

# URBAN

PROPERTY

## AVIATION IMPACT ASSESSMENT REPORT



### **AIRSPACE IMPLICATIONS DUE TO THE PROPOSED CENTRAL COAST QUARTER DEVELOPMENT: SOUTHERN AND EASTERN TOWERS 26-30 MANN STREET, GOSFORD**














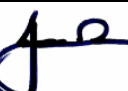
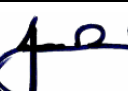
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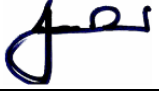

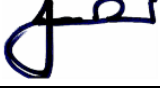
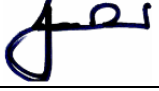


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This Report on the airspace implications, both during and following construction of the development is prepared for Urban Property Group (UPG) Waterfront Pty Ltd, by Resolution Response Pty. Ltd. ABN: 94 154 052 883, trading as 'AviPro'.

The Report relates to the coordination aspects associated with protected airspace in the vicinity of the Helicopter Landing Site (HLS) at the Gosford Hospital due to the proposed development of the Southern and Eastern Towers at 26-30 Mann St, Gosford. It is intended to inform design and planning.

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## 1. EXECUTIVE SUMMARY

The aim of this report is to provide insights into the impacts of constructing the proposed East and South Tower developments at 26-30 Mann St, Gosford on the aviation operations into and out of the Gosford Hospital Helicopter Landing Site (HLS).

The maximum elevations of the two buildings will be:

- East Tower - RL150.1, and
- South Tower - RL127.65.

The report analyses the likely impact of the completed building and any associated construction cranes on aviation activities.

The following key outcomes arose from the analysis:

- The proposed buildings, once constructed, will not intrude into any OLS.
- The proposed buildings, once constructed, will not intrude into any PANS-OPS surfaces.
- The proposed buildings, once constructed, will not intrude into any RTCC.
- The proposed buildings, once constructed, will not impact the Gosford Hospital HLS approach and departure paths.
- The proposed buildings will not require aviation-standard obstacle lighting.
- The proposed buildings' construction crane(s) will not intrude into any OLS.
- The proposed buildings' construction crane(s) will not intrude into any PANS-OPS surfaces provided an elevation of RL 168 is not exceeded.
- The proposed buildings' construction crane(s) will not intrude into any RTCC.
- The proposed buildings' construction crane(s) will not intrude into the Gosford Hospital HLS approach and departure paths.
- The proposed buildings' construction crane(s) will require aviation-standard obstacle lighting.
- The proposed buildings, including its construction crane (s) will not impact aviation safety in relation to any aerodrome or the Gosford Hospital HLS.

No specific approvals will be required provided construction crane(s) remain below an elevation of RL168, however appropriate aviation standard lighting for HLS protection will be necessary on any construction cranes.



To facilitate the built form proposed under SSD-90960208, concurrent amendments are sought to the *State Environmental Planning Policy (Precincts – Regional) 2021* (Regional SEPP) pursuant to the concurrent SEPP Amendment process facilitated by the HDA planning pathway.

#### 2.4. Response to SEARs

This report has been prepared in response to the requirements contained within the Secretary’s Environmental Assessment Requirements (SEARs) dated 20 August 2025 issued for the SSDA (SSD-90960208). Specifically, this report has been prepared to respond to the SEARs requirement issued in [Table 1](#) below.

Item	SEARS Requirement	Relevant Section of Report
24.1	If the development proposes a helicopter landing site (HLS), assess its potential impacts on the flight paths of any nearby airport, airfield or HLS.	N/A
24.2	If the site contains or is adjacent to a HLS, assess the impacts of the development on that HLS.	See Sections 4.10-4.16

**Table 1:** Secretary’s Environmental Assessment Requirements - Aviation

#### 2.5. Statement of Significance

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- No serious aviation impacts exist for this proposed development.

#### 2.6. Background Material

Reference material provided by DKO Architecture and Furtado Sullivan via Urban Property Group in support of the report include early planning designs and concept drawings.

#### 2.7. Methodology

Criteria from all relevant references were assessed, with Civil Aviation Safety Authority (CASA) Advisory Circular (AC) 139.R-01 Guidelines for heliports - design and operation used as the primary tool.

#### 2.8. Consultant Qualifications and Experience

AviPro has been an HLS consultant to NSW Health Infrastructure for almost 20 years, and under current ownership for approximately eight years. CVs of those responsible for the development of this report are available upon request.

## 2.9. 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 2.6° 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 8.7°/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 RSQ. 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.

**Flight Path Alignment Guidance (FPAG).** FPAG lighting system are provided at a heliport where it is desirable and practicable to indicate available approach and/or departure path direction(s).

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

**Helideck.** A heliport located on a fixed or floating offshore facility such as an exploration and/or production unit used for exploitation of oil or gas.

**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 HLSs. 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 the dual sites.

**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.*

**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.

**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 Position.** The paved centre portion of a parking position, normally adjacent to an HLS. Also known as a stand.

**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 safely 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 Wash.** The volume of air moved by the action of the rotating main rotor blades. When moving vertically downwards this volume of air is known as downwash. Once this air strikes the ground or some other surface and turns outwards it is known as outwash. Together downwash and outwash cause a highly turbulent flow 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<sup>2</sup>. 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.

**Touchdown and Lift-off Area (TLOF).** A load bearing, generally paved area, normally centred in the FATO or the parking position, on which the helicopter lands or takes off, and that provides ground effect for a helicopter rotor system. Size is based on 0.83 x D Value of the Design Helicopter, and is 14m diameter.

**Touchdown Positioning Circle (TDPC).** Sometimes called the Touchdown Positioning Marking (TDPM). A touchdown positioning marking in the form of a circle use for omnidirectional positioning within a TLOF. The purpose of the TDPC is to ensure containment of the undercarriage within the TLOF and the helicopter within the FATO. The term TDPM is more correctly used to define the white hospital cross and red "H" within the TDPC.

**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.

## 2.10. Applicable Abbreviations

Acronym	Meaning
AC	Advisory Circular (issued by an aviation regulator)
ACC	Aeromedical Control Centre (HQ Eveleigh). Responsible for control and tasking of HEMS
AsA	Airservices Australia
ATC	Air Traffic Control
CASA	Civil Aviation Safety Authority (Australia)
CASRs	Civil Aviation Safety Regulations (1998) Australia
CCLHD	Central Coast Local Health District
D	Helicopter D value - (also referred to as Overall Length) - the total distance between the main rotor and tail rotor tip path planes when rotating
DCP	Development Control Plan

Acronym	Meaning
DDO	Design and Development Overlay
FATO	Final Approach and Take-Off Area (1.5 x helicopter length)
GPS	Global Positioning System
HEMS	Helicopter Emergency Medical Service
HLS	Helicopter Landing Site
HLSRO	HLS Reporting Officer (Airservices Australia requirement)
ICAO	International Civil Aviation Organisation
ICU	Intensive Care Unit
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions - requiring flight under IFR
L	Helicopter fuselage length
LDP	Landing Decision Point (Category A/Performance Class 1 operations)
LiDAR	Light Detection and Ranging
LEP	Local Environment Plan
LGA	Local Government Area
MoH	Ministry of Health NSW
MRI	Magnetic Resonance Imagers
MTOW	Maximum Take Off Weight
NOTAM	Notice to Airmen. Issued by Airservices Australia 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	Helicopter Main Rotor Diameter
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)
TDPC	Touchdown Positioning Circle
TDPM	Touchdown Positioning Marking
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
V <sub>TOSS</sub>	Take off Safety Speed

**2.11. List of Figures**

Figure	Description
1	Example of Obstacle Limitation Surfaces
2	Example of PANS-OPS Surfaces
3	Example of a Radar Terrain Clearance Chart
4	HLS VFR Approach and Departure Surfaces (1)
5	HLS VFR Approach and Departure Surfaces (2)
6	Category A Backup Procedure Profile
7	Category A Backup Procedure Surfaces
8	Location of the Proposed 26-30 Mann St Gosford Development
9	Elevation of the Proposed 26-30 Mann St Gosford Development
10	Gosford Airspace
11	Gosford Hospital HLS Approach and Departure Paths
12	Gosford Hospital HLS Approach and Departure Paths Survey
13	Gosford Hospital RNAV (GNSS) 340 Approach Procedure
14	Gosford Hospital RNAV (GNSS) 340 Missed Approach Procedure

**2.12. List of Images**

Image	Description
1	Aerial Photograph of Site

**2.13. List of Tables**

Table	Description
1	Secretary's Environmental Assessment Requirements - Aviation
2	Mitigation Measures

### **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 primary 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 AC 139.R-01 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 HLS'). Generally, hospital HLS' 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).

Local Government requirements for airspace protection at aerodromes emanate from either the Airports Act 1996 and the Airports (Protection of Airspace) Regulations 1996 (for Federally-leased aerodromes) of the Civil Aviation Safety Regulations 1988 (for all others).

The Airports (Protection of Airspace) Regulations 1996 differentiate between short-term (less than 3 months) and long-term controlled activities at Federally-leased aerodromes. 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 HLS', if they exist, may be contained within the LGA's Development Control Plan (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:

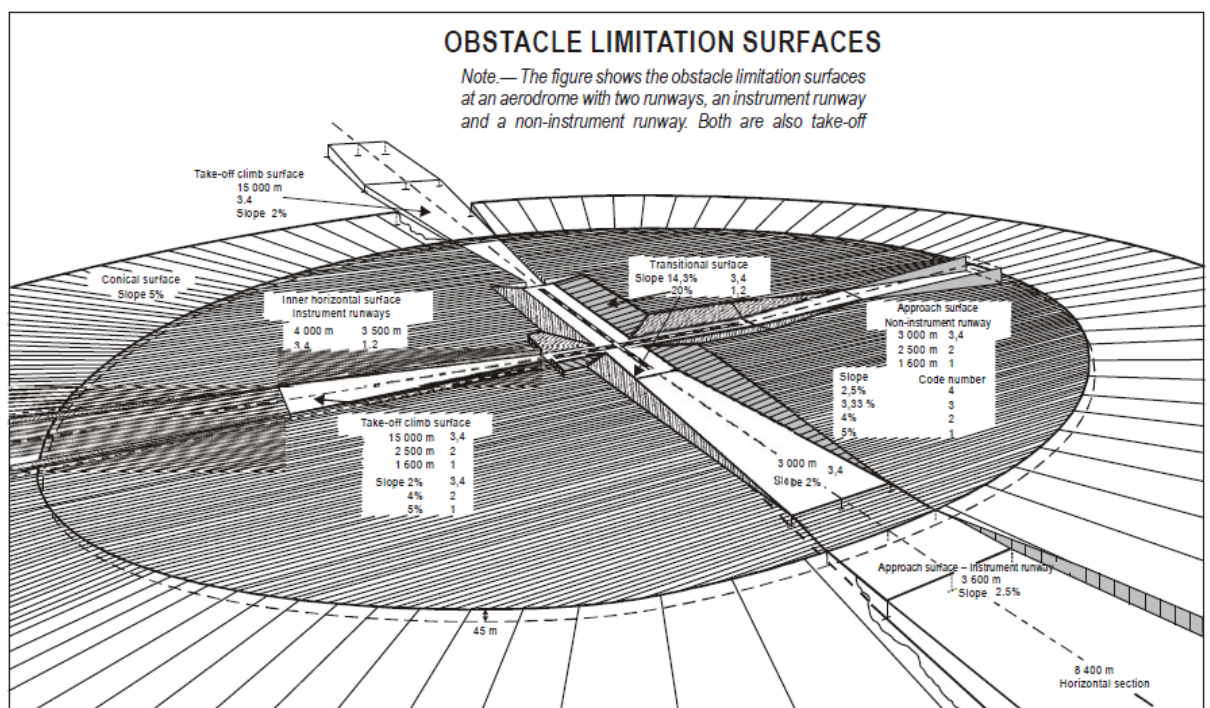
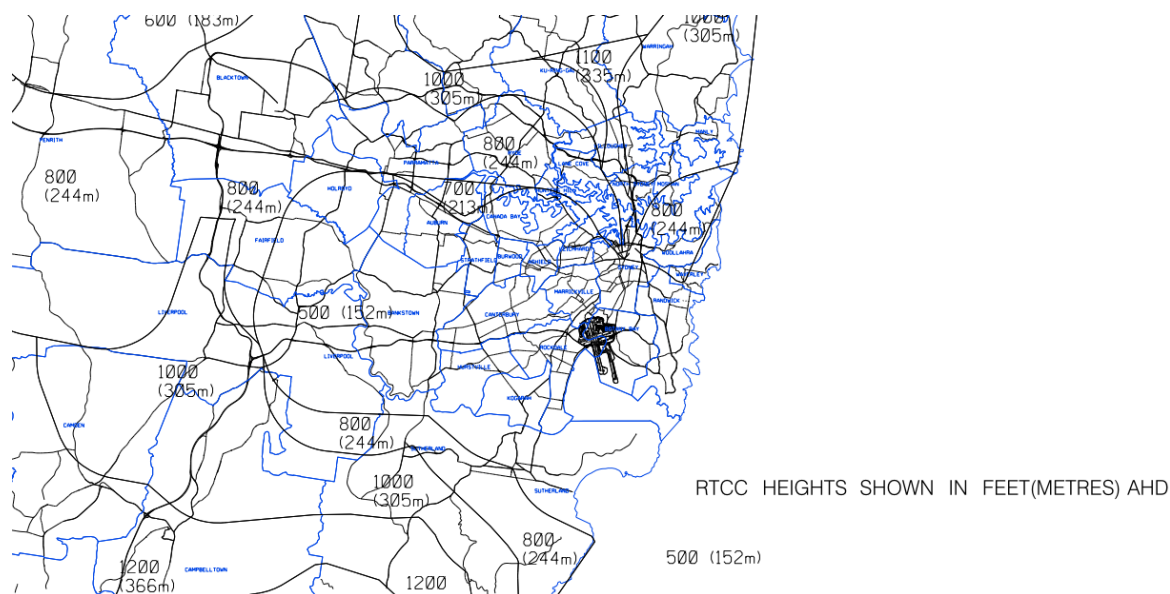


Figure 1: Example of Obstacle Limitation Surfaces





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

### 3.9. Approach and Departure Paths

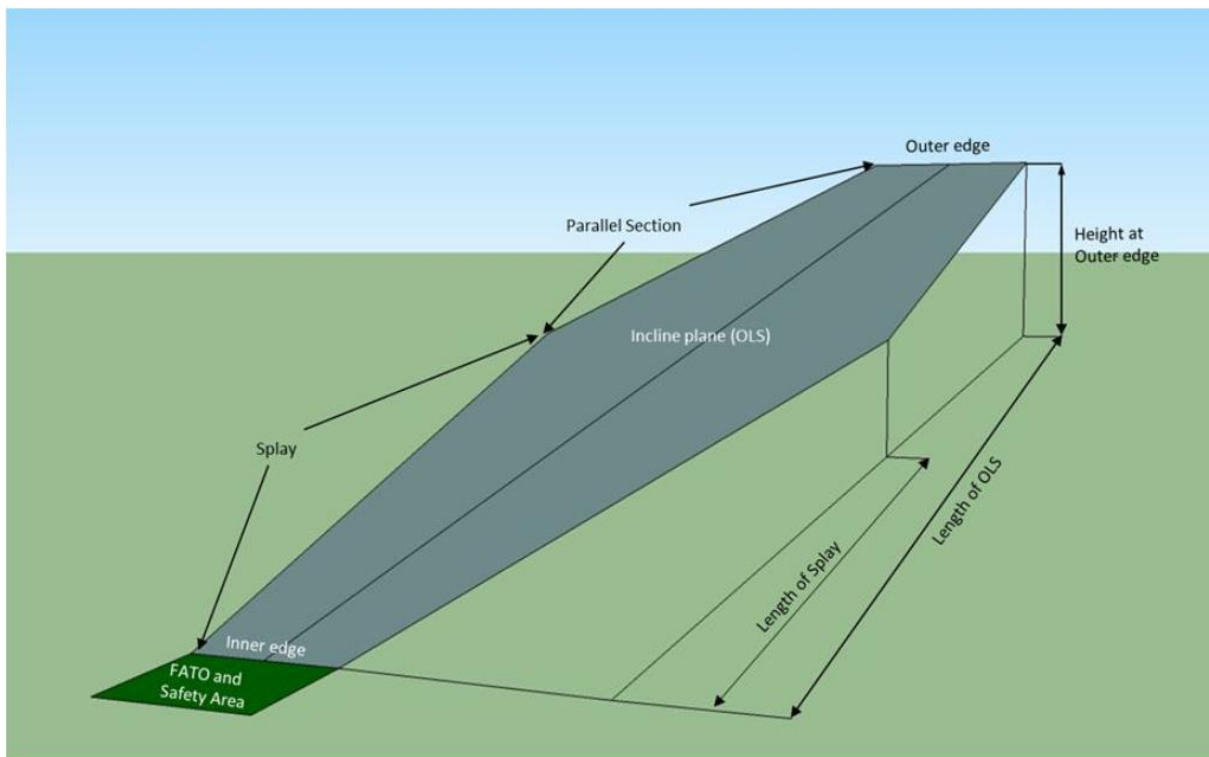
The purpose of approach and departure path is to provide a portion of airspace sufficiently clear of hazards to allow safe approaches to, and departures from, the HLS. Approach and departure paths can be designed for both visual (VFR) use by day and by night using different criteria; and for instrument (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.

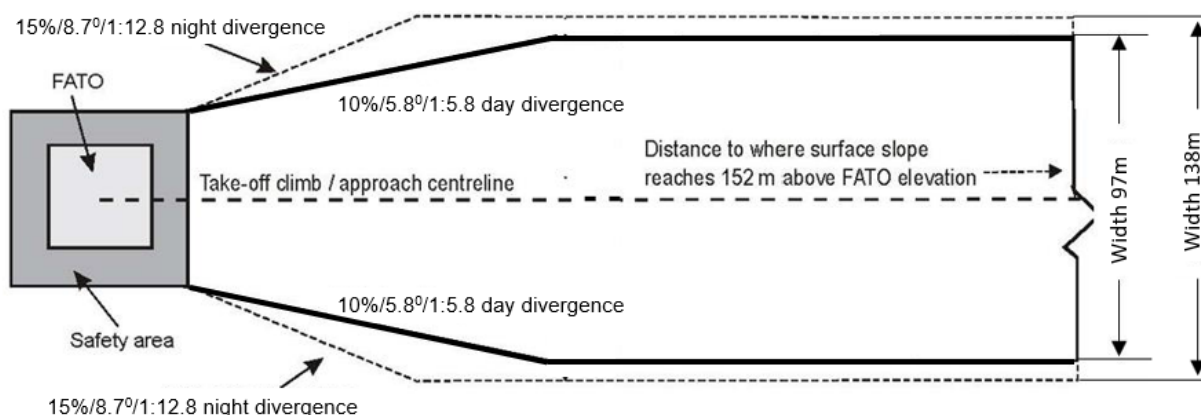
The preferred flight approach and departure path should where possible, be aligned with the predominant, prevailing wind when taking account of potential obstacles. Other approach and departure paths should also be based on an assessment of the average, prevailing winds and potential obstacles. The separation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

### 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 HLS' 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  $2.6^\circ/4.5\%/1:22.2$  (22.2 units horizontal in 1 unit vertical) for a distance of  $\sim 3,386$  m. The approach and departure path commences at a width of 34 m and expands uniformly, laterally at an angle of  $8.7^\circ/15\%/1:12.8$  to a width of 138 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  $2.6^\circ/4.5\%/1:22.2$  obstacle free slope to account for the performance requirements of one engine inoperative (OEI) flight following an emergency. See [Figures 4 and 5](#) below, which are reproduced from the International Civil Aviation Organisation (ICAO) Doc 9261 Heliport Manual, Fifth Edn, 2021.



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



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

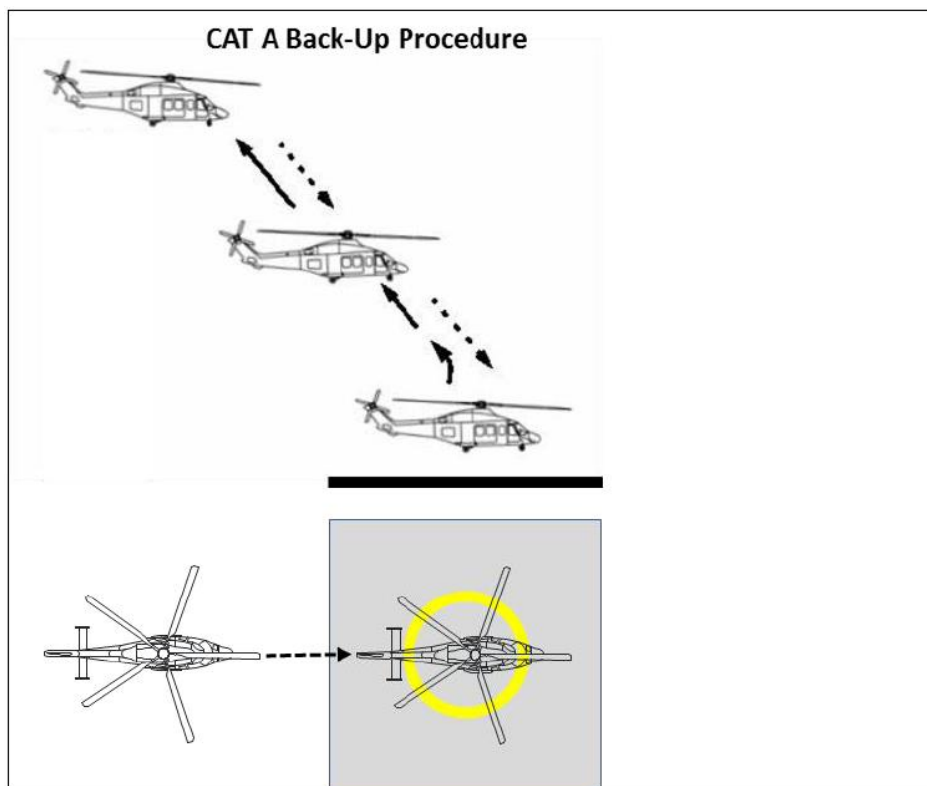
There are no transitional surfaces for VFR approach and departure paths.

**3.11. 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.

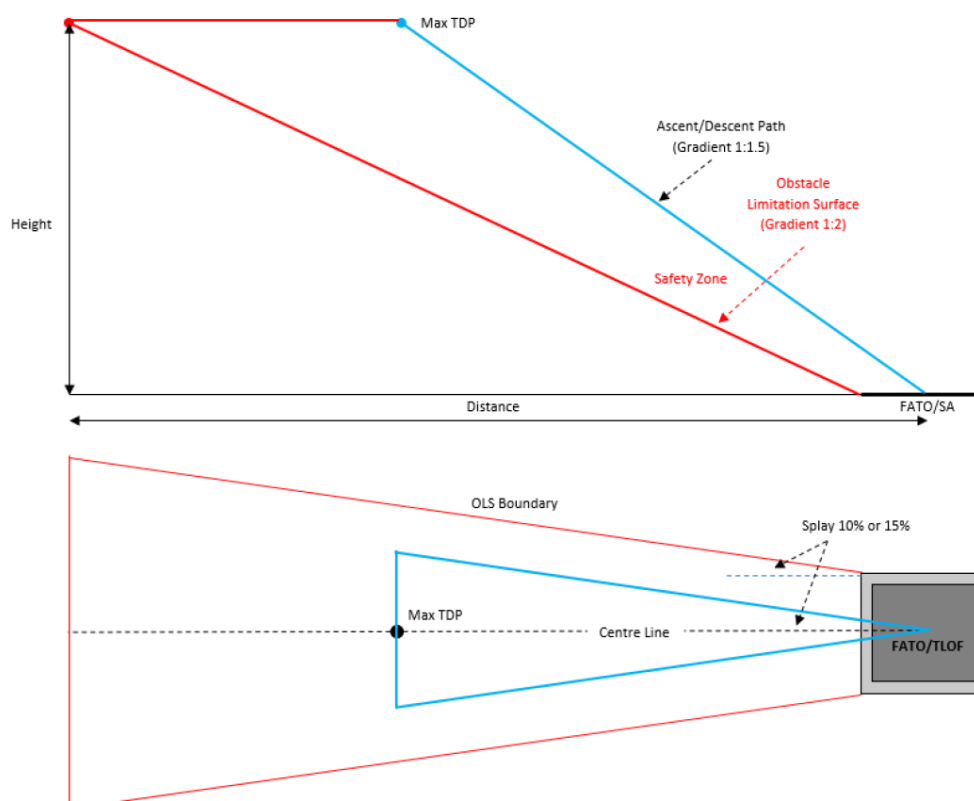
**3.12. Category A Backup Procedure**

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 6 below. These figures are reproduced from ICAO Doc 9261 Heliport Manual, Fifth Edn, 2021.



**Figure 6:** 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 backup 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 7](#) below.



**Figure 7:** Category A Backup Procedure Surfaces

### **3.13. 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.

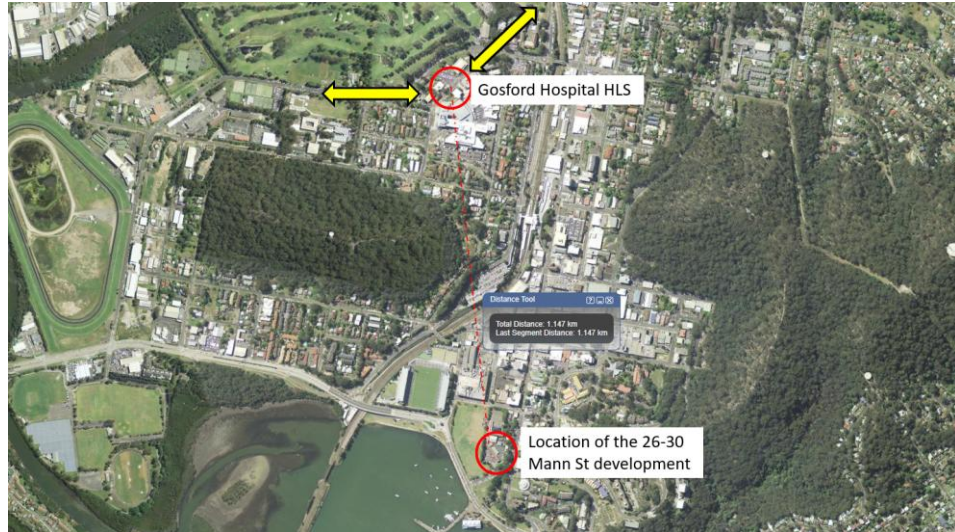
### **3.14. Obstructions in close Proximity but Outside/Below the Approach/Departure Surface**

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 close 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 26-30 MANN ST GOSFORD DEVELOPMENT CONSIDERATIONS

### 4.1. The 26-30 Mann St Gosford Building Location

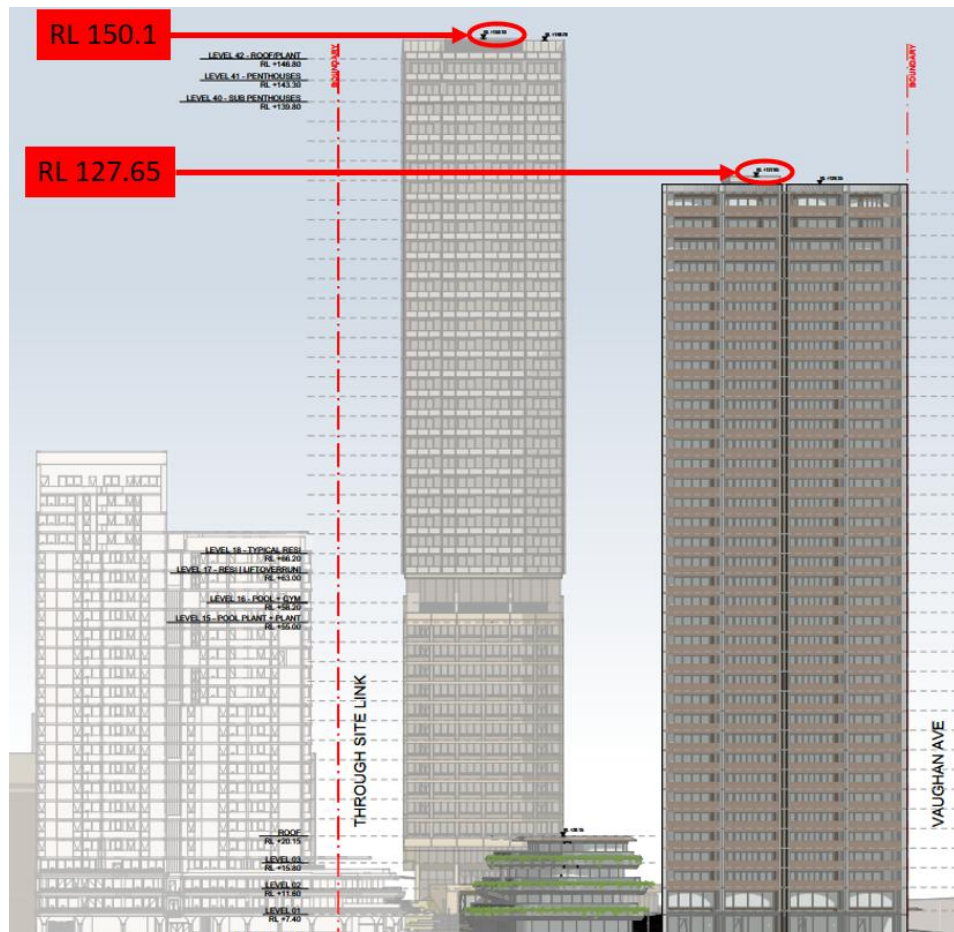
The location of the lot of the proposed 26-30 Mann St Gosford buildings is shown in [Figure 8](#) below. It is approximately 1.1km from the Gosford Hospital HLS.



**Figure 8:** Location of the Proposed 26-30 Mann St Gosford Development

### 4.2. The Proposed 26-30 Mann St Gosford Building Elevations

Maximum elevations of the proposed buildings are shown in [Figure 9](#) below. The elevations will be: East Tower - RL150.1 and South Tower - RL127.65.



**Figure 9:** Elevations of the Proposed 26-30 Mann St Gosford Development

#### 4.3. The Central Coast Local Environment Plan (LEP) (2022)

The Central Coast LEP 2022 contains limitations on building heights for the purposes of airspace protection for the Central Coast Airport at Warnervale. This airport is approximately 20km from the proposed development and is not a factor in airspace considerations for this report. The Central Coast LEP 2022 does not contain any limitations on building heights for the purposes of airspace protection for heliports/HLSs.

#### 4.4. The Central Coast Development Control Plan (DCP) (2022)

The Central Coast DCP 2022 does not contain any limitations on building heights for the purposes of airspace protection for either aerodromes or heliports/HLSs.

#### 4.5. Gosford Airspace

The proposed 26-30 Mann St Gosford development sits below an area covered by the Sydney Visual Terminal Chart (VTC). The VTC, in Figure 10 below, shows that the proposed development is below controlled airspace, which has a lower level of 7500ft or approximately 2286m above mean sea level (equates to RL 2286 or 2286 AHD). The “H” inside a circle depicts the Gosford Hospital HLS.

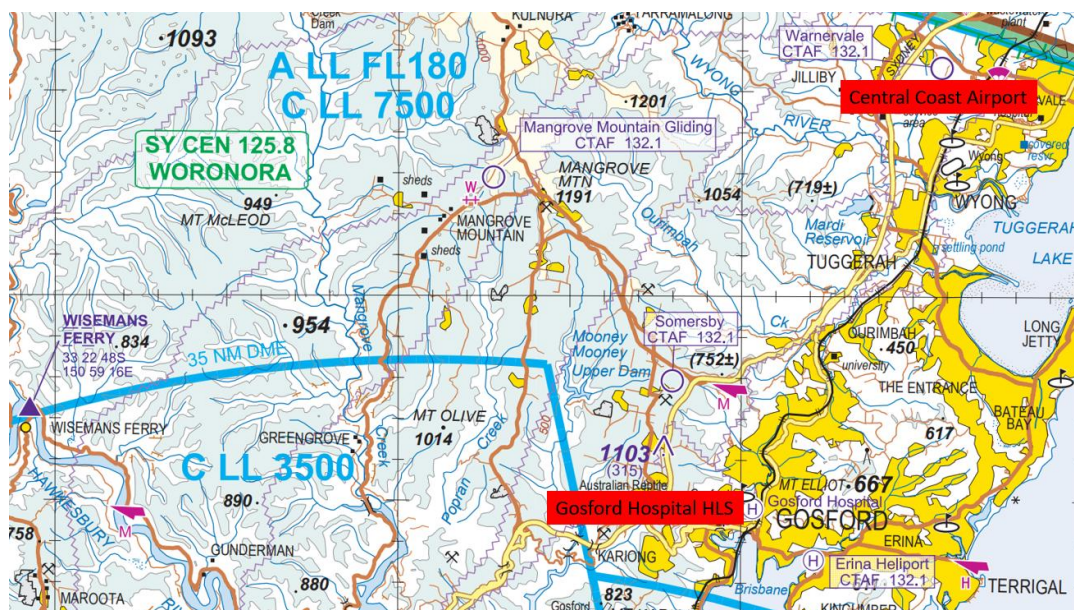


Figure 10: Gosford Airspace

#### 4.6. OLS Overlay

The proposed 26-30 Mann St Gosford development is not within any OLS overlay.

#### 4.7. PANS-OPS Overlay

The proposed 26-30 Mann St Gosford development is not within any PANS-OPS overlay.

#### 4.8. Radar Terrain Clearance Chart (RTCC) Overlay

The proposed 26-30 Mann St Gosford development is not within any RTCC overlay.

#### 4.9. Impacts on OLS, PANS-OPS and RTCC Surfaces

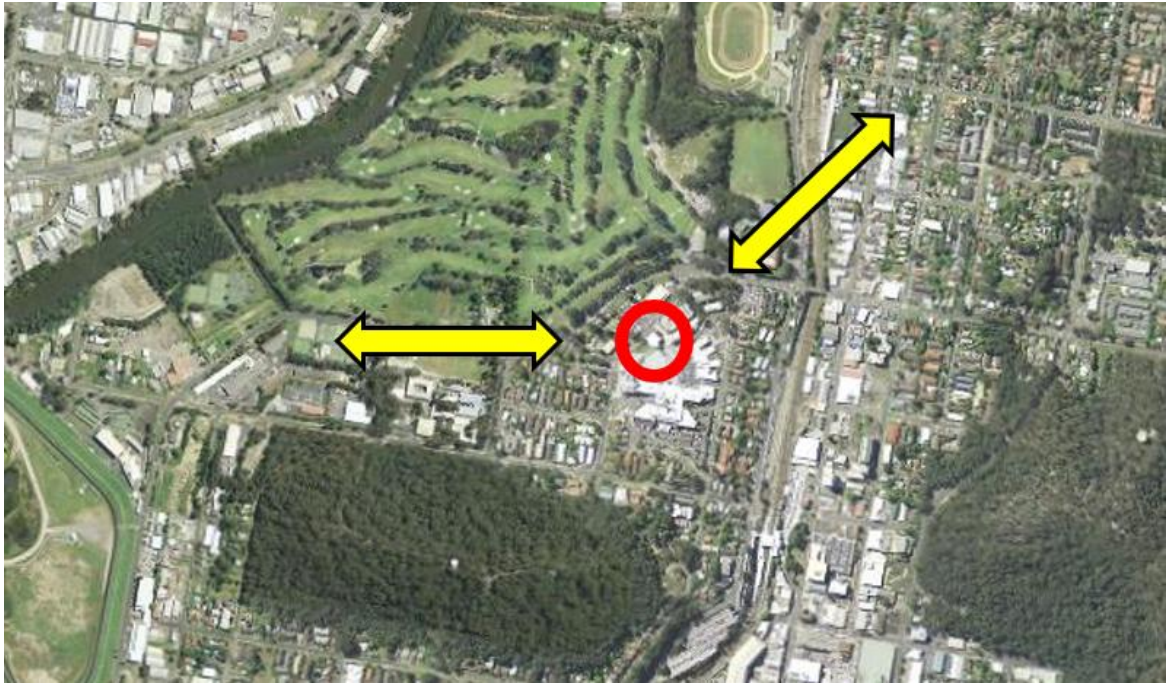
The proposed 26-30 Mann St Gosford development will not intrude into any OLS, PANS-OPS or RTCC surfaces.

**4.10. Location of the Proposed 26-30 Mann St Gosford Building in Relation to the Gosford Hospital HLS**

The location of the proposed 26-30 Mann St Gosford development in relation to the Gosford Hospital HLS is shown in [Figure 8](#) above.

**4.11. Gosford Hospital HLS Approach and Departure Paths**

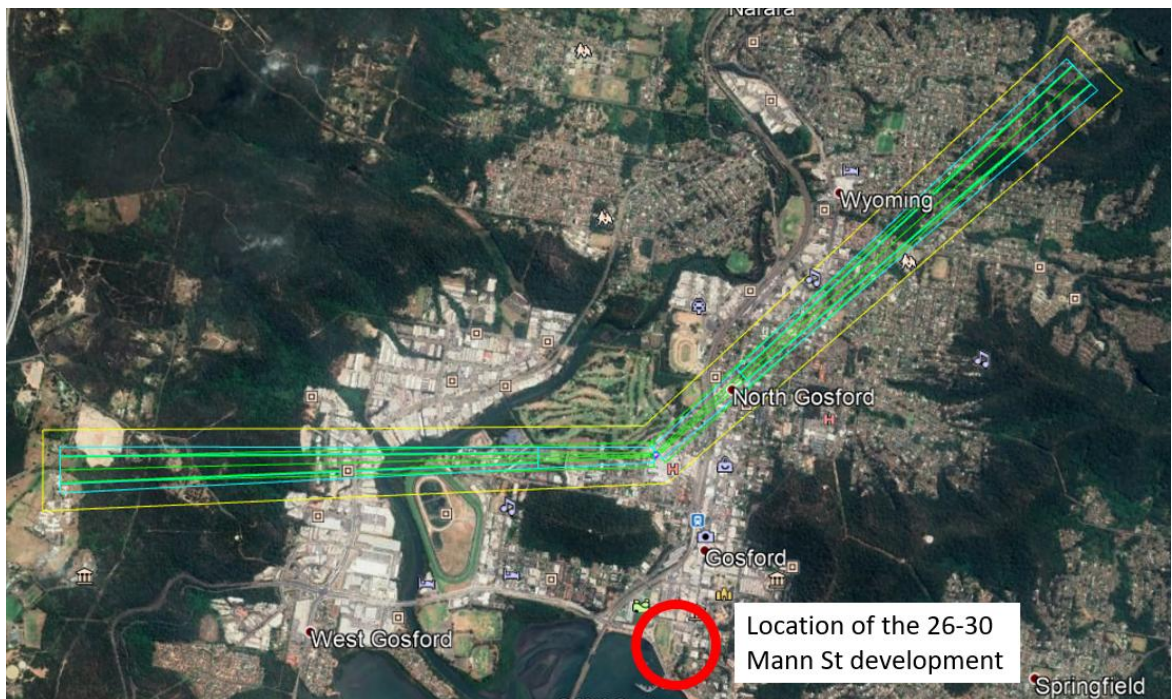
The Gosford Hospital HLS approach and departure paths are shown in [Figure 11](#) below. It should be noted that yellow arrows aligning with the surveyed paths are painted onto the HLS.



**Figure 11:** Gosford Hospital HLS Approach and Departure Paths

**4.12. Gosford Hospital HLS Approach and Departure Paths Survey**

The surveyed areas relating to the Gosford Hospital HLS approach and departure paths are shown in [Figure 12](#) below. The approximate location of the proposed 26-30 Mann St Gosford development is also indicated.



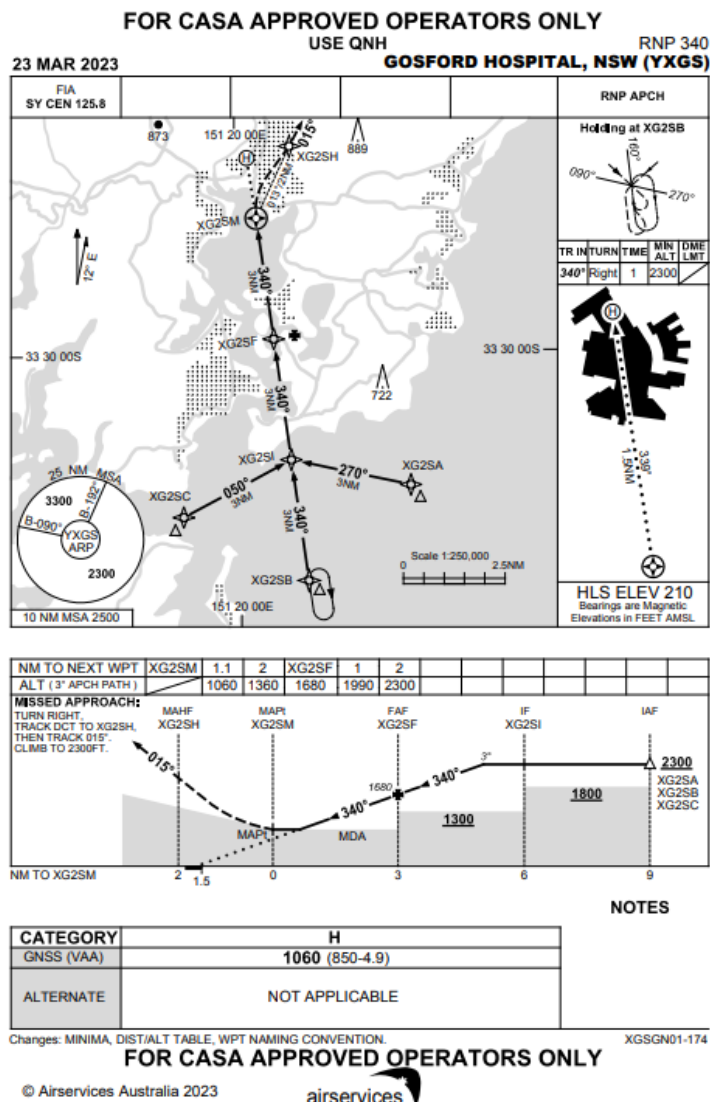
**Figure 12:** Gosford Hospital HLS Approach and Departure Paths Survey

**4.13. Impact of the Proposed 26-30 Mann St Gosford on the Gosford Hospital HLS Approach and Departure paths**

Approach and departure paths for the Gosford Hospital HLS will not be impacted by the position of the proposed 26-30 Mann St Gosford development.

**4.14. Gosford Hospital HLS Instrument Approach Procedure**

The Gosford Hospital HLS has an instrument approach titled the RNAV (GNSS) 340. In this instance RNAV is an abbreviation for Area Navigation and GNSS is an abbreviation for Global Navigation Satellite System based upon the better-known Global Positioning System (GPS). The 340 stands for the direction of approach, in degrees magnetic. The approach is approved by the Civil Aviation Safety Authority (CASA) for approved operators only. These approvals are mainly restricted to Helicopter Emergency Medical Services (HEMS) operators. For Gosford Hospital, the approach requires the pilot to track on a bearing of 340° towards the HLS descending to 1040 ft above mean sea level at a point approximately 2500 metres from the hospital. This position corresponds roughly with half-way along the eastern side of Point Frederick. This position is known as the Missed Approach Point (MAPt) and if the pilot is not in “visual” with at least five kilometres visibility and clear of cloud, must execute a missed approach (this requires an immediate climb and a turn onto a track of 013°). If visual, the pilot then continues, determining the best way to approach the HLS based upon the prevailing conditions. The approach is shown in [Figure 13](#) below.



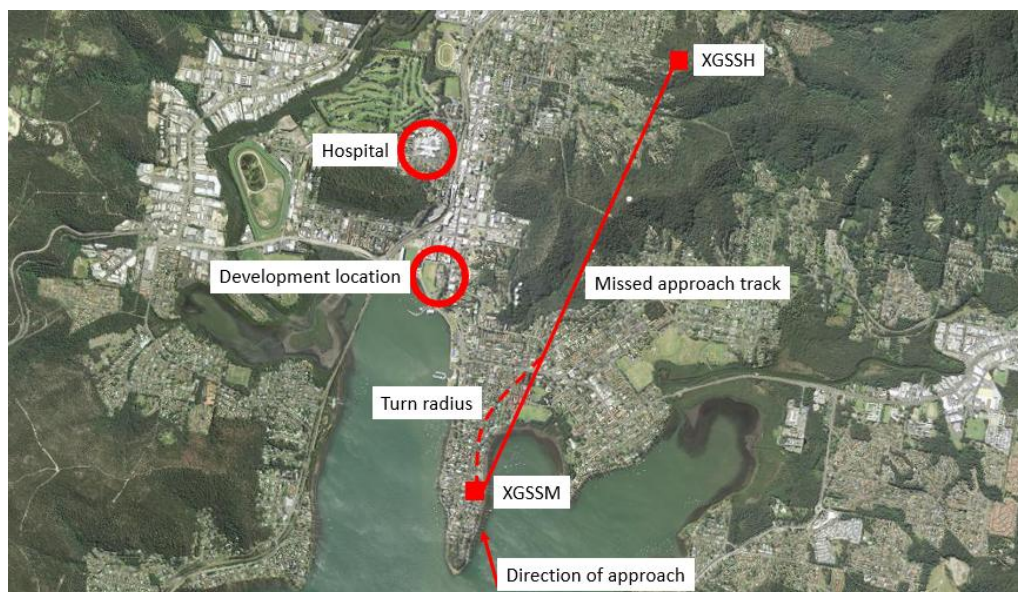
**Figure 13: Gosford Hospital RNAV (GNSS) 340 Approach Procedure**

The visual segment (the dashed line in [Figure 13](#) (from fly-over waypoint XGSSM and the Gosford Hospital HLS)) allows the pilot to fly in any way considered safe and expeditious in order to arrive in the vicinity of the HLS in the best possible situation to land in the preferred or chosen direction. Significant factors for the pilot's consideration are:

- The pilot sits in the right-hand seat and will mostly prefer to circle to the right in order to bring the HLS clearly into view and keep it there,
- Overflight of built-up and populous areas will be avoided to the maximum extent possible,
- Overflight of known noise-sensitive areas and areas of environmental interest such as bird and bat colonies will be avoided to the maximum extent possible,
- Known obstacles such as high terrain, high power lines and cranes will be avoided to the maximum extent possible, and
- Landings into a significant headwind component will be flown to the maximum extent possible.

The resulting analysis of how a pilot would fly the visual segment of the RNAV (GNSS) 340 approach leads to the conclusion that flight in the vicinity of the proposed 26-30 Mann St Gosford development will occur on most occasions. In order to commence the visual segment of the RNAV (GNSS) 340 approach, the pilot requires a minimum of 4.8km visibility and must be clear of cloud at no lower than 1040ft (317m) above mean sea level (AMSL) (equating to 317 AHD) at the MAPt. From this position, the pilot is at liberty to manoeuvre safely to the HLS.

The proposed 26-30 Mann St Gosford development is of little consequence to the missed approach procedure for the RNAV (GNSS) 340 approach. In the event that the helicopter does not become visual at the MAPt (GXSSM) it will execute a missed approach by turning onto a track of 013<sup>0</sup> and fly for two nautical miles to the fly-by waypoint GXSSH from whence it will adjust track to 015<sup>0</sup> and climb to the minimum safe altitude of 2300 feet above mean sea level. Refer to [Figure 14](#) below.



**Figure 14:** Gosford Hospital RNAV (GNSS) 340 Approach Procedure

The missed approach tracking arrangement (from fly-over waypoint XGSSM) requires that the helicopter turns inside the high terrain of Rumbalara Reserve which acts to shield it from any potential collision with buildings close to the CBD. It is therefore very safe to conclude that the missed approach procedure will not be impacted by the proposed 26-30 Mann St Gosford development.

#### 4.15. Construction Crane Considerations

Construction cranes will require assessment by Airservices Australia to determine if they will impact the Gosford Hospital RNAV (GNSS) 340 instrument approach if they exceed RL168. Entering the PANS-OPS surfaces of an instrument approach requires amendment to the Minimum Descent Altitude for that approach. This is tolerable with consultation with helicopter operators but their strong preference will be that the instrument approach Minimum Descent Altitude is not impacted. The critical elevation at which changes to the Gosford Hospital RNAV (GNSS) 340 instrument approach Minimum Descent Altitude may be required is RL 168.

The Guidelines require cranes to be lit when “in the vicinity” of a Hospital HLS. Whilst not stated specifically, logically this includes if the cranes are “in the vicinity” of an associated instrument approach procedure. The illumination requirements for cranes in the vicinity of a Hospital HLS are detailed below.

As a minimum for all tower (hammerhead) cranes:

- top of crane A frame or cabin: medium intensity flashing red obstruction light.
- both ends of Jib: medium intensity flashing red obstruction light
- along Jib: line of white LED fluoro on a PE cell along the full length of the jib, and
- tower section: stairway lights or spot lights attached to the top of the tower pointing down and onto the tower (not up into pilot eyes).

As a minimum for all luffing cranes:

- top of crane A-frame or cabin: medium intensity red obstruction light
- end of Jib: medium intensity red obstruction light
- along Jib: line of white LED fluoro on a PE cell along the full length of the jib
- tower section: stairway lights or spot lights attached to the top of the tower pointing down and onto the tower (not up into pilot eyes)

The LED jib fluoro lights are to be LED weather proof emergency fluoros controlled via a PE cell with a minimum 90 minute battery back-up.

#### 4.16. Deductions: Airspace, Cranes, Obstructions and HLS

The following key deductions can be made:

- The proposed buildings, once constructed, will not intrude into any OLS.
- The proposed buildings, once constructed, will not intrude into any PANS-OPS surfaces.
- The proposed buildings, once constructed, will not intrude into any RTCC.
- The proposed buildings, once constructed, will not impact the Gosford Hospital HLS approach and departure paths.
- The proposed buildings will not require aviation-standard obstacle lighting.
- The proposed buildings’ construction crane(s) will not intrude into any OLS.
- The proposed buildings’ construction crane(s) will not intrude into any PANS-OPS surfaces provided an elevation of RL 168 is not exceeded.
- The proposed buildings’ construction crane(s) will not intrude into any RTCC.

- The proposed buildings’ construction crane(s) will not intrude into the Gosford Hospital HLS approach and departure paths.
- The proposed buildings’ construction crane(s) will require aviation-standard obstacle lighting.
- The proposed buildings, including its construction crane (s) will not impact aviation safety in relation to any aerodrome or the Gosford Hospital HLS.

**4.17. Authority Consultation**

No consultation has been undertaken with any airspace authorities or any airport in relation to this proposed development. Discussions and communications have been undertaken on other similar projects however. The most relatable example is for the nearby Central Coast Leagues Club development where building and crane assessments were undertaken by Airservices Australia at elevations slightly below what is being proposed. It is known from past airspace assessments by Airservices Australia that the lowest protected airspace, which is for the Gosford Hospital RNP 340 instrument approach is 168m above mean sea level (or RL 168/168 AHD).

Discussions were undertaken previously with Central Coast Local Health District (CCLHD) and Toll Helicopters in preparation for Stage 1 (Northern Tower).

The original CCLHD comment was as follows:

“On review of the AviPro report, I have no added concerns other than monitoring the required lighting during construction phase.”

**4.18. Cumulative Impacts**

The cumulative impacts of this development on aviation operations to the Gosford Hospital HLS are negligible. It is one of several developments that are all contained within a small area such that any potential hazards are all grouped closely together. This is a far better outcome than if a number of developments were spread widely around the Gosford area (notwithstanding there are also several other State Significant developments in other parts of the wider Gosford area).

**4.19. Mitigations**

Mitigations in relation to aviation impact and airspace protection matters for the proposed 26-30 Mann St Gosford development are minor. Aviation-standard obstacle lighting for construction crane(s) are routine issues that are considered on all projects in the vicinity of helicopter landing sites or helicopter routes. See [Table 2](#) below.

Project Stage	Mitigation Measures	Relevant Section
C	Where feasible, limit cranes to below RL 168	4.15
C	Appropriate crane lighting	4.15

**Table 2:** Mitigation Measures

#### **4.20. Conclusion**

The proposed 26-30 Mann St Gosford development, including its construction cranes will not impact aviation safety in relation to any aerodrome or the Gosford Hospital HLS.

No specific approvals will be required, however if a luffing crane with an elevation above RL 168 is planned to be used (AviPro has been advised this will not be the case), an assessment by Airservices Australia will be necessary and they will ultimately recommend increases to the Minimum Decent Altitude for the Gosford Hospital RNAV (GNSS) 340 instrument approach. The acceptability of this change will need to be agreed by NSW Ambulance and their helicopter operators e.g. Toll.

Appropriate aviation standard lighting for HLS protection will be necessary on any construction crane(s).

#### **4.21. Recommendations**

As advised to AviPro that this will be the case, keep cranes below RL 168. Ensure that the proposed 26-30 Mann St Gosford development construction tower crane(s) is/are fitted with HLS-protection standard obstacle lighting. If operating at night or in low visibility, ensure that the proposed 26-30 Mann St Gosford development construction mobile crane(s) (for tower crane erection) is/are fitted with HLS-protection standard obstacle lighting.