AviPro

a division of Resolution Response Pty Ltd
ABN: 94 154 052 883

LINDFIELD GROUP
FACILITY MANAGEMENT

182-186 GERTRUDE ROAD

NORTH GOSFORD

29 September 2023

AVIATION IMPACT ASSESSMENT

Prepared for

The University of Newcastle

Version 1.0 DRAFT

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29 September 2023

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AVIATION IMPACT ASSESSMENT REPORT: 182-186 GERTRUDE STREET, NORTH GOSFORD

References:

A. NSW Department of Planning and Environment Letter: Request for Information Development Application 23/3021 dated 19 July 2023
B. CASA AC 91-29 Guidelines for helicopters – suitable places to takeoff and land
C. National Airports Safeguarding Framework Guideline H – Protecting Strategically Important Helicopter Sites
D. NSW Health GL2020_014 Guidelines for Hospital HLS in NSW
E. Central Coast Local Environment Plan (2022)
F. CASA Manual of Standards 139 Chapter 8, Division 10 - Obstacle Markings
G. Civil Aviation Safety Regulation (CASR) 1998 Part 139

Dear Andy,

The proposed development at 182-186 Gertrude St, North Gosford is not near any airport of airfield however it is very close the Gosford Hospital Helicopter Landing Site (HLS). The distance from the development to the HLS is approximately 600m as depicted in Image 1 below.

Image 1

The development application at 182-186 Gertrude St, North Gosford seeks consent for the demolition of existing buildings and structures and construction of an eight-storey residential flat building (with two additional basement levels) containing 39 apartments, 47 car parking spaces and associated tree removal, earthworks, infrastructure works and landscaping works.

The location of the development in relation to the Gosford Hospital Helicopter Landing Site (HLS) approach and departure paths (illustrated by the yellow arrows - these are actually painted onto the HLS) is depicted in Image 2 below.

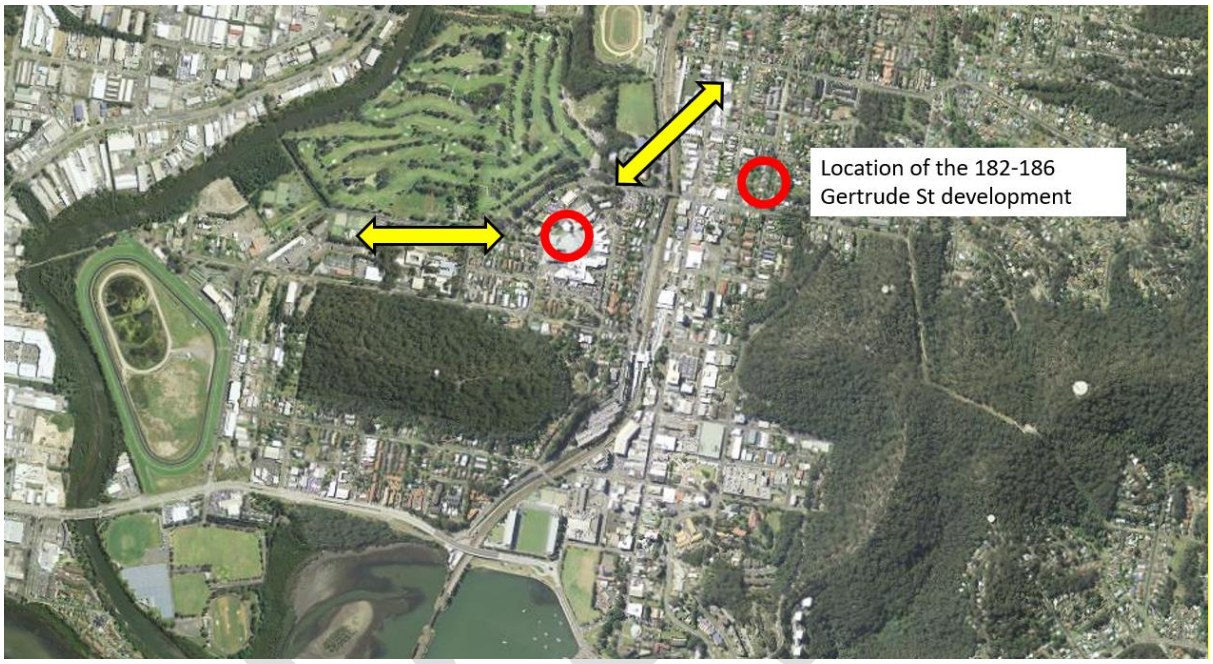

Image 2

This report satisfies the requirements of Reference A. Appendix 1, Item 10 (Airspace) requires: "Information and clarification, prepared by a suitably qualified aviation expert, whether the proposal will impact Gosford Hospital's helicopter flight paths, particularly from the use of cranes during the construction phase.

In assessing the impact, References B-D have been reviewed and their relevant requirements, principles and best practices have been applied. N.B. Reference C requirements are incorporated in Reference D.

Some NSW Councils apply an "airspace operations" Clause in their Local Environment Plan. Reference E contains such a clause but it applies only to the Central Coast Airport and not to the Gosford Hospital HLS.

The State Environmental Planning Policy (Precincts—Regional) 2021 contains no aviation limitations in Chapter 5 pertaining to the Gosford City Centre.

The Gosford Hospital HLS has been surveyed in accordance with Reference D Sections 3.14.4 and 3.14.5. Section 3.14.4 Visual Flight Rules (VFR) Approach and Departure Path and Transitional Surface Survey requires compliance with Figure 11 of Reference D. Figure 11 is reproduced here as Figure 1 below:

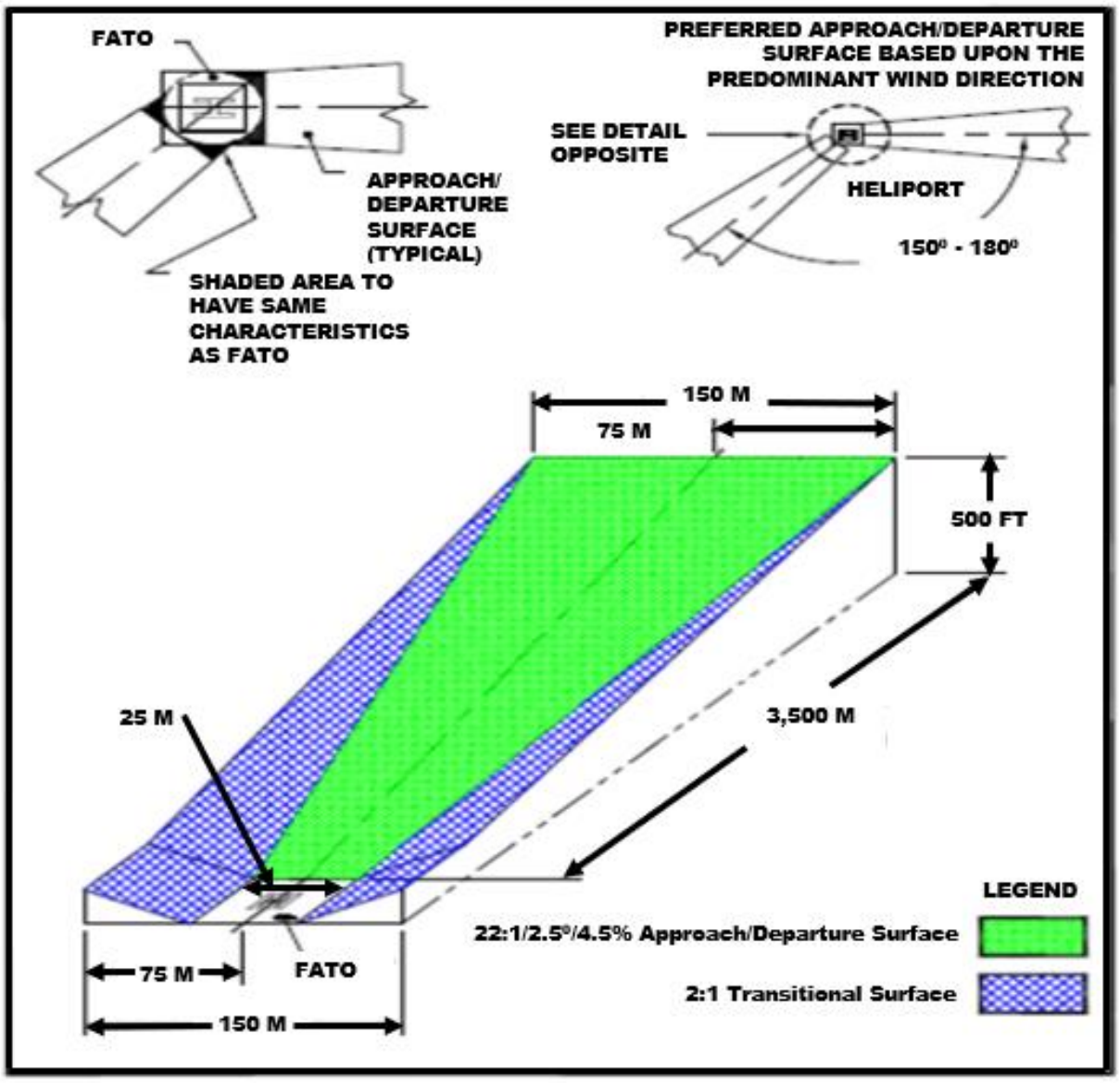

Figure 1

The Design and Development Overlay (DDO) is a survey of an area 30 m below the VFR Approach and Departure Path and Transitional Surface. The surface 30 m below the VFR Approach and Departure Path and Transitional Surface is known as the Object Identification Surface (OIS). There should be no penetration of the OIS, however there may be exceptions and where deemed tolerable, such obstructions must be lit. The DDO requirement is depicted in Figure 10 of Reference D, and this figure is reproduced below as Figure 2.

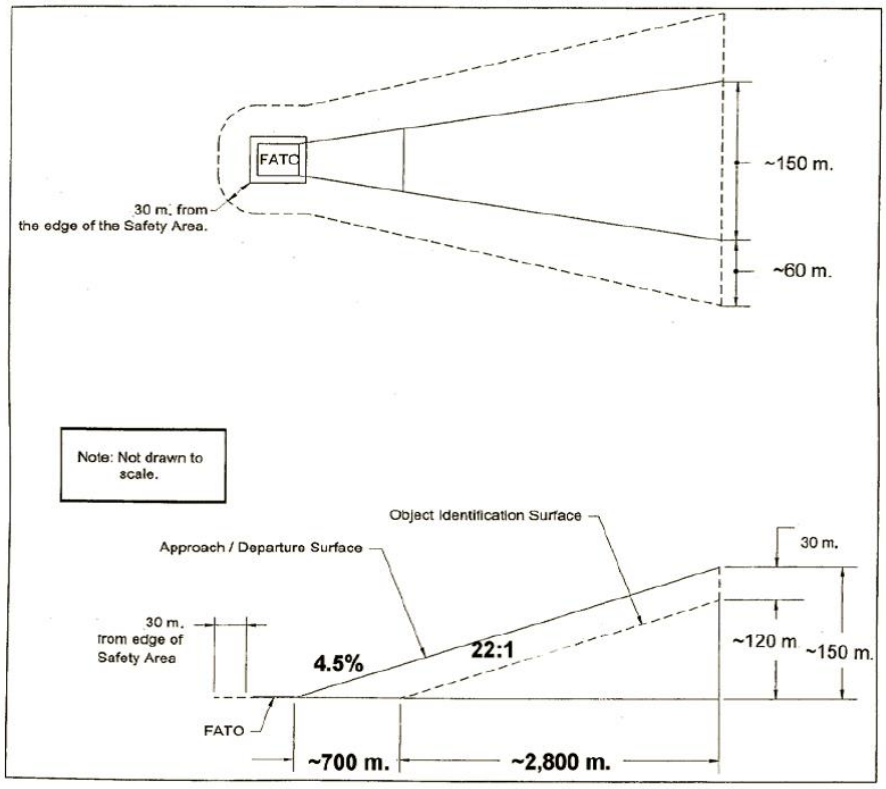

Figure 2

The combined VFR approach and departure path and transitional surfaces and DDO survey results for the Gosford Hospital HLS are depicted on Image 3 below. Also included is the location of the 182-186 Gertrude St, North Gosford development.

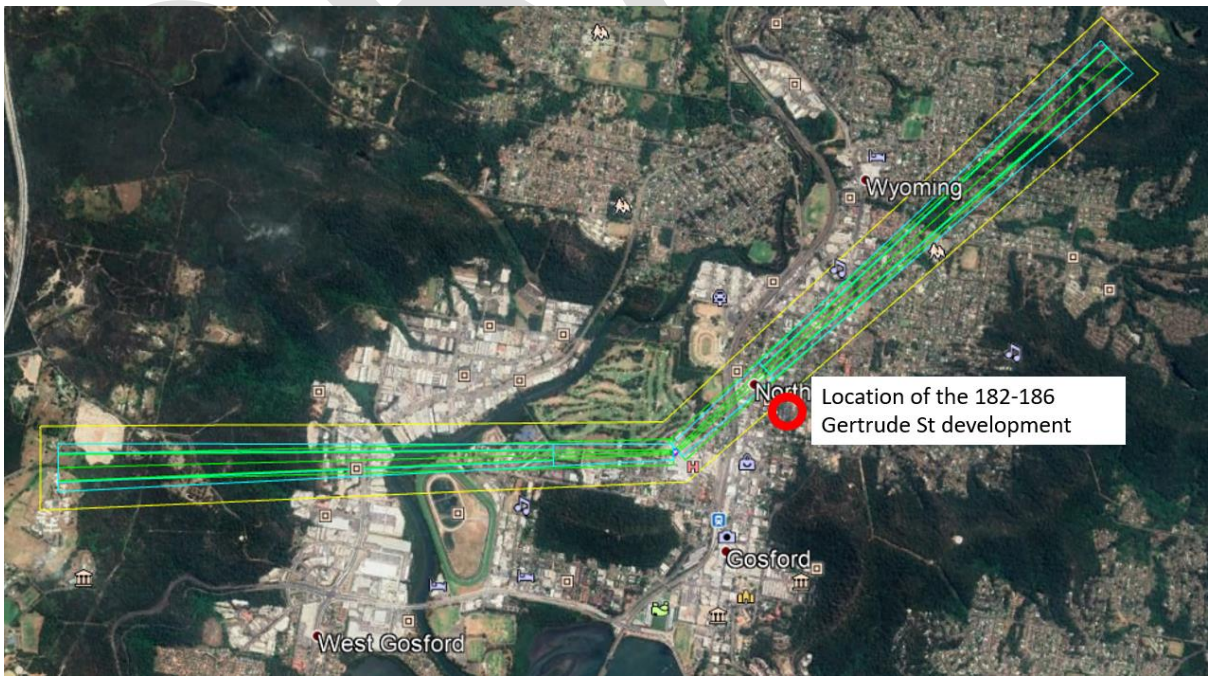

Image 3

The ground level elevation of the Gosford Hospital HLS is approximately 35 AHD. The elevation of the HLS is 62.48 AHD. The ground level elevation of the 182-186 Gertrude St, North Gosford development is approximately 40AHD and the maximum planned elevation is in the vicinity of 60AHD. The building, including any protrusions such as antennae, poles, masts, vents, garden and the like will therefore not be obstacles for helicopters arriving and departing from the Gosford Hospital HLS as they will be below HLS elevation, offset laterally to the surveyed approach and departure paths and outside the approach and departure path survey splay.

The survey requirement is to protect approach and departure surfaces at a gradient of 1:22.2/2.6^0 or 4.5%. At approximately 600m, this allows approximately 27m above HLS elevation before an obstacle would intrude into the level of the northerly approach and departure surface. Therefore, if the top of the construction crane was to be restricted to below RL 90 it would not intrude into the northerly approach and departure surface, noting that the development site id offset to that path.

Image 4 below provides a visual depiction of the general location of the 182-186 Gertrude St, North Gosford site in relation to the Gosford Hospital site.

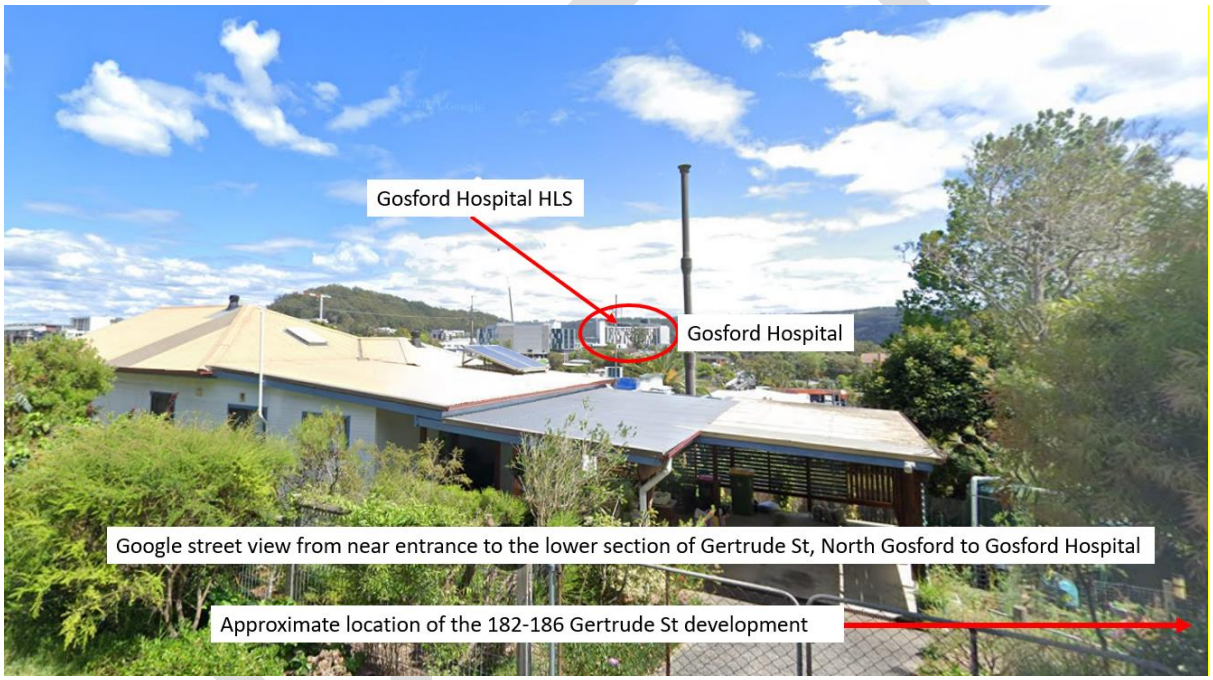

Image 4

The Gosford Hospital HLS has an instrument approach titled the RNP 340. RNP is an abbreviation for Required Navigation Performance. 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 340^0 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 4.8 kilometres visibility and clear of cloud, must execute a missed approach (this requires an immediate climb and a turn onto a track of 013^0). 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 3 below:

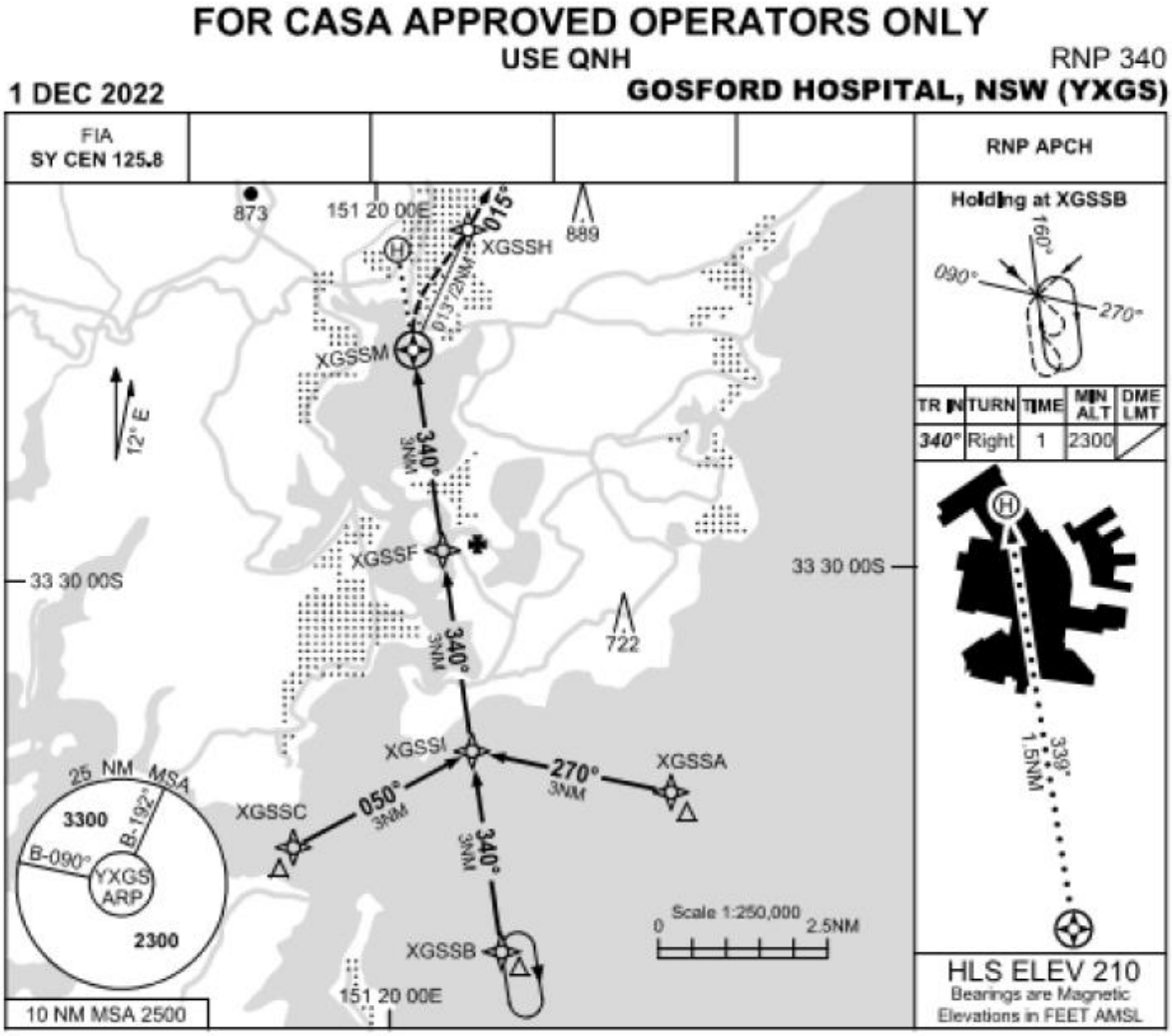

Figure 3

The visual segment (the dashed line in Figure 3 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.

Considering the points above, in the majority of cases the pilot will either (only in good weather) continue tracking towards the hospital with all obstacles in sight; or track to the west around President's Hill (high terrain between the MAPt and the hospital) mostly over the racecourse, tennis courts, the golf course and Narara Creek. It would only be in rare cases that the pilot would track towards Gosford CBD and then between President's Hill and the high terrain of Rumbalara Reserve. This track places the HLS to the pilot's left making it difficult to keep in sight and transits over a significantly built-up area. It may be necessary to fly this track on occasions but it would mostly be avoided. A general depiction of the most usual paths of the visual segment are demonstrated in Image 5 below:

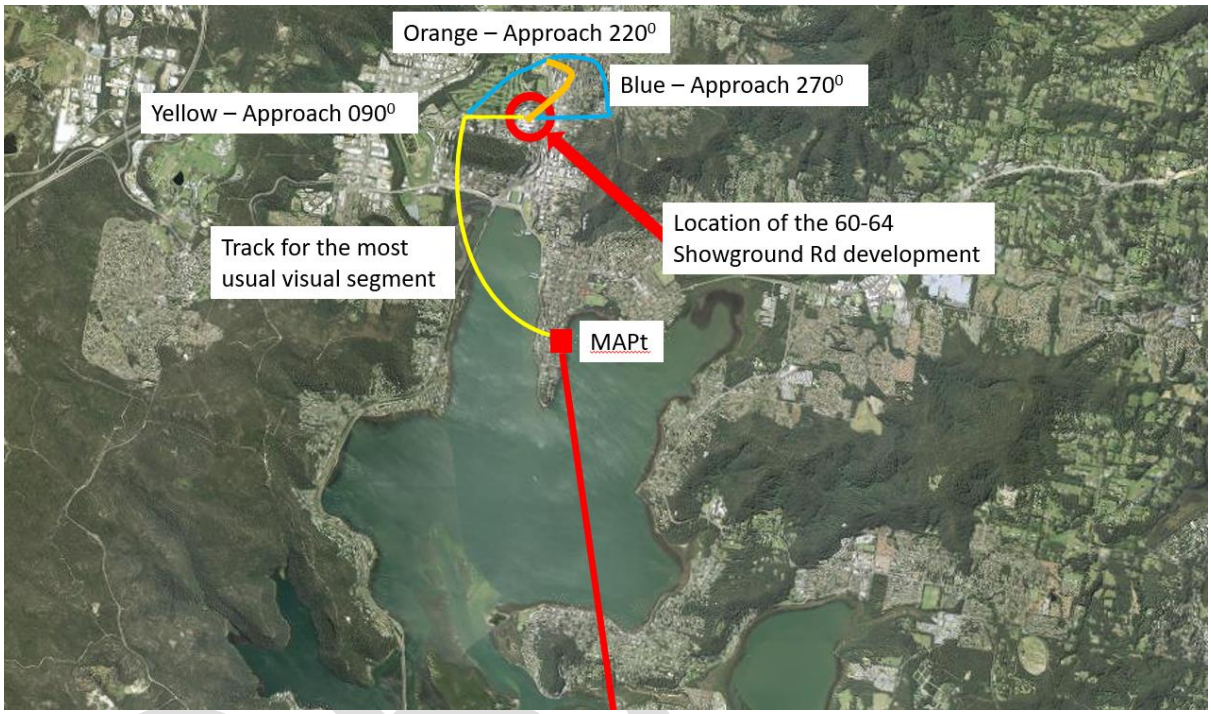

Image 5

The resulting analysis of how a pilot would fly the visual segment of the RNP 340 approach leads to the conclusion that flight in the vicinity of the development at 182-186 Gertrude St, North Gosford will occur on some occasions. In order to commence the visual segment of the RNP 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 development at 182-186 Gertrude St, North Gosford is of little consequence to the missed approach procedure for the RNP 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 013^0 and fly for two nautical miles to the fly-by waypoint GXSSH from whence it will adjust track to 015^0 and climb to the minimum safe altitude of 2300 feet above mean sea level. Refer to Figure 3.

Image 6 below demonstrates the missed approach tracking arrangement in relation to the Gosford Hospital and the development site. It is vitally important 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 development at 182-186 Gertrude St, North Gosford.

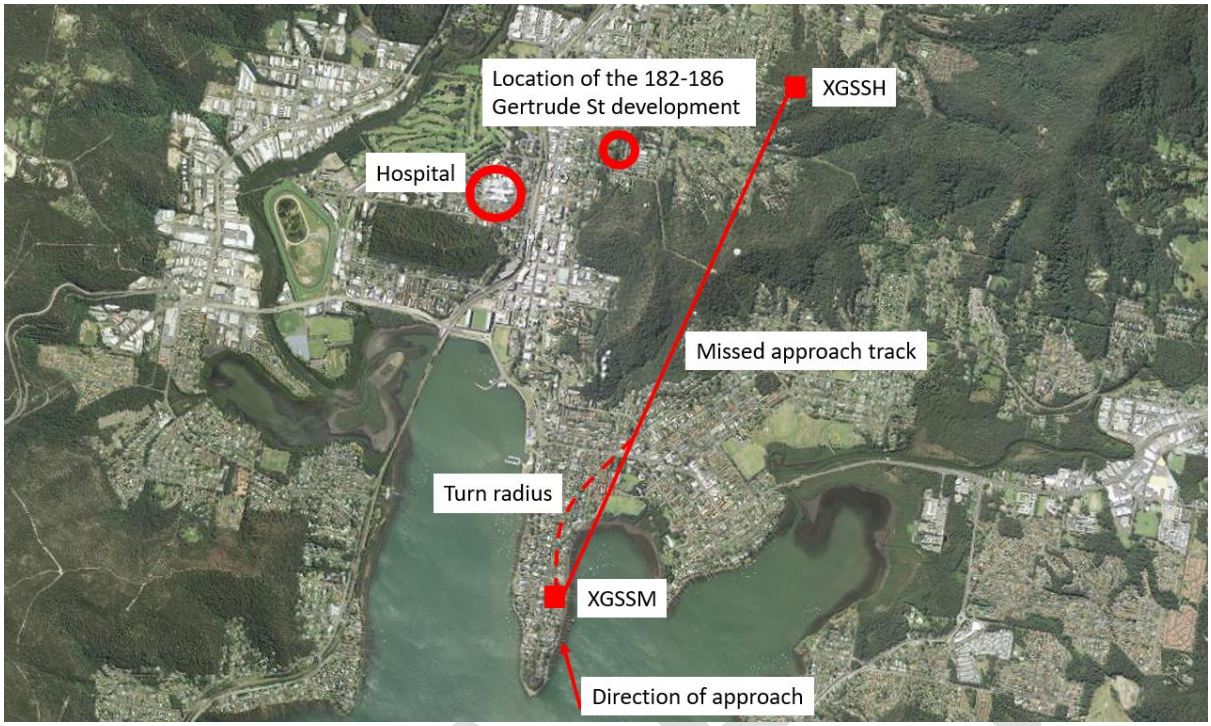

Image 6

The conclusion from reviewing survey data and instrument approach for the Gosford Hospital HLS is that the development at 182-186 Gertrude St, North Gosford will have no impact on the approach and departure paths to and from the HLS, including the RNP 340 instrument approach and its missed approach procedure.

This does not, however, completely address the matter. Reference F requires that "a structure must be marked when more than 150 m higher than the surrounding terrain. Surrounding terrain means the area within 400 m of the structure. Structures above 90 m may need to be marked, and inconspicuous structures 75 m above ground level should also be marked." This development, at a maximum elevation of RL 60 means that the building is generally around 20 m above ground level at its' highest point. As this is lower than 90 m/75 m above ground level, it does not require any specific aviation obstruction lighting.

AviPro notes, further, that although the developed building at 182-186 Gertrude St, North Gosford will not be inconspicuous, the crane which will be used to build it will be. The maximum height of the crane is likely to be in the vicinity of 40m above ground level, which is below the 75 m height for recommended temporary obstruction lighting. There is therefore no regulatory requirement for the construction crane to be lit to an aviation standard. Reference D, however, states the following:

"The illumination requirements for cranes in the vicinity of a Hospital HLS are detailed below.

As a minimum for all tower cranes:

- top of crane A frame or cabin: medium intensity red obstruction light
- both ends 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, 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 fluro lights are to be LED weather proof emergency fluros controlled via a PE cell with a minimum 90 minute battery back-up."

As there is no clear guidance on lighting of mobile cranes in Reference D, a similar standard to the requirements for hammerhead and luffing cranes should be applied if operating by night or in exceptionally poor (low visibility) weather.

It should be noted that at an approximate height of RL 90 (hammerhead) and being about 600 m from the Gosford Hospital HLS, such a crane would not be considered as an obstacle to helicopter arrivals and departures at the Gosford Hospital HLS.

Regulation 139.165 of Reference G - Notifying CASA of certain proposed objects or structures states: "This regulation applies if a person proposes to construct or erect an object or structure that… will have a height of 100 metres or more above ground level…" This is done through Airservices Australia. This development does not require notification.

In summary, AviPro advises that:

a. **the development at 182-186 Gertrude St, North Gosford will have no impact on the approach and departure paths to and from the Gosford Hospital HLS, including the RNP 340 instrument approach and its missed approach procedure;**

b. **aviation obstruction lighting is not required on this building once developed,**

c. **aviation lighting similar to the standards in NSW Health GL2020_014 Guidelines for Hospital HLS in NSW will not be required on cranes during construction if they operate at night or in low visibility and are kept below RL 90, and**

d. **this development does not need to be advised to CASA through AirServices Australia as a tall structure.**

Sincerely,

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