

Aviation Safeguarding Assessment

815 Pacific Highway, Chatswood

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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 815 Pacific Highway 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-87033962) and concurrent rezoning proposal, in support of the redevelopment of land at 815 Pacific Highway in St Leonards, New South Wales (the site).

The scope of Avlaw's engagement has been defined by guidelines applicable to a proposed development at the site, as set out in the National Airports Safeguarding Framework (NASF) and all associated aviation legislation and regulations. This by default addresses the site-specific Secretary's Environmental Assessment Requirements (SEARs), which includes item (#27) titled "Aviation Impact Assessment", stating the following:

- Provide an aviation impact assessment. This assessment to consider the following:
 - The OLS/PANS-OPS for both Bankstown Airport and Sydney Kingsford Smith Airport
 - Any impacts of the proposal on the prescribed airspace for Sydney and Bankstown Airport, including the impact of construction and associated cranes
 - Any temporary or permanent structures that protrude into the OLS/PANS-OPS will require approval from the Civil Aviation Safety Authority/Airservices Australia
 - Any impacts of helicopter operations, including whether the building should incorporate aviation obstacle lighting

The proposed redevelopment at the site will consist of demolishing the existing building and constructing one (1) multi-level tower complex, to be developed up to a height of 310.28 m AHD (1018 ft), 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, indicative advice in relation to the construction methodology describes that three (3) tower cranes will be used during development, reaching a height of 317.80 m AHD (1,043 ft) when weathervaning and an ultimate maximum height of 330.080 m AHD (1,083 ft) when conducting refuelling operations.

Avlaw's assessment has found the site is located beyond the lateral limits of the OLS for both Sydney and Bankstown Airports and below the PANS-OPS surfaces. The critical (i.e. lowest) airspace protection surface covering the site is the Radar Terrain Clearance Chart (RTCC) for Sydney basin area which is 335.28 m AHD (1,100 ft) over the site. The proposed built structure at 310.28 m AHD (1018 ft) and indicative heights for three (3) tower cranes TC3 at 330.080 m AHD (1,083 ft) being the highest will be below and remain clear of the lowest airspace protection surface RTCC at 335.28 m AHD (1,100 ft) by 25 m for the finished building and 5.20 m for the tallest construction crane.

The site is approximately 8.6 nm (15.88 km) from Sydney Airport's Aerodrome Reference Point (ARP) and falls within the 10 nm Minimum Safe Altitude (MSA) area (PANS-OPS) with a minimum height of 2,100 ft (640 m). This will allow an obstacle free height up to 1,116ft (340.1 m AHD) when applying the required a 300 m (1,000 ft) Minimum Obstacle Clearance (MOC). The site also lies within Class

C airspace with a lower limit of 1,000 ft. With the Channel 9 TV tower located in Willoughby at 1,077 ft (328.27 m) and Sydney's Centre Point Tower in the Sydney CBD at 1,073 ft (327 m), it would be prudent to have Airservices Australia to review and verify the above to confirm that there will be no adjustment to the 1,000 ft lower limit based on the proposed development or the construction cranes, with the existing TV tower and Sydney Tower Eye heights documented above the 1,000 ft lower limit.

The building at the finished height of 310.28 m AHD will also be required to be reported both CASA and 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 3,076 m northwest of the rooftop helipad at the Royal North Shore Hospital (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 helicopter VFR transit lane, the site is west and amongst other existing tall structures. Given the height of the proposed development, it would be prudent to have obstacle lights fitted to the top of the building and cranes to also be marked in accordance with CASA MOS 139, to ensure the building and cranes do not introduce adverse impacts on the safety, efficiency and regularity of aircraft and helicopter operations. In any case, CASA may deem it required and impose it as a condition, which will be subject to detailed design and their subsequent input.

No other aviation compliance issues or hazards to aircraft operations have been identified by Avlaw and therefore, Avlaw believes the development and associated crane activity should be approved by aviation stakeholders. The rationale for reaching this conclusion is detailed throughout this report.

2

Introduction

Introduction

2.1 Description

The subject site is located on the north-west side of Chatswood CBD and immediately to the north-east of the intersection between Pacific Highway and Help Street.

The site is within easy walking distance of services and facilities at Chatswood Strategic Centre. It is well-located in terms of public transport options, being approximately 350 metres (walking distance) from Chatswood Station interchange on the T1 and Sydney Metro North West Line. The site also benefits from being within walking distance many services and amenity within the CBD, including two shopping centres, being Westfield and Chatswood Chase.

It comprises a single allotment and is legally described as Lot 1 in DP547585, with an area of approximately 1,657m². The site is bounded by Pacific Highway to the west, Help Street to the south, the commercial property of 15 Help Street to the east and McIntosh Street to the north. It forms part of the western 'gateway' to the Chatswood CBD.

The existing development on the site is an early 1970s 14-storey brick-built commercial office building, comprising retail uses at podium level, with offices above. This scale of development is significantly below the potential offered by the location of the site as part of the CBD and within close walking distance of train and Metro services at Chatswood Station.

There is very limited vegetation and public domain activation at the existing site, currently comprising three trees set within paving at the northern end of the site and four trees with hedging at the southern end of the site. A site aerial and location plan is provided at Figure 1 below



Figure 1: Aerial photo showing the site location

2.2 Proposal

This Aviation Safeguarding Assessment has been prepared by Avlaw and is submitted to DPHI in support of a SSDA (SSD-87033962) and concurrent rezoning proposal for a new mixed-use development at 815 Pacific Highway, Chatswood (the site). The proposal seeks consent for the following:

- Construction of a 61-storey (plus roof plant) shop-top housing development including affordable housing. The podium comprises ground floor, plus 10 storeys, with the tower component comprising 50 storeys above.
- A rezoning request is made concurrently with the SSDA under the HDA pathway. The rezoning request seeks to amend the Willoughby Local Environmental Plan 2012 (WLEP 2012) as follows:
 - Amend Schedule 1 of the WLEP 2012 to enable 'shop top housing' as an Additional Permitted Use (APU) to be permitted with consent at 815 Pacific Highway, Chatswood; and
 - Amend the 'Height of Buildings Map' referenced in clause 4.3 of the WLEP to specify a maximum building height for the site of RL 310.28 (increased from the existing RL 246.80 Height of Buildings control).

Specifically, State Significant Development consent is sought for the following:

- Site preparation and excavation works, including demolition of all structures on the site and tree removal,
- Construction of a 61-storey mixed-use shop-top housing development comprising:
 - Retail premises on the ground floor with a frontage to Pacific Highway and Help Street.
 - A residential tower comprising 490 dwellings (including 76 affordable housing units to be managed by an affordable housing provider for a period of 15 years)
 - Construction of a nine-level basement for car parking, storage, waste holding, plant and loading facilities which are to be accessed via Help Street.
 - Residential and retail waste storage on Level 1, including waste holding areas and plant services.
 - Amenities, including communal spaces and shared outdoor spaces.
 - Associated landscaping and public domain works to improve the public domain interface along Pacific Highway and Help Street, and
 - Services and infrastructure upgrades, as required.

2.3 SEARs

This Aviation Safeguarding Assessment has been prepared to address the following relevant Secretary's Environmental Assessment Requirements (SEARs) Item 27 as set out in Table 1 below.

Item	SEARS Requirement	Relevant Section of Report
27	Aviation Impact Assessment • Provide an aviation impact assessment. This assessment is to consider the following: ○ any impacts of the proposal on the prescribed airspace for Sydney Airport, including the impact of construction and associated cranes ○ The OLS/PANS-OPS for both Bankstown Airport and Sydney Kingsford Smith Airport ○ Any temporary or permanent structures that protrude into the OLS/PANS-OPS which will require approval from the Civil Aviation Safety Authority ○ Any Impacts on helicopter operations, including whether the building should incorporate aviation obstacle lighting	Section 5.7 Section 6

Table 1: SEARs Aviation-related site-specific requirements

3

Aviation Regulatory Framework

Aviation Regulatory Framework

3.1 Airspace Height Controls

Protection of the 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 and Bankstown Airports comprises two (2) types:

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

With regards to Sydney and Bankstown Airports, 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 both Sydney and Bankstown Airports are federally leased airports. 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 and Bankstown 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 and communications towers 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 proposed to intrude into the prescribed airspace of Sydney and Bankstown Airports will require a referral to the Department.

3.2 Airspace Approval Process

The aviation approval processes for penetrations of Sydney and Bankstown 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 and Bankstown Airport

Sydney and Bankstown Airports are Federal government-leased airports and, as such, are 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.

Part 12 of the *Airports Act 1996* (Act) and the *Airports (Protection of Airspace) Regulations 2026* (Regulations) establish a framework for the protection of airspace at and around airports. The Act defines any activity resulting in an intrusion into an airport's prescribed airspace to be a "controlled activity" that cannot be carried out without approval from aviation stakeholders. Controlled activities include the following:

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

Depending on the type of obstacle being proposed, the airspace protection surfaces which are impacted and the duration the activity is proposed to last, a range of aviation stakeholders may be invited to conduct an assessment:

- **CASA** for an assessment of the impact on aviation safety;
- **Airservices Australia** for assessments of proposals resulting in a penetration of surfaces relating to navigation equipment or instrument flight procedures;
- **The local council authority** responsible for building approvals; and
- **The Department of Defence** in the case of joint-user airports (not relevant in this instance).

Controlled activities under the Regulations can now be considered "sensitive" if they result in an intrusion through a "primary" airspace protection surface. Primary airspace protection surfaces include:

- A terminal instrument flight procedure obstacle protection (TIFPOP) surface (formerly PANS-OPS);
- Any of the following kinds of OLS:
 - Approach surface;
 - Inner approach surface;
 - Transitional surface;

- Inner transitional surface;
 - Baulked landing surface;
 - Take-off climb surface; or
- A surface declared to be a primary surface for the airport.

Under the Regulations, an applicant seeking to intrude a primary surface and therefore conduct a sensitive controlled activity needs to first obtain the permission from the relevant airport operator to bring forward the application. Other intrusions through what are referred to as "Secondary" airspace protection surfaces are considered lower risk and more likely to be approved, and thus do not require a Proponent to first seek permission to submit the application.

However, based on Avlaw's assessment at the site and the proposed heights of permanent and temporary obstacles, this will not be applicable to the Applicant as neither any secondary or primary airspace protection surfaces will be penetrated. More details are provided in Section 5.5.

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 assessing proposed development activities with respect to the airspace surrounding hospital HLSs are not captured in the regulations and legislation described above for Sydney and Bankstown Airports. 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 criterion can be found in Section 5.7.

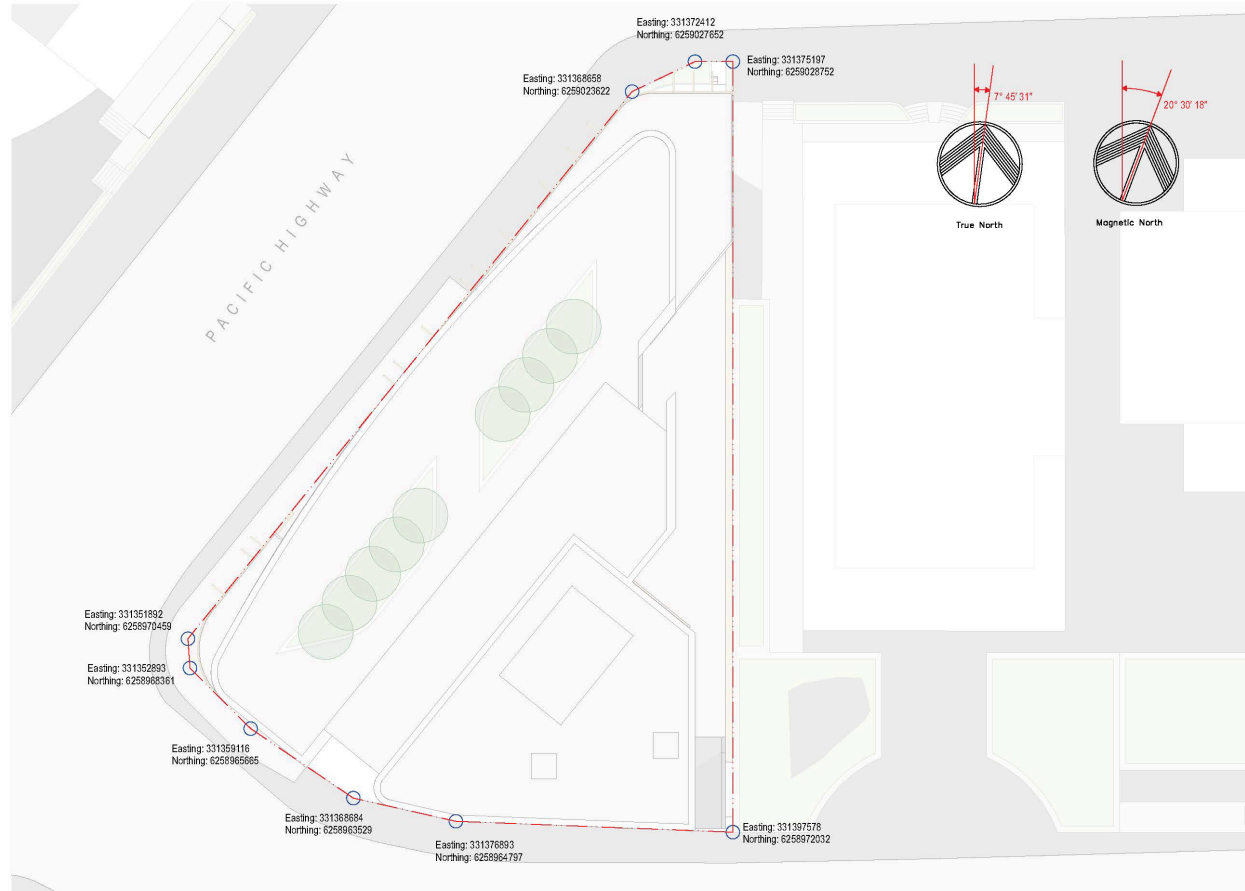
4

Proposed Development

Proposed Development

4.1 Site description

Figure 2 below is a plan view of the site and includes the MGA 94 coordinates for each corner and extremity.



0
9/9/2024

1 — MGA Coordinates
Fivex — FXPB

Scale
1:300 @ A3

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formerly symmetrise

Figure 2: Site Plan showing the boundary of the site including MGA 94 coordinates of each corner/extremity

4.2 Location

Sydney Airport

The site (marked in red) is approximately 16.71 km north of Sydney Airport's ARP on a bearing of 347.41 degrees magnetic (0.41 degrees true), which is illustrated in Figure 3 below.

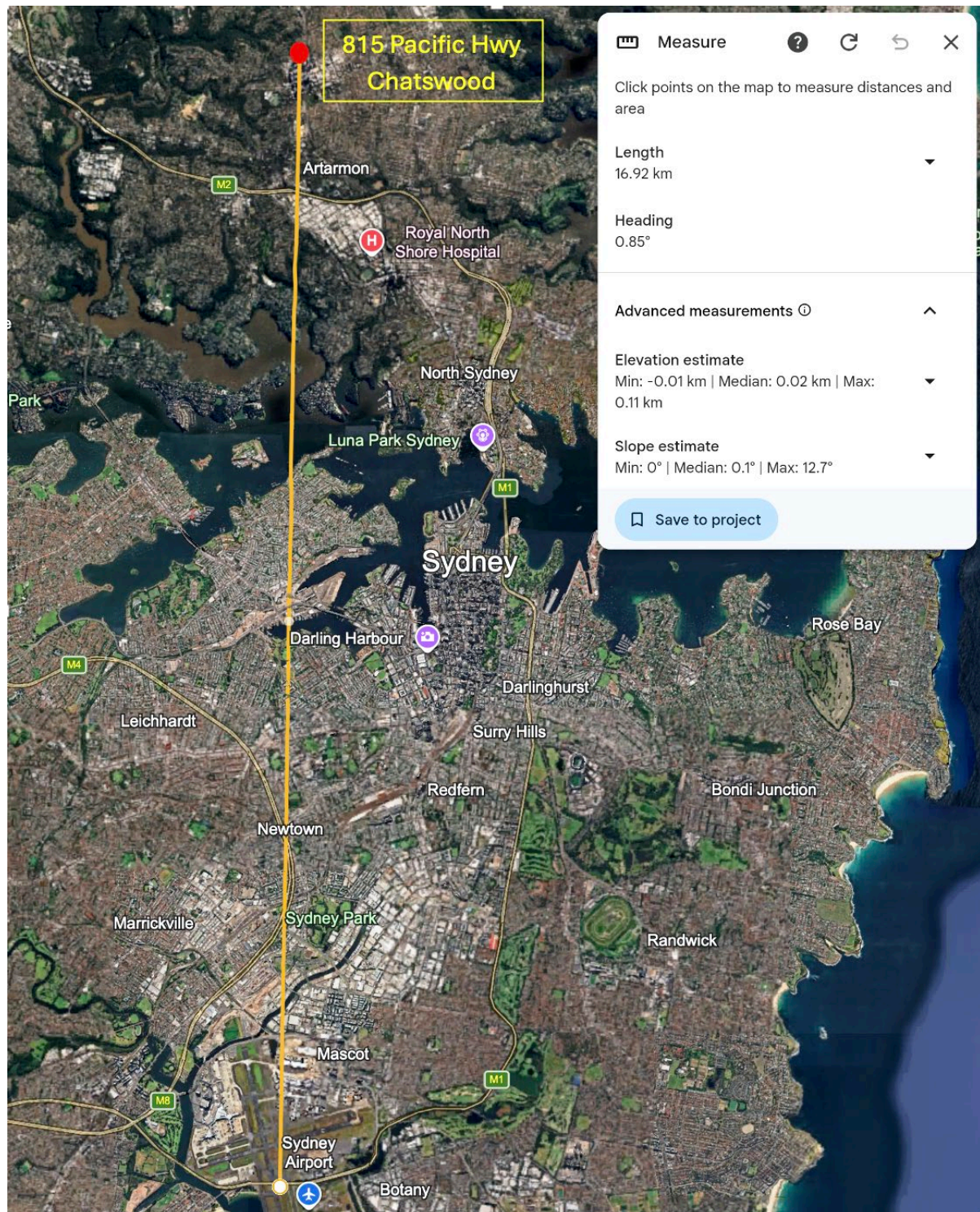


Figure 3: Site shown in Red in relation to Sydney Airport's ARP

Bankstown Airport

The site (marked in red) is approximately 22.65 km northeast of Bankstown Airport's ARP on a bearing of 38.02 degrees magnetic (51.02 degrees true), which is illustrated in Figure 4 below.

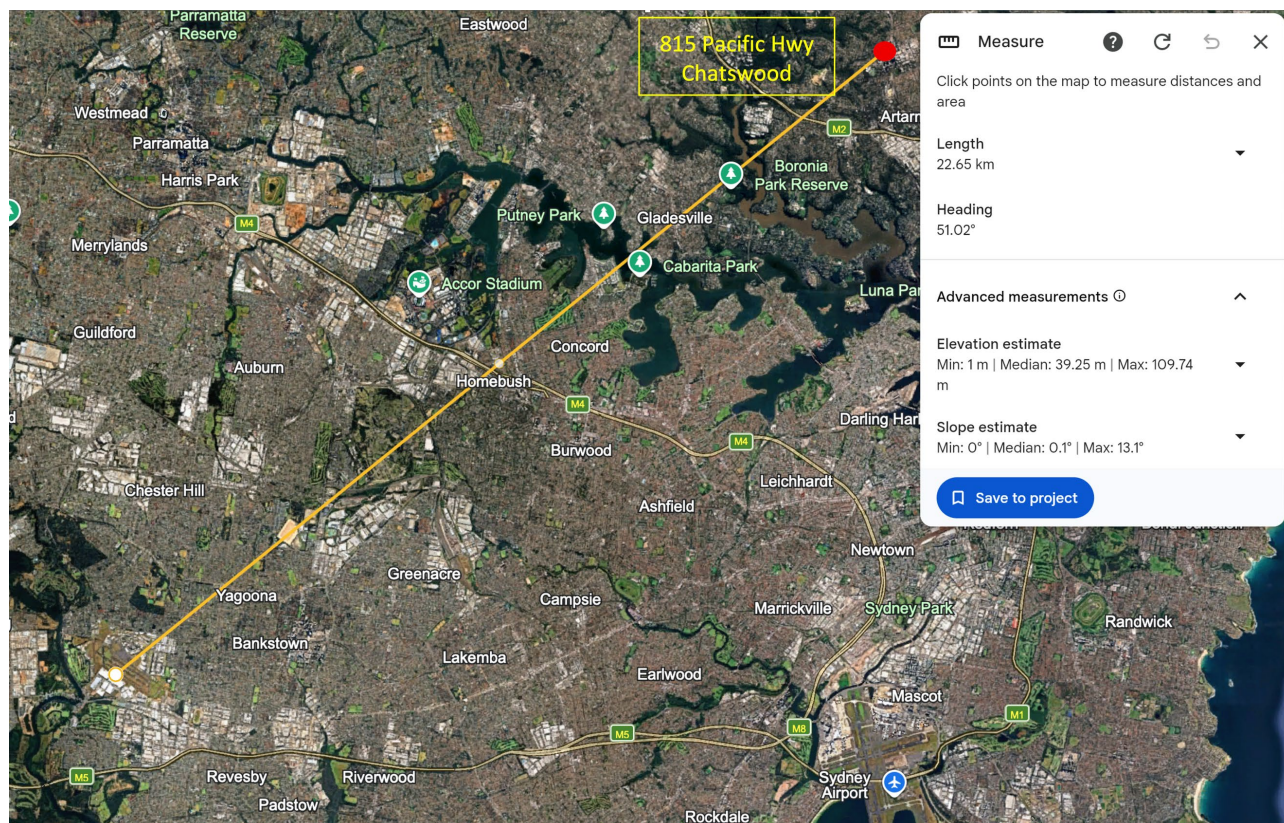
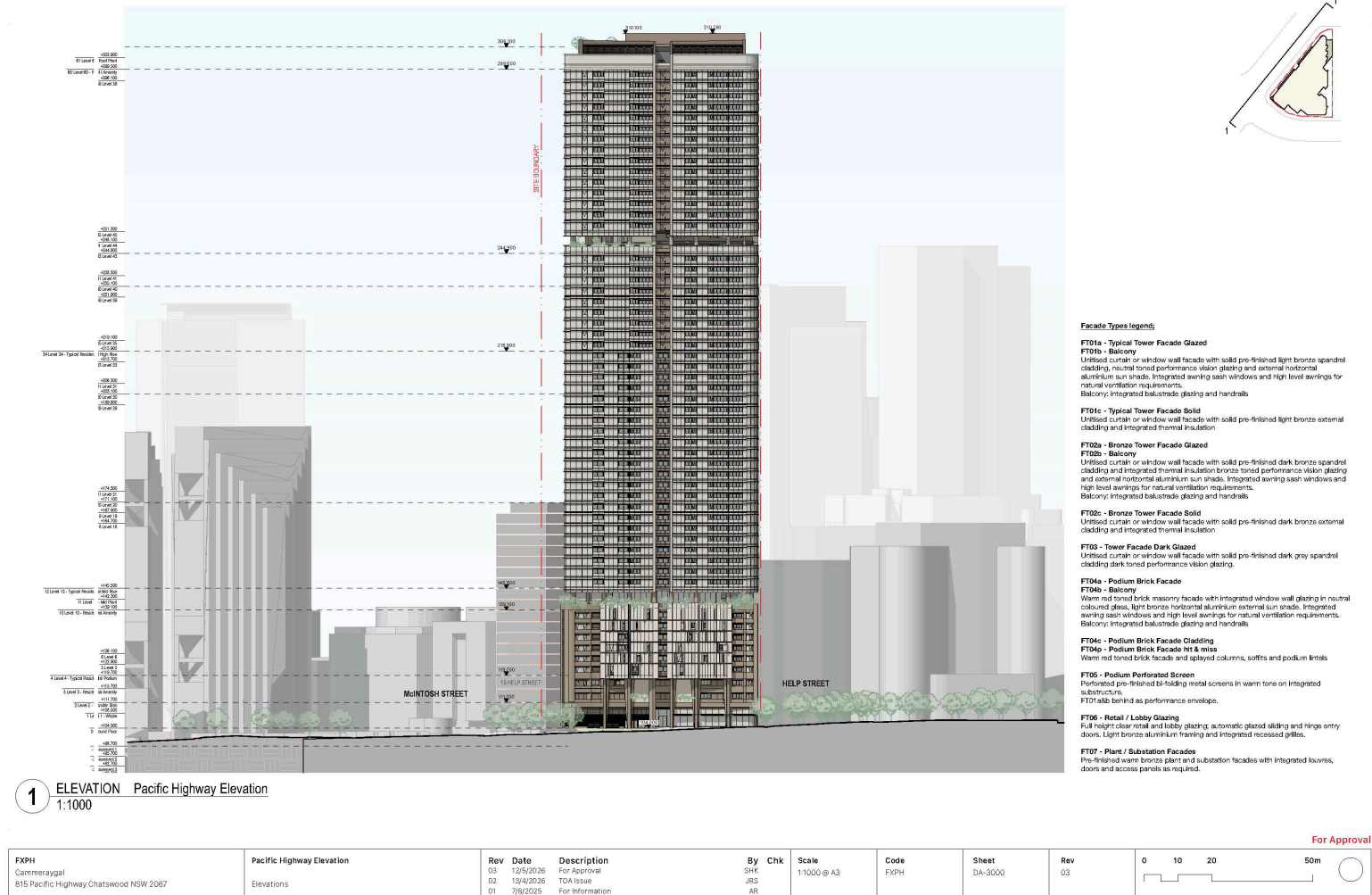


Figure 4: Site shown in Red in relation to Bankstown Airport's ARP

4.3 Permanent structures

The proposed structure at the site will comprise one (1) multi-level tower complex, with approximately 506 residential units above a retail precinct, and 8 levels of basement car parking. The overall height of the proposed development will reach 310.28 m AHD, including all ancillary features such as plant and equipment, handrails, lift overruns, ventilation shafts, and communications antennas within this envelope.



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Figure 5: Pacific Highway elevation showing proposed completed built form at 310.28m AHD

4.4 Crane Activity

A detailed Construction Management Plan (CMP), which includes the designed crane heights, locations, and specific erection dates, is not available at the time of writing and will be produced once the detailed design is complete and a principal contractor is appointed. However, for the purposes of this assessment, Avlaw has been provided with indicative information which assumes the use of three (3) tower cranes (TC1, TC2 and TC3) across the development as shown in Table 2 – Crane Activity and in Figures 7, 8 and 9 in order to keep the crane activity as localised and low as possible.

Crane #	Maximum Operating Height (M AHD)	Crane Type	Reference
1	323.270	Luffing	Figure 7
2	327.270	Hammerhead	Figure 8
3	330.080	Luffing	Figure 9

Table 2: Crane activity

The three (3) tower cranes will be installed as required, and based on the operating radii of each, the operating heights are indicative, with TC3 being the tallest at 330.080 m AHD, which is nominally 226.080 m above ground level.

A conservative approach has been adopted for crane heights to inform the assessment in this report, which will be confirmed once the detailed design is complete. It is envisaged that the cranes will be installed at a lower height initially and raised as required up to a maximum height of 330.080 m AHD (during refuelling operations) as the building construction height increases, facades fitted, and rooftop plant and equipment are installed.

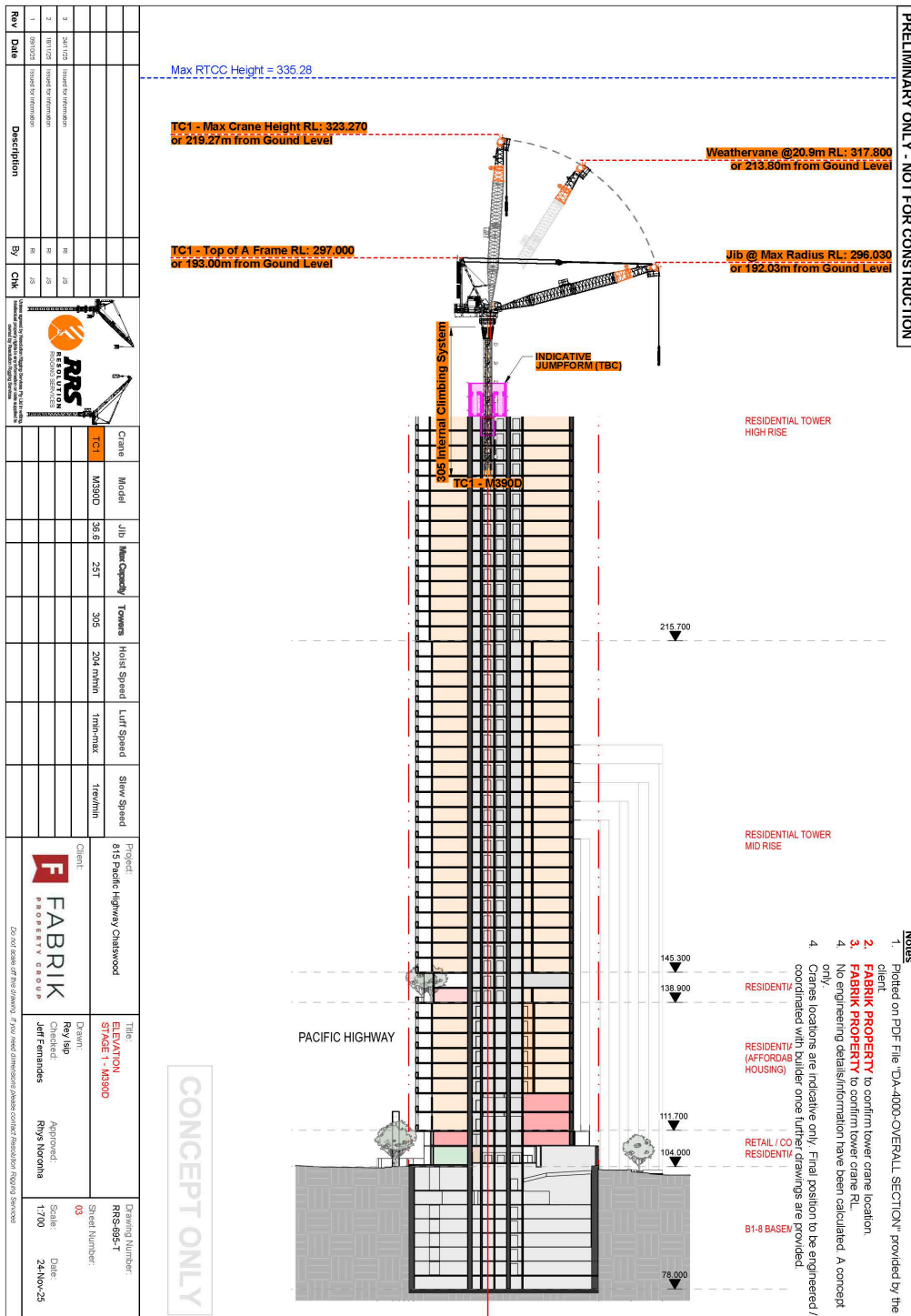


Figure 6: Elevation drawing indicatively showing the maximum height of TC1 (NTS)

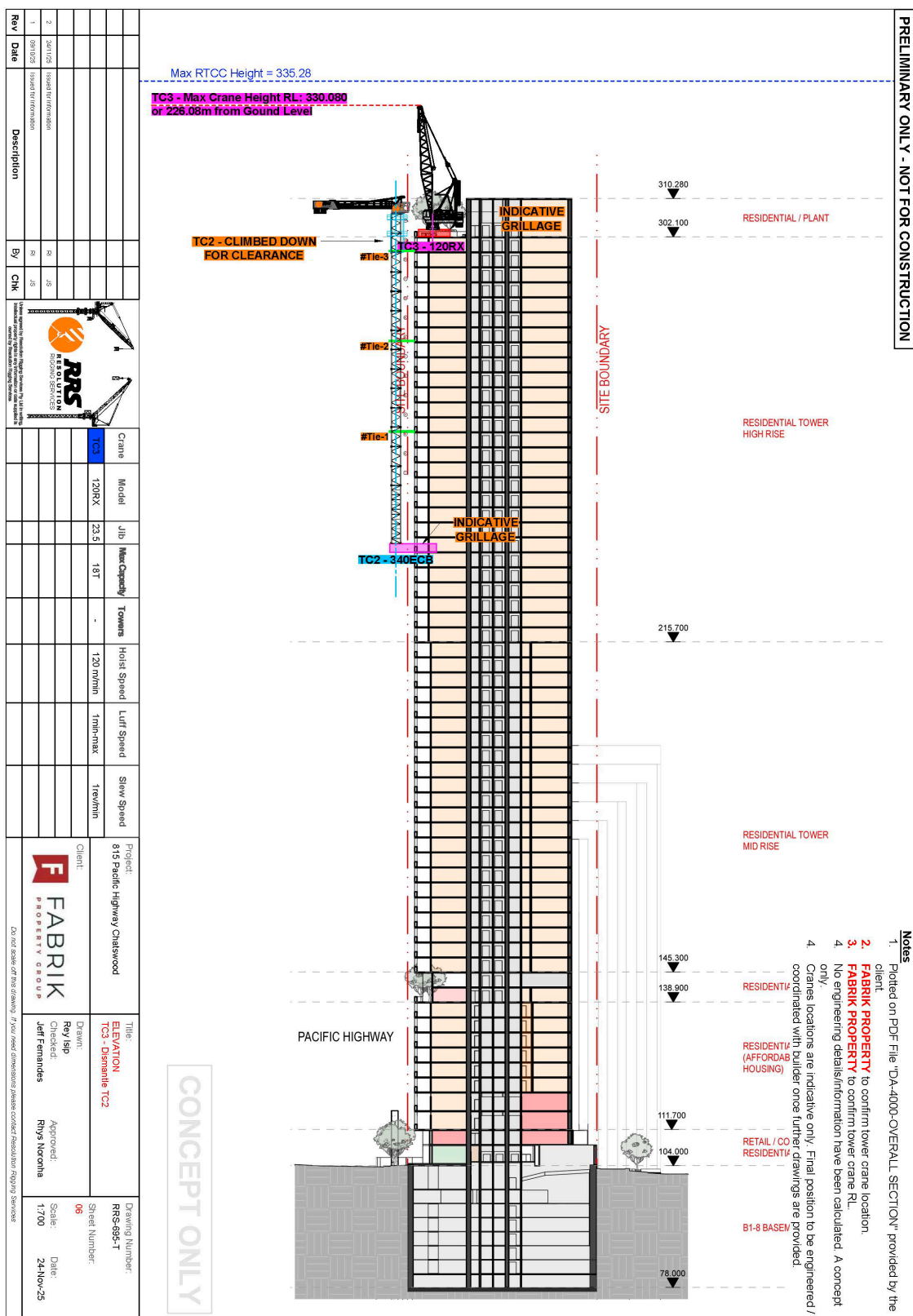


Figure 8: Elevation drawing, indicatively showing the maximum height of TC3 (NTS)

Figure 9: MGA 94 coordinates of the site boundary

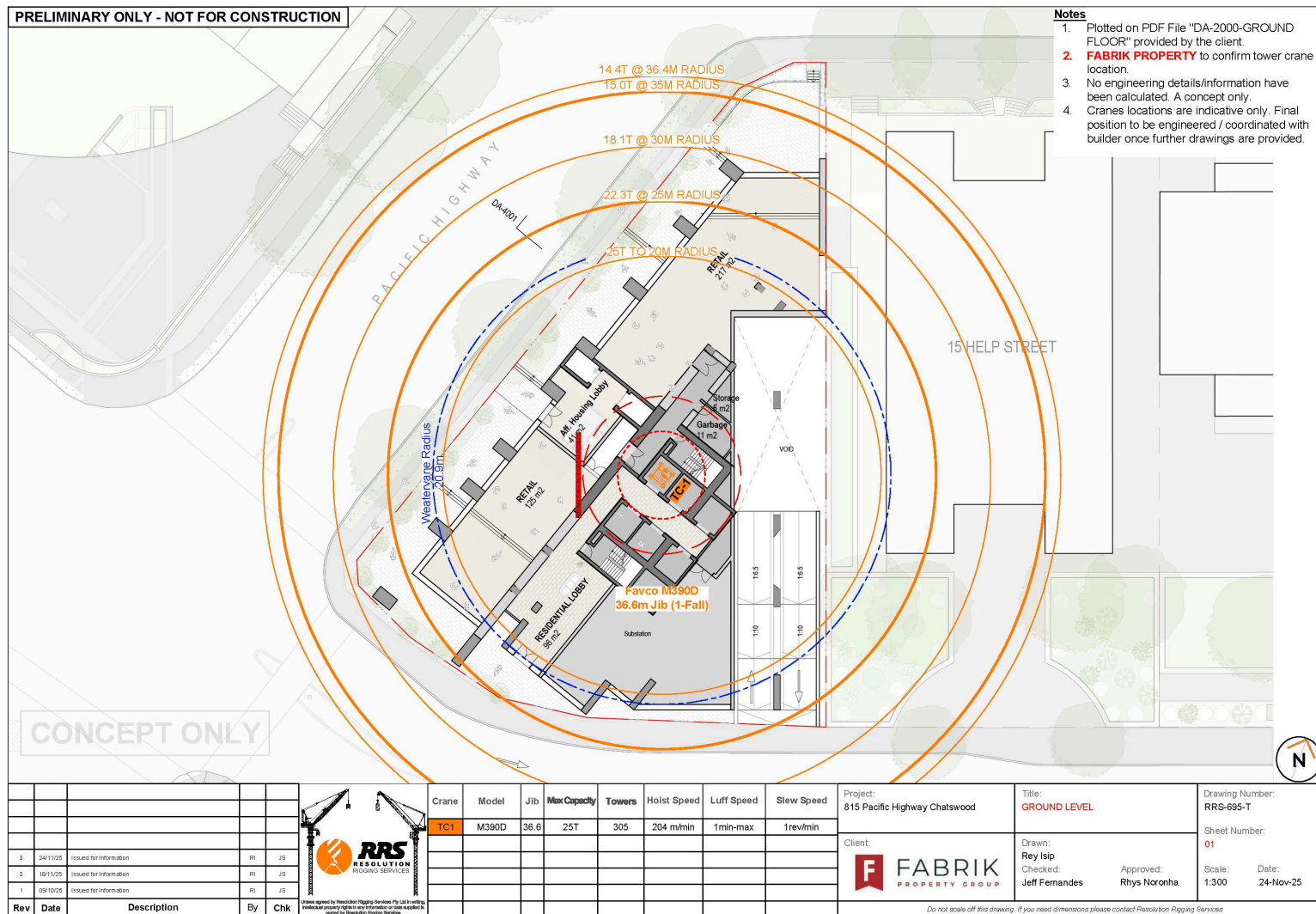


Figure 10: Indicative location of TC1

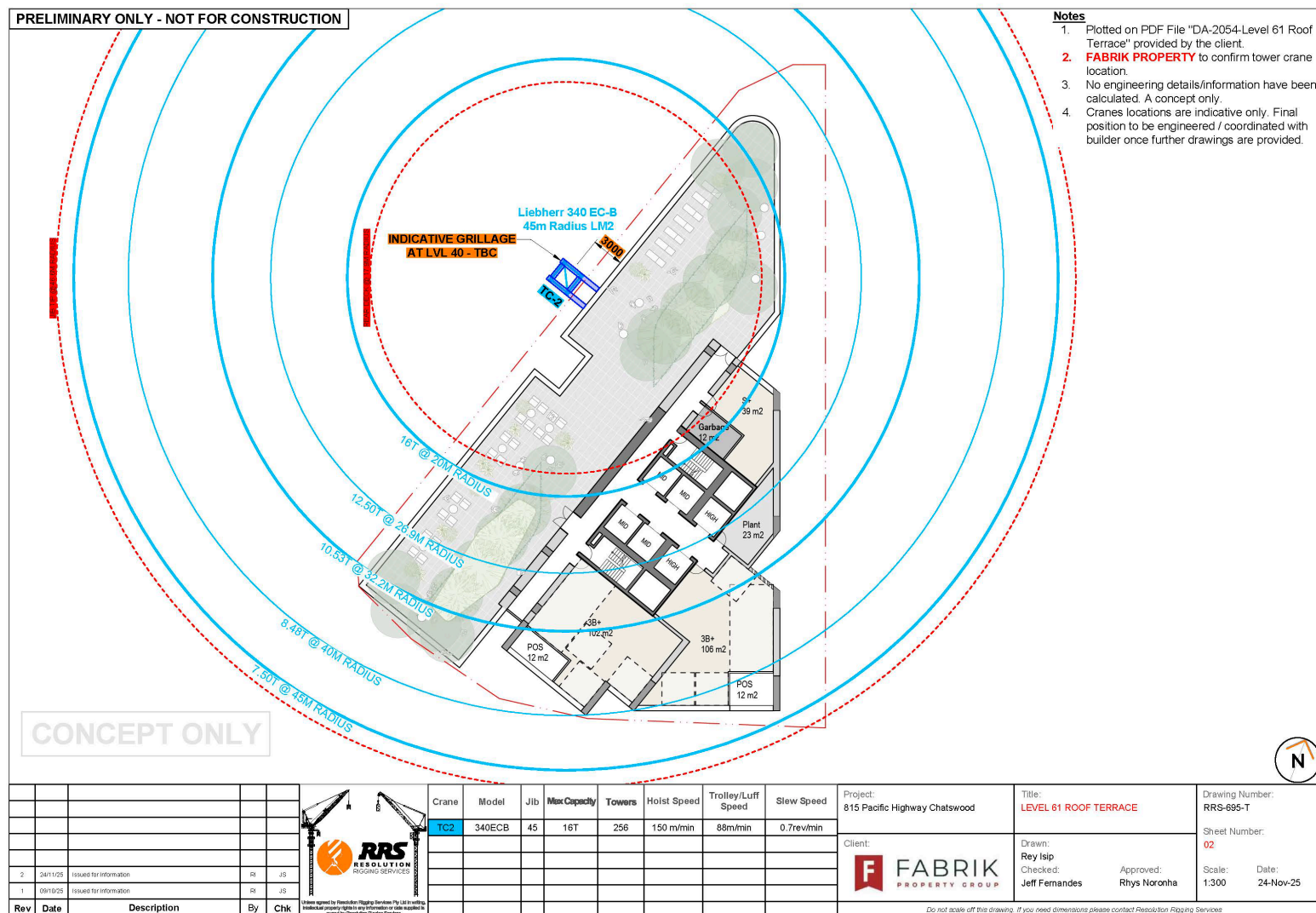


Figure 11: Indicative location of TC2

Notes

1. Plotted on PDF File "DA-2054-Level 61 Roof Terrace" provided by the client.
2. **FABRIK PROPERTY** to confirm tower crane location.
3. No engineering details/information have been calculated. A concept only.
4. Cranes locations are indicative only. Final position to be engineered / coordinated with builder once further drawings are provided.

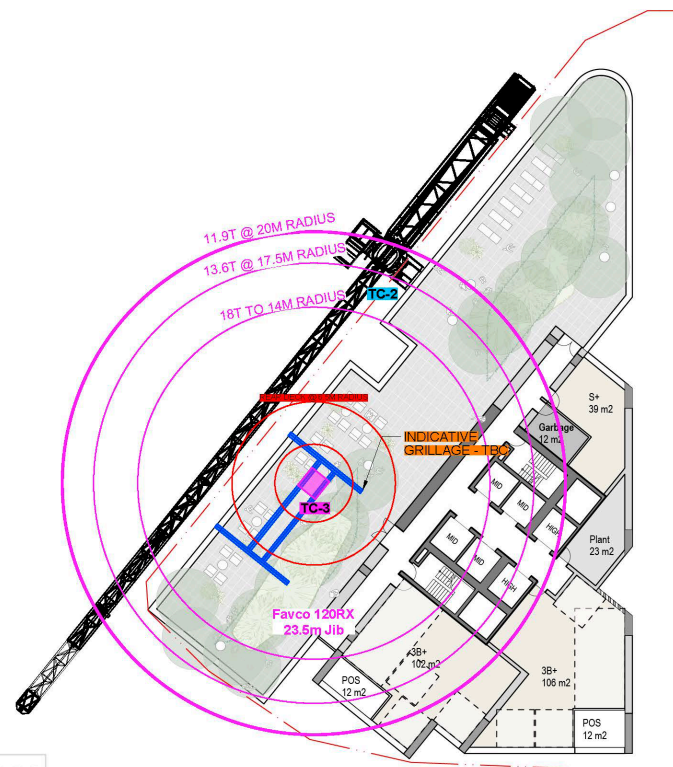
[illegible]

Figure 12: Indicative location of TC3

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"*. As mentioned Section 3.2, the Airports (Protection of Airspace) Protection 1996 regulations will be updated as of 1 April 2026. The draft regulations have been reviewed by Avlaw, which includes a provision for the 4.3m/s limit to be increased to 6.1m/s.

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.

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 Sydney Airport.

As the site is located more than 22 km from Bankstown Airport, and not under flights paths associated with Bankstown Airport and as such falls well outside the noise footprint area as documented in the 2019 Bankstown Airport Master. Therefore, Avlaw's assessment is that the development at the site is compliant with noise restrictions as they relate to Bankstown Airport.

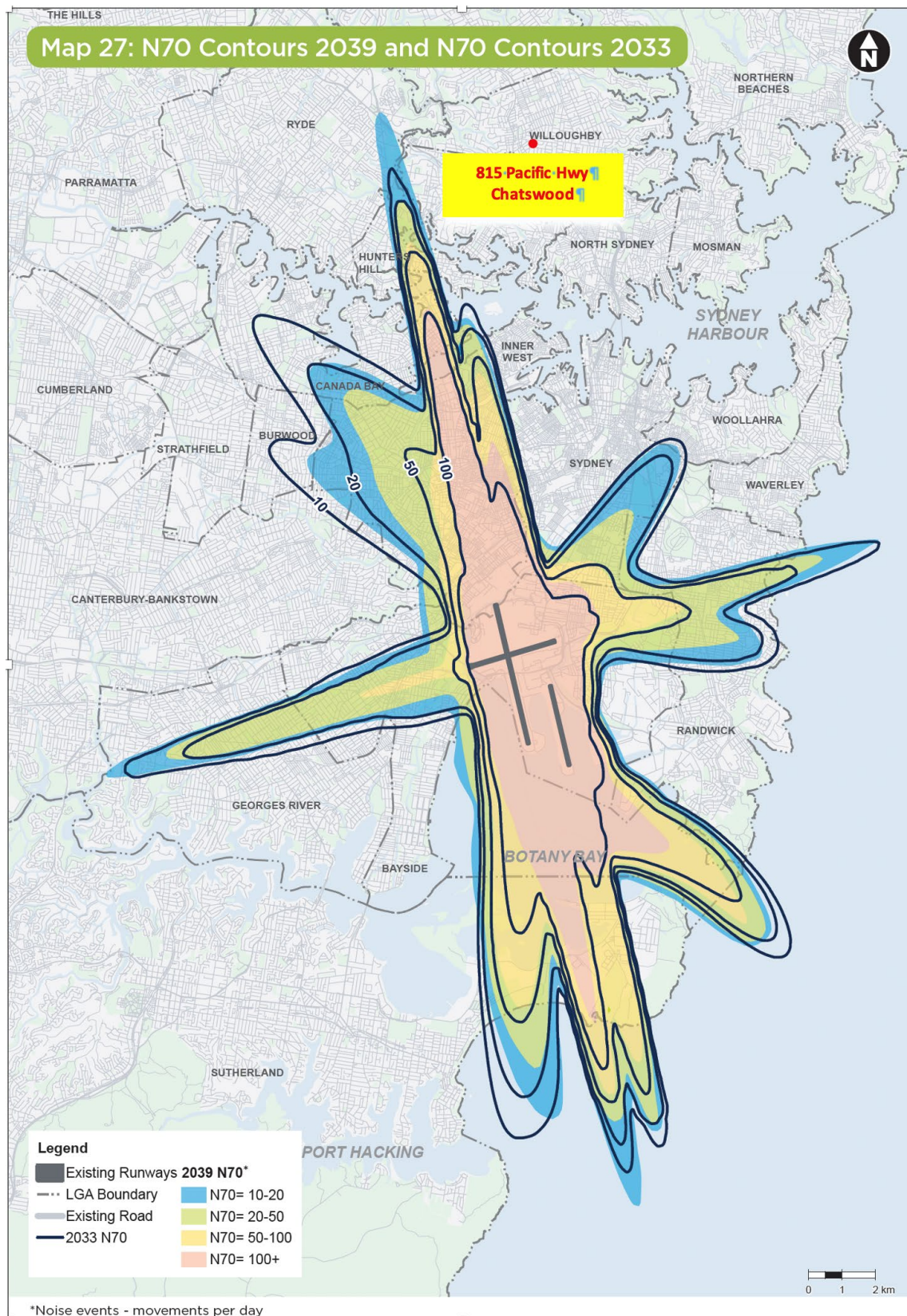


Figure 13: Sydney Airport 2039 Noise Exposure Contour Map.

Source: Sydney Airport Master Plan

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.

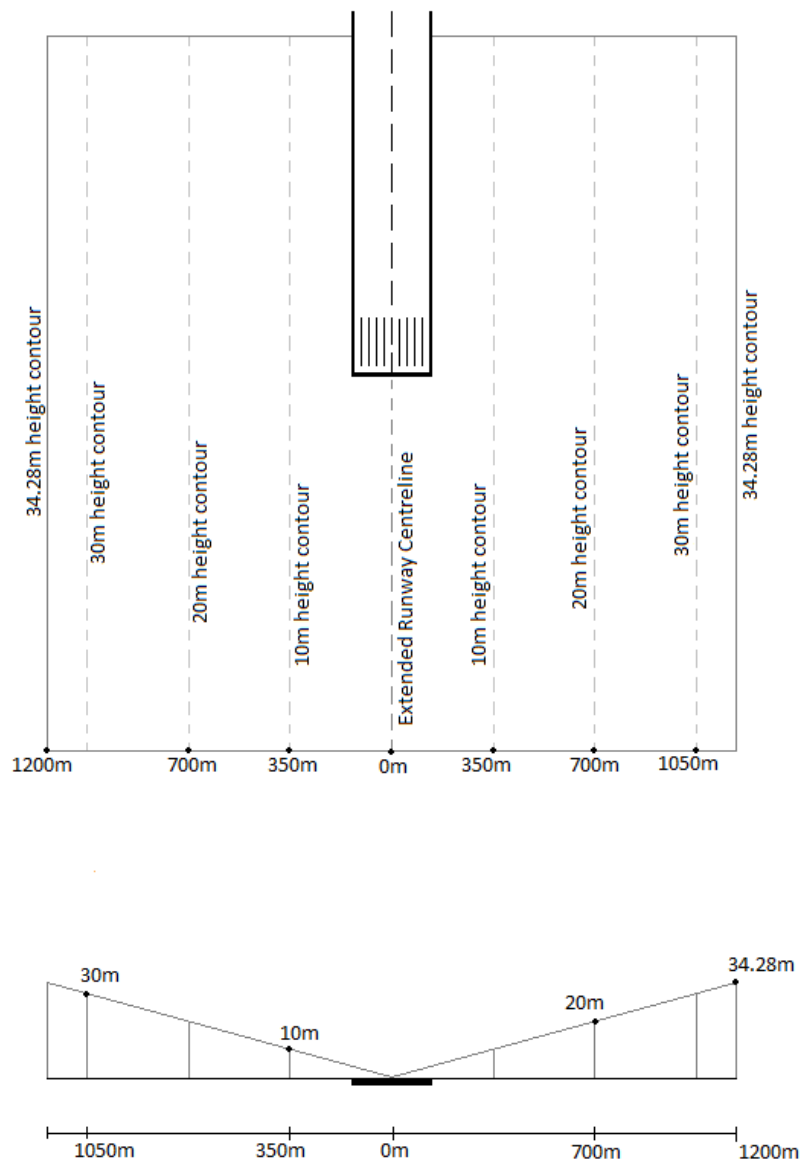


Figure 14: Plan view (top) and elevation view (bottom) of the 1:35 surface

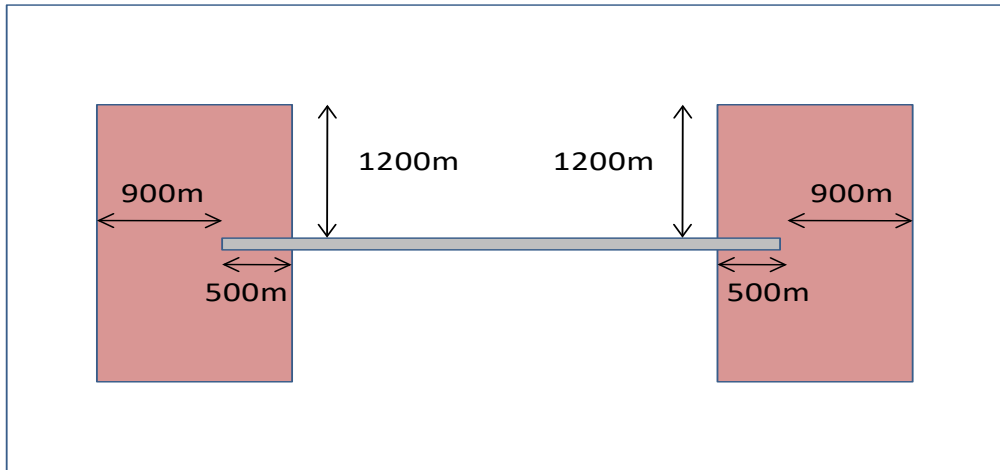


Figure 15: Area within which buildings that penetrate the 1:35 surface should be assessed

Since the site is approximately 14.8 km from the nearest runway threshold (RWY 16R) at Sydney Airport, the proposed development is outside the assessment area and therefore does not need further assessment 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 16.64 km from the Sydney Airport's ARP and 22.65 km from Bankstown 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 provides guidance on situations in which lights are to be installed within a 6km radius of 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 14.8 km from the nearest runway threshold, 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.

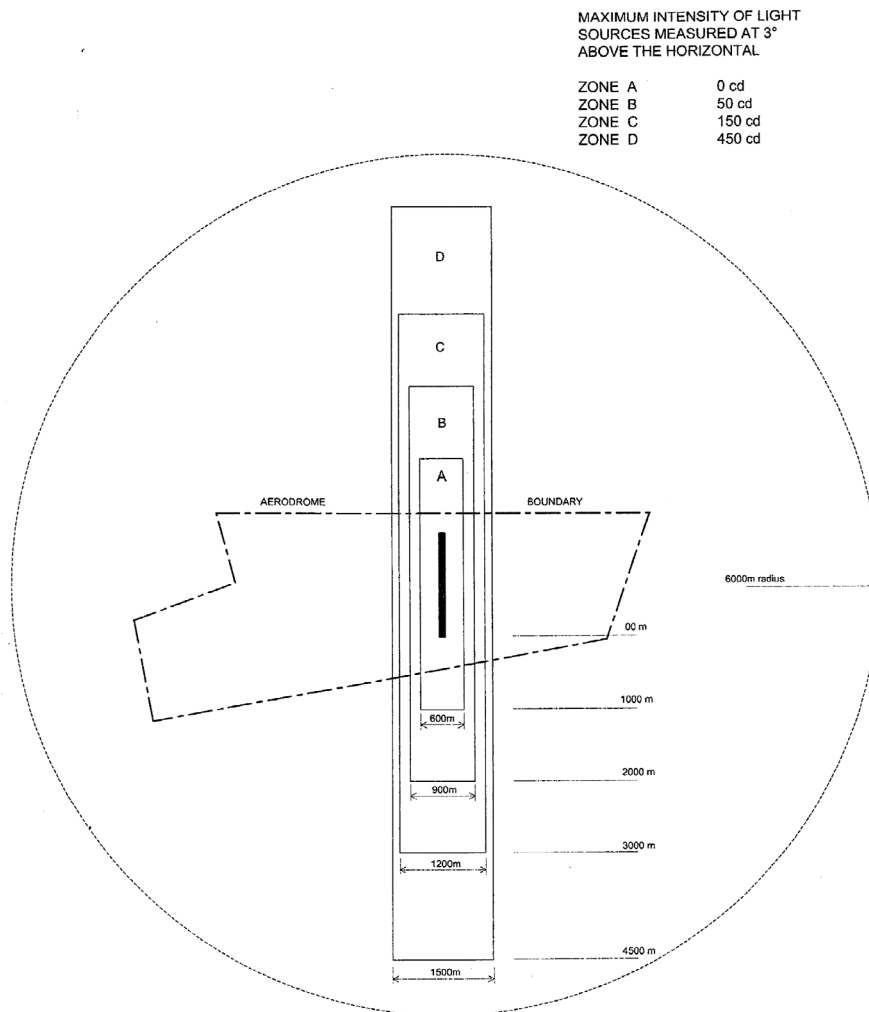


Figure 16: NASF lighting zones

As describe above, the entire site 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 and Bankstown Airports, 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 and Bankstown Airports have each 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 and Bankstown Airport and the current 2039 and 2019 Airport Master Plans respectively. In review all the airspace documentation, Avlaw has determined that the controlling airspace is the airspace associated with Sydney Airport, noting that Bankstown Airport is 22.65 km to the southwest of the site and the site has been assessed as having no impact on Bankstown Airport airspace. Although the prescribed airspace charts shown on the Sydney Airport's website 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 Sydney Airport.

The site is located outside the Outer Horizontal Surface of Sydney Airport's OLS, which is common to all runways at Sydney Airport, Refer to Figure 12 below.

Figure 17: Extract from the SYD OLS chart showing the location of the site outside the Outer Horizontal Section

Avlaw has modelled the proposed building along with an indicative operating envelope for the tallest luffing tower crane (TC3), in the refuelling configuration (tallest configuration) at a height of 330.080 m AHD (1083 ft).

PANS-OPS, RTCC surfaces and Controlled Airspace

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

- When applying ICAO PANS-OPS Doc 6168 criteria the site falls outside the PANS-OPS surfaces associated with Sydney Airport
- The site is located approximately approx. 8.6 nm from Sydney Airports ARP and therefore lies within and beneath the 10 nm radius with a 2100 ft MSA (640 m AHD), resulting in the building structure at 310.28 m (1018 ft) being below 2100 ft MSA by 1082 ft (329.70m) and the tallest crane (TC3) at 330.080 m (1083 ft) being below 2100 ft MSA (640 m) by 309.9 m (1017 ft).

○ RTCC

- The RTCC protection surface across the site is a horizontal plane at 335.28m AHD (1,100 ft). With a building height of 310.28 m AHD, the proposed build form remains clear of the RTCC surface by 25.00 m and will not intrude into RTCC protection surfaces. The tallest luffing jib crane (TC3) proposed to be erected at the site will reach a maximum height of 330.080 m AHD during refuelling operations and will remain below and clear of the RTCC surface by 5.20 m. Emphasis is added here that an intrusion of the RTCC will not be approvable and therefore, this minimal vertical clearance between the indicative crane height and protection surface must be adhered to when finalising the CMP to avoid adding complexity to the aviation approval process.

○ Controlled Airspace

- The site is located within the and below Class C controlled airspace which as a lower limit of 1,000 ft. Therefore, the building and crane activity at the site is currently proposed to intrude. With the Channel 9 TV tower located in Willoughby at 1,077 ft (328.27 m) and Sydney's Centre Point Tower in the Sydney CBD at 1,073 ft (327 m), it would be prudent to have Airservices Australia to review and verify the above to confirm that there will be no adjustment to the 1,000 ft lower limit based on the proposed development or the construction cranes, based on the existing TV tower and Sydney Tower Eye heights documented above the 1,000 ft lower limit.

The building at the finished height of 310.28 m AHD will also be required to be reported both CASA and 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.

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 18: 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 Royal North Shore Hospital (RNSH), which is located 3,076 m bearing 142.85 degrees magnetic (155.85 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 128.62m AHD, meaning that at the site, the trigger criteria would be met for structures 158.62m 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. Refer to Figure XX below showing the northeast approach/departure flight path.

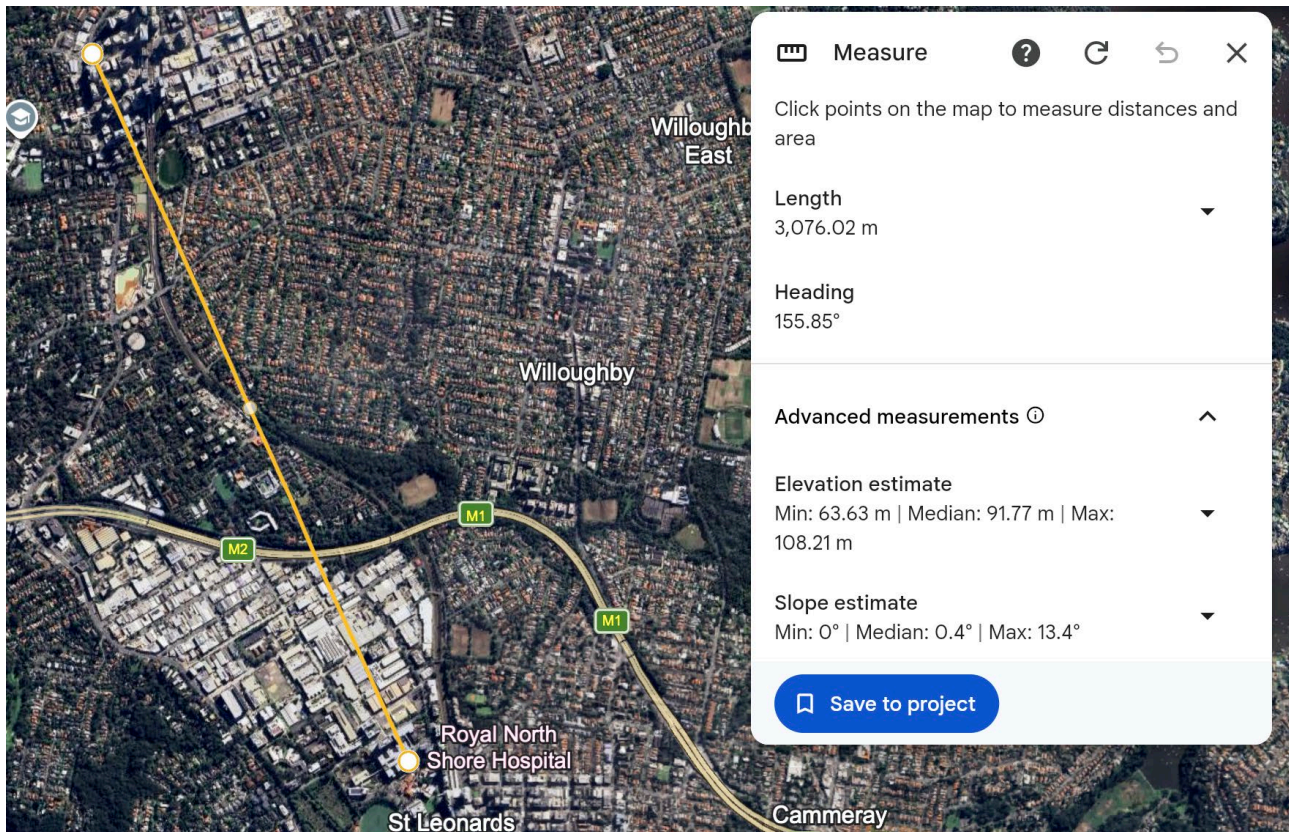
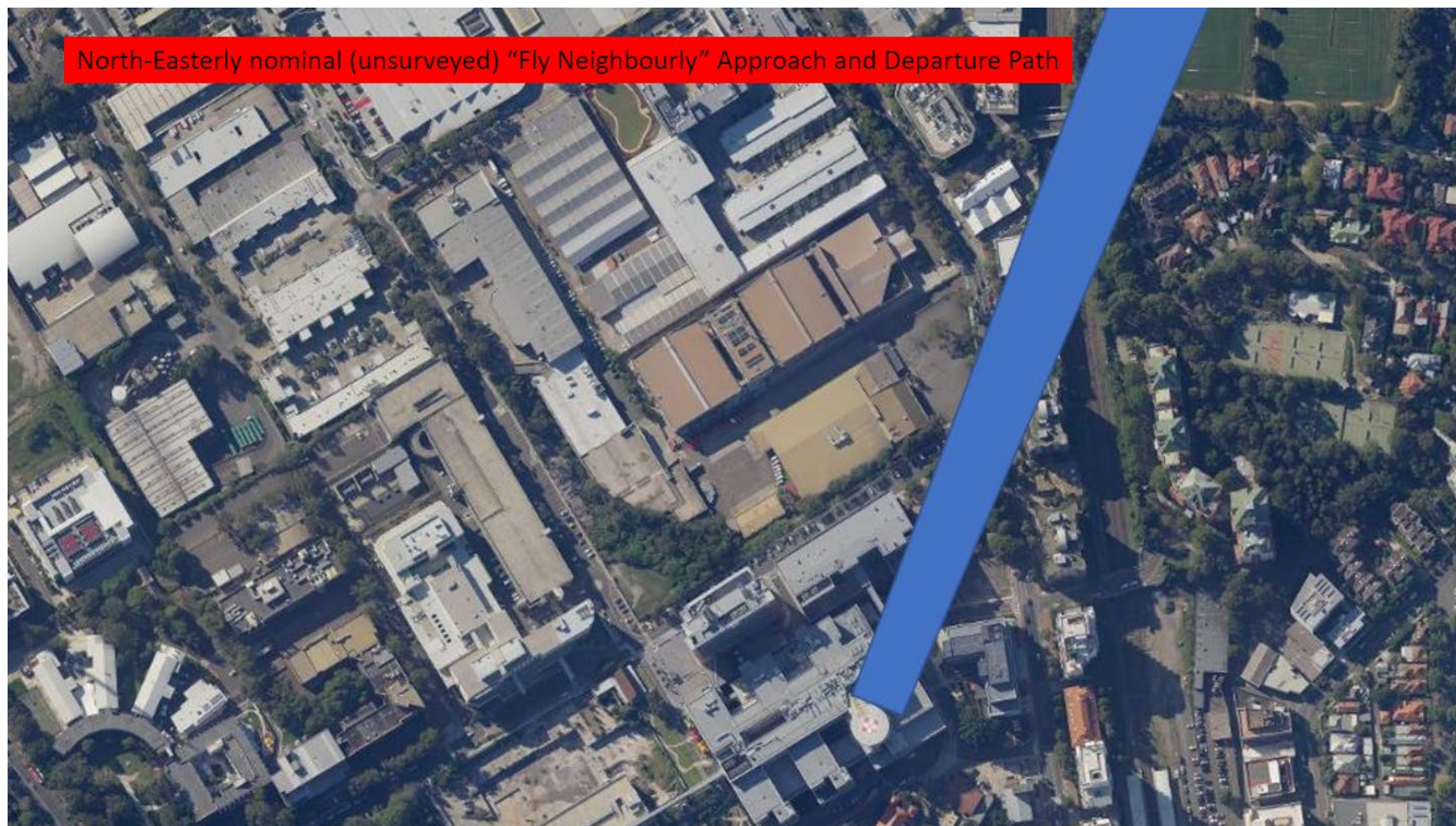


Figure 19: Location of Royal North Shore Hospital



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

Figure 20: Indicative operational airspace boundary for NE flight path for RNSH HLS (site to north is off image)

Source: AviPro

For completeness, attempts were made to consult with relevant stakeholders with an interest in the helipad to confirm that the proposed building and cranes at the site will not affect their operations. No response has been provided yet, but no impacts are expected.

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. [NASE](#) 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 14.82 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

As outlined in the earlier part of the report, the proposed development at the site will not result in any permanent built form or temporary construction cranes intruding into the OLS of Sydney or Bankstown Airport, as the site is located outside the lateral extremities of the OLS associated with both airports.

The site is approximately 8.6 nm (15.88 km) from Sydney Airport's ARP and falls within the 10 nm MSA area with a minimum height of 2,100 ft (640 m), which results in an obstacle free height up to 1,100 ft (340 m) when applying a 300 m (1,000 ft) MOC. None of the built or temporary construction cranes reach this height.

The site also lies within Class C airspace with a lower limit of 1,000 ft, which will be penetrated permanently by the built form as well as all three cranes proposed to be erected at the site. Avlaw does note that when citing the Sydney VTC, the Channel 9 TV tower located in Willoughby is identified at 1,077 ft (328.27 m) and Sydney's Centre Point Tower in the CBD reaches a height of 1,073 ft (327 m). It would be prudent to have Airservices Australia to review and verify the above to confirm that there will be no adjustment to the 1,000 ft lower limit based on the proposed development or the construction cranes, however given that the existing TV tower and Sydney Tower Eye heights documented are above the 1,000 ft lower limit, Avlaw expects that the assessment will be favourable, assuming certain conditions such as marking and lighting are satisfied.

Emphasis is placed on the minimal vertical clearance between the height of TC3, which based on indicative figures in this report, will only allow for a 5.20m vertical clearance before intruding the RTCC. This needs to be considered carefully when the final CMP is prepared, as the RTCC should not be penetrated and a favourable outcome (approval) is not expected.

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 site fall outside the OLS for Sydney and Bankstown Airports.
- The site lies within C class airspace with a lower limit of 1,000 ft, which will be penetrated by the built form and all cranes erected at the site. Airservices will need to confirm the clearance requirements and advise if there is any adjustment required to the lower limit, however given other taller obstacles already intruding the same LL, Avlaw expects a favourable outcome.
- The site lies within and below RTCC surface 1,100 ft (335.28m AHD), which will not be penetrated by the final build form or temporary construction cranes. The final built form will provide a clearance of 25.00 m below the RTCC surface and the tallest temporary crane (TC3) will provide a clearance of 5.20 m below the RTCC surface. Emphasis is placed on this by Avlaw to ensure that when the final CMP is prepared, the RTCC is not penetrated as a favourable outcome is not expected.
- 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 Avlaw's assessment is that there will be no impact on its use. Attempts were made to engage with relevant stakeholders, however no response was received.
- The site is clear of any future PSA's, should they be adopted at Sydney Airport



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