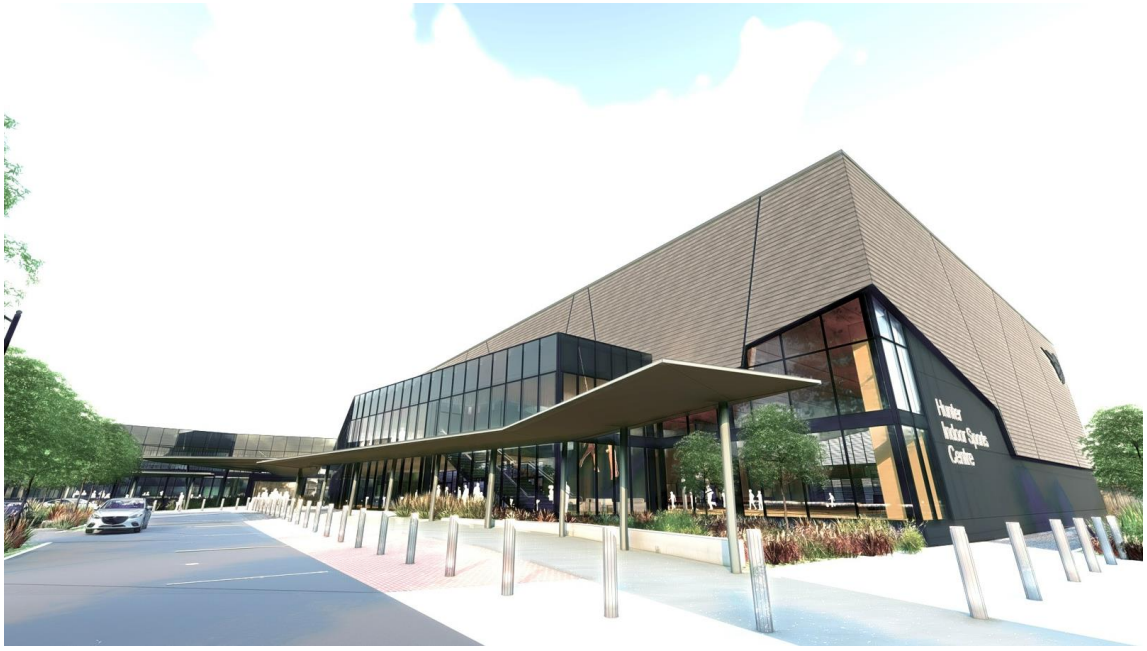
AVIATION IMPACT ASSESSMENT REPORT



AIRSPACE IMPLICATIONS DUE TO THE CONSTRUCTION OF THE HUNTER INDOOR SPORTS CENTRE DEVELOPMENT

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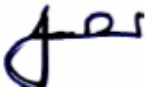
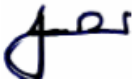
		Signature			
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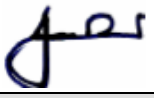
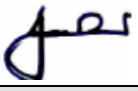
		Signature			
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This Report on the airspace implications, both during and following construction of the development is prepared for EJE Architecture by Resolution Response Pty. Ltd. ABN: 94 154 052 883, trading as ‘AviPro’.

The Report relates to the coordination aspects associated with prescribed/protected airspace at Newcastle/ Williamtown Aerodrome and the Helicopter Landing Sites (HLS) at: the John Hunter Hospital Hospital, Westpac Rescue Helicopter Base, Broadmeadow and the Port of Newcastle helicopter base at Dykes Point due to the establishment and site design of the Hunter Indoor Sports Centre development at Wallarah and Blackley Ovals, Broadmeadow. It is intended to inform design and planning.

Contents

1. INTRODUCTION

1.1. Background

Newcastle Basketball was told by the NSW Government that they needed to move from their current location in Hunter Park over eight years ago so their site could be used for much needed housing. Newcastle Basketball have been working with the NSW Government ever since to find a home for their growing 5,000 local members. Their current facilities are not fit-for-purpose. In March 2023, Newcastle Basketball announced it would be seeking to build a new stadium in Newcastle on Crown Land opposite McDonald Jones Stadium at Broadmeadow. The basketball stadium (indoor sports centre) project is being managed and funded, and will be assessed, by the NSW Government.

City of Newcastle has been working closely with local sporting groups and Lambton High School to ensure that, should the NSW Government approve the development of the proposed indoor sports centre at Wallarah and Blackley Ovals, new playing locations would be secured.

The proposed basketball stadium has been declared a State Significant Development by the Department of Planning and Environment, who will act as the planning authority when a Development Application (DA) is lodged by Newcastle Basketball.

1.2. Overview

AviPro has been commissioned by the Basketball Association of Newcastle Limited (BANL) to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the State Significant Development Application (**SSD-65595459**) for the proposed Hunter Indoor Sport Centre with courts, indoor stadium, amenities and associated civil and landscaping works, at 2 Monash Road and 24 Wallarah Road, New Lambton.

This Aviation Impact Assessment report assesses the aviation specific impacts that the Hunter Indoor Sports Centre development will have on the prescribed/protected airspace at Newcastle/Williamtown Aerodrome and the HLSs at: the John Hunter Hospital (JHH), Westpac Rescue Helicopter Service base, Broadmeadow and the Port of Newcastle Helicopter Base at Dykes Pt.

1.3. Site Details

1.3.1. Site address

The site is located at 2 Monash Road and 24 Wallarah Road, New Lambton, within the Newcastle Local Government Area (LGA).

1.3.2. Boundaries

The area surrounding the site comprises:

- To the south is Monash Road.
- To the east is Turton Road.
- To the north is New Lambton High School and the Newcastle International Hockey complex.
- To the west is the Arthur Edden Oval precinct.

1.3.3. Heritage Significance

Under the *Newcastle Local Environmental Plan 2012* (NLEP2012) the site is zoned RE1 (Public Recreation) and does not contain any local or State listed heritage items.

1.3.4. Site Location

The site location is shown in Image 1 below.

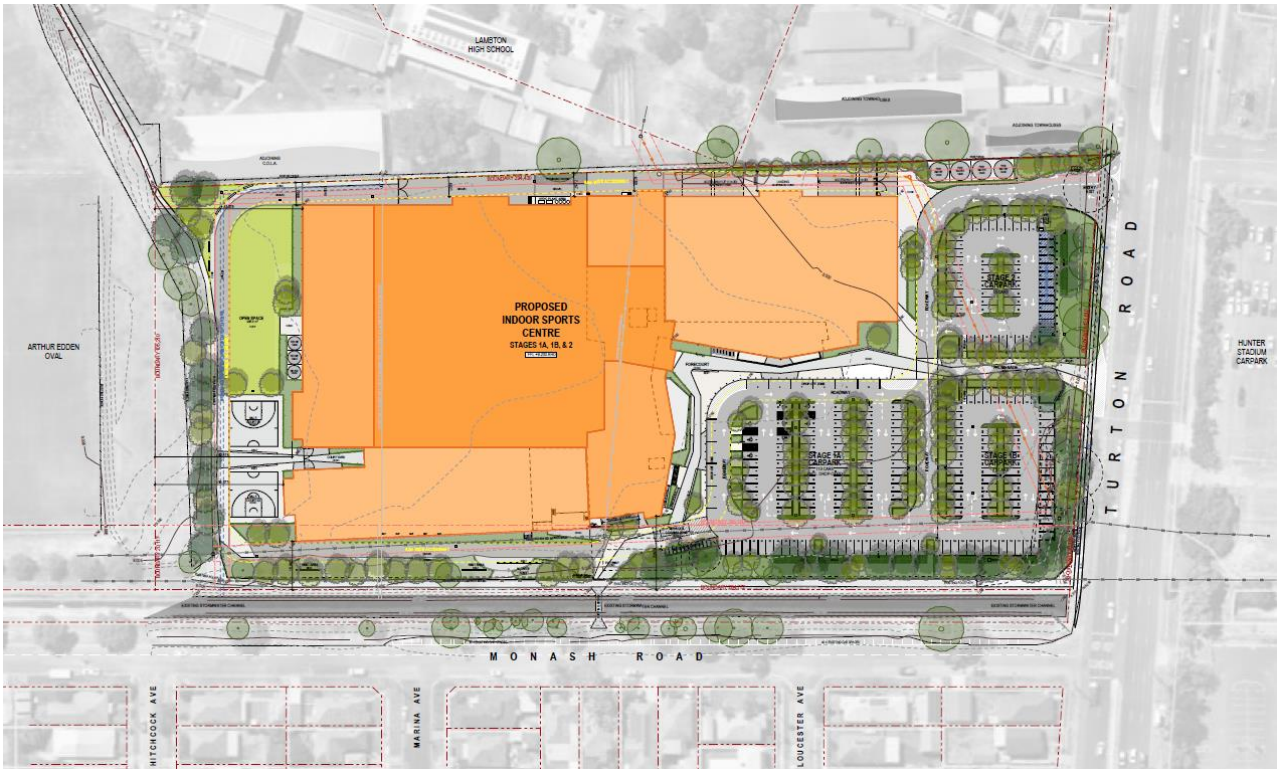

Image 1: Site Location

1.4. Secretary's Environmental Assessment Requirements (SEARs) Reporting

In preparing this report, the minimum SEARs requirement (additional considerations are also included) has been addressed in Table 1 below.

Item	SEARS Requirement	Relevant Section of Report
19	This EIS must…address any potential impacts, particularly from the use of cranes during the construction phase, on any surrounding helicopter flight paths.	*See Sections 4.2 to 4.14*

Table 1: Secretary's Environmental Assessment Requirements - **Construction**

1.5. Additional Background Information

1.5.1. Background Material

Reference material provided by EJE Architecture in support of the report include early planning designs and concept drawings.

1.5.2. Methodology

Criteria from all relevant references were assessed, including: National Airports Safeguarding Framework Guideline H – Protecting Strategically Important Helicopter Sites; CASA Advisory Circular (AC) 139.R-01 v2.0 Guidelines for heliports - design and operation and the NSW MoH GL 2020_014 Guidelines for Hospital Helicopter Landing Sites in NSW.

1.6. Explanation of Terms

Aircraft. Refers to both aeroplanes (fixed wing) and helicopters (rotorcraft).

Approach/Departure Path (VFR) (Day and Night). The flight track helicopters follow when landing at or departing from the FATO of an HLS. Updated standards to align with ICAO recommendations now have the VFR Approach/Departure path extending outwards from the edge of the FATO safety area with an obstacle free gradient of 2.6º or 4.5% or 1:22.2 vertical to horizontal, measured from the forward edge of the FATO safety area. The VFR Approach/Departure path commences at a width of 34m, and splays laterally at an angle of 8.7º/15%/1:12.8 to a width of 140m, then remains parallel to a distance of 3,386 m, where the height is 152 m above the elevation of FATO surface.

Design Helicopter. The Leonardo AW139 contracted to the NSW Ambulance. The type reflects the new generation Performance Class 1 capable helicopters used in HEMS and reflects the maximum weight and maximum contact load/minimum contact area.

D Value (also Overall Length (L)). The distance from the tip of the main rotor tip plane path to the tip of the tail rotor tip plane path or the fin if further aft, of the Design Helicopter.

Elevated Helicopter Landing Site. An HLS located on a roof top or some other elevated structure where the Ground Effect Area/Touchdown and Lift-off Area (TLOF) is at least 2.5 m. above ground level.

Final Approach. The reduction of height and airspeed to arrive over a predetermined point above the FATO of an HLS.

Final Approach and Takeoff Area (FATO). A defined area over which the final phase of the approach to a hover, or a landing is completed and from which the takeoff is initiated. For the purposes of these guidelines, the specification of 1.5 x Length Overall of the Design Helicopter is used and equates to 25 m. diameter. Area to be load bearing.

Ground Taxi. The surface movement of a wheeled helicopter under its own power with wheels touching the ground.

Hazard to Air Navigation. Any object having a substantial adverse effect upon the safe and efficient use of the navigable airspace by aircraft, upon the operation of air navigation facilities, or upon existing or planned airport/heliport capacity.

Helicopter Landing Site (HLS). The area of land, water or a structure used or intended to be used for the landing and takeoff of helicopters, together with appurtenant buildings and facilities.

Helicopter Landing Site Elevation. At an HLS without a precision approach, the HLS elevation is the highest point of the FATO expressed as the distance above mean sea level.

Helicopter Landing Site PC1 Survey Reference Point. A position at eye height (1.5 m.) above the forward edge of the FATO in the centre of the flight path, from which the PC1 survey at 2.6º (4.5%) is initiated.

Helicopter Landing Site Reference Point (HRP). The geographic position of the HLS expressed as the latitude and longitude at the FATO centre.

Hospital Helicopter Landing Site. HLS limited to serving helicopters engaged in air ambulance, or other hospital related functions.

Note:

*A designated HLS located at a hospital or medical facility is an emergency services HLS and **not** a medical emergency site.*

Heliport. An HLS that meets or exceeds the specifications contained within CASA Advisory Circular (AC) 139R-01 Guidelines for heliports design and operation. A heliport may have two or more co-existing HLS. There are no implications for operating a heliport as opposed to an HLS, other than having a "Heliport Operations Manual" rather than an "HLS Operations Manual" which would address the various interactions and interoperability (aviation, clinical etc) at multi-HLS sites.

Hover Taxi. The movement of a helicopter above the surface, generally at a wheel/skid height of approximately one metre. For facility design purposes, a skid-equipped helicopter is assumed to hover-taxi.

Landing and Lift Off Area (LLA). A load-bearing, nominally paved area, normally located in the centre of the TLOF, on which helicopters land and lift off. Minimum dimensions are based upon a 1 x metre clearance around the undercarriage contact points of the Design Helicopter.

Lift Off. To raise the helicopter into the air.

Movement. A landing or a lift off of a helicopter.

Object Identification Surface. The OIS are a set of imaginary surfaces associated with an HLS or heliport. They define the volume of airspace that should ideally be kept free from obstacles in order to minimise the danger to a helicopter during an entirely visual approach.

Obstacle Limitation Surface. The OLS are a set of imaginary surfaces associated with an aerodrome. They define the volume of airspace that should ideally be kept free from obstacles in order to minimise the danger to aircraft during an entirely visual approach.

Obstruction to Air Navigation. Any fixed or mobile object, including a parked helicopter, which impinges the approach/departure surface or the transitional surfaces.

Parking Pad. The paved centre portion of a parking position, normally adjacent to an HLS.

Performance Class 1 (PC1). Similar to Category A requirements. For a rotorcraft, means the class of rotorcraft operations where, in the event of failure of the critical power unit, performance is available to enable the rotorcraft to land within the rejected take-off distance available, or safely continue the flight to an appropriate landing area, depending on when the failure occurs. For an elevated HLS, the reject area is that area within the FATO (25 m. diameter) and therefore this area is to be load bearing. PC1 also requires CASA approved flight path surveys to/from the HLS.

Performance Class 2 (PC2). For a rotorcraft, means the class of rotorcraft operations where, in the event of failure of the critical power unit, performance is available to enable the rotorcraft to safety continue the flight, except when the failure occurs early during the take-off manoeuvres, in which case a forced landing may be required. PC2 also requires CASA approved flight path surveys to/from the HLS.

Performance Class 2 With Exposure (PC2WE). PC2WE is very similar to PC2 as mentioned above. The primary difference is that there need not be any provision for a suitable forced landing area during the take-off and landing phases of flight, within the designated exposure period for the rotorcraft. PC2WE offers operators alternative mitigation strategies based on: a defined exposure time limit, demonstrated engine reliability, engine maintenance standards, pilot procedures and training, and operator risk assessments. Specific approval to operate with exposure is required from CASA and will require a number of mitigation strategies from the operator to gain that approval.

Performance Class 3 (PC3). For a rotorcraft, means the class of rotorcraft operations where, in the event of failure of the critical power unit at any time during the flight, a forced landing:

- in the case of multi-engine rotorcraft – may be required; or
- in the case of single-engine rotorcraft – will be required.

Pilot Activated Lighting (PAL). A PAL system utilises a hospital-based VHF radio and timed switching device, activated by the pilot via a radio transmission on a pre-set frequency, to turn on the associated HLS lighting.

Rotor Downwash. The volume of air moved downward by the action of the rotating main rotor blades. When this air strikes the ground or some other surface, it causes a turbulent outflow of air from beneath the helicopter.

Safety Area. A defined area on an HLS surrounding the FATO intended to reduce the risk of damage to helicopters accidentally diverging from the FATO. This area should be free of objects, other than those frangible mounted objects required for air navigation purposes. The Safety Area for the Design Helicopter extends 4.5m beyond the FATO perimeter forming a 34m X 34m square or a 34m diameter circle.

Safety Net. Surrounds the outer edge of a rooftop HLS. It is to be a minimum of 1.5m wide and have a load carrying capacity of not less than 122 kg/m^2. The outer edge is not to project above the HLS deck, and slope back and down to the deck edge at approximately 10 degrees, and not more than 20 degrees. Both the inside and outside edges of the safety net are to be secured to a solid structure.

Shielded Obstruction. A proposed or existing obstruction that does **not** need to be marked or lit due to its close proximity to another obstruction whose highest point is at the same or higher elevation.

Take off. To accelerate and commence climb at the relevant climb speed.

Take off Position. A load bearing, generally paved area, normally located on the centreline and at the edge of the TLOF, from which the helicopter takes off. Typically, there are two such positions at the edge of the TLOF, one for each of two takeoff or arrival directions.

Touchdown and Lift-off Area (TLOF). A load bearing, generally paved area, normally centred in the FATO, on which the helicopter lands or takes off, and that provides ground effect for a helicopter rotor system. Size is based on 1 x main rotor diameter of the Design Helicopter, and is 14m diameter.

Unshielded Obstruction. A proposed or existing obstruction that may need to be marked or lit since it is **not** in close proximity to another marked and lit obstruction whose highest point is at the same or higher elevation.

1.7. Applicable Abbreviations

Acronym	Meaning
AC	Advisory Circular
ACC	Aeromedical Control Centre (NSW Ambulance HQ Eveleigh)
CASA	Civil Aviation Safety Authority (Australia)
CASRs	Civil Aviation Safety Regulations (1998) Australia
D (value)	In relation to a helicopter, the total distance between the extremities of main rotor and tail rotor tip path planes (also referred to as Overall Length)
DCP	Development Control Plan
DDO	Design and Development Overlay
FATO	Final approach and Take-Off Area (1.5 x helicopter length)
FARA	Final Approach Reference Area
GPS	Global Positioning System
HEMS	Helicopter Emergency Medical Service
HISC	Hunter Indoor Sports Centre

Acronym	Meaning
HLS	Helicopter Landing Site
HLSRO	HLS Reporting Officer
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions - requiring flight under IFR
JHH	John Hunter Hospital
LDP	Landing Decision Point (Category A/Performance Class 1 operations)
LEP	Local Environment Plan
LGA	Local Government Area
LLA	Landing and Lift Off Area. Solid surface meeting dynamic loading requirements, with undercarriage contact points + I metre in all directions
MAPt	Missed Approach Point
MDA	Minimum Descent Altitude
MOC	Minimum Obstacle Clearance
MRI	Magnetic Resonance Imagers
MTOW	Maximum Take Off Weight
NOTAM	Notice to Airmen. Issued by Airservices in relation to airspace and navigation warnings
NVG	Night Vision Goggle(s)
OIS	Object Identification Surface(s) (Heliport/HLS)
OLS	Obstacle Limitation Surface(s) (Aerodrome)
PC1	Performance Class 1
PC2	Performance Class 2
PC2WE	Performance Class 2 With Exposure
PC3	Performance Class 3
RD	Main Rotor Diameter
RNP	Required Navigational Performance
RTCC	Radar Terrain Clearance Chart
SARPS	Standards and Recommended Practices developed by ICAO and promulgated in the Annexes to the Convention of International Civil Aviation
TDP	Takeoff Decision Point (Category A/Performance Class 1 operations)
TLOF	Touch Down and Lift Off Area. Load bearing min. 1 x main rotor diameter.
VFR	Visual Flight Rules
VHF	Very High Frequency radio
VMC	Visual Meteorological Conditions - allowing flight under VFR
VAA-H	Visual Approach Area - Helicopter
V_{TOSS}	Take off Safety Speed

1.8. List of Images

1.9. List of Tables

1.10. List of Figures

2. EXECUTIVE SUMMARY

The aim of this report is to provide insights into the impacts of constructing the Hunter Indoor Sports Centre development on the aviation operations into and out of Newcastle/Williamtown Aerodrome and of helicopter operations within the city of Newcastle and the Port of Newcastle. The report analyses the likely impact of the completed building and any associated construction cranes on all such aviation activities.

The following key outcomes arose from the analysis:

- The proposed Hunter Indoor Sports Centre development, once constructed, will not intrude into the Newcastle/Williamtown Aerodrome PANS-OPS surfaces.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not intrude into the Newcastle/Williamtown Aerodrome OLS.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not impact the Port of Newcastle Dykes Point HLS flight paths or the Dykes Point HLS.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not adversely impact the RNP 110 instrument approach into the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not adversely impact helicopter operations to and from the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not impact helicopter operations to and from the JHH.
- The proposed Hunter Indoor Sports Centre development buildings will require aviation-standard obstacle lighting, once completed.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not intrude into the Newcastle/ Williamtown Aerodrome PANS-OPS surfaces.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not intrude into the Newcastle/ Williamtown Aerodrome OLS.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not impact the Port of Newcastle Dykes Point HLS flight paths or the Dykes Point HLS.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not adversely impact the RNP 110 instrument approach into the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not adversely impact helicopter operations to and from the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not impact helicopter operations to and from the JHH.
- The proposed Hunter Indoor Sports Centre development construction tower crane(s) will require aviation-standard obstacle lighting.
- The proposed Hunter Indoor Sports Centre development construction mobile crane(s) will require aviation-standard obstacle lighting if operating at night or in low visibility.

Construction of the proposed Hunter Indoor Sports Centre development will not impact aviation safety at Newcastle/Williamtown Aerodrome or affect helicopter operations within the city of Newcastle and the Port of Newcastle.

Approval will not be required to erect a construction crane(s) unless specifically advised by Newcastle City Council.

3. GENERAL AIRSPACE REQUIREMENTS AND CONSIDERATIONS

3.1. Purpose of this Section

It is important that the reader has a good understanding of the fundamentals of airspace protection for aerodromes and heliports/HLS in order to be able to understand the analysis later in this report. Section 3 provides this general overview.

3.2. Airspace Regulation in Australia - Aerodromes

Approvals will be required if prescribed airspace could be impinged. The normal contact for this process is through the local aerodrome operator who in most cases outside of the major international airports, is the local Council.

Primary prescribed airspace includes an airport's Obstacle Limitation Surfaces (OLS) involving a set of imaginary surfaces associated with an aerodrome that should be kept free of obstacles. Additionally, the Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) surfaces that takes account of the airspace associated with aircraft instrument procedures, must be considered.

3.3. Airspace Management in Australia – Heliports and Helicopter Landing Sites

Currently within Australia, there are no "standard" rules or regulations applicable to the design, construction or placement of HLSs. There may however be local council planning, location and movement approvals required. The appropriate national regulatory guidance at present for the use of HLSs is Civil Aviation Safety Regulation (CASR) 91.410 which places the onus on the helicopter pilot to determine the suitability of a landing site.

CASR 139.R will ultimately govern the regulation of HLSs within Australia. In the meantime, CASA, the regulator of aviation in Australia has issued a new Advisory Circular (AC) 139.R-01 v1.0 Guidelines for heliports - design and operation to provide "guidance in the planning, design, and operation of heliports to support the safe and efficient operation of helicopters…" and to prepare for the introduction of CASR 139.R.

Because no Federal or State (NSW) legislation is in place to protect VFR approach and departure paths associated with hospital HLS', in May 2018, the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications issued Guideline H: Protecting Strategically Important Helicopter Landing Sites under the National Airports Safeguarding Framework (NASF). Whilst this publication has no legal effect in NSW as yet, its content is gradually being aligned within the NSW MoH Guidelines for Hospital Helicopter Landing Sites in NSW.

3.4. State Government Requirements

The various legislative/regulatory requirements relating to HLS' in NSW are complex. Current regulation excludes emergency service landing sites from the definition of "designated development" in the Environmental Planning and Assessment Regulation (which otherwise includes most HLSs). Generally, hospital HLSs are considered "ancillary-uses" to hospital purposes and are thus not separate "development". The same cannot necessarily be said about off-site emergency medical HLS, e.g., local sports fields. To ensure that all requirements are met, close consultation with a NSW Ambulance approved Aviation Consultant should be maintained throughout the design and construction phases.

3.5. Local Government Requirements

Local Government requirements for airspace protection, if they exist, will be contained within the Local Environment Plan (LEP) or Development Control Plan (DCP).

Local Government requirements for airspace protection at aerodromes emanate from the Airports Act 1996 and the Airports (Protection of Airspace) Regulations 1996.

The Airports (Protection of Airspace) Regulations 1996 differentiate between short-term (less than 3 months) and long-term controlled activities. The Regulations provide for the airport operator to approve short-term controlled activities that penetrate the OLS, and for the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications for approval of long-term controlled activities and those short-term controlled activities referred to it by the airport operator. However, the airport operator must refer short-term PANS-OPS infringements to the Department for approval. Long term intrusions of the PANS-OPS surface are prohibited.

Additional requirements for airspace protection at heliports and HLSs, if they exist, may be contained within the LGA's DCP.

3.6. Obstacle Limitation Surfaces

The objective of the OLS is to define a volume of airspace in proximity to the airport which should be kept free of obstacles that may endanger aircraft in visual operations, or during the visual stages of an instrument approach.

The intention is not to restrict or prohibit all obstacles, but to ensure that either existing or potential obstacles are examined for their impact on aircraft operations and that their presence is properly taken into account. Since they are relevant to visual operations, it may sometimes be sufficient to ensure that the obstacle is conspicuous to pilots, and this may require that the obstacle be marked or lit.

In reality, there is little issue with breaching the OLS as pilots will be visual with the obstruction and can work on "see and avoid" principles. OLS at a multi-runway aerodrome look akin to Figure 1 below:

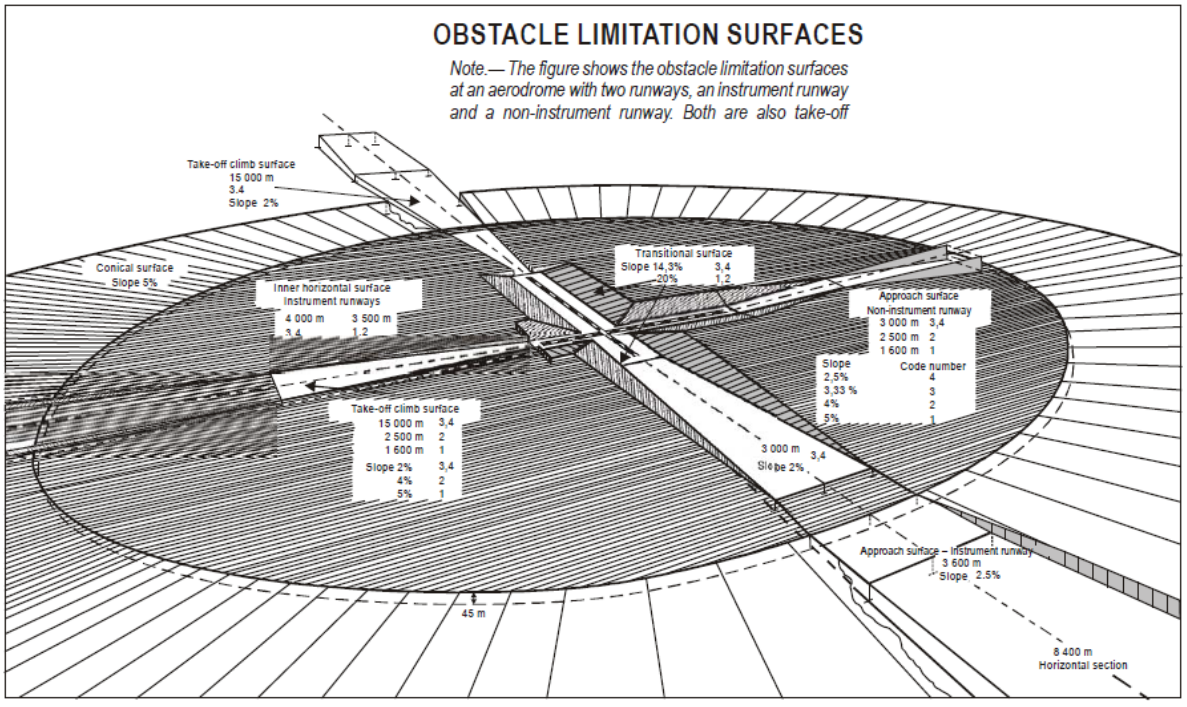

Figure 1: Example of Obstacle Limitation Surfaces

3.7. Procedures for Air Navigation – Aircraft Operations (PANS-OPS) Surfaces

PANS-OPS surfaces detail essential areas and obstacle clearance requirements for the achievement of safe, regular instrument flight operations.

The instrument flight procedures enable pilots to either descend from the high enroute environment of cruise type flight to establish visual contact with the landing runway, or climb from the runway to the enroute environment, with a prescribed safe margin above terrain and obstacles, by use of aircraft instruments and radio navigation aids or GPS in conditions where the pilot cannot maintain visual contact with the terrain and obstacles due to inclement weather conditions.

Pilots must be protected against protrusions into the PANS-OPS surfaces as they have no way of avoiding obstructions if they get off track and they cannot see such obstructions.

PANS-OPS surfaces are constructed differently to OLS however they serve a similar purpose. An example of PANS-OPS surfaces is in Figure 2 below:

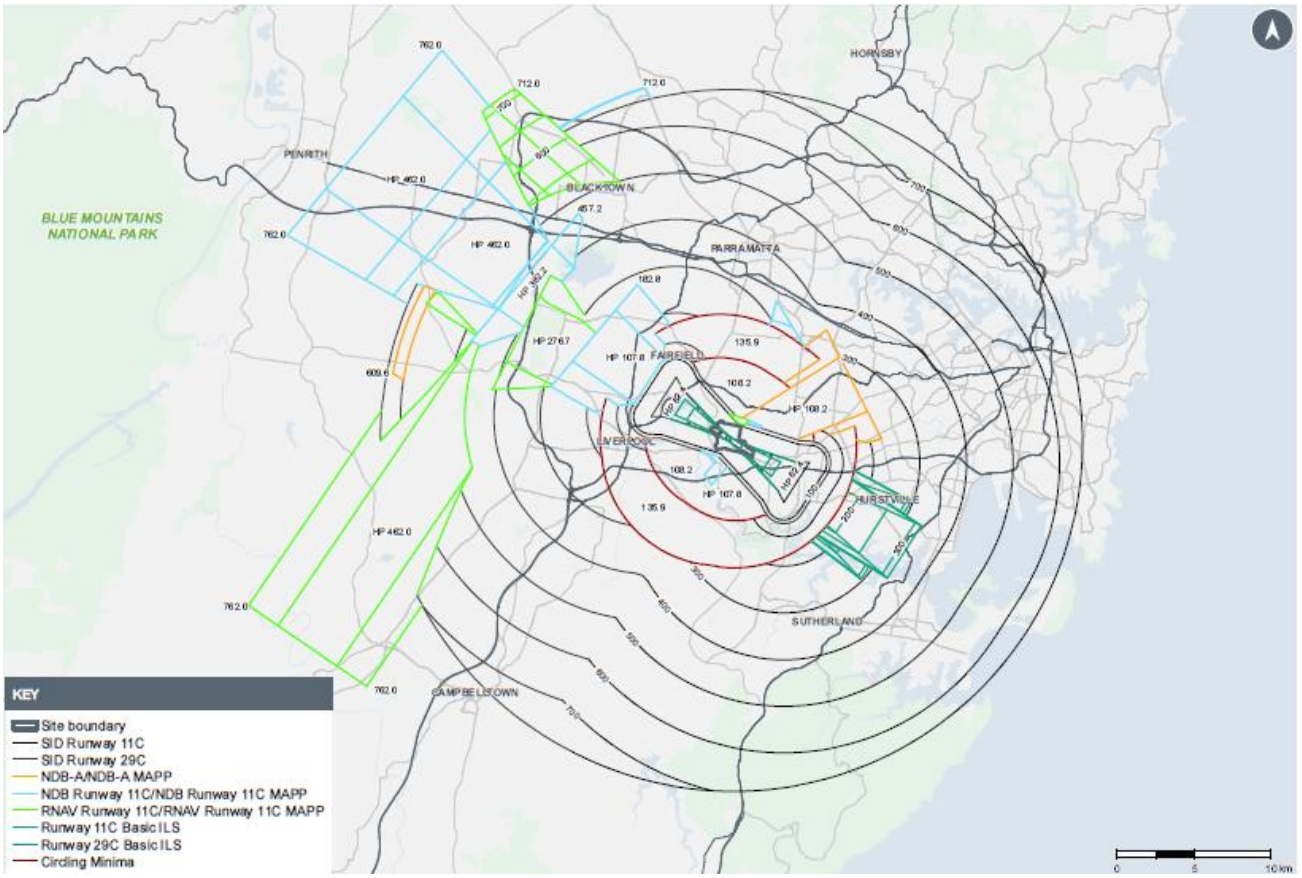

Figure 2: Example of PANS-OPS Surfaces

3.8. Radar Terrain Clearance Charts

The Radar Terrain Clearance Chart defines an area in the vicinity of an aerodrome, in which the minimum safe levels allocated by an Air Traffic Controller (ATC) vectoring Instrument Flight Rules (IFR) flights with Primary and/or Secondary Surveillance RADAR equipment have been predetermined. The figure shown on the chart is the lowest altitude which an ATC may assign to a pilot. An example of an RTCC is in Figure 3 below:

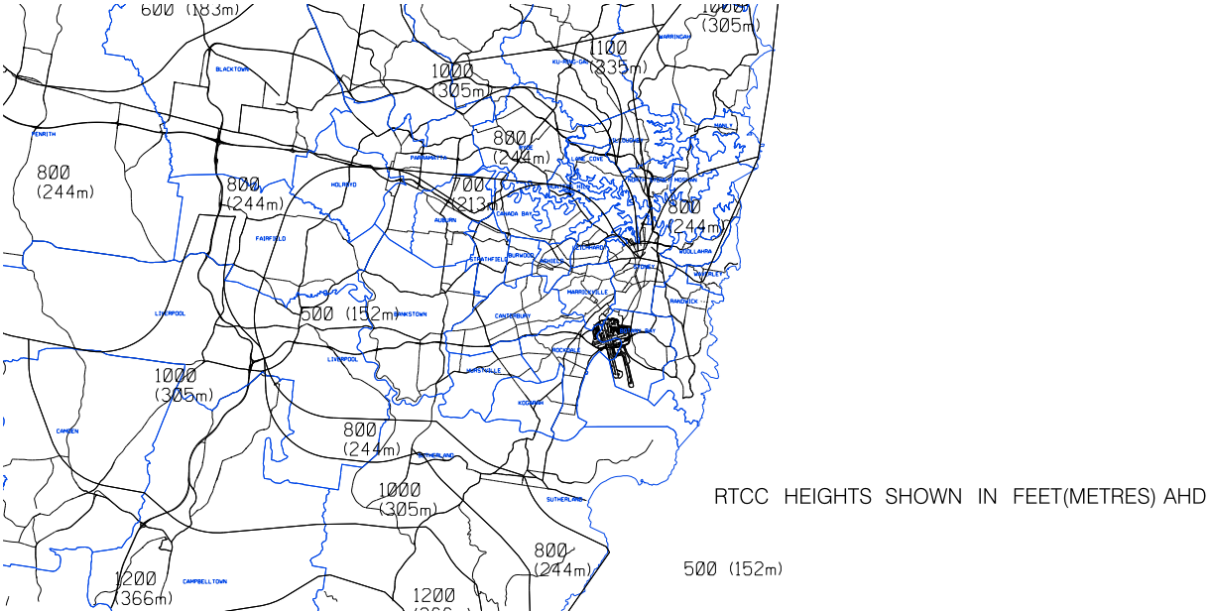

Figure 3: Example of a Radar Terrain Clearance Chart (RTCC)

3.9. Approach and Departure Paths

The purpose of approach and departure path is to provide a portion of airspace sufficiently clear of hazards to allow safe approaches to, and departures from, the HLS. Approach and departure paths can be designed for both visual (VFR) use by day and by night using different criteria; and for instrument (IFR) flight (also by day and night, albeit there are no differences in design requirements).

VFR approach and departure paths should be such that there are no downwind operations and crosswind operations are kept to a minimum. To accomplish this, an HLS must have more than one path which provides an additional safety margin and operational flexibility.

The preferred flight approach and departure path should where possible, be aligned with the predominant, prevailing wind when taking account of potential obstacles. Other approach and departure paths should also be based on an assessment of the average, prevailing winds and potential obstacles. The separation between approach and departure paths should not be less than 135°, and should preferably be 180°.

3.10. VFR Approach and Departure (Take-off Climb) Surface

VFR approach and departure surfaces can be designed for both day and night operations. Because all NSW hospital HLSs are required to be capable of both day and night use, the night tolerances are always used. A (day and) night approach and departure surface starts at the forward edge of the FATO safety area and slopes upward at 2.6^0/4.5%/1:22.2 (22.2 units horizontal in 1 unit vertical) for a distance of ~3,386 m. The approach and departure path commences at a width of 34 m and expands uniformly, laterally at an angle of 8.7^0/15%/1:12.8 to a width of 140 m, then remains parallel to a distance of 3,386 m, where the height is 152 m above the elevation of FATO surface. The VFR approach and departure paths are to be obstacle free. It is important to achieve the 2.6^0/4.5%/1:22.2 obstacle free slope to account for the performance requirements of one engine inoperative (OEI) flight following an emergency. See Figures 4 and 5 below.

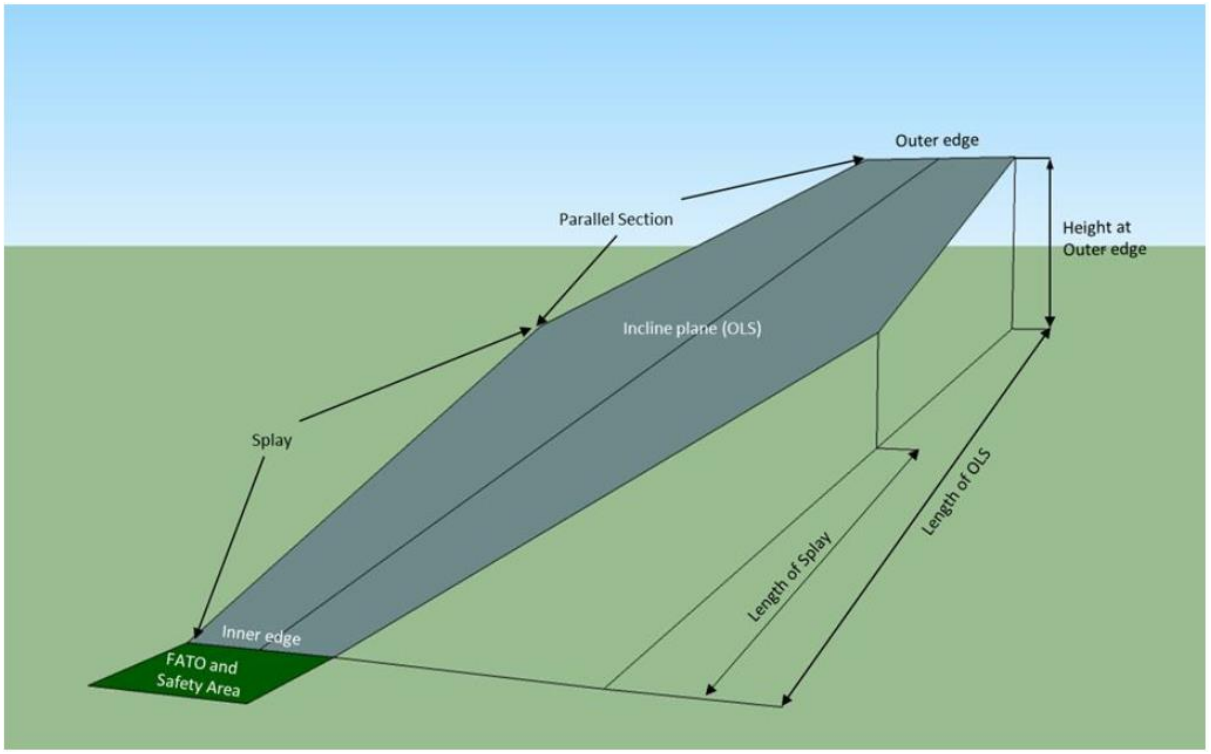

Figure 4: HLS VFR Approach and Departure Surfaces (1)

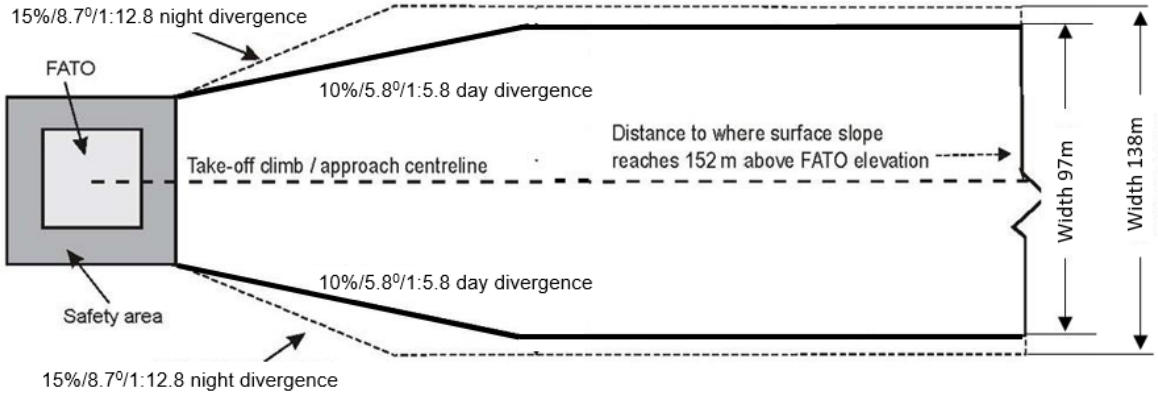

Figure 5: HLS VFR Approach and Departure Surfaces (2)

There are no transitional surfaces for VFR approach and departure paths.

3.11. Protected Side Slope

A VFR-only HLS is to be provided with at least one, and preferably two, protected side slopes, rising at 45^0 from the edge of the safety area and extending to a distance of 10m. See Figure 6 below. Due to the proximity of lift lobbies and other infrastructure, it is often difficult to provide the second protected side slope.

The surface of a protected side slope must not be penetrated by obstacles.

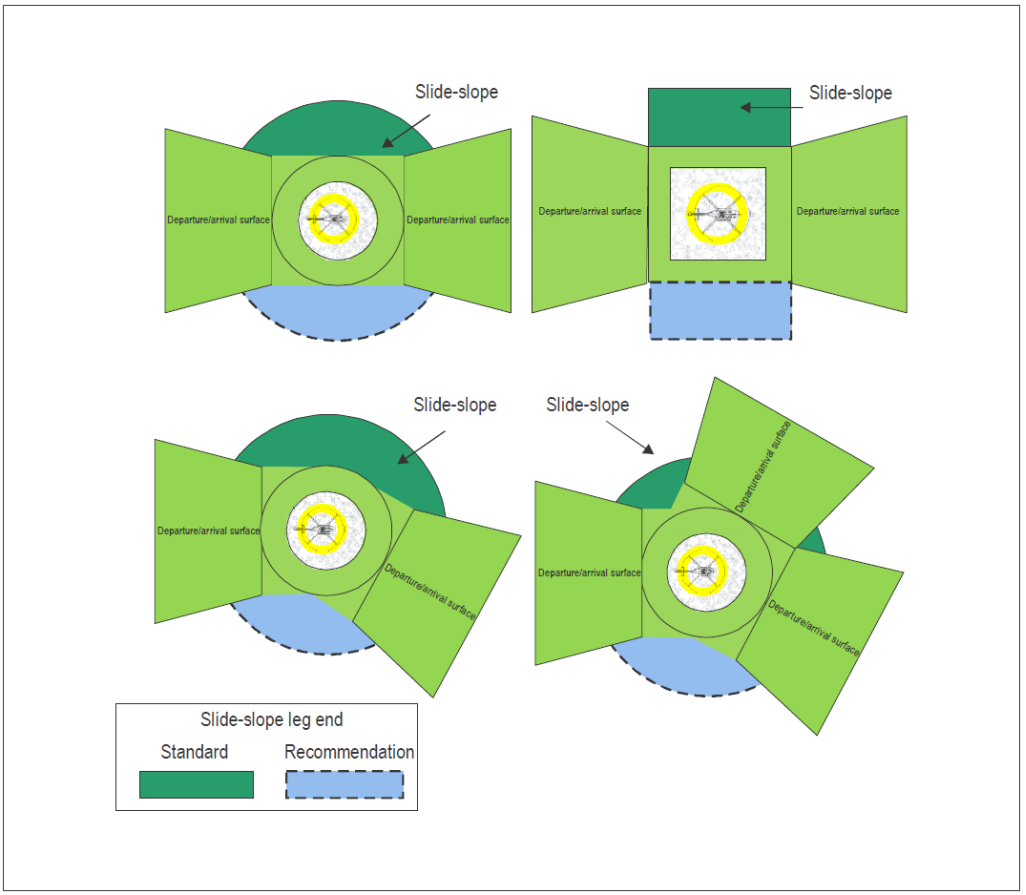

Figure 6: Protected Side Slopes

3.12. IFR Approach and Departure Paths

NSW has very few hospital HLSs with instrument approaches, however this can change at any time depending on needs and priorities. To that end, all NSW hospital HLSs should be surveyed so as to permit IFR operations, whether immediately or at some time in the future.

The IFR approach and departure surface, like the VFR approach and departure surface, commences at the safety area edge. They diverge uniformly to a width of 152m at 3,386m from the safety area edge (approximately 1:45).

The FATO transitional surfaces start from the edges of the FATO and safety area, parallel to the approach and departure path centre line, and extend outwards (from the sides of the FATO and safety area) at a slope of 1:2 (2 units horizontal in 1 unit vertical or 26.6°). They provide very similar protection at an IFR-capable HLS as the protected side slope does at a VFR-only HLS; but extend 45m above FATO level (rather than 10m). The approach and departure transitional surfaces commence at the forward edge of the safety area, overlaid over the approach and departure surface; and from the outer edges of the approach and departure surface. The outer sides are 76m from the centreline, i.e., the outer edges are 152m wide. The approach and departure transitional surfaces extend to the end of the approach and departure surface at 3,386m.

Note:

The transitional surface is not applied on the safety area edge opposite the Approach/Departure surface.

The approach and departure surface is to be free of penetrations. Any penetration of the transitional surface is to be considered a hazard.

Figure 7 illustrates the IFR Approach/Departure and Transitional surfaces.

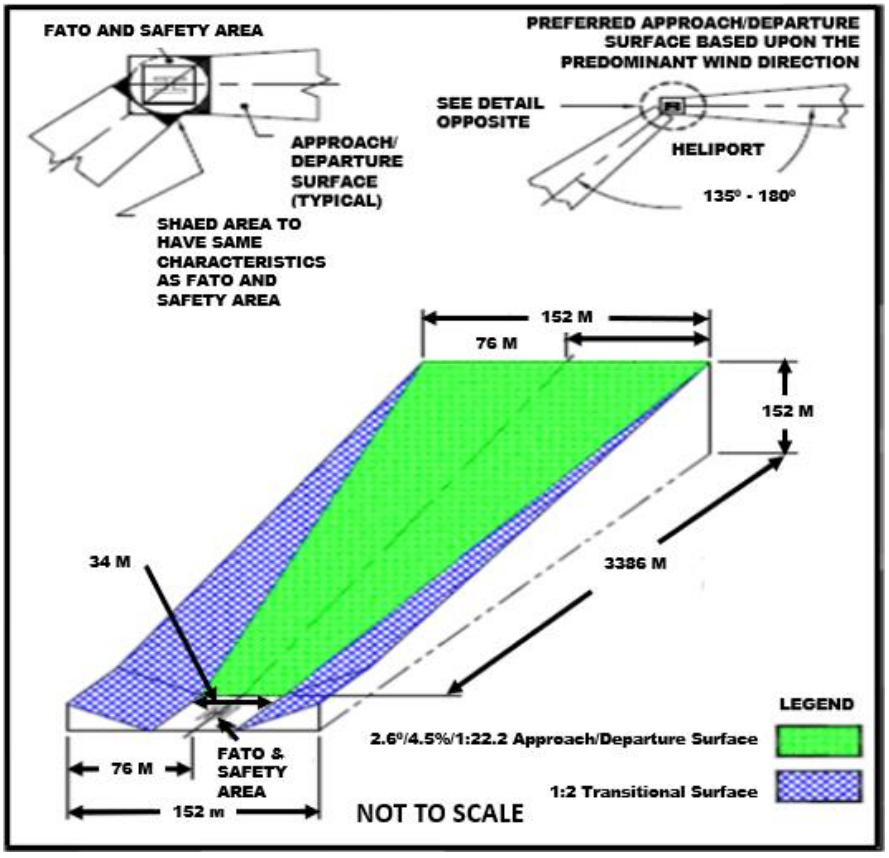

Figure 7: HLS IFR Approach/Departure and Transitional Surfaces

3.13. Visual Segment of a Point-in-Space Approach/Departure Procedure

ICAO Doc 9261 Heliport Manual, Part 2, Chapter 4, Section 4.2 addresses this highly specialised requirement. It will not apply at the majority of NSW hospitals.

3.14. Types of Category A Departures

NSW Ambulance require their contracted helicopters to operate in Performance Class (PC) 1 where possible. Operating in PC requires aircraft to utilise a Category A departure profile. The AW 139 has six possible Category A departure options. The primary options are the confined area and the backup options. See Figure 8 below.

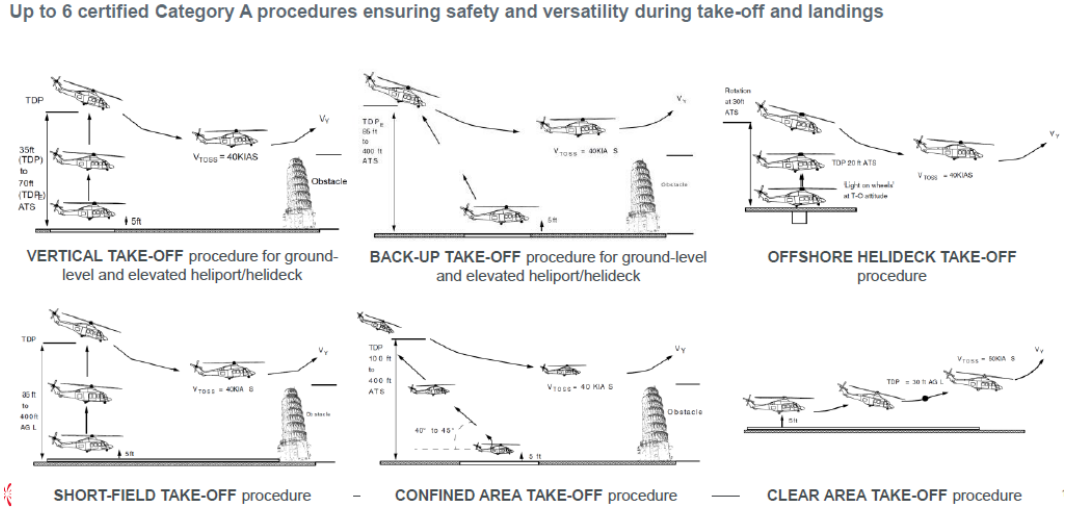

Figure 8: AW 139 Certified category A Departure Profiles

3.15. Category A Backup Procedure

A Category A back-up procedure, i.e. without a lateral component, is one of the PC1 HLS profiles provided in RFMs along with the dimensions of the backup area. Category A The backup procedure is depicted in Figure 9 below.

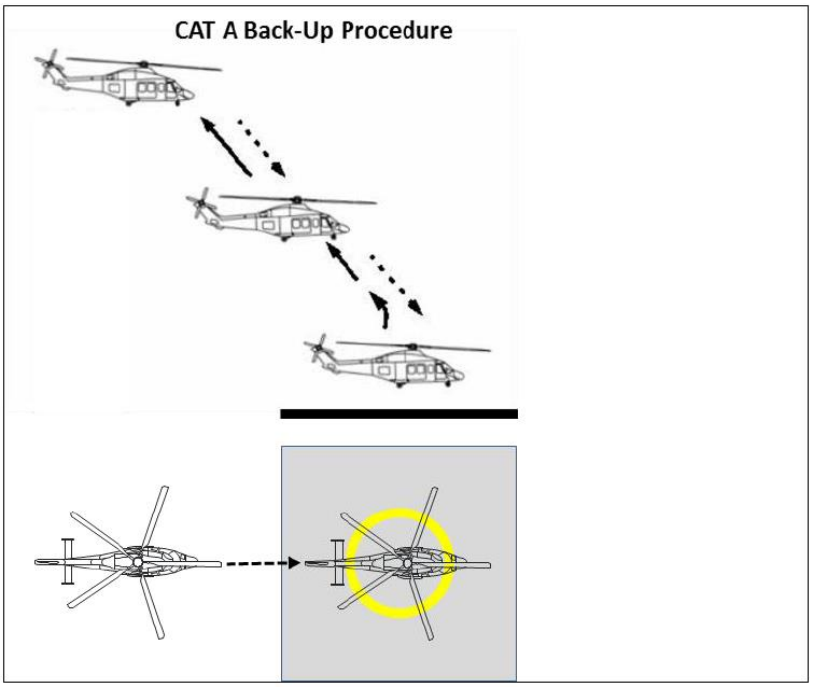

Figure 9: Category A Backup Procedure Profile

The back-up area should consist of two elements: an ascent/descent path/surface and an obstacle limitation surface. The dimensions of these are normally contained in tabular form in the Category A supplement of the RFM. For NSW hospitals which are to be both day and night capable, the splay is to be 15%. Where the backup area is coincident with a reciprocal VFR approach and departure surface, no additional airspace protection measures will be required. Where the back-up area does not overlay the VFR approach and departure surface, a specific ascent/descent path/surface and obstacle limitation surface will need to be surveyed. See Figure 10 below.

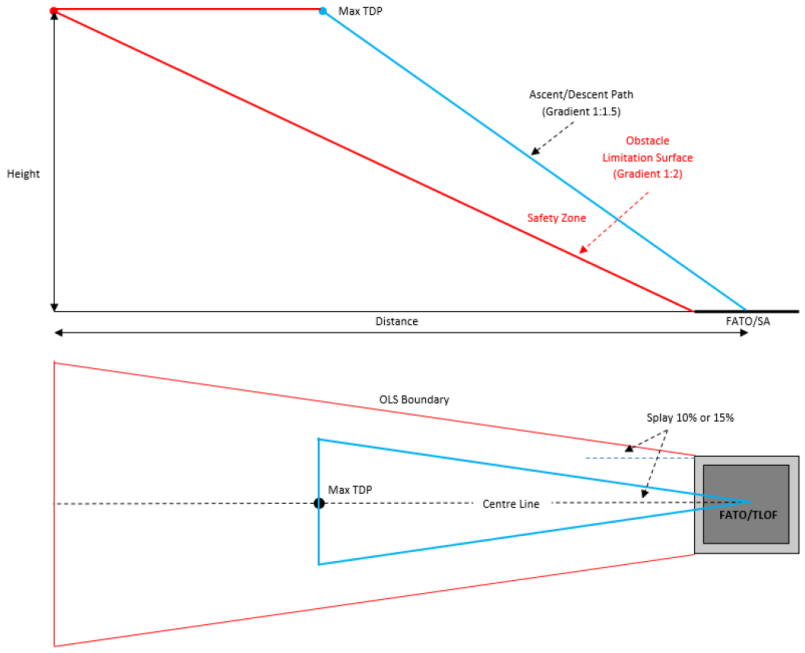

Figure 10: Category A Backup Procedure Surfaces

3.16. Obstructions on or in the Vicinity of the HLS

The adverse effect of an object presumed or determined to be a hazard to air navigation may be mitigated by:

- Removing the object.
- Altering the object, e.g., reducing its height.
- Marking and/or lighting the object, provided that the object would not be a hazard to air navigation if it were marked and lit.

An example of an obstruction light required close to the HLS would be that required to be positioned on the top of the windsock. Other obstacles in close proximity to the HLS deck may include radio aerials or exhaust stacks etc. attached to the main building, other buildings in the vicinity such as a lift lobby, or stand alone. All such obstacles are required to have red obstacle lights fitted.

3.17. Obstructions in Proximity but Outside/Below the Approach/Departure Surface

Unmarked wires, antennas, poles, mobile phone towers, and similar objects are often difficult to see even in the best daylight weather, and in time for a pilot to successfully take evasive action. While pilots can avoid such objects during enroute operations by flying well above them, approaches and departures require operations near the ground where obstacles may be in proximity. Where possible obstructions are to be moved, however if this is impractical, markings and/or obstruction lighting is to be placed upon them.

4. SPECIFIC HUNTER INDOOR SPORTS CENTRE DEVELOPMENT CONSIDERATIONS

4.1. The Hunter Indoor Sports Centre Development Location

The location of the proposed Hunter Indoor Sports Centre development is shown in Figure 11 below: 17.41km south-south-west of Newcastle/ Williamtown Aerodrome; 2.7km east of the John Hunter Hospital at New Lambton Heights; 800m west of the Westpac Rescue Helicopter Service base in Broadmeadow; and 5 km south-west of the Port of Newcastle Dykes Point Helicopter Base.

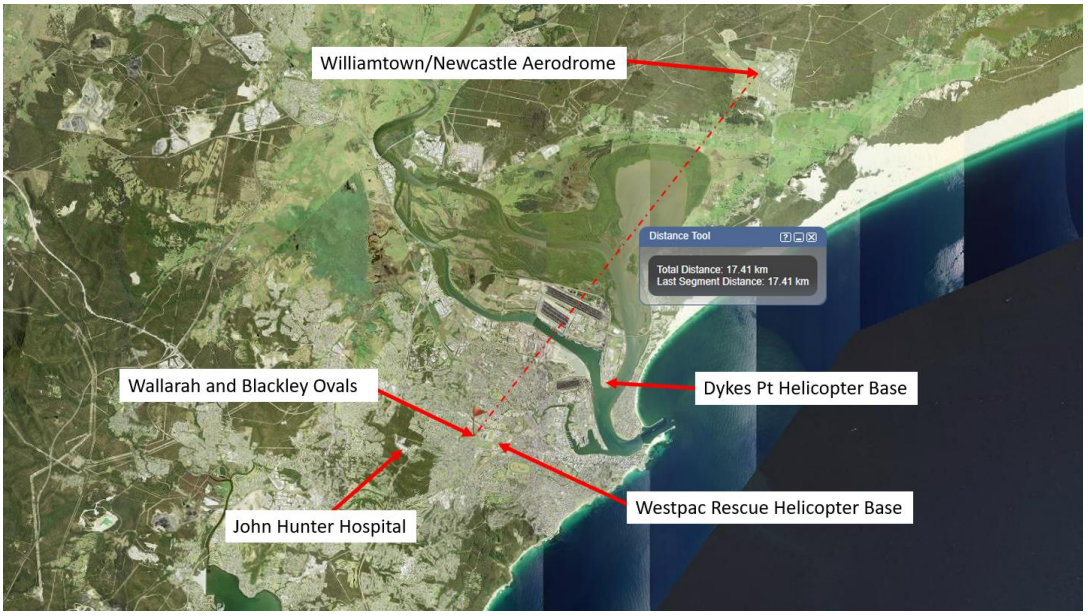

Figure 11: Location of the Proposed Hunter Indoor Sports Centre Development

4.2. The Hunter Indoor Sports Centre Development Terrain Elevation

The elevation of the terrain at Wallarah and Blackley Ovals ranges from 8m-10m above sea level. See Figure 12 below.

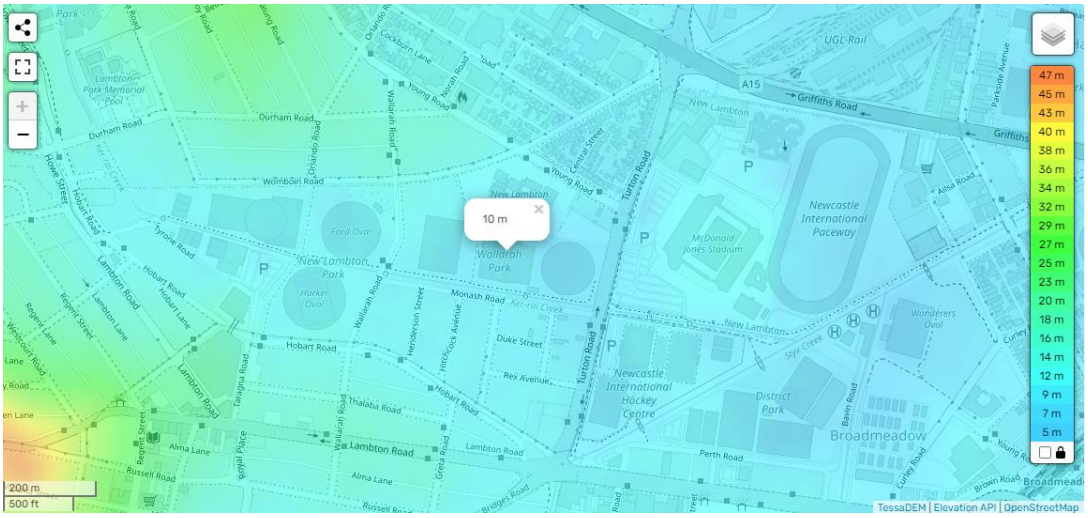

Figure 12: Terrain Elevation of the Proposed Hunter Indoor Sports Centre Development

4.3. The Hunter Indoor Sports Centre Development Buildings Elevation

The proposed Hunter Indoor Sports Centre development is planned to be built to 15.820m above ground level. By adding the highest terrain elevation across the site (10m) to the above-ground buildings elevations, the completed buildings will be no more than 26m above sea level (RL 26). See Figure 12 above and Figure 13 below.

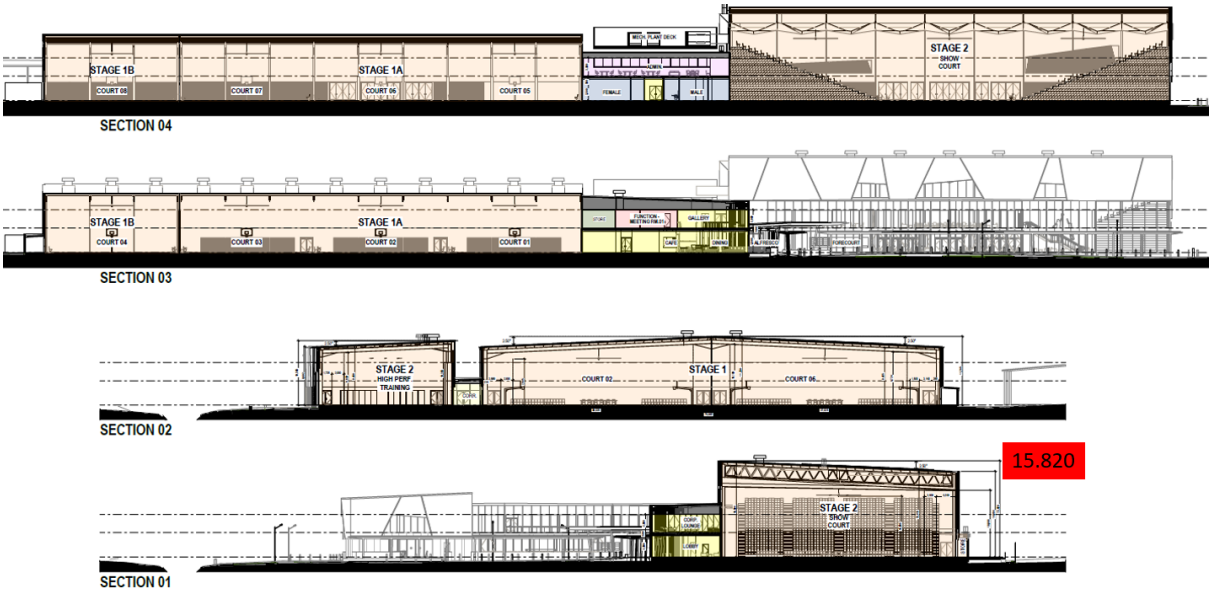

Figure 13: Buildings Elevation of the Proposed Hunter Indoor Sports Centre Development

4.4. Construction Crane Elevations

The proposed Hunter Indoor Sports Centre development is quite low by SSD standards. It may not require tower cranes for construction. It is most unlikely that luffing tower cranes would be used, therefore it is assumed, worst-case that hammerhead tower cranes might be used for construction. For planning purposes, a maximum additional elevation of 20m or 65ft is used to determine obstacle clearance.

4.5. Newcastle Local Environment Plan (LEP) 2012 - Airspace

The Newcastle/Williamtown Aerodrome is not within the Newcastle Local Government Area (LGA) (it is within the Port Stephens LGA). To that end, the Newcastle LEP does not contain any “Airspace Operations” requirements. The Port Stephens LEP 2013 is not applicable to the proposed Hunter Indoor Sports Centre development.

There is, however, a Department of Defence document titled “Operation of Cranes and Tall Structures in the Vicinity of Newcastle Airport” dated July 2013 and attached to the City of Newcastle Council website states that: “This instruction details the procedures to seek approval to erect a crane or tall structure within 15 km of Newcastle Airport”. As the proposed Hunter Indoor Sports Centre development is approximately 17.41km from the Newcastle/Williamtown Aerodrome, it does not apply.

4.6. The Newcastle Development Control Plan (DCP) 2023

The stated purpose of the Newcastle DCP is to:

- Give effect to the aims, objectives and other provisions of LEP 2012.
- Provide guidance on matters to be considered by the consent authority when exercising its environmental assessment and planning functions under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act 1979).
- Realise the desired outcomes set out in the Minister's Local Planning Directions.
- Facilitate development consistent with the established vision and adopted planning policies and strategies.
- Support a vibrant community and desirable place to live, work and visit.
- Recognise and reinforce the distinctive character of our neighbourhoods and centres.
- Deliver development that is of a high design standard and energy efficient.
- Provide appropriate housing opportunities for all existing and future residents at all stages of their life cycle.
- Foster development that responds appropriately to the natural and built environment

There are no references to protection of approach and departure paths for helicopter landing sites in the Newcastle DCP. The DCP makes reference to State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021 in relation to the Port of Newcastle where one heliport is located. The proposed Hunter Indoor Sports Centre development is outside of this zoned area. A graphic of the SEPP “Special Activities” area pertaining to the Port of Newcastle was contained in the previous version of the Newcastle DCP (2013). See Figure 14 below, showing that the proposed Hunter Indoor Sports Centre development is well clear of the area.

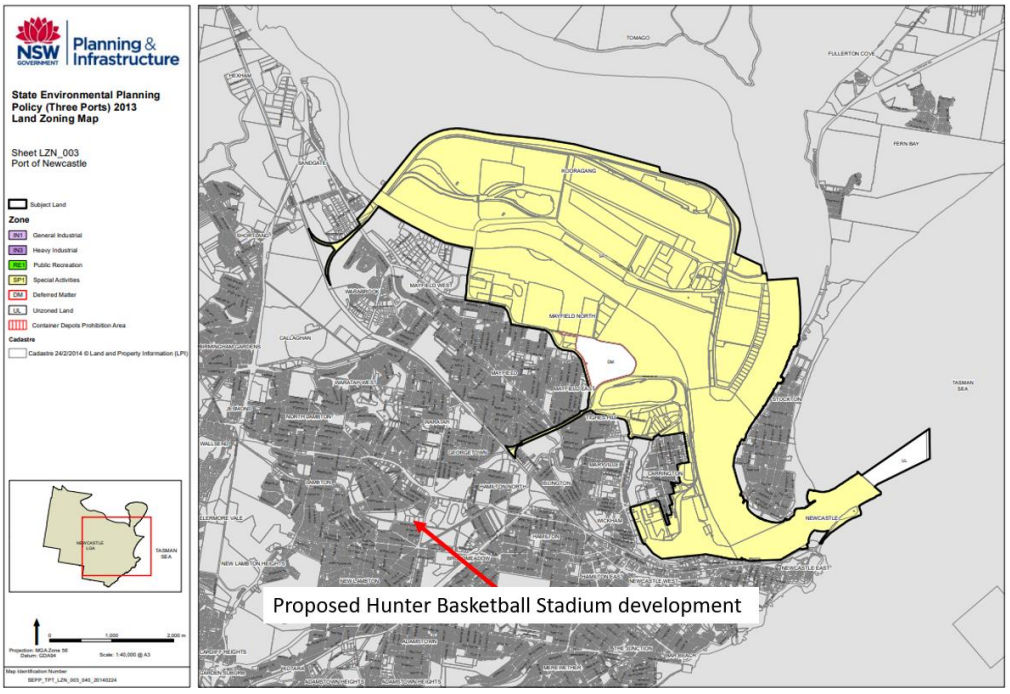

Figure 14: Port of Newcastle Special Activities Land Zoning

It may have been assumed that there would be some protection of the Dykes Point helicopter base within the Port of Newcastle contained in the relevant section of the (SEPP) (Transport and Infrastructure) 2021 however this is not the case.

4.7. The Newcastle/Williamtown Aerodrome OLS

The proposed Hunter Indoor Sports Centre development is not inside the Newcastle/Williamtown Aerodrome OLS.

4.8. The Newcastle/Williamtown Aerodrome PANS-OPS Surfaces

The proposed Hunter Indoor Sports Centre development is not inside the Newcastle/Williamtown Aerodrome PANS-OPS surfaces

4.9. Dykes Point Helicopter Operations

The Port of Newcastle has recently applied for, and been granted, consent to update arrangements for their helicopter base to accommodate twin-engined helicopter operations. As part of the application, the flight paths for Dykes Point helicopter operations were published. See Figure 15 below. The proposed Hunter Indoor Sports Centre development (and its construction cranes) is not in conflict with the Port of Newcastle helicopter flight paths.

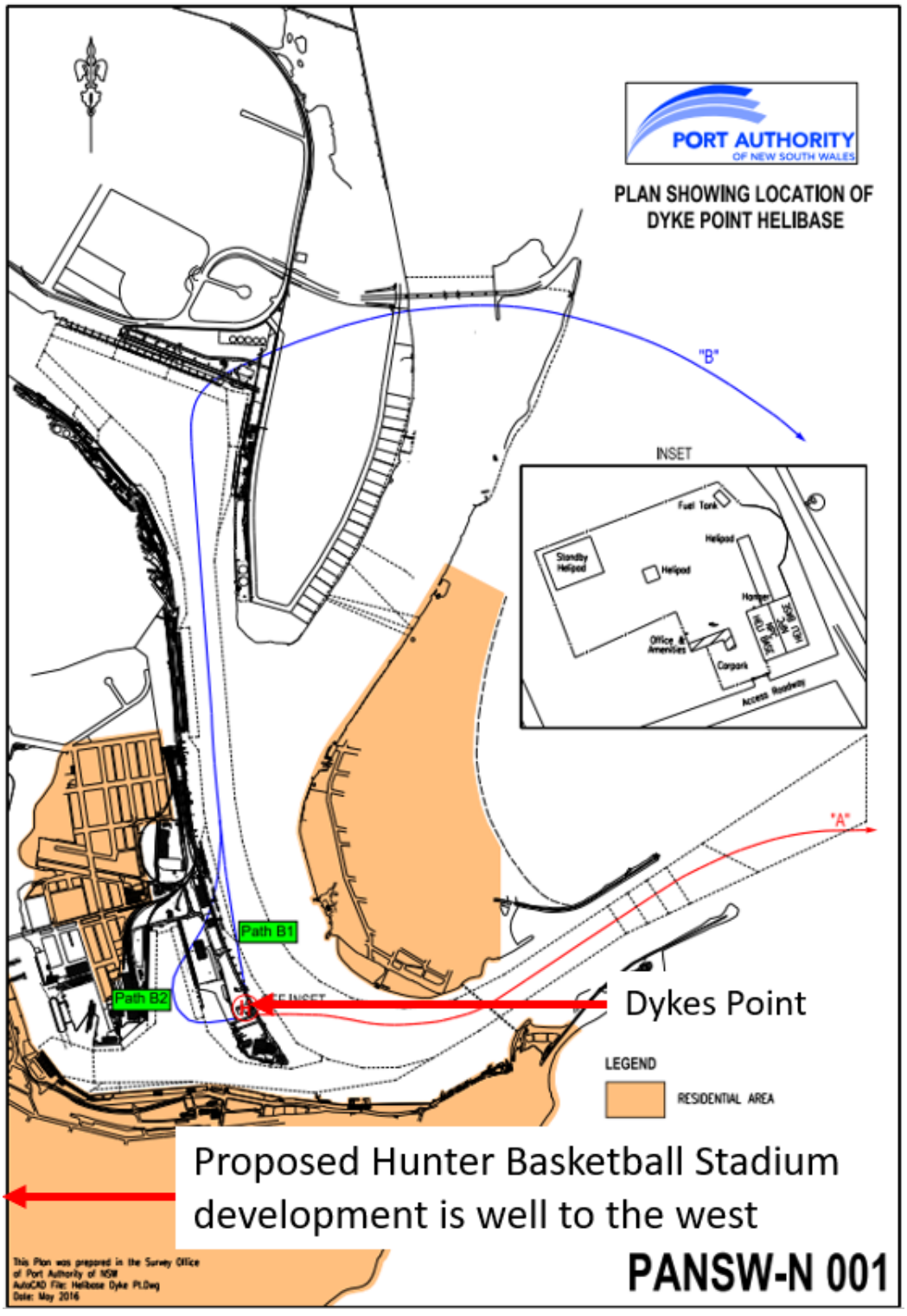

Figure 15: The Port of Newcastle helicopter flight paths

4.10. The John Hunter Hospital (JHH) Heliport

At 2.7km away from the proposed Hunter Indoor Sports Centre development, the JHH heliport will not be impacted by either the new building(s) or the construction crane(s). It should be noted that this assessment pertains to both the existing JHH HLS and the new heliport that is being constructed as part of the John Hunter Health and Innovation Precinct (JHHIP) development that is currently underway.

4.11. The Westpac Rescue Helicopter Service Maintenance Base

The Westpac Rescue Helicopter Service operates from Aeropelican in Belmont to the south of Newcastle. It retains a base at Broadmeadow for maintenance purposes. There is no instrument that protects approach and departure paths to and from the Westpac Rescue Helicopter Service base at Broadmeadow. Operations to and from Broadmeadow are minimal; and are concentrated in the area between Belmont and Broadmeadow. An Airservices-designed, CASA-approved (RNP 110) instrument approach procedure exists for the Broadmeadow base. See Figure 16 below.

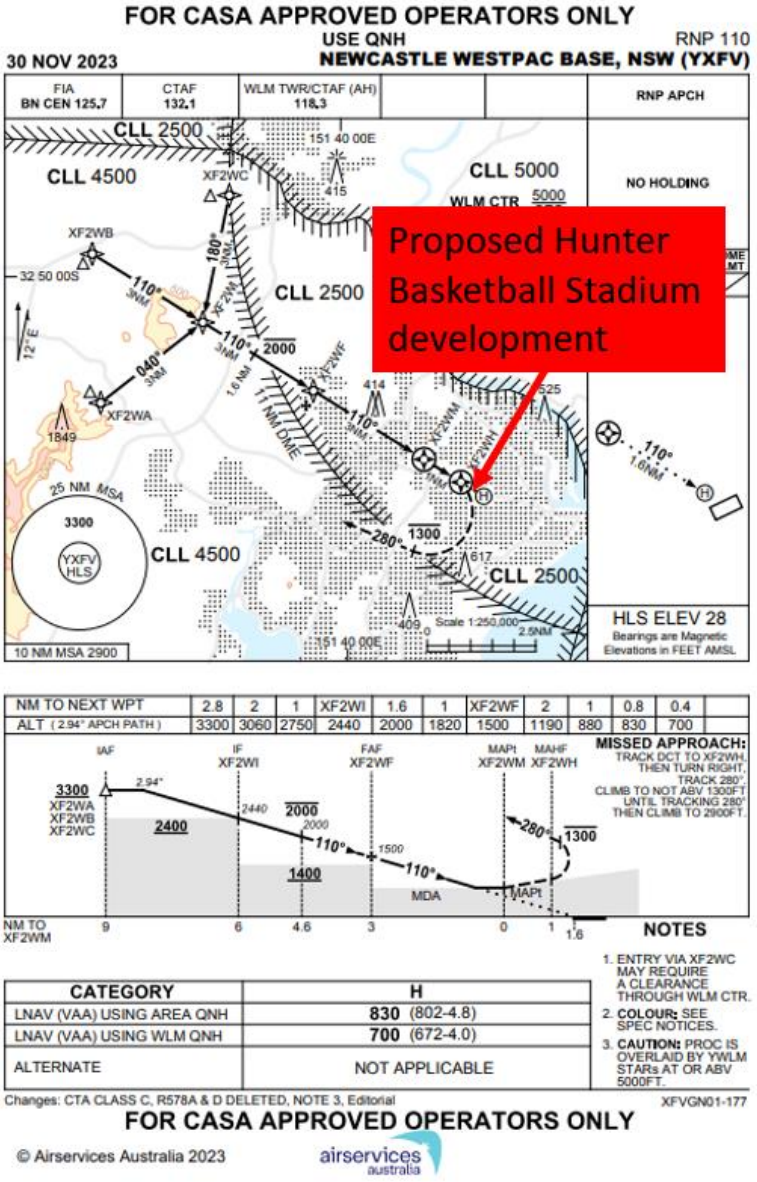

Figure 16: The Broadmeadow Base RNP 110 Approach Procedure

It can be seen that the Required navigational Performance (RNP) 110 instrument approach is predominantly conducted to the west of the base and the final visual segment of the approach tracks directly overhead the site of the proposed Hunter Indoor Sports Centre development. This requires further analysis.

The lowest level to which a helicopter may descent (the Minimum Descent Altitude or MDA) is determined by adding a Minimum Obstacle Clearance (MOC) of 295 ft (90 m) to the highest obstacle or terrain within the lateral limits of the Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) surface that protects aircraft conducting the instrument approach procedure.

If, at the Missed Approach Point (MAPt) visual contact with the HLS is made, the pilot may continue flight visually to the HLS and may descend below the MDA. This area, known as the Visual Approach Area – Helicopters (VAA-H) is assessed separately and described in CASR Part 173 Manual of Standards (MOS), Chapter 8. The MOC in the VAA-H is 295 ft (90 m). Adding the MOC to the proposed buildings (terrain elevation plus building elevation) would create an MDA of 380 ft AHD, below the currently published MDA of 700 ft. (Note: the approach chart shows an MDA of 700 ft AHD, using the Newcastle/ Williamtown Aerodrome air pressure reading (QNH) but if this is not available pilots must use an MDA of 830 ft AHD.

It is apparent that another obstacle that is much higher than the proposed Hunter Indoor Sports Centre development buildings is the controlling obstacle for the VAA-H in the RNP 110 instrument approach procedure.

Adding the VAA-H MOC to the maximum height of the cranes would create an MDA of no more than 450 ft, again below the current MDA of 700 ft. However, because pilots are permitted to descend below the MDA once the HLS has been visually acquired, and given the proposed Hunter Indoor Sports Centre development is situated directly between the MAPt and the HLS, buildings and cranes must be appropriately lit to assist pilots in sighting them in poor weather.

It is therefore assessed that the Westpac Rescue Helicopter Service Maintenance Base at Broadmeadow will not be adversely impacted by either the proposed Hunter Indoor Sports Centre development buildings or the construction crane(s) as long as they are appropriately lit.

Caveats: If the Westpac Rescue Helicopter Service Maintenance Base at Broadmeadow closes prior to the erection of construction cranes, there will be no requirement for crane lighting. If the Westpac Rescue Helicopter Service Maintenance Base at Broadmeadow closes prior to the completion of the proposed Hunter Indoor Sports Centre buildings, there will be no requirement for building lighting.

4.12. Construction Crane Lighting Considerations

There are no CASA-specific considerations for the lighting of construction crane(s) in the vicinity of heliports (as opposed to aerodromes). There is very good guidance in the NSW Ministry of Health publication “Guidelines for Hospital Helicopter Landing Sites in NSW”. This is an excellent exemplar document that could be referenced.

Aviation-standard crane lighting is only required on tower cranes and mobile cranes that operate at night or in low visibility. Low visibility is generally defined in aviation as less than 5,000m in darkness, cloud, fog, precipitation, haze, dust storms etc.

4.13. Deductions: Airspace, Cranes, Obstructions and HLS

The following key deductions can be made:

- The proposed Hunter Indoor Sports Centre development, once constructed, will not intrude into the Newcastle/Williamtown Aerodrome PANS-OPS surfaces.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not intrude into the Newcastle/Williamtown Aerodrome OLS.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not impact the Port of Newcastle Dykes Point HLS flight paths or the Dykes Point HLS.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not adversely impact the RNP 110 instrument approach into the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not adversely impact helicopter operations to and from the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development, once constructed, will not impact helicopter operations to and from the JHH.
- The proposed Hunter Indoor Sports Centre development buildings will require aviation-standard obstacle lighting, once completed.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not intrude into the Newcastle/ Williamtown Aerodrome PANS-OPS surfaces.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not intrude into the Newcastle/ Williamtown Aerodrome OLS.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not impact the Port of Newcastle Dykes Point HLS flight paths or the Dykes Point HLS.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not adversely impact the RNP 110 instrument approach into the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not adversely impact helicopter operations to and from the Westpac Rescue Helicopter Service base at Broadmeadow.
- The proposed Hunter Indoor Sports Centre development construction crane(s) will not impact helicopter operations to and from the JHH.
- The proposed Hunter Indoor Sports Centre development construction tower crane(s) will require aviation-standard obstacle lighting.
- The proposed Hunter Indoor Sports Centre development construction mobile crane(s) will require aviation-standard obstacle lighting if operating at night or in low visibility.

4.14. Mitigations

There is nothing to mitigate in relation to aviation impact and airspace protection matters for the proposed Hunter Indoor Sports Centre development. Aviation-standard obstacle lighting for the completed building(s) and construction crane(s) are routine issues that are considered on all projects in the vicinity of helicopter landing sites.

4.15. Conclusion

Construction of the proposed Hunter Indoor Sports Centre development will not impact aviation safety at Newcastle/Williamtown Aerodrome or affect helicopter operations within the city of Newcastle and the Port of Newcastle.

Approval will not be required to erect a construction crane(s) unless specifically advised by Newcastle City Council.

4.16. Recommendations

Ensure that the proposed Hunter Indoor Sports Centre development construction tower crane(s) is/are fitted with aviation-standard obstacle lighting. If operating at night or in low visibility, ensure that the proposed Hunter Indoor Sports Centre development construction mobile crane(s) is/are fitted with aviation-standard obstacle lighting. Ensure that the proposed Hunter Indoor Sports Centre development buildings are fitted with aviation-standard obstacle lighting once completed.