AERONAUTICAL IMPACT ASSESSMENT

New Primary School in Mulgoa Rise

9 August 2021

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Publication Title

Aeronautical Impact Assessment: New Primary School in Mulgoa Rise

Prepared for:

Colliers International Australia

Level 30, Grosvenor Place
225 George Street
Sydney NSW 2000

Prepared by:

Avlaw Pty Ltd, trading as Avlaw Aviation Consulting
Suite 6.13
6 Middlemiss St
Lavender Bay NSW 2060
Australia
Email: info@avlaw.com.au

Project Team

Amin Hamzavian (Project Manager)
Allan Frew (Airport Operations)

VERSION NO.	DATE	PREPARED BY	CHANGE DESCRIPTION
V1 DRAFT	18/03/2021	Amin Hamzavian, Allan Frew	First draft for client review
V1 FINAL	16/04/2021	Amin Hamzavian	Minor typos corrected
V2 FINAL	03/05/2021	Amin Hamzavian	Introduction added, corrected reference to school
V3 FINAL	09/08/2021	Amin Hamzavian	Project title and elevations updated

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Executive Summary

Executive Summary

This Aeronautical Impact Assessment (AIA) has been prepared by Avlaw Pty Ltd, trading as Avlaw Aviation Consulting (Avlaw), for Colliers International Australia (Colliers) to address the aviation-related SEARs issued by the Department of Planning for the proposed new Primary School in Mulgoa Rise and mobile cranes that will be used during construction.

The Department of Education propose one single story building, three connecting two story buildings and four covered outdoor areas at 1-23 Forestwood Drive in Glenmore Park which extends through to Deerubbin Drive to the north and bounded by Darug Street to the west ("the site"). The proposed maximum building height is 72m AHD, with all plant and ancillary features captured within this height. Only mobile cranes will be used during construction and temporary crane activity will reach a maximum height of 96.5m AHD for MC1, 144.5m AHD for MC2, 170.5m AHD for MC3, and 209.5m AHD for MC4.

Avlaw's assessment has found that the critical (i.e. lowest) prescribed airspace protection surface covering the site is the Outer Horizontal Surface of the Western Sydney Airport Obstacle Limitation Surfaces (OLS) at a height of 230.5m AHD. This surface will not be penetrated either permanently by the building development, or temporarily by the four mobile construction cranes, meaning no controlled activity approval will be required. Although no controlled activity approvals are required for the development to proceed, cranes that are 110m or more AGL do trigger the requirement to notify the Civil Aviation Safety Authority (CASA), which means the tallest of the four mobile cranes that will used during construction will meet this criteria.

An assessment of the proposed development against prescribed airspace and helicopter operations at the Nepean Hospital Helipad, or helicopter operations in close vicinity of the site, has concluded that the building and cranes will not adversely impact on these activities.

The conclusion of this AIA is that no applications seeking aviation approvals for the building and associated cranes is required. The rationale for this is that the buildings and cranes will not penetrate any protected airspace or defined flight operational surfaces and therefore, will not adversely affect the safety, efficiency, or regularity of operations of aircraft (aeroplane and helicopters).

1

Introduction

Introduction

This Aeronautical Impact Assessment (AIA) has been prepared by Avlaw Pty Ltd, trading as Avlaw Aviation Consulting (Avlaw), for Colliers International Australia (Colliers) to address the aviation-related SEARs issued by the Department of Planning for the proposed new Primary School in Mulgoa Rise and mobile cranes that will be used during construction.

This report has been prepared to address the aviation-related SEARs that have been issued:

Aviation

- Provide a report prepared by a suitably qualified person expert:
  - Providing details of any existing or planned flight paths that may be impacted by the proposed development.
  - Providing details of impact of the proposed development on Aviation and Airspace protection considering the Obstacle Limitation Surface (OLS) for the proposed Western Sydney Airport.

Relevant Policies and Guidelines:

- National Airports Safeguarding Framework and associated guidelines.
- State Environmental Planning Policy (Western Sydney Aerotropolis) 2020.

2

Regulatory Framework

Regulatory Framework

2.1 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. With respect to Western Sydney Airport (WSA), at the time of writing only the Obstacle Limitation Surfaces (OLS) have been "declared" by the Department of Infrastructure, Transport, Regional Development and Communications (Department) and are therefore enshrined in legislation as the airport's prescribed airspace.

Advice provided by WSA and the Department specifies that development that infringes on the airport's protected airspace is called a controlled activity and can include, but is not limited to:

- permanent structures, such as buildings, intruding into the protected airspace;
- temporary structures such as cranes intruding into the 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.

WSA further states that you do not need approval if the planned activity in the airport's OLS involves buildings, structures or things that penetrate the protected airspace but are:

- no taller than 10 metres above ground level;
- relates to temporary activities that penetrate the protected airspace, but do not continue for more than 12 months and will not result in a permanent airspace intrusion;
- or is authorised by the Western Sydney Airport, Airport Plan, herein referred to as the "Airport Plan".

2.2 Airspace Approval Process

Part 12 of the *Airports Act 1996* (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 an airport's prescribed airspace to be a "controlled activity" and requires that controlled activities cannot be carried out without approval.

As is further explained in section four, no penetration of prescribed airspace will be necessary for the development at the site to proceed and therefore the process defined in the Regulations is not relevant. However, notification to CASA that one crane will reach a height greater than 110m AGL will be necessary. This can be emailed to oar@casa.gov.au.

3

Proposed Development

Proposed Development

3.1 Location

The site is located 10,150 metres NW of Western Sydney Airport aerodrome reference point (ARP). The coordinates at the centre of the site are 285383.54 m E, 6257278.51 m S.

Figure 1: Site boundary indicated in red

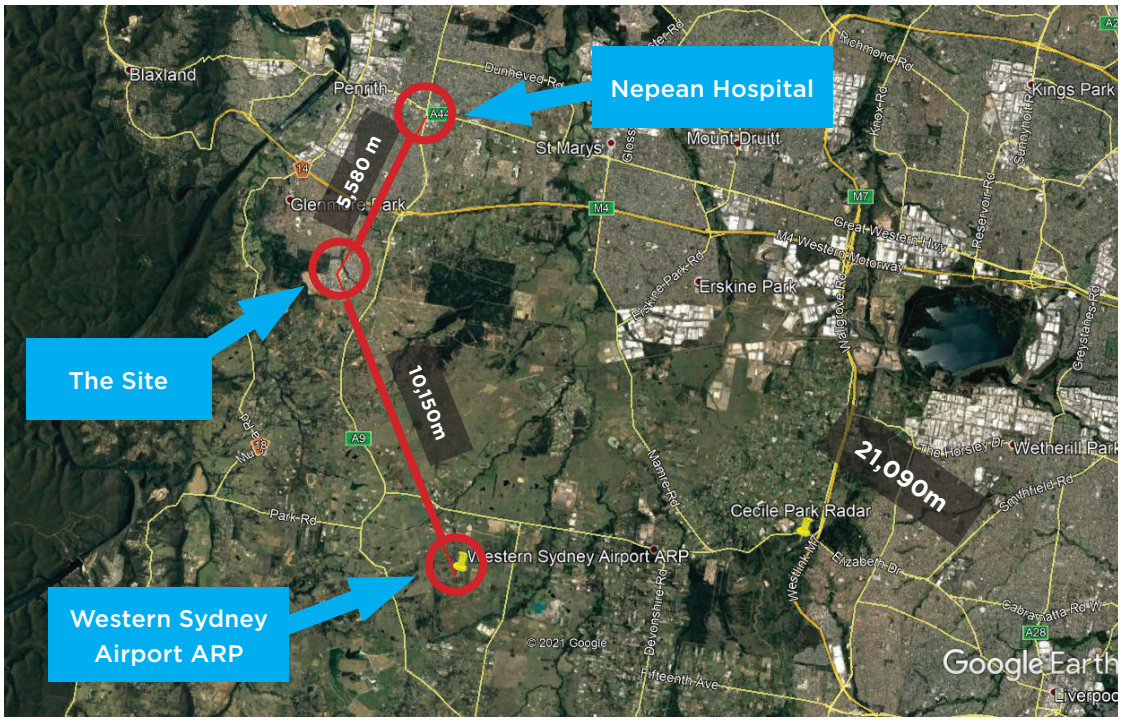

Figure 2: Site location in relation Western Sydney Airport and Nepean Hospital

3.2 Permanent Structure

The proposed maximum building height is 72m AHD, with all plant and ancillary features captured within this envelope. An elevation view image of the proposed development indicating its height is provided at Figure 3.

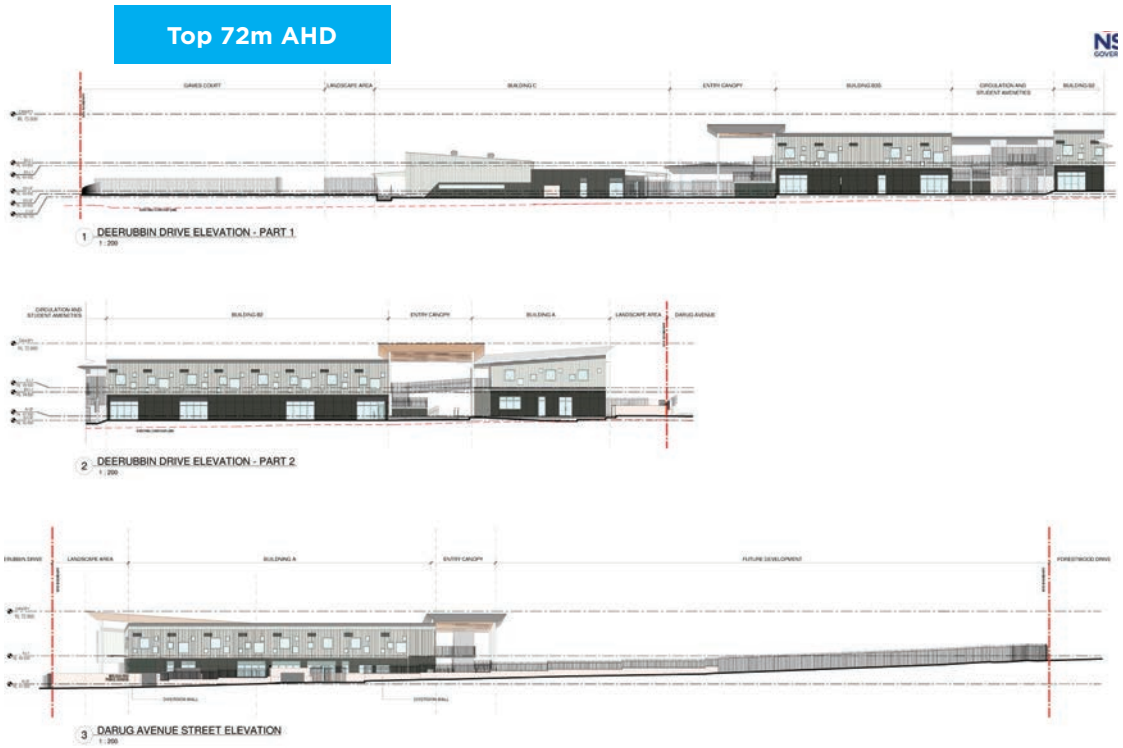

Figure 3: Elevation view of the proposed development (max height 72m AHD)

3.3 Crane Activity

Four temporary mobile cranes will be used to complete construction of the proposed development. Temporary crane activity will reach a maximum height of 96.5m AHD for MC1, 144.5m AHD for MC2, 170.5m AHD for MC3, and 209.5m AHD for MC4.

Figures 4 and 5 on illustrate the height of the four cranes as well as their movement arc during construction. All four cranes will be used at different locations across the site.

Crane Type	Crane Reference	Maximum Tip Height (AGL) m	Maximum Tip Height (AHD) m	Use
Franna (25t)	MC1	32	96.5	Lift general building materials across site
Mobile (60t)	MC2	80	144.5	Lift general building materials across site
Mobile (130t)	MC3	106	170.5	Lift heavy building elements across site
Mobile (400t)	MC4	145	209.5	Lift prefabricated building elements across site

Figure 4: Table showing cranes to the highest point of 209.5 AHD

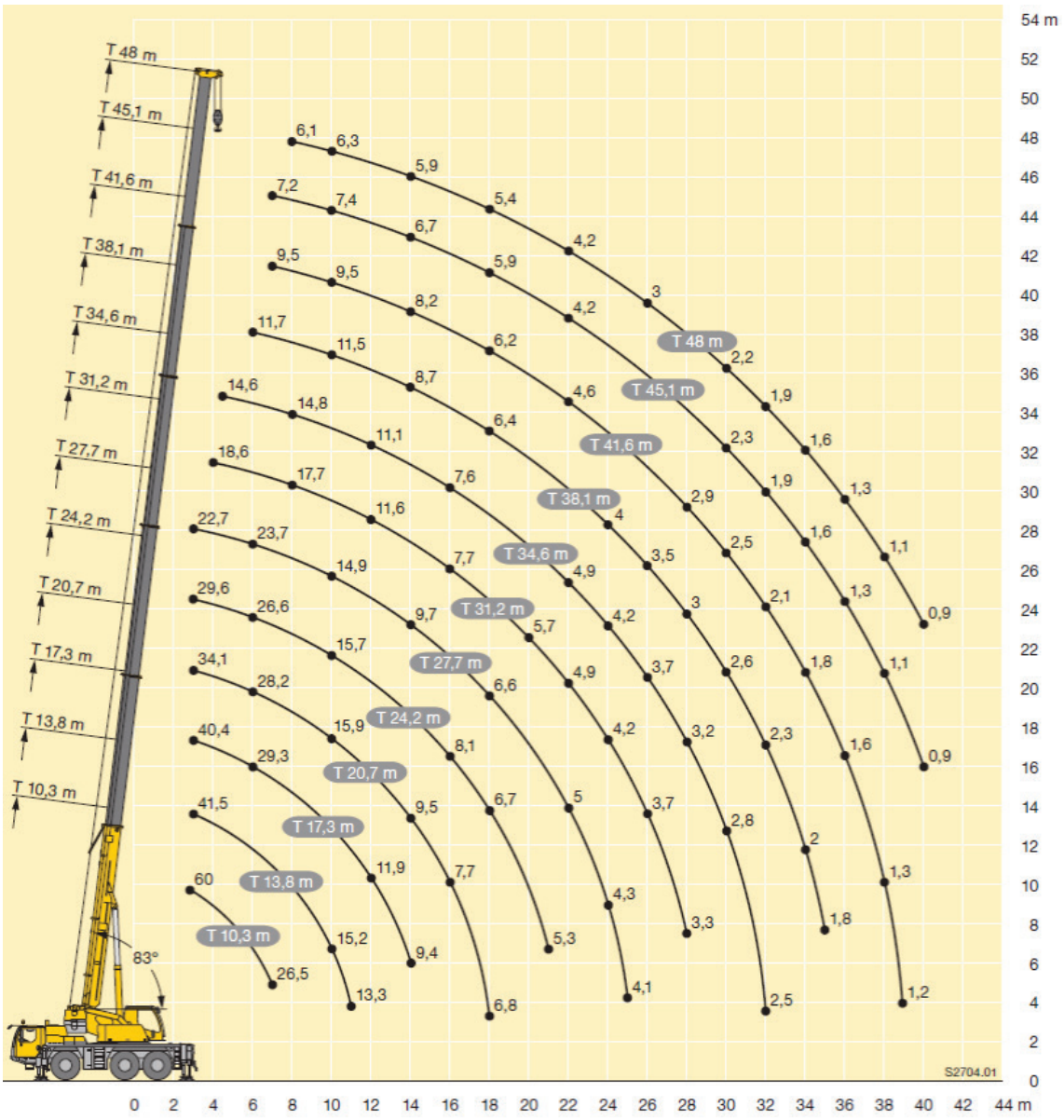

Figure 5: Movement arc of temporary construction cranes

In terms of timing, it is anticipated the first mobile crane will be utilised on site in November 2021, with construction works running through until Jan 2023.

4

Prescribed Airspace Assessment

Prescribed Airspace Assessment

A review of the airspace charts which form Western Sydney Airport's prescribed airspace and made available through their website provides the basis upon which the aeronautical impact of any proposed development activity will have on the safety, efficiency and regulatory of aircraft operations. With respect to the proposed development at the site, Avlaw has determined that the OLS is the only relevant chart.'

4.1 Obstacle Limitation Surfaces

The site lies under the Outer Horizontal Surface of the OLS for Western Sydney Airport as indicated by the marker on Figure 7. The proposed maximum building height of 72m AHD will remain 158.5 metres clear of the OLS. Temporary construction cranes at the maximum height of 209.5m AHD will remain 21 metres clear of the OLS. Since neither the buildings nor temporary crane activity will penetrate the prescribed airspace for Western Sydney Airport, they will not be considered controlled activities requiring aeronautical assessment. However, as one of the cranes (MC4) will be greater than 110m AGL, CASA will need to be notified of this proposed activity.

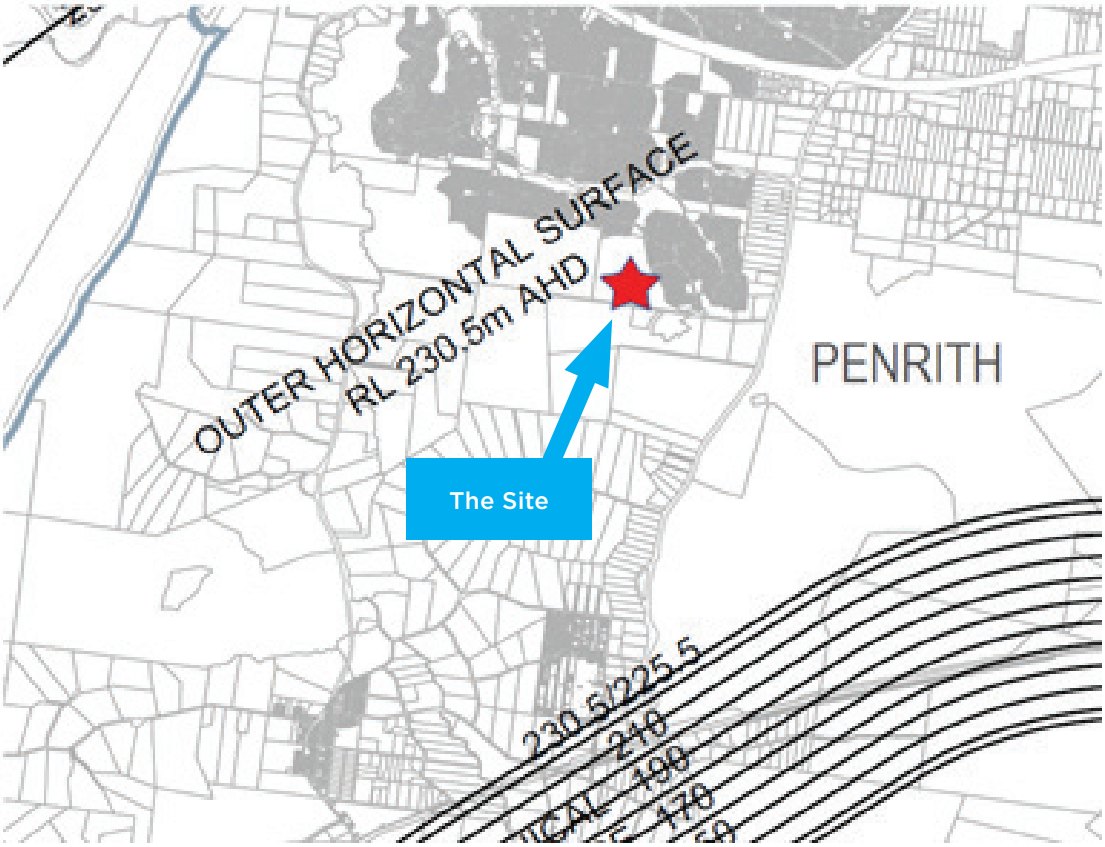

Figure 6: Location with respect to the Western Sydney Airport OLS

5

Assessment of Instrument Flight Procedures

Assessment of Instrument Flight Procedures

Formal advice on the WSA PANS-OPS contained in the Airport Plan is as follows:

"Calculating the PANS-OPS surfaces is complex because of the highly technical nature of the design and interaction of procedures. The design of a full set of PANS-OPS for Stage 1 and long-term operations will be required following the formal flight path design before start of operations. Once designed, the PANS-OPS will be protected under the Airspace Protection Regulations."

Avlaw has identified on aeronautical assessments for other projects that the PANS-OPS has only been lower than the OLS in close proximity to the runway ends aligned with the approach and departure areas (specifically in relation to Precision Approach Instrument Landing Systems). The site is outside these limits so the OLS over the site is considered the most critical relevant airspace control and therefore once the PANS-OPS is published, it is anticipated the PANS-OPS surface covering the site will be greater than 230.5m AHD.

Therefore, Avlaw's assessment is that there will be no greater impact by the PANS-OPS than is provided by the OLS in the vicinity of the site. The buildings and temporary construction cranes will therefore remain below the instrument flight procedure protected surfaces.

6

Airport Master Plan

Airport Master Plan

The Western Sydney Airport Plan 2016 provides advice on airspace control and contains the detailed OLS. The PANS-OPS is currently under design however as explained in section five, this is not considered to be relevant to the proposed activities at the site. The master plan constraints by way of the OLS are particularly relevant to this assessment and were explained above in section four.

7

Helicopter Operations

Helicopter Operations

Legislation requires the pilot of a helicopter to determine the safe take-off and landing approach taking into account all factors including aircraft performance, wind direction, obstacles, and emergency landing in the event of engine failure. The helicopter operations relevant to development at the site and are by visual flight rules and have been assessed, the findings of which are summarised below.

7.1 Hospital Helipads

The NASF Guideline H has been issued regarding protection of 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 in Figure 7 below that has been sourced from Guideline H and illustrates the protection of SHLS and the heights above which further assessment is triggered.

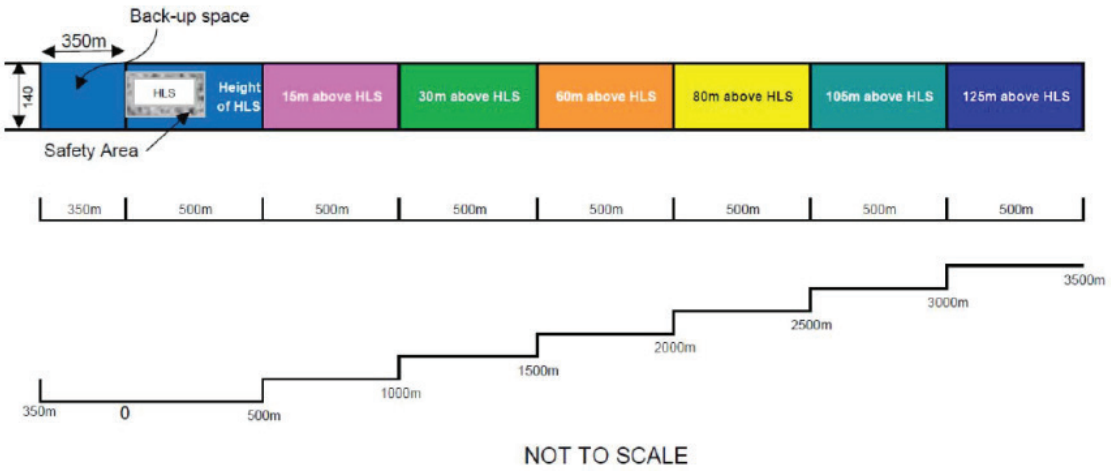

Figure 7: Referral trigger for SHLS

The nearest hospital helipad to the site is the Nepean Hospital rooftop helipad, which is approximately 5,580 metres to the NE of the site (i.e. the site is 5,580 metres to the SW of the hospital helipad). The approach and departure paths for the helipad are generally in the direction of the site, however the NASF guideline assessment area only extends 3,500 metres from the helipad. This places the site outside the horizontal limit of the assessment area. Apart from visual flight reference during approach and departure covered by the NASF Guideline H, no instrument flight procedures are established for the Nepean Hospital Helipad to be impacted by the proposed development at the site.

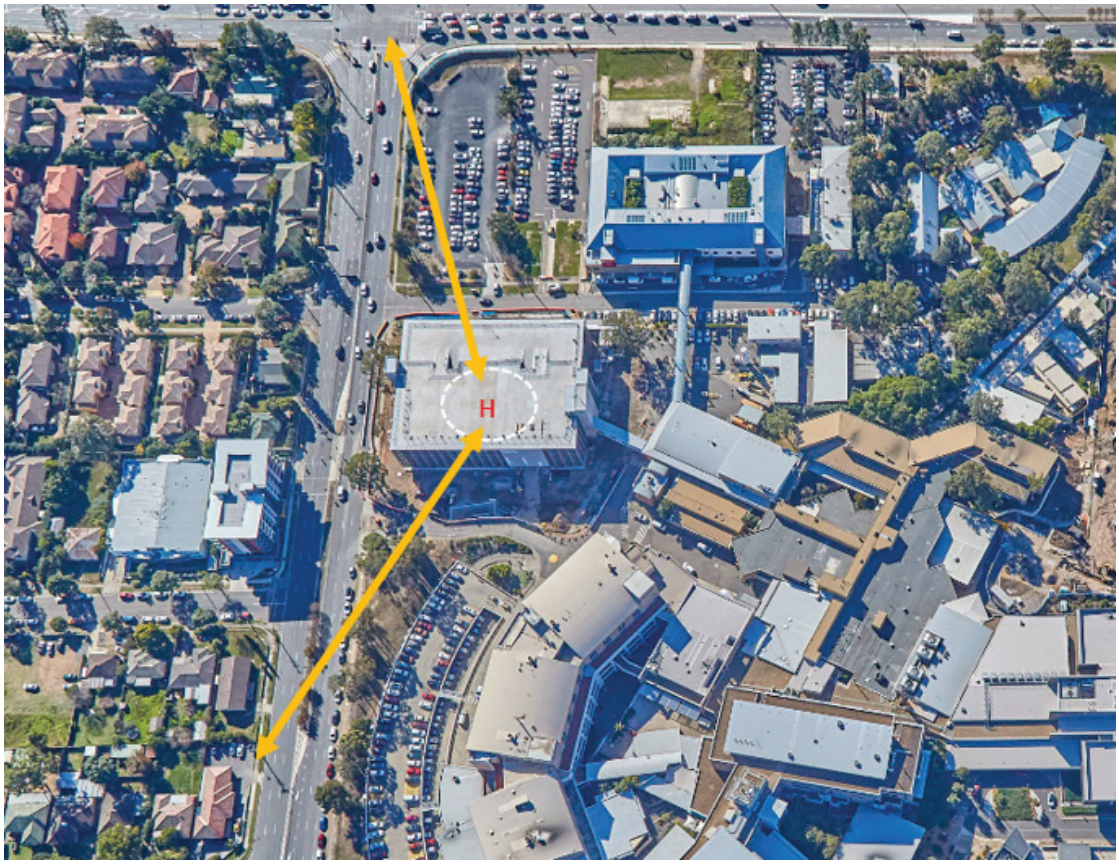

Figure 8: Nepean Hospital Helipad - yellow arrows are accordance with flight path markings on helipad surface

Therefore, Avlaw's assessment of current and future helicopter operations in the vicinity of the site concludes the proposed development (i.e. buildings and cranes) will pose no increased safety risk to those that already exist due to other obstacles in the area.

8

Conclusions

Conclusions

Permanent building development at the site is proposed to reach a maximum height of 72m AHD, with all plant and ancillary features captured within this envelope whilst temporary crane activity will reach a maximum height of 209.5m AHD. The only airspace protection surface that is applicable is the Outer Horizontal Surface of the Western Sydney Airport OLS at 230.5m AHD. All building development activity will be clear of the OLS. However, as one of the cranes (MC4) will be greater than 110m AGL, CASA will need to be notified of this proposed activity although this will not trigger to formal approval process.

Helicopter operations are required to be conducted by visual rules unless following a prescribed instrument flight procedure prior to final approach. Helicopter operations are well clear of building and crane activity at the site.

This AIA concludes that the proposed building heights up to 72m AHD and temporary crane activity to a maximum height of 209.5m AHD are clear of all aircraft operational surfaces, and the development will not adversely affect safety, efficiency, or regularity of operations of aircraft (aeroplanes and helicopters).

AVLAW CONSULTING

Suite 6.13
6 Middlemiss St
Lavender Bay NSW 2060
Australia

P: (+612) 9980 7717
E: info@avlaw.com.au

www.avlaw.com.au