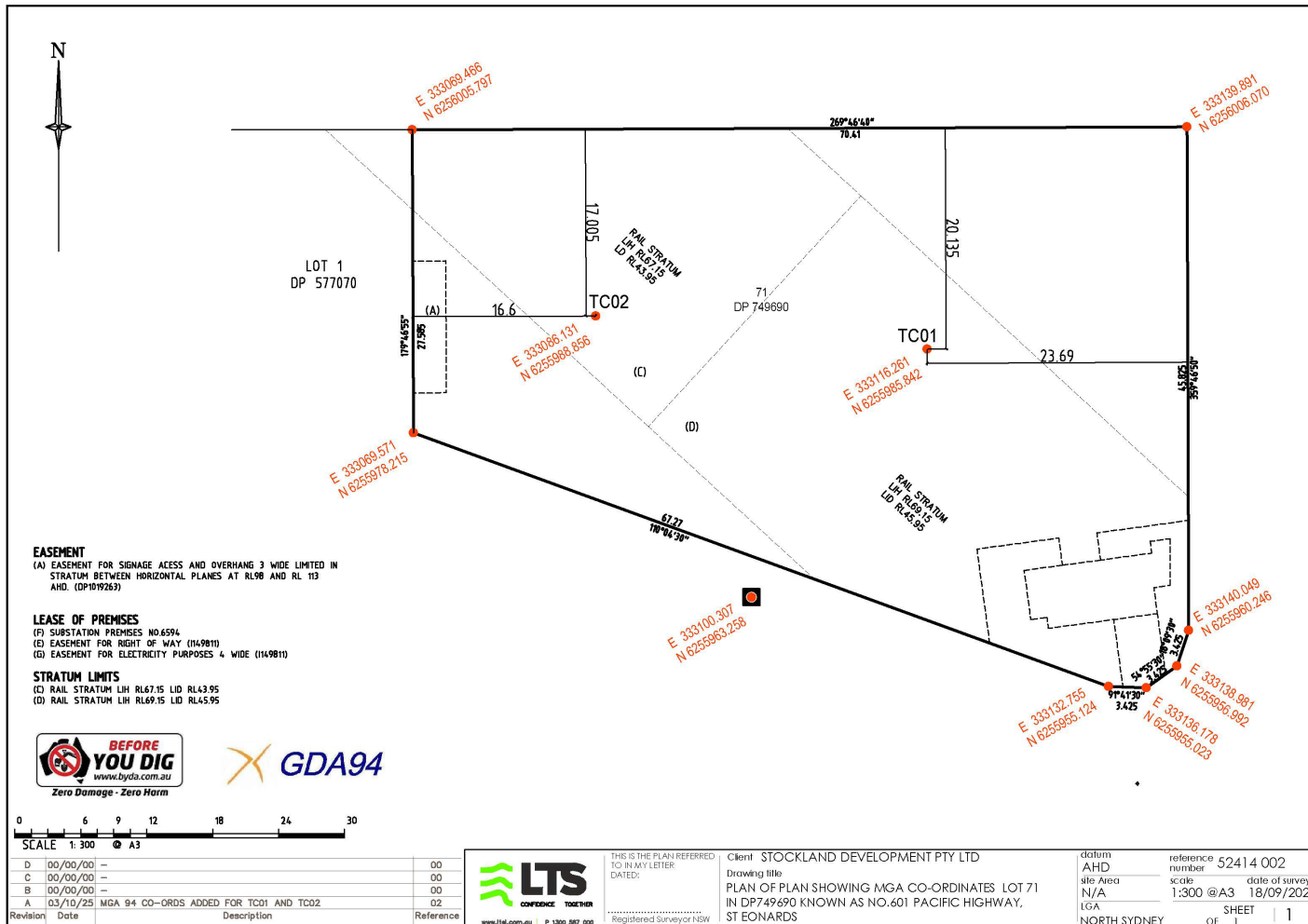


Figure 3: Site Plan showing the boundary of the site including MGA 94 coordinates of each corner/extremity
Note: MGA 94 coordinates within the boundary indicate positions of TC01 and TC02 (discussed later in this report)

4.2 Location

The site (marked in red) is approximately 13.75 km north of Sydney Airport's ARP on a bearing of 354.57 degrees magnetic (7.57 degrees true), which is illustrated in Figure 4 below.

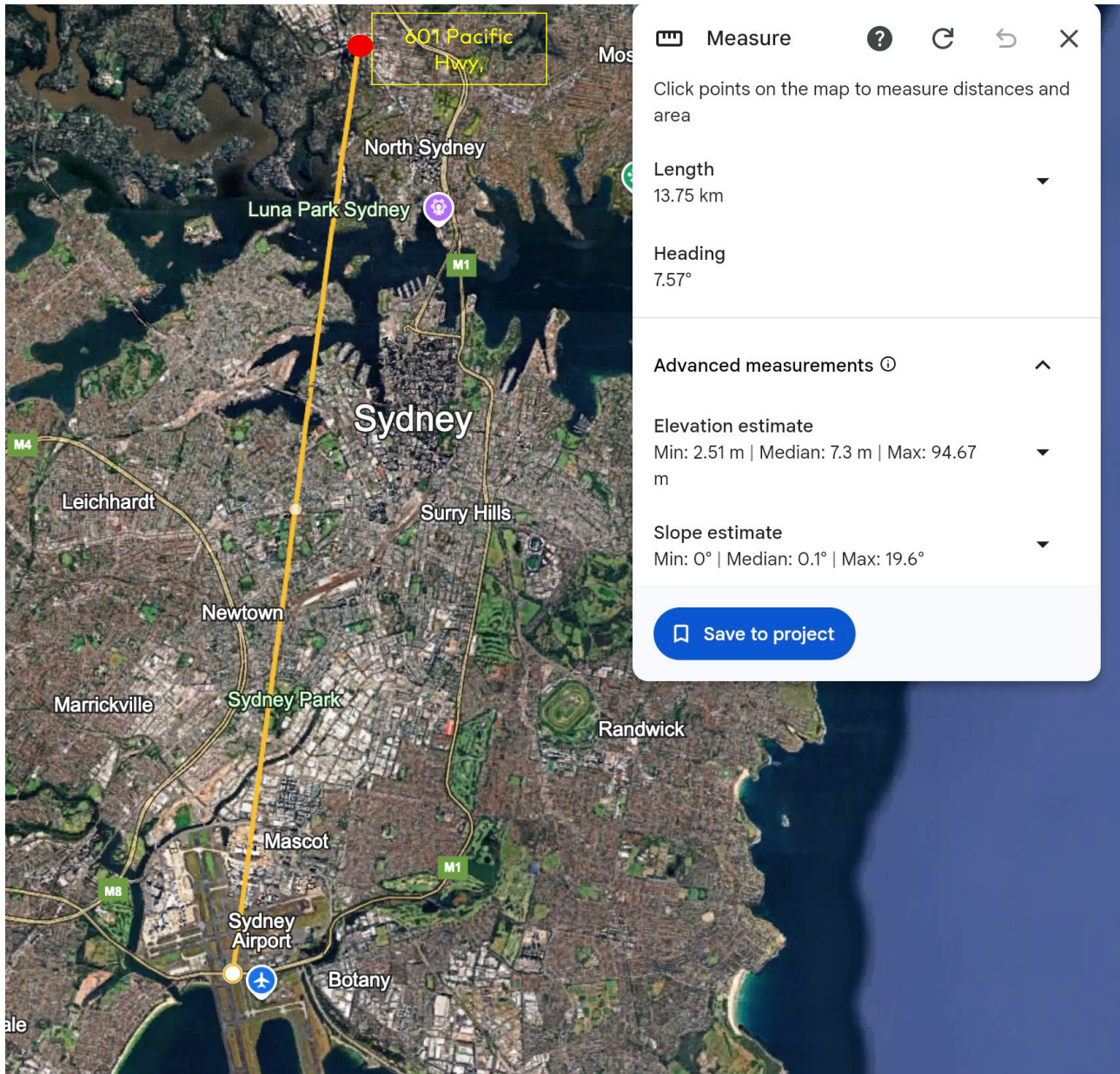


Figure 4: Site shown in Red in relation to Sydney Airport's ARP

4.3 Permanent structures

The built structure proposed at the site will comprise of one (1) multi-level tower complex comprising 52 above-ground floors reaching a height of 264.50m AHD, inclusive of all ancillary features such as plant and equipment, handrails, lift overruns, ventilation shafts and communications antennas within this envelope.

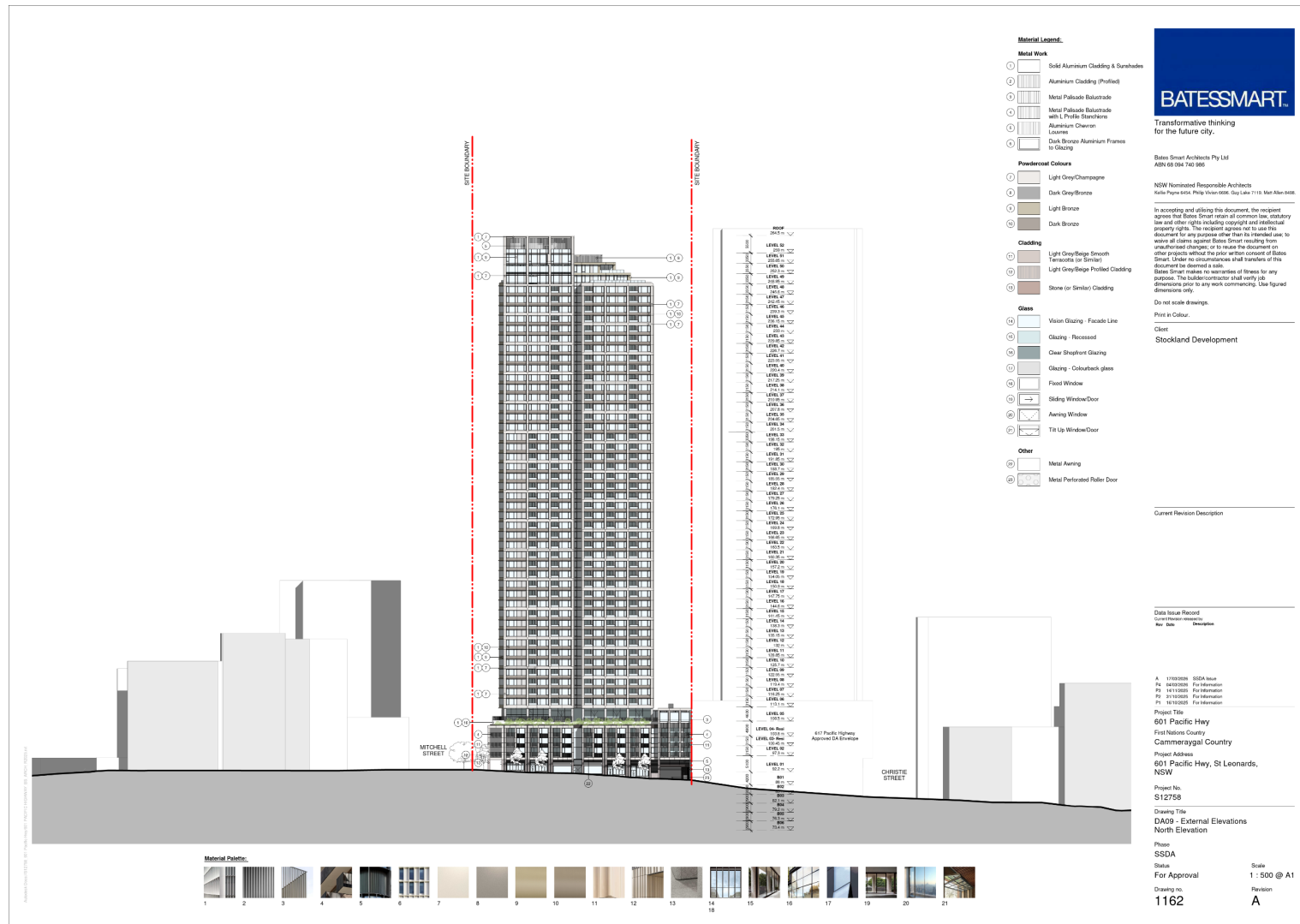


Figure 5: North elevation showing the proposed built structure at its finished height of 264.50m AHD

4.4 Crane Activity

A detailed Construction Management Plan (CMP), which includes designed crane heights, locations and specific dates of erection, is not available at the time of writing and will be produced at the appropriate time when a Principal Contractor is appointed. However, for the purposes of this assessment, Avlaw has been provided with indicative information which assumes the use of two (2) tower luffing cranes (TC1 and TC2) across the development (as shown in Figure 6) to keep the crane activity as localised and low as possible.

Both tower luffing cranes will be installed as required and, based on the operating radii of each, the operating heights are indicatively set at 67.50 m above the maximum built form of the structure.

A conservative approach has been adopted with regard to crane heights to inform the assessment in this report, which will be confirmed once detailed design is completed. It is envisaged that the cranes will be installed at a lower height initially and raised as required up to a maximum height of 332.00 m AHD (weathervaning position) as the building construction height increases, facades fitted, and rooftop plant and equipment are installed

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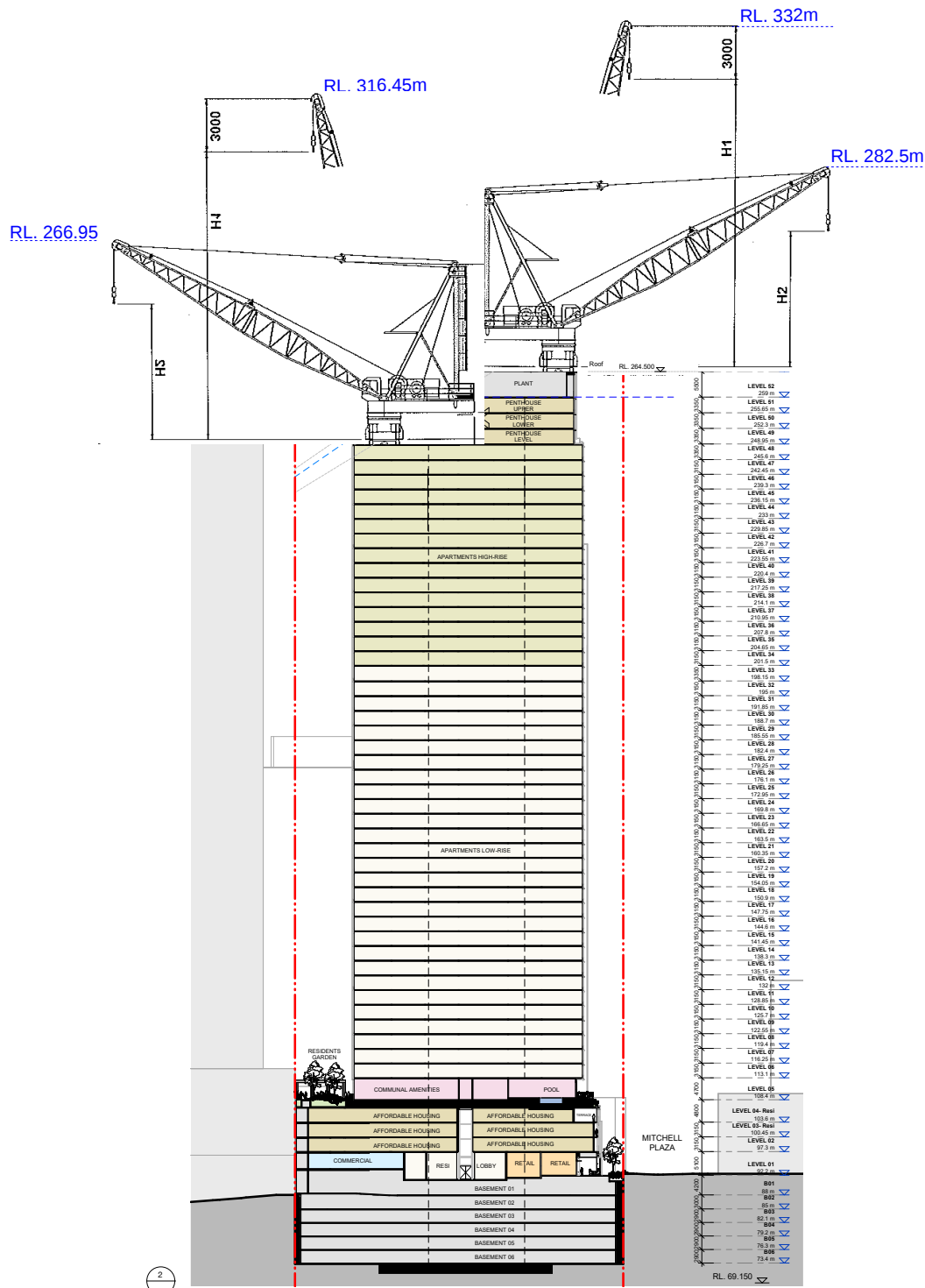


Figure 6: Elevation drawing indicatively showing both cranes at min and max radii (NTS)

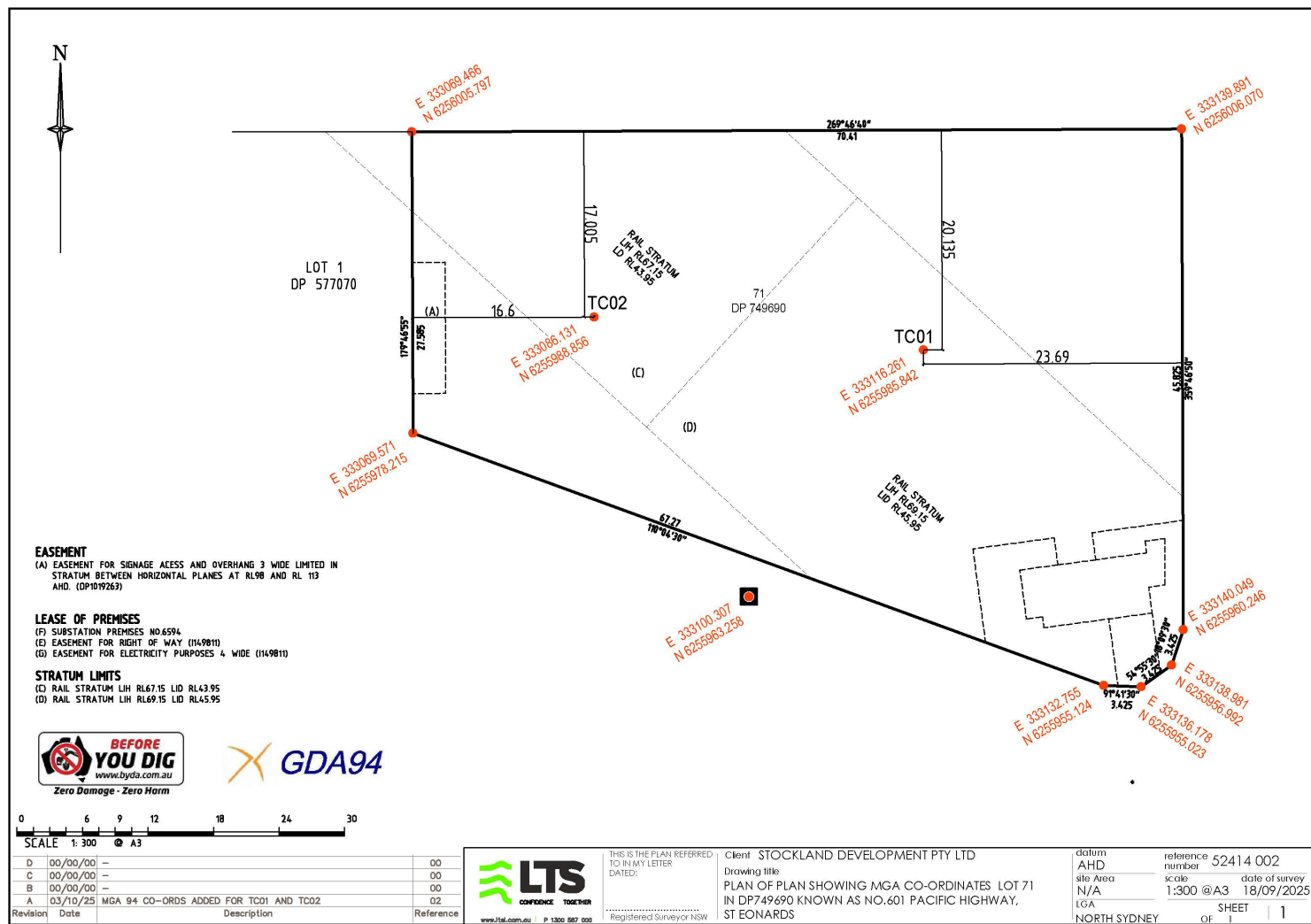


Figure 7: MGA 94 coordinates (indicative) for the centre of each tower section of TC01 and TC02

4.5 Non-structural elements

In addition to permanent and temporary obstacles which require assessment and approval in the event they intrude prescribed airspace, non-structural elements which introduce hazards to aircraft safety in the form of turbulence (e.g. discharge from vents, exhausts) must, when applicable, also be considered carefully and risk mitigated as required.

Such features must be considered in the context of applicable aviation regulations to ensure they will not introduce any unacceptable hazards to aircraft operations. Civil Aviation Safety Regulations (CASR) Part 139.180 states that *"CASA may determine a gaseous efflux having a velocity in excess of 4.3m/s will be a hazard to aircraft operations because of the velocity or location of the efflux"*.

Exhaust and lobby relief fans are proposed on the roof, which is standard for buildings of this height. The velocity of the discharge from these fans will be determined through the detailed design phase.

Therefore, further assessment of the proposed development at the site against this criterion is not considered necessary or appropriate at the time of writing, and is therefore excluded from the rest of this report.

5

NASF Guidelines

NASF Guidelines

The proposed development at the site needs to be assessed against a range of guidelines and principles contained within the NASF to satisfy the expectations of local planning authorities and aviation stakeholders. This ensures that any unacceptable risks associated with property development in the context of aircraft operations are not approved unless important aviation stakeholders have had an opportunity to assess the proposed activities on various aspects of aviation safety and, if necessary, propose appropriate mitigations that will ensure the safety, efficiency and regularity of aircraft operations are preserved.

All the NASF Guidelines are assessed in this section of this report, with the exception of an assessment of the Proposal against Guideline D of the NASF. This has been omitted as it relates specifically to wind turbine farms, which is irrelevant in the given type of development being proposed.

5.1 Aircraft Noise

Sydney Airport continues to grow each year, and more recently Sydney Airport has had its Airport Master Plan 2039 approved by the Minister as a requirement under the Airports Act.

To help quantify aircraft noise around airports and their surrounds to establish parameters for appropriate land-use planning based on aircraft noise, an Australian Noise Exposure Forecast (ANEF) has been developed to assist planners, developers, and regulators. ANEF modelling is endorsed by Airservices Australia and, in turn, has been approved as part of the airport master plan process. Figure 8 shows the N70 noise contour chart provided in the Sydney Airport 2039 Master Plan and has been adopted in this assessment, noting that the N70 lines extend out to the west of the site.

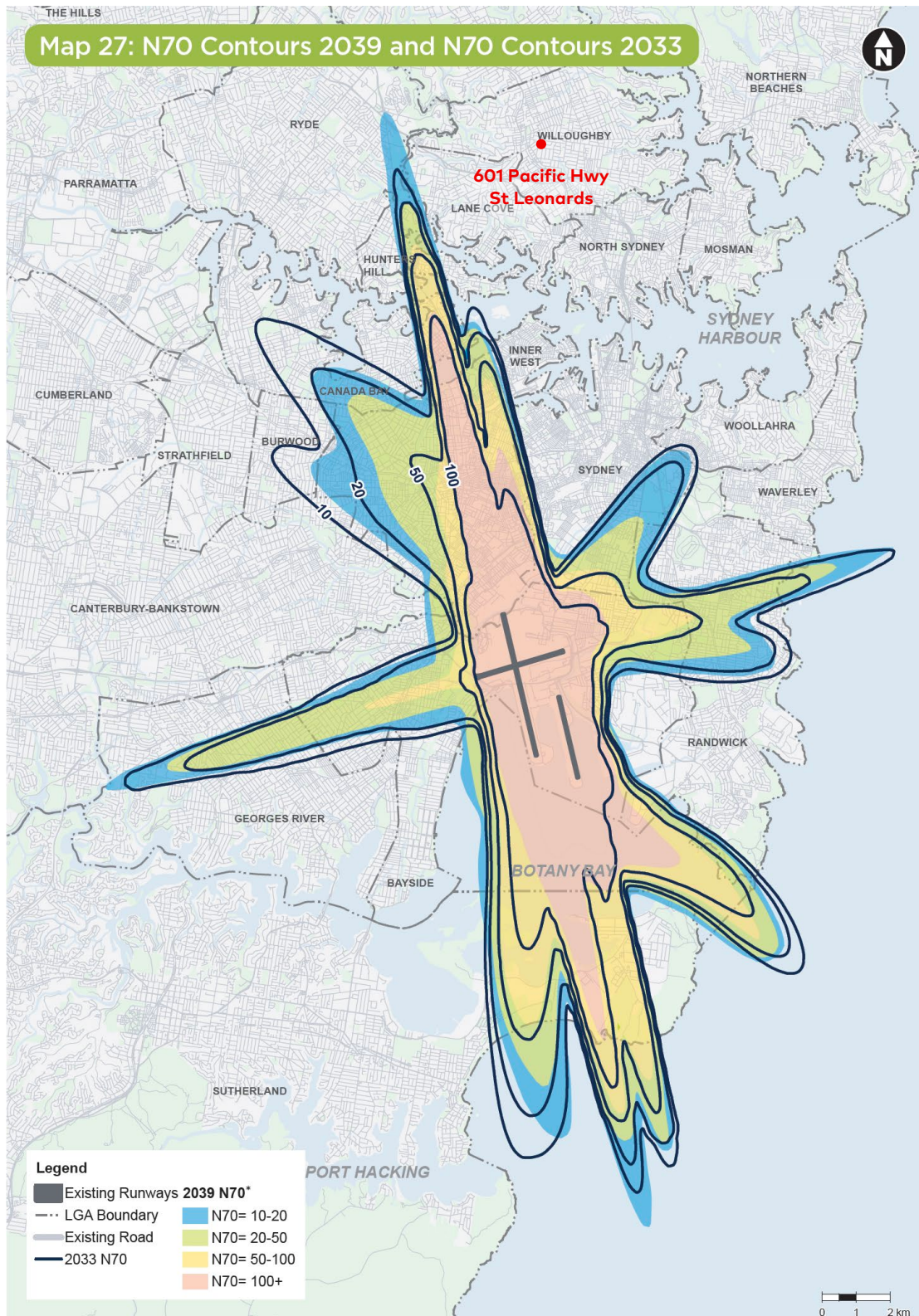


Figure 8: Sydney Airport 2039 Noise Exposure Contour Map.

Source: Sydney Airport Master Plan

It is clear that the entire site falls outside the contours within which restrictions for development of specific land uses would apply. Therefore, Avlaw's assessment is that the development at the site is compliant with noise restrictions as they relate to SYD.

5.2 Windshear and Turbulence

The Department has published [Guideline B](#) to provide advice to States and Territories, as well as local government decision makers and airport operators, to manage the risk of building-generated windshear and building-generated turbulence at airports. The assessment area that triggers additional assessment is illustrated in the figures below.

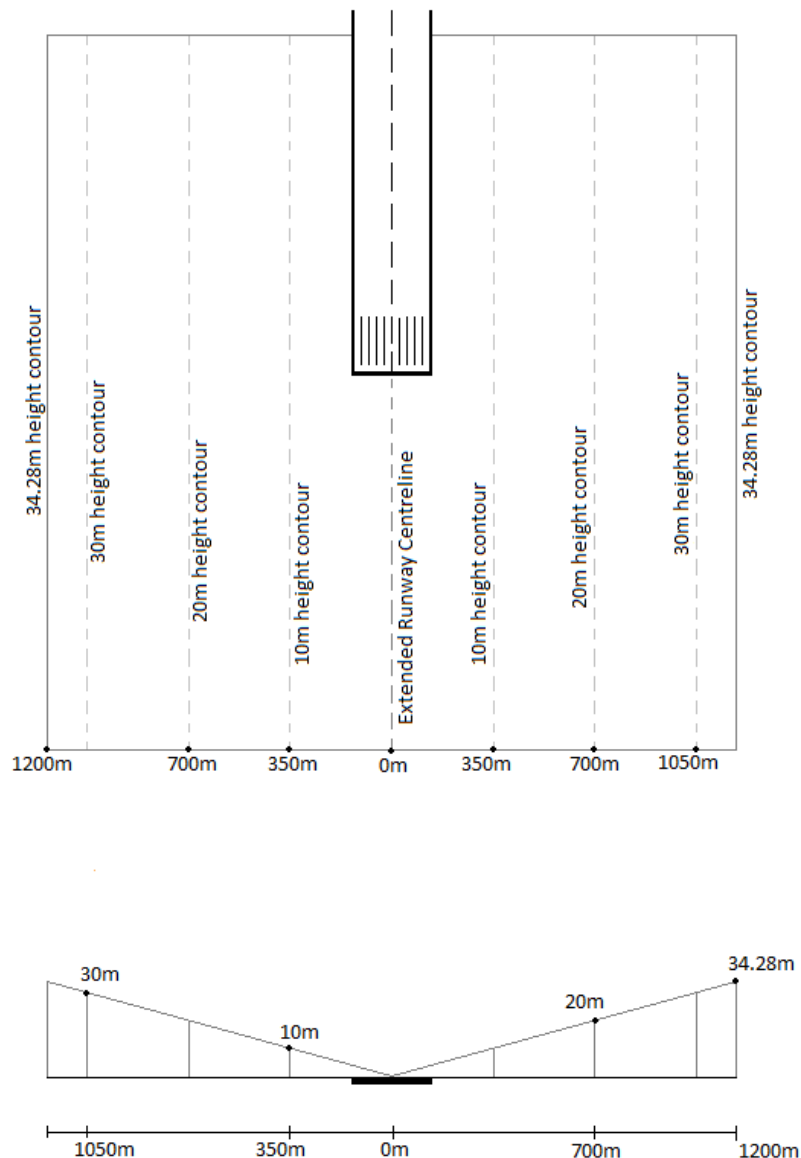


Figure 9: Plan view (top) and elevation view (bottom) of the 1:35 surface

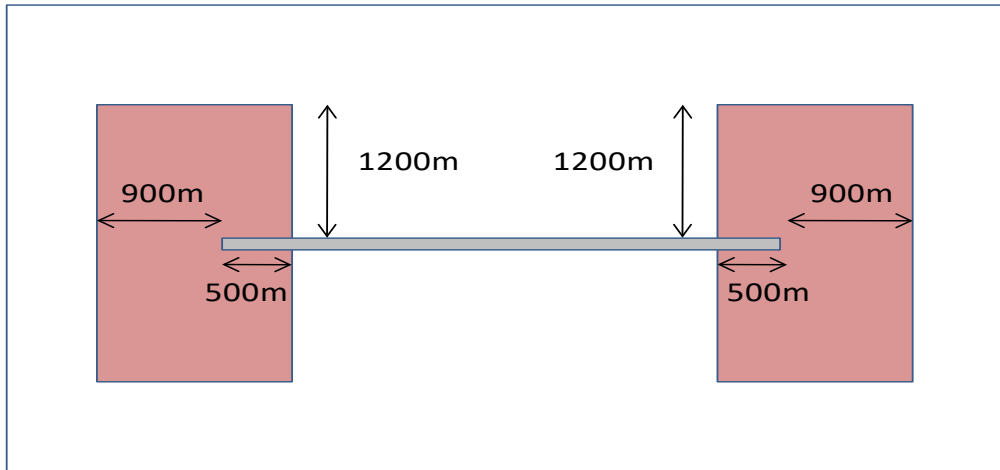


Figure 10: Area within which buildings that penetrate the 1:35 surface should be assessed

Since the site is located approximately 12 km from the nearest runway threshold at Sydney Airport, the proposed development is outside the assessment area and therefore does not need to be assessed further to ensure compliance with windshear and turbulence criteria.

5.3 Wildlife Hazards

Within a certain proximity to an airport, aviation stakeholders require an assessment to be conducted on proposed developments to identify the risks of wildlife that may be present or attracted to a location as a means of understanding the impacts of said development on airport operations. Once identified, certain land uses are either deemed to be acceptable, unacceptable or conditionally approved based on specific monitoring and mitigation measures being developed and implemented. The site is located 13.75 km radius from the Sydney Airport's ARP and therefore falls outside the 13 km assessment criteria and does not need to be assessed further to ensure compliance with wildlife hazard criteria.

5.4 Lighting

The Department has published [NASF Guideline E on Managing Risk of Distractions to Pilots from Lighting in the Vicinity of Airports](#). The guideline advises on situations where lights are to be installed within a radius of 6km from an airport.

Attachment 1 to the guideline illustrates what is referred to as a "primary area" which is further divided into four segments which is illustrated below.

The site is located 12 km from the northern threshold of RWY 16R for Sydney Airport. Therefore, the site falls outside the maximum intensity of the light source measured at 3 degrees above the horizontal.

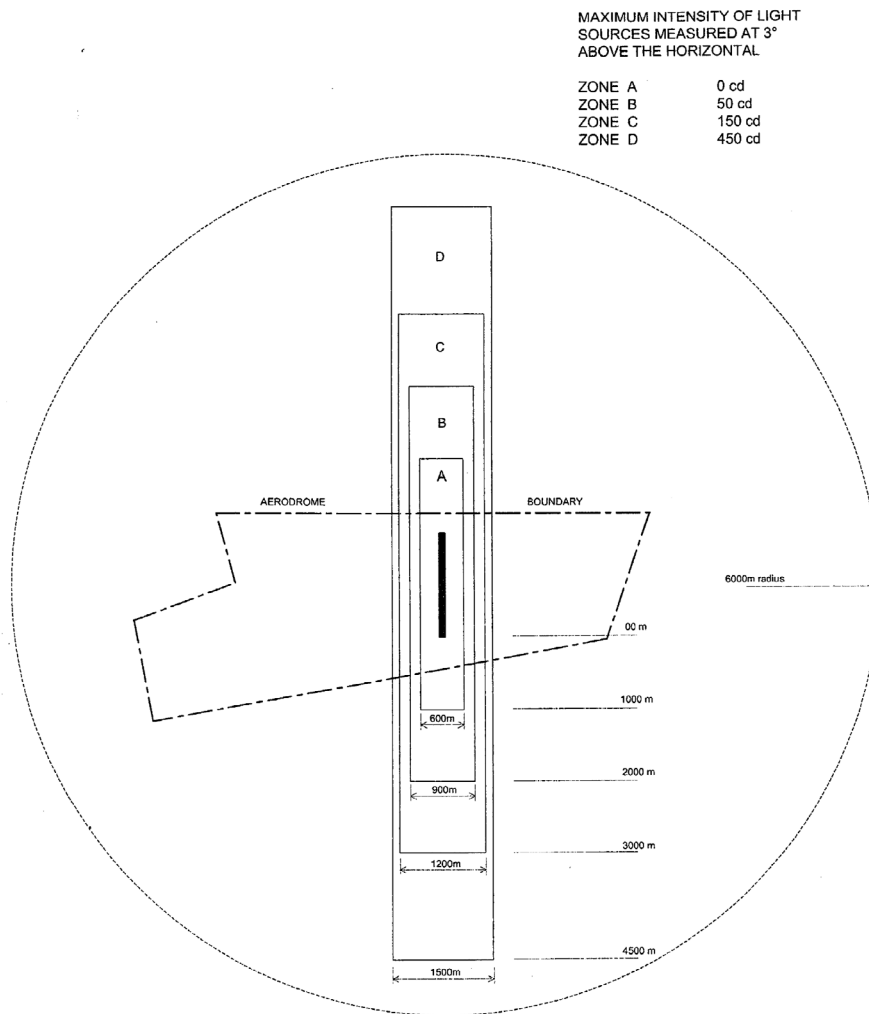


Figure 11: NASF lighting zones

As describe above, the entire sites falls outside the primary area indicated by Zones A, B , C and D and the overall assessment area for Sydney Airport and therefore does not need to be assessed further to ensure compliance with NASF lighting zone guideline criteria.

5.5 Protected Airspace

The airspace design process for any airport is highly technical and lengthy. This is especially true with airports that have control towers and published instrument flight procedures like Sydney Airport, which must be carefully considered before construction of any buildings or structures commences that may penetrate the prescribed airspace, on either a permanent or temporary basis. Sydney Airport has published an OLS drawing, and Airservices Australia has published IFPs that Avlaw has used to undertake the airspace assessment.

Avlaw has completed a thorough prescribed airspace assessment, which is based on modelling from first principles, along with CASA and ICAO standards, the findings for which are explained below. It is important to note that Avlaw also reviewed the current IFPs published for Sydney Airport and the current 2039 Airport Master Plan. Although the prescribed airspace charts shown on the airport's website are inserted for reference, given they are outdated and difficult to interpret to a granular level of detail, any conclusions in this report are based on the results of Avlaw's own modelling of the airspace protection surfaces for SYD

OLS

The site is located within the Outer Horizontal Surface of the OLS, which is common to all runways at Sydney Airport. The Sydney Airport outer horizontal surface is set at 156.00 m AHD.

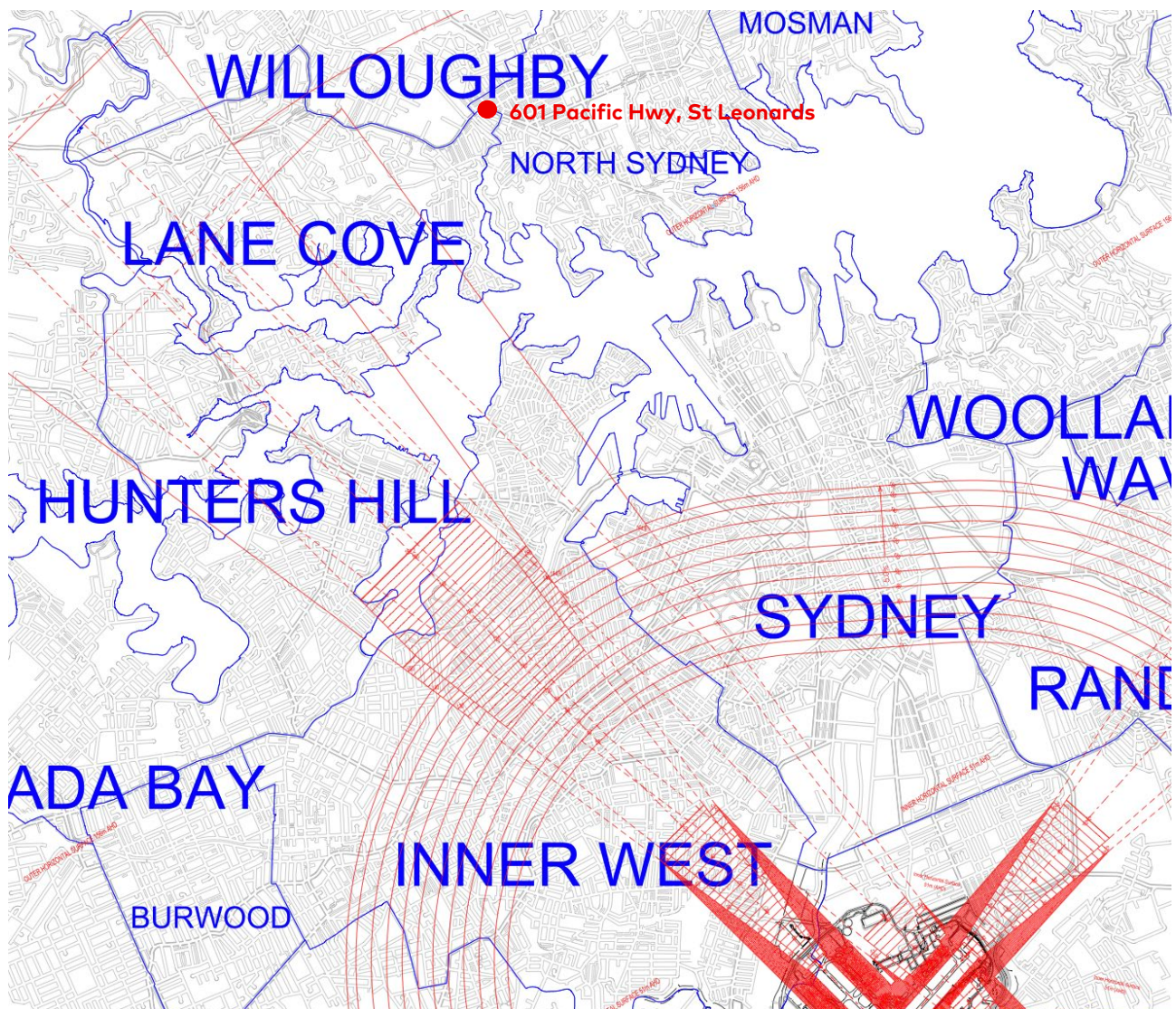


Figure 12: Extract from the SYD OLS chart showing the location of the site in the Outer Horizontal Section

Avlaw has modelled the proposed building along with an indicative operating envelope for a luffing tower crane, in the weathervaning configuration, refer to Figure 13 below. While a CMP is yet to be developed, Avlaw has assumed a nominal 67.5 m operating height above the built form, which equates to an overall height of 332.00m AHD.

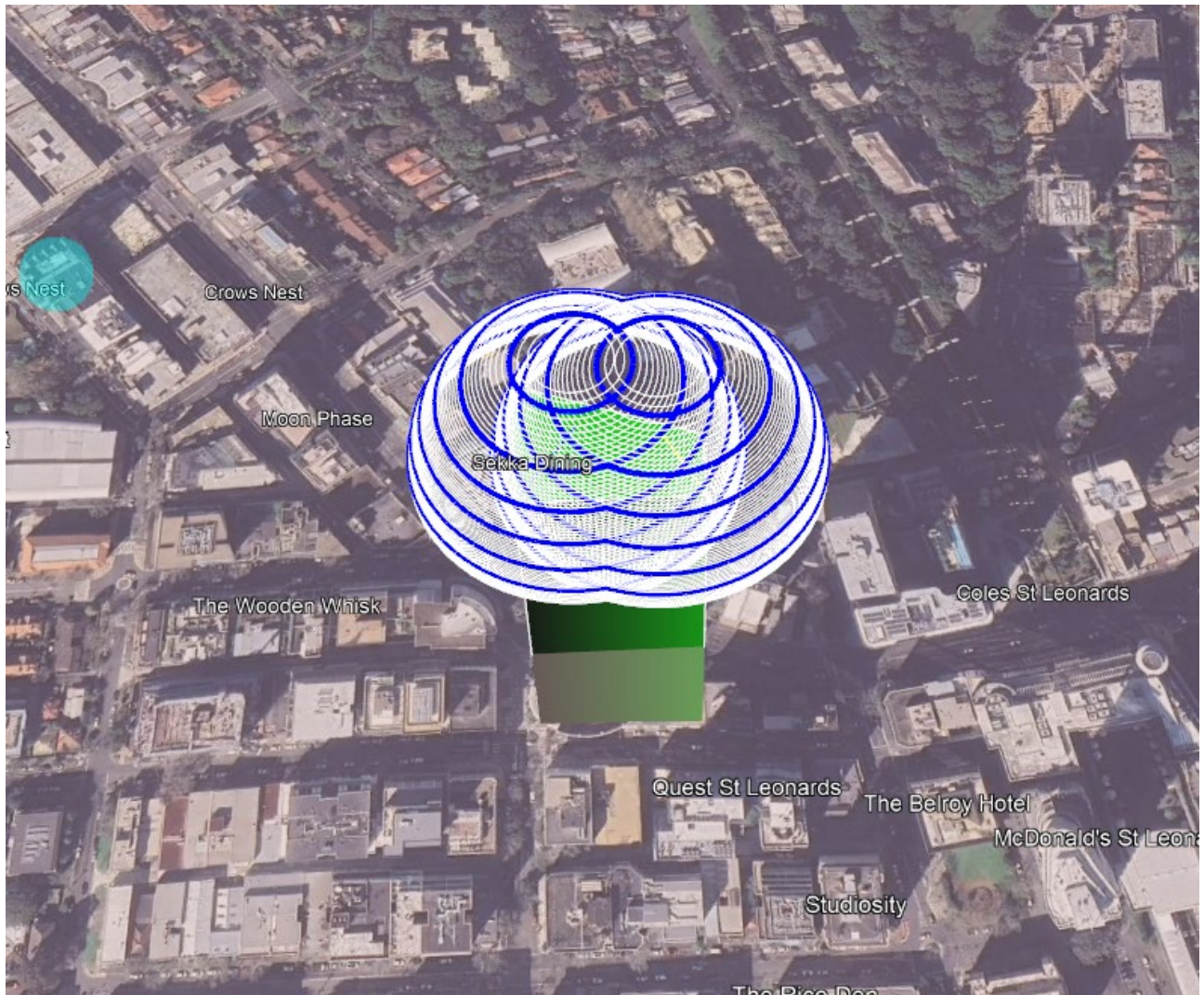


Figure 13: Avlaw's model of the proposed building and two (2) tower luffing cranes intruding the SYD OLS

The proposed development at 264.50m AHD will penetrate the Sydney Airport's outer horizontal surface of the OLS by 108.50 m.

The proposed maximum crane weathering height of 332.00 m AHD will penetrate the Sydney Airport's outer horizontal surface of the OLS by 176.00 m.

As a result of this penetration into the OLS, a controlled activity referral to CASA is required.

Assessment of the proposed obstacles at the site against other airspace protection surfaces continues below.

PANS-OPS & RTCC surfaces

Sydney Airport has well-established and published IFPs for all runways, which are also enhanced by air traffic control along with primary and secondary radar. Using the Avlaw model of the proposed building and crane envelope, designing the protection surfaces associated with critical PANS-OPS and RTCC procedures have been calculated from first principles, which has produced the following results:

○ PANS-OPS

- 278.28m AHD, when applying ICAO PANS-OPS Doc 6168 criteria
 - This surface relates specifically to a SID for aircraft departing from RWY 34L and climbing straight ahead
- 340.15m AHD, when applying AsA criteria

○ RTCC protection surface across the site is a horizontal plane at 335.28m AHD

At 264.50m AHD, the proposed building at the site will not intrude any of the PANS-OPS or RTCC protection surfaces, irrespective of which criteria are applied. However, two luffing jib cranes are proposed to be erected at the site and will reach a height of 332.0m AHD. Both will therefore result in an intrusion of the PANS-OPS, specifically when ICAO PANS-OPS Doc 6168 criteria is applied.

The images below illustrate the results of Avlaw's modelling results when applying ICAO PANS-OPS Doc 6168 criteria.



Figure 14: Avlaw's model of the PANS-OPS (ICAO criteria) showing the building (264.5m AHD) not intruding

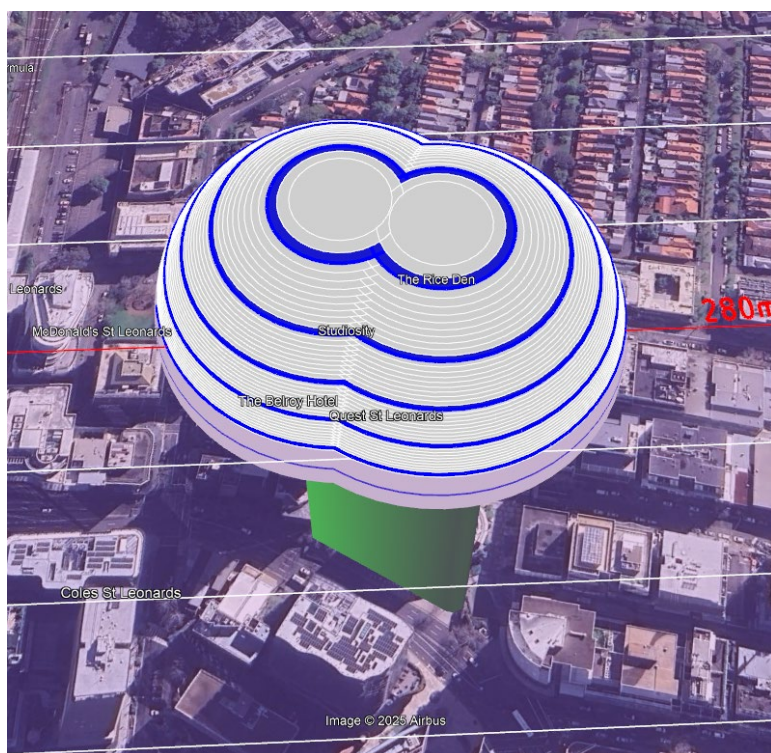


Figure 15: Avlaw's model of the PANS-OPS (ICAO criteria) showing two cranes (332.0m AHD) intruding



Figure 16: Avlaw's model of the proposed building and two (2) tower luffing cranes below the RTCC

Such intrusions are possible in some circumstances, however, must be limited to a total of three contiguous months. AsA will be tasked with assessing the proposed permanent and temporary structures at the site once controlled activity applications are lodged and will advise the Applicant if the proposed crane activity does or does not impact IFP or PANS-OPS surfaces.

5.6 Aviation Facilities - Communications, Navigation and Surveillance (CNS)

The Department has published [Guideline G](#) of the NASF to provide advice to States and Territories, Local Government decision makers and others on planning protection within Building Restricted Areas (BRAs) to ensure no developments are approved that can adversely impact the Communication, Navigation and Surveillance (CNS) facilities related to air transport operations.

Sydney Airport uses both ground-based and GPS satellite navigation aids to assist in instrument approach and departure procedures and overhead en-route navigation. The location of the site in relation to the ground-based navigational aids at Sydney Airport is well outside the assessment areas and therefore, the proposed development at the site does not need to be assessed further.

5.7 Strategically Important Helicopter Landing Sites

The triggers for assessment of proposed development activities with respect to airspace surrounding Helicopter Landing Sites (HLSs) are not captured within those that are in place to establish the prescribed airspace for an airport (e.g. OLS, PANS-OPS). [NASF](#) Guideline H has been developed to offer some form of protection to what are being termed Strategically Important Helicopter Landing Sites (SHLSs). Under the guideline, hospital helipads would be considered as SHLSs and therefore protected from obstacles being erected in close proximity to it.

The guideline defines 140m wide rectangular steps in the direction of the approach/take-off area in 500m long increments until reaching 125m above the SHLS. The steps, rising in 15m increments, are shown below in a figure that has been sourced from Guideline H that illustrates the area which is protected and the heights above which further assessment is triggered.

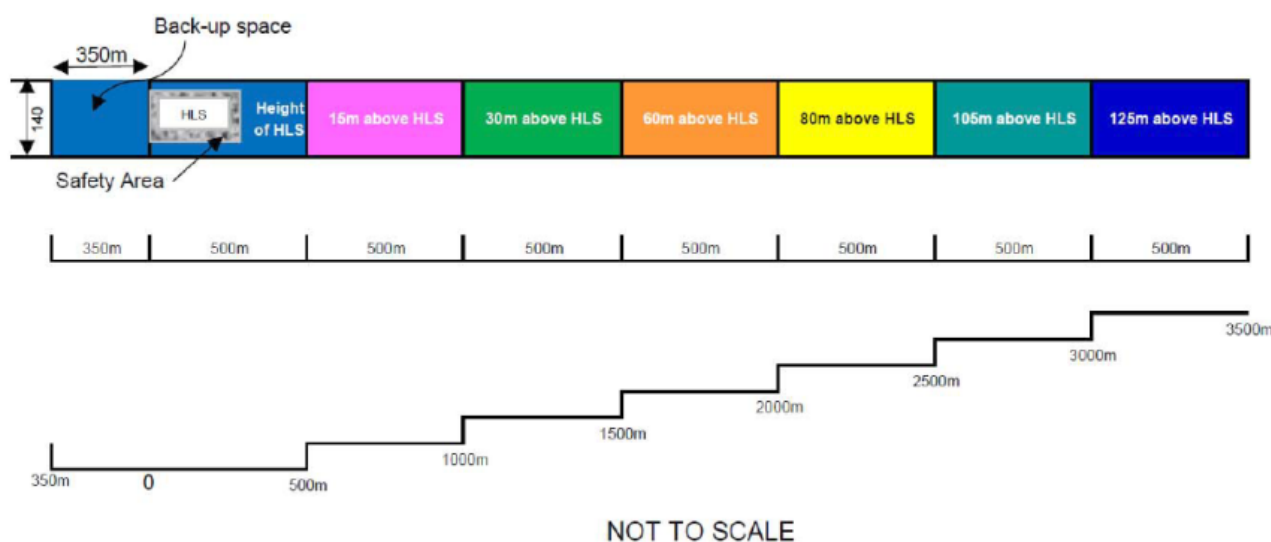
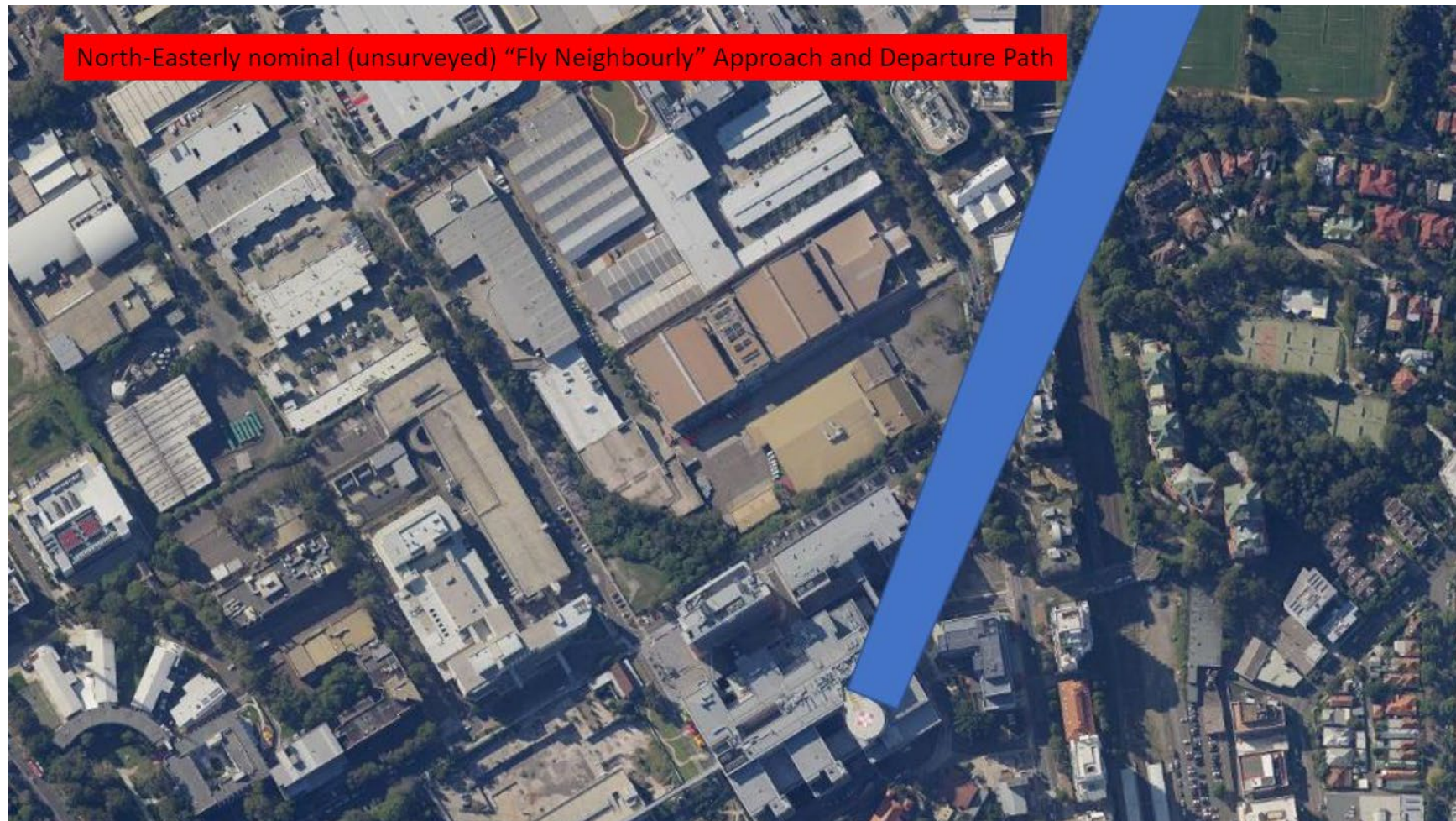


Figure 17: Referral trigger for SHLS

Applications for airspace approval for developments in close proximity to HLSs are lodged with the asset owner who in turn refers the application to their aviation advisors (if applicable) and Helicopter Emergency Medical Services (HEMS) operators that fly to/from the HLS in question for assessment. The closest existing hospital to the site with a helipad is the RNSH, which is located 530 m bearing 278 degrees magnetic (291 degrees true) from the site and within the

assessment area as shown in the referral trigger for SHLS above. Therefore, if the site was in the direction of the approach/departure tracks for the RNSH HLS, any permanent or temporary structure 30m above the height of the HLS would require additional assessment.

The RNSH HLS is at a height of 128.6m AHD, meaning that at the site, the trigger criteria would be met for structures 158.6m AHD or greater. However, the established flight paths to/from this HLS are not in the direction of the site, so no additional assessment is required.



North-Easterly nominal (unsurveyed) "Fly Neighbourly" Approach and Departure Path

Figure 18: Indicative operational airspace boundary for NE flight path for RNSH HLS (site to SE off image)

Source: AviPro

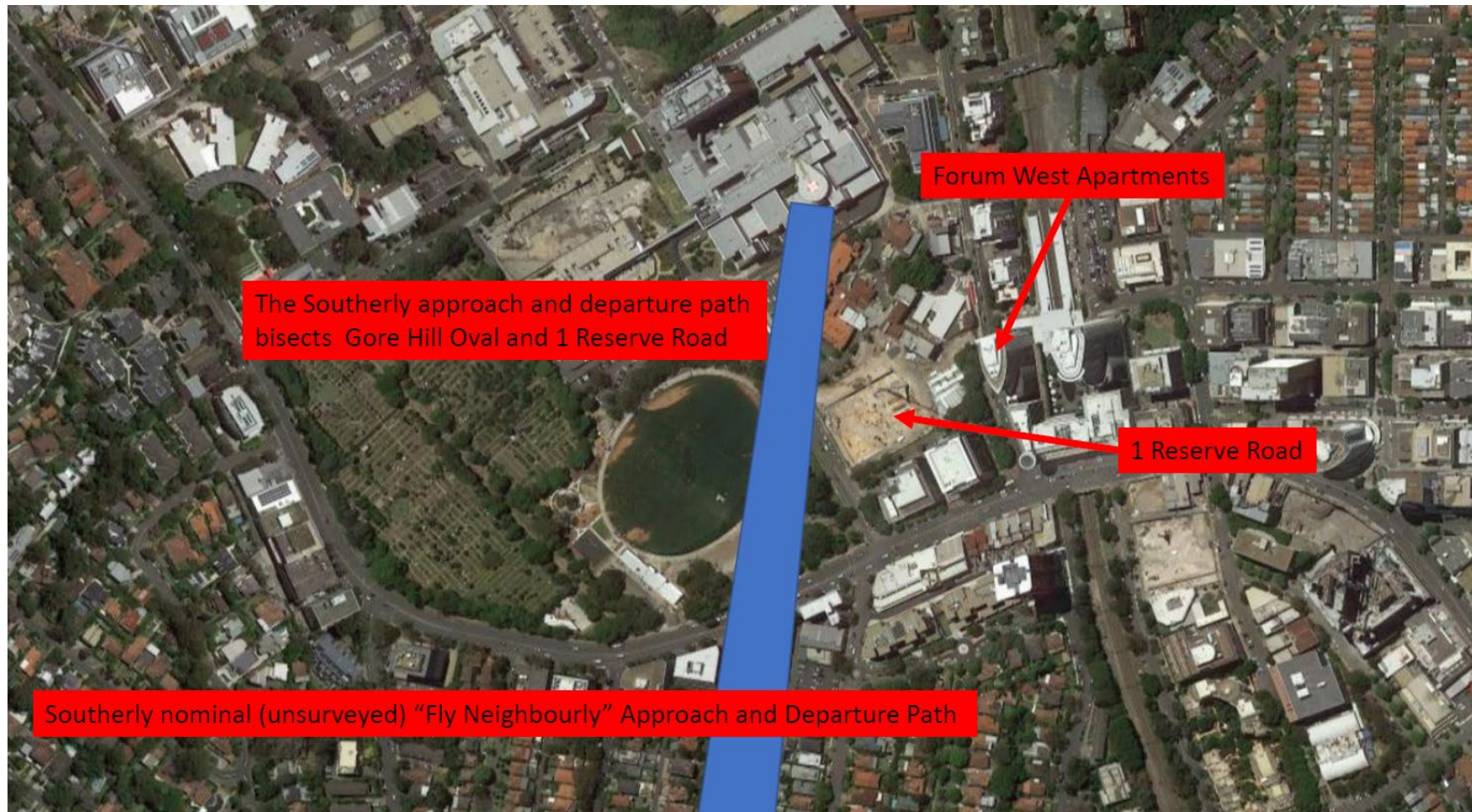


Figure 19: Indicative operational airspace boundary for SW flight path for RNSH HLS (site well clear)

Source: AviPro

For completeness, consultation was undertaken with NSW Health's aviation advisors AviPro, who have confirmed that the proposed building at 601 Pacific Highway will be shielded by the existing built form referred to as "Forum Towers", which is located over St Leonards Station. Figure 20 Shows the RNSH Helipad and Forum Towers. The email exchanges are inserted as Appendix A.



Figure 20: RNSH Helipad and Forum Towers (red arrow)

Therefore, the proposed development at the site will have no impact on the hospital helipad at RNSH, meaning the proposed building and crane activity should not be opposed by NSW Health, NSW Air Ambulance or other stakeholders associated with helicopter operations in the vicinity of the site.

5.8 Public Safety Areas

An important aspect of compatible land uses that the site must be assessed against is the Public Safety Area (PSA) for Sydney Airport. [NASF](#) Guideline I has been developed to offer protection from incompatible land use development within a defined area at the end of airport runways.

These are designated areas of land at the end of runways within which development may be restricted in order to control the number of people on the ground. This is to reduce the risk of injury or death in the event an aircraft accident occurs during take-off or landing.

The Sydney Airport Master Plan 2039, while not adopting a PSA area, provides guidance on two (2) acceptable Australian PSA models and notes that the International Civil Aviation Organization (ICAO) data indicates that if an accident occurs, it will likely occur within 1,000 metres before the runway on approach or within 500 metres beyond the runway end on departure. PSA zones are designed to protect public safety, limiting land uses, on- and off-airport, that increase the number

of people living, working or congregating in the zone, and the storage of hazardous materials in the zone.

Avlaw has assessed that the site is located 12 km from the nearest runway threshold (RWY 16R), and is outside any PSA trigger area for assessment; therefore, Avlaw has assessed that no action is required.

6

Proposed Obstacle Analysis

Proposed Obstacle Analysis

Penetration of the OLS is a consideration for practically every major international airport in Australia, and SYD is no exception. The potential for more tall structures to be approved close to SYD than what may ordinarily have been the case in decades past at other international airports will be closely associated with whether a revised concept for the OLS is adopted in Australia, following further development by ICAO. As mentioned in Section 3.2, there are indications that this will be rolled out in the coming years, but for the time being, Avlaw's assessment is based on the currently endorsed OLS, which is expected to be more restrictive.

As outlined in the earlier part of the report, the proposed development at the site will result in both permanent and temporary intrusions of the Sydney Airport OLS by the final built form structure and two temporary construction cranes. The final built form at a height of 264.50 m AHD will penetrate the Sydney Airport's OLS by 108.50 m, and during construction, two (2) onsite luffing cranes with an operating height of 332.00 m AHD will penetrate the Sydney Airport's OLS by 176 m. As such, each will need to be assessed by SYD, CSA, AsA and ultimately approved by the Department. Avlaw believes that with mitigations in the form of markings, obstacle lighting and NOTAM, the risks associated with these proposed obstacles will be appropriately mitigated. With respect to crane activity, depending on the criteria used by AsA, a slight reduction in height may be required. When applying ICAO criteria, the lowest calculated PANS-OPS surface is approximately 278.28m (913ft) AHD, which increases to 298.40m (979ft) AHD when using Aircservices' methodology (both related to the RWY 34L SID).

In any case, the crane activity reaching a height of 332.0m AHD is only 3.28m below the RTCC over the site, which should not be penetrated under any circumstances. This will need to be considered when finalising the CMP to ensure that the final levels of the building can be completed without having to intrude this critical airspace protection surface. With respect to helicopter operations, discussions with AviPro (NSW Health aviation advisors) have verified Avlaw's own assessment that the proposed development at 601 Pacific Highway St Leonards will not have any adverse impact on the helipad operations at RNSH. Additional marking and lighting requirements as per NSW Health's own HLS guideline may be requested, however are unlikely based on feedback received to date and the location of the site in relation to the designated flight paths and other existing tall buildings closer to the HLS and which are also well above the height of the HLS at 128.6m AHD e.g. Forum Apartments at 204m AHD.

7

Conclusions

Conclusions

The findings from Avlaw's Aviation Safeguarding Assessment of the proposed built and temporary structures at the site are summarised below:

- The proposed development is not impacted by any land use restrictions in the context of aircraft noise.
- The site is outside the assessment trigger area which is impacted by potential windshear and turbulence considerations.
- The site is outside the assessment trigger area for wildlife management.
- The site falls outside the assessment area for off-airport lighting impacts on airport operations.
- The built structure at the site will infringe the outer horizontal surface of the OLS for Sydney Airport, including temporary construction cranes and will require approval with any specific conditions that will be determined by CASA.
- AsA will need to confirm the heights of the PANS-OPS surfaces over the site:
 - ICAO criteria results in an intrusion by both luffing jib cranes
 - AsA criteria does not result in any intrusions by cranes
- There is only a 3.28m vertical clearance between the indicative maximum crane height (332.0m AHD) and the RTCC (335.28m AHD), which should not be penetrated. This will need to be considered carefully when finalising the CMP later in the project.
- The site is well clear and outside the assessment area for the ground-based navigation aids located at Sydney Airport.
- The site is within the assessment area of an established HLS located at the RNSH, and NSW Health's aviation advisors AviPro have confirmed that the proposed building is shielded by Forum Towers located over St Leonards Station and therefore will have no impact on helicopter operations at RNSH.
- The site is clear of any future PSA's, should they be adopted at Sydney Airport.

8

Appendix A – Email exchange with AviPro

Appendix A – Email exchange with AviPro

RE: Proposed development - 601 Pacific Hwy, St Leonards



Jeff Stark <j.stark@avipro.com.au>

To Amin Hamzavian

 You replied to this message on 8/10/2025 10:38 AM.

Hi Amin. That development won't affect the RNSH HLS. It is shielded by the Forum Towers over St Leonards Station. See snip below.



You may not even be able to see that development from the HLS. It certainly won't impact any approach or departure profiles.

I'm doing a development immediately north of it at 20-22 Atchison St (you can see those properties on your snips). It is planned at RL228.9.

Best regards

Jeff Stark

Senior Consultant - Infrastructure

 AviPro

Aviation Management and Safety Advisers

Accredited Aviation Safety and Compliance Auditors

Member Vertical Association International (VAI)

Member Australian Helicopter Industry Association (AHIA)

Member Airborne Public Safety Association (APSA)

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AviPro is a division of Resolution Response

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From: Amin Hamzavian <ahamzavian@aviaw.com.au>
Sent: Wednesday, 8 October 2025 10:16 AM
To: Jeff Stark <j.stark@aviapro.com.au>
Subject: Proposed development - 601 Pacific Hwy, St Leonards

Hi Jeff,

We're working with Stockland as they prepare a SSDA for a proposed high-rise tower at 601 Pacific Hwy in St Leonards. I am writing to you to invite your thoughts re impacts on the RNSH HLS.

As you'd be well aware of working with developers, they're still tinkering with the heights, but the tallest concept I've seen shows the built form at 264.5m AHD. With regards to cranes, the initial methodology shows 2 x luffing jib cranes reaching a height of 329.3m AHD at their resting height/minimum radius.

I'd normally wait for the heights to crystallise to not waste your time re-assessing the site again later, but in this instance, I am sharing this with you now as we need to finalise our report by mid-Nov and I'm off overseas for work 29 Oct. I don't return until 9 Nov, so considered it prudent to get a jump start. There have been some delays in recent times getting responses out of NSW/Toll, so hopefully this provides them enough of a heads up so we can incorporate any feedback into our report/advice we're providing Stockland.

Appreciate your help as always. Let me know if you need more information.





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