A division of Resolution Response Pty Ltd
ABN 94 154 052 883

PENRITH LAKES HELICOPTER LANDING SITE AVIATION IMPACT REPORT

22 October 2021

PENRITH LAKES HLS - AVIATION IMPACT REPORT

Prepared for: Colliers International

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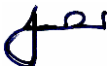
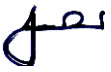
		Signature			
Revision	Date	File name			
V1.1	22.10.21	Description	Amended Parts: 5.7 and 7.2 (addition of Stakeholders); New Parts: 6.3 (DPIE requested additions) Addition to Part 10.1 Conclusion post stakeholder meetings (Western Sydney Airport and Federal Departments)		
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This Report is prepared for Heliport Developers Pty Ltd through Colliers International for the Penrith Lakes HLS development by Resolution Response Pty. Ltd. ABN: 94 154 052 883, trading as 'AviPro'.

The Report relates to the aviation aspects associated with the site design to inform consideration of the Development Application.

Contents

1. INTRODUCTION

1.1. Overview

Heliport Developers Pty Ltd are proposing the transition of a site adjacent to Penrith Lakes from its current use to a low utilisation helicopter landing site (HLS). The site would become the new home for Sydney Helicopters as a consequence of a compulsory acquisition of the current Granville site by the NSW Government.

1.2. Suitable Qualified Aviation Specialists

AviPro is a division of Resolution Response Pty Ltd. It has been engaged by Colliers International on behalf of Heliport Developers Pty Ltd, to provide expert and independent aviation review and commentary on the Secretary's Environmental Assessment Requirements – Aviation.

AviPro is presently engaged by a number of Australian jurisdictions to provide expert planning, operational design guidance, and regulatory compliance assessments for helicopter and aircraft operational bases and flight operations. As such, AviPro can be considered a suitably qualified aviation specialist.

1.3. Subject Site

The Penrith Lakes site is located north of the City of Penrith and east of the Nepean River. It was constructed in the late 1990s specifically for the Sydney Olympic Games as the rowing and white-water racing venues.

Image 1: Proposed Penrith Lakes HLS location

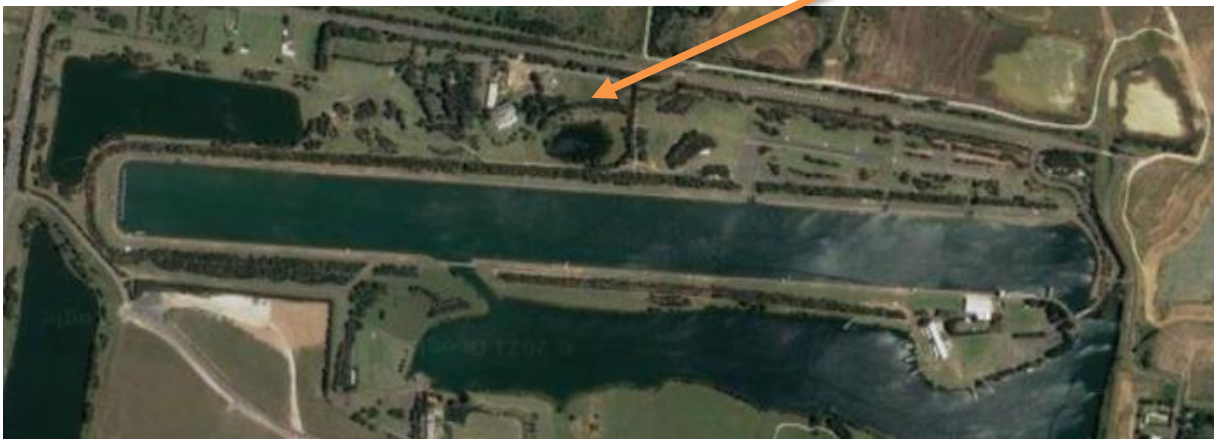

Image 2: Penrith Lakes (south to top of image)

1.4. Amendment to Penrith Lakes SEPP 2021

The NSW Department of planning is proposing changes to the Penrith Lakes SEPP that will increase employment, recreational and tourism opportunities within Western Sydney. Specifically, the SEPP amendment states it will "facilitate potential new land use and employment opportunities in Penrith Lakes and Western Sydney".

2. TERMS AND ABBREVIATIONS

2.1. Explanation of Terms

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

Approach/Departure Path (VFR). The flight track helicopters follow when landing at or departing from the FATO of an HLS. Updated standards to align with ICAO recommendations now has the VFR approach/departure path extending outwards from the edge of the FATO with an obstacle free gradient of 2.5º or 4.5% or 1:22 vertical to horizontal, measured from the edge of the forward edge of the FATO, to a height initially of 500 feet above the FATO at a distance of ~3,500 m. The flight path commences at the forward edge of the FATO at a width of 25 m., and increases in width uniformly to 150 m. at a distance of 3,500 m. The path may be curved left or right to avoid obstacles or to take advantage of a better approach or departure path. Changes in direction by day below 300 feet should be avoided and there should be no changes in direction below 500 feet at night.

Design Helicopter. The type of helicopter the HLS is designed for. The type reflects the new generation Performance Class 1 capable helicopters and reflects the maximum weight and maximum contact load/minimum contact area.

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 Take-off 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 take-off 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.

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 take-off 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.

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

Heliport. Two or more co-existing helicopter landing sites (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 the multiple 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.

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 a 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.

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.

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.

Transitional Surfaces. Starts from the edges of the FATO parallel to the flight path centre line, and extends outwards (to the sides) at a slope of 2:1 (two-units horizontal in one-unit vertical or 26.6°) from the outer edges of approach/departure surface. The outer sides are 75 m. from the centreline, i.e., the outer edges are 150 m. wide. The transitional surfaces start at the forward edge of the FATO, overlaid over the approach/departure path (surfaces) and extend to the end of the approach/departure surface at 3,500 m.

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.

2.2. Applicable Abbreviations

Acronym	Meaning
AC	Advisory Circular (US FAA)
ACMA	Australian Communication and Media Authority
ADS-B	Automated Dependent Surveillance - Broadcast
AsA	Airservices Australia
ATC	Air Traffic Control
CAAP	Civil Aviation Advisory Publication (Australia)
CASA	Civil Aviation Safety Authority (Australia)
CAOs	Civil Aviation Orders (Australia)
CARs	Civil Aviation Regulations (1988) Australia
CASRs	Civil Aviation Safety Regulations (1998) Australia
DDO	Design and Development Overlay
DPIE	Department of Planning, Industry and Environment (NSW)
FAA	Federal Aviation Administration, USA
FATO	Final Approach and Take-Off Area (1.5 x helicopter length)
HLS	Helicopter Landing Site
HLSRO	HLS Reporting Officer (Airservices Australia requirement)
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions – requiring IFR flight
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
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)
PRM	Precision Runway Monitoring
RAAF	Royal Australian Air Force
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
SEARs	Secretary's Environmental Assessment Requirements
TDP	Take-off Decision Point (Category A/Performance Class 1 ops)
TLOF	Touch Down and Lift Off Area. Load bearing min. 1 x main rotor dia.
VFR	Visual Flight Rules
VHF	Very High Frequency radio
VMC	Visual Meteorological Conditions - allowing flight under VFR

3. SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

3.1. Aviation and Airspace Requirements (Aviation Impact Statement)

This Section provides a list of SEARs requirements specific to the proposed Penrith Lakes helicopter landing site (HLS) development.

Item	Requirement or Key aviation airspace issue	Relevant Report Section
Aviation		
Provide a report prepared by a suitably qualified Aviation expert:		
1.	Provide an assessment of impacts of and to airspace, including but not limited to flight path/s, altitudes, obstructions and obstacles during operation (including construction cranes in the vicinity of the site and its flight path/s), air turbulence, the Obstacle Limitation Surface (OLS) and Procedures for Air Navigation Services Operations Surface (PANSOPS), as well as, the impact on future air transport operations into or out of Western Sydney (Nancy Bird Walton) Airport, the RAAF Base in Richmond and the Nepean Hospital Helipad.	See Part 5
2.	Provide a reverse sensitivity analysis (i.e., existing landscaping, lighting and land uses) to identify potential impacts from adjoining land uses on flight operations.	See Part 6
3.	Address aviation safeguarding requirements/considerations within the Western Sydney Airport Planning Package, including: a. the State Environmental Planning Policy (Western Sydney Airport) 2020; and b. the Western Sydney Airport Plan.	See Part 7
4.	Provide an Aviation Report by suitably qualified aviation specialists which outlines the specific aviation requirements relative to the construction of the helicopter landing site and its ongoing use including size, shape, structural design standards, markings, obstructions, flight paths and approvals etc with consideration of CASA Civil Aviation Advisory Publication (CAAP) 92-2(2) Guidelines for the establishment and operation of onshore Helicopter Landing Sites and International Civil Aviation Organization Volume II annex 14.	See Part 8 and Appendix 1.
5.	The impact of flight paths on use of drones during competitive sporting and major events at the Sydney International Regatta Centre.	See Part 9
Relevant Policies and Guidelines: National Airports Safeguarding Framework and associated guidelines CASA Civil Aviation Advisory Publication (CAAP) 92.2(2)		

Table 1: Secretary's Environmental Assessment Requirements - Aviation

4. GENERAL REQUIREMENTS – AVIATION REGULATION

4.1. Regulatory Review

The Penrith Lakes HLS project is located outside all major airport airspace areas.

It is therefore not considered to be within "prescribed airspace" as defined in the Airports (Protection of Airspace) Regulations 1996. Further, there is no specific requirement in the Penrith Local Environment Plan 2010 (version 23 July 2021) to consider airspace protection. Specifically, Part 7 Additional Local Provisions referencing 'development of land in the flight paths of the proposed Second Sydney Airport'. The Penrith Lakes site is outside and below any planned flight path airspace for this Airport and also RAAF Richmond.

The positioning and proposed development will not incur any negative air traffic or protected airspace factors or considerations. There are no constraints imposed by prescribed airspace associated with airports or airport instrument approach and standard departure profiles. As a consequence, the development of the HLS, and in particular vertical obstructions such as cranes, can be addressed from a "safety to flight" requirement for helicopters and aircraft transiting in the vicinity.

Currently within Australia, there are no set 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 Regulation (CAR) 92 which places the onus on the helicopter pilot to determine the suitability of a landing site.

CASA, as the regulator of aviation in Australia currently provides only basic operating guidelines via Civil Aviation Advisory Publication (CAAP) 92-2 (2) Guidelines for the Establishment and Operation of Onshore Helicopter Landing Sites.

AS detailed, CASA does not provide design, structural information or advice beyond that provided in the CAAP. CASA, as a component of a Regulatory Reform Program, does propose to prepare rules for HLS and currently has a panel established for this purpose. The new rules will form Civil Aviation Safety Regulation (CASR) Sub-part 139R, and it is expected that they will be published in late 2021 and apply to major HLS. The proposed HLS would not be impacted by any proposed regulations.

4.2. National Airports Safeguarding Framework

The National Airports Safeguarding Framework (NASF) has been assessed and there is no impact on surrounding airspace or the development of the Western Sydney Airport airspace.

Guideline H addresses protecting strategically important helicopter landing sites. The Penrith Lakes HLS is not a strategically important site. Therefore, Guideline H does not apply.

4.3. Civil Aviation Safety Authority (CASA)

CASA has been engaged in relation to the Penrith Lakes HLS development however they do not offer Regulatory comment on commercial HLS outside a Federally controlled airport.

4.4. AirServices Australia (AsA)/Western Sydney Airport/RAAF Richmond

AsA, Western Sydney Airport have been consulted in relation to the Penrith Lakes development. Flight operations into/from the proposed HLS will not involve the restricted airspace associated with Western Sydney Airport or RAAF Richmond.

4.5. Standards applied to HLS development

The key current reference documents for the development of HLS are as follows:

- ICAO Annex 14, Vol II, Heliports;

- US FAA Advisory Circular AC 150/5390-2C, Heliport Design, (covers both operational and design criteria, particularly for hospital-based HLS' in Chapter 4, Hospital Heliports);
- Australian Civil Aviation Safety Authority (CASA) Civil Aviation Advisory Publication (CAAP) 92-2 (2) Guidelines for the Establishment and Operation of Onshore Helicopter Landing Sites. (Covers essentially operational specifications only and is produced around European commercial helicopter airport-based operations);
- National Airports Safeguarding Framework Guideline H – Protecting Strategically Important Helicopter Landing Sites, and

5. SEAR REQUIREMENTS 1: OPERATIONAL AIRSPACE ASSESSMENT

5.1. Impact to airspace

The Secretary has requested an assessment of impacts of and to airspace, including but not limited to:

- Flight path/s,
- Altitudes,
- Obstructions and obstacles during operation (including construction cranes in the vicinity of the site and its flight path/s),
- Air turbulence,
- The Obstacle Limitation Surface (OLS) and Procedures for Air Navigation Services Operations Surface (PANSOPS),
- Impact on future air transport operations into or out of Western Sydney (Nancy Bird Walton) Airport, the RAAF Base in Richmond and the Nepean Hospital Helipad.

5.2. HLS Flight Path Considerations

Primary considerations in selection of HLS approach and departure paths include:

- Direction of prevailing winds,
- Location of existing obstructions, and
- Location of any airspace altitude and boundary restrictions or limitations,
- Avoidance of areas sensitive to noise, downwash and vibration.

5.2.1. Prevailing Wind

The Bureau of Meteorology has a weather station at Penrith Lakes. Annualised average wind readings taken since 1942 show that average annual predominant winds in the area are from the South/South-West in the mornings and West/North-West in the afternoons. Refer to Image 3 below. This data was a primary driver for the design of the HLS flight paths in conjunction with the orientation of the Lake's rowing venue.

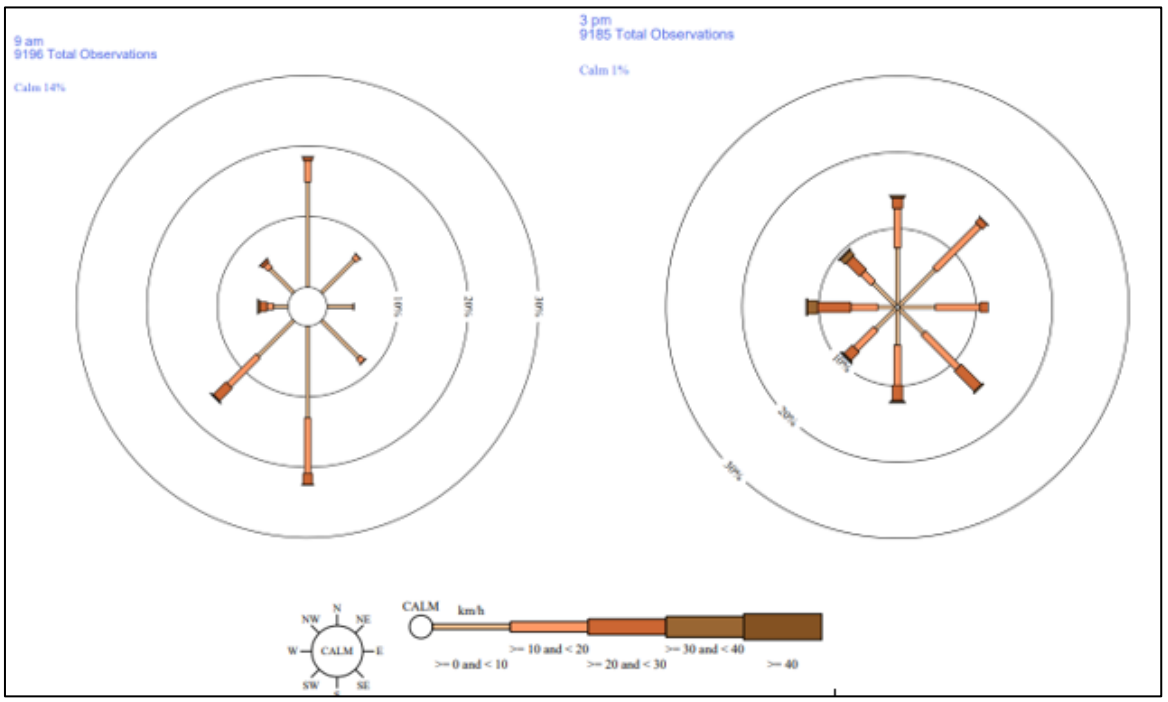

Image 3: Penrith Lakes Wind Rose – Annual Average (Image BOM)

5.2.2. Details of Penrith Lakes Approach and Departure Path Directions

The wind assessment from the Wind Roses at Image 3 influenced greatly by the layout of the Penrith Lakes Regatta precinct, informed the development of the flight path directions. Image 4 illustrates the location of the HLS and the flight path directions (east/west).

Image 4: Penrith Lakes HLS approach/departure paths

The proposed plan has trees in the vicinity of the HLS being removed to allow for access.

Note the east west flight path orientation eliminates any potential disturbance to events at the Regatta Centre or on any potential business park developments south of Old Castlereagh Road.

5.3. Controlled Airspace – Altitude and Boundaries

The Penrith Lakes location (indicated by the red arrow) is conveniently situated outside and to the south of the RAAF Richmond Control Zone (R474 – restricted Zone 474), The airspace restrictions here exist from the surface (SFC) to 4,500'. This was a planning consideration in the early development of the Lakes Regatta precinct pre-Sydney 2000 Olympic Games. The RAAF have maintained this unchanged southern boundary to their RAAF Richmond Control Zone.

The Lakes location is below the Sydney Controlled Airspace which has a lower level of 4,500'and is illustrated within the red circle at the base of Image 5.

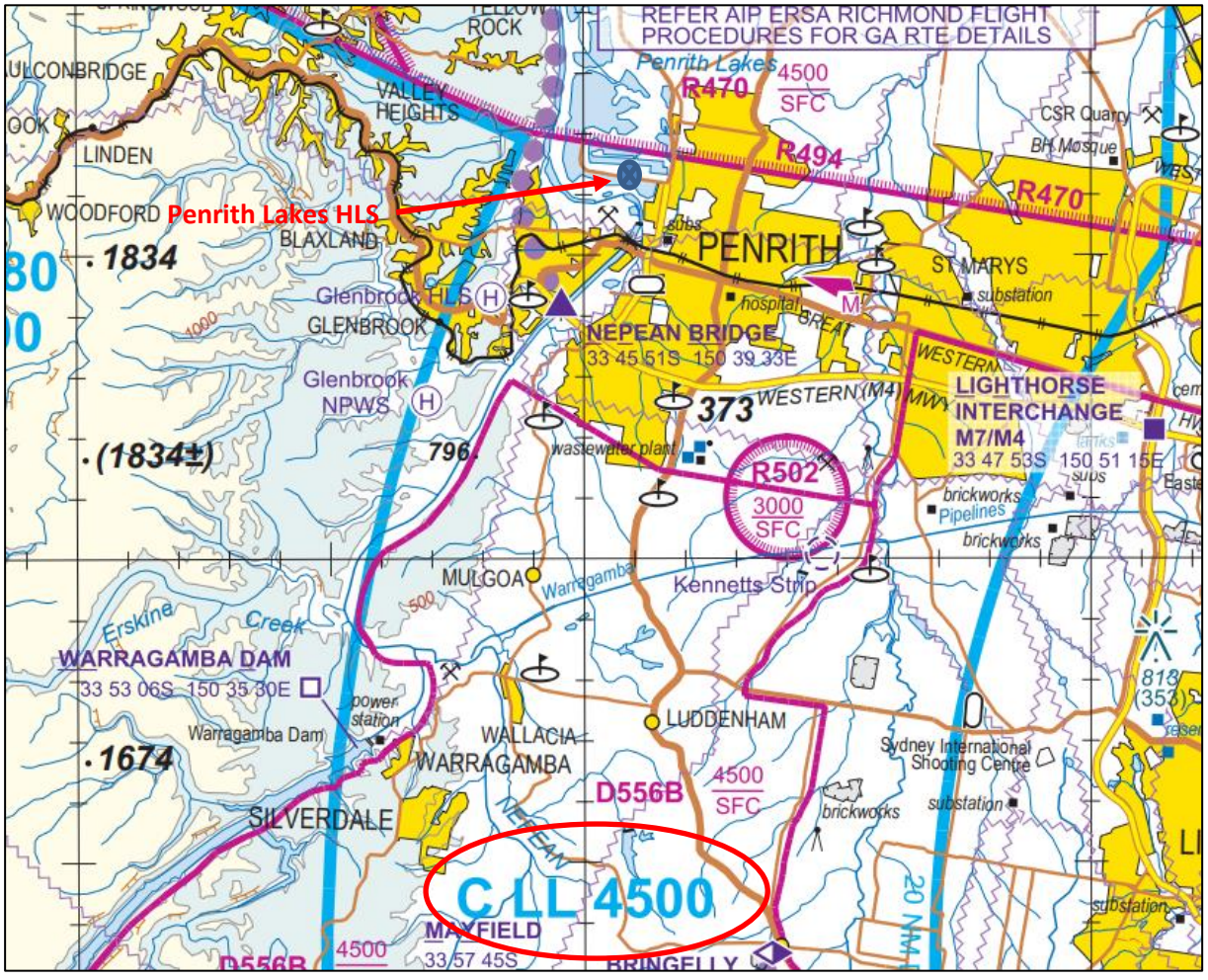

Image 5: Penrith Lakes HLS approach/departure paths

Sydney Helicopters is obliged to follow airspace constraints as they do presently. Flight operations to/from the Penrith Lakes site will need to be in accordance with the existing airspace constraints illustrated in the Sydney VTC extract, Image 5.

After reviewing the available AirServices Charts and available Restricted and Controlled Airspace information, Airspace Altitude will not impact the proposed HLS at Penrith Lakes.

5.4. Impact of Obstructions on Flight Paths

Obstructions including the positioning of cranes, power lines and tall buildings will impact the safe use of flight paths. To mitigate this, especially in the current regulatory context where there is no protection from developments for private HLS locations, sufficient land has been procured to ensure un obstructed approach/departure flight paths.

The developer has already identified trees and building obstructions that will be removed during the development of the site.

Should cranes be placed in a position that may influence the access to the HLS, the operator of the helicopters will need to ensure the cranes are illuminated for any night operations and that the arc of the jib does NOT impact the access to/from the HLS. This will be especially applicable to the development of sites south of Old Castlereagh Road.

5.5. Air Turbulence

There are two aspects of air turbulence that may apply to the site, the first is turbulence caused by mechanical obstructions including natural obstructions such as the Blue Mountains and trees, the other being man made obstructions such as buildings.

Natural causes of turbulence will be evident in high wind conditions, specifically in the August to October periods of the year with predominately westerly winds descending on the Penrith Lakes area. Manmade or artificial obstructions including the buildings surrounding the HLS will be managed (removed) by the site developer.

In both cases, turbulence is not a significant factor in the safe operation of the HLS as helicopters are less impacted by turbulence than fixed wing aircraft.

5.6. Downwash

Rotor downwash is the inevitable by-product of lift required by any aircraft to fly. Heavier than air aircraft fly because the aerofoils, at any given instant, accelerate the mass of air downward that is at least equal to the mass of the aircraft. Lift is the equal and opposite reaction to that downward deflection of air.

Because the rotating wings or a helicopter are capable of generating ‘relative airflow’ solely due to the speed of the rotation, it is not necessary for helicopters to have forward speed in order to fly.

In the case of a hovering helicopter, particularly a helicopter hovering well clear of the ground, there is inevitably a column of descending air beneath the helicopter. The vertical velocity of the column of air beneath a helicopter depends on several factors including surface wind strength and direction, the main rotor radius, and the weight of the helicopter (disc loading). Larger helicopters generally create a greater down wash.

What is important in the assessment of downwash is that downwash dissipates rapidly the further you get from the source. It is this planning factor that the developer at Penrith Lakes has considered in the placement of the HLS. The flight corridor (flight path) planned for this location runs parallel to the tree line along Old Castlereagh Road. Downwash will therefore be dissipated by both distance between the hovering or operating helicopter, and the trees. Downwash will not be a factor to pedestrian outside the property to the south.

Similarly, the distance between the HLS and the flight paths and the Regatta Centre is significant. Downwash will dissipate well before any wind effect could reach the water of banks surrounding the course. Downwash will not be a factor to pedestrian outside the property to the south.

As a consequence of the site design and the orientation of the flight paths, downwash will not be a risk factor to pedestrians, vehicles or water craft around the Regatta Precinct outside the HLS immediate environs.

5.7. Operations Impact and Airspace Protection (OLS and PANS OPS)

The airspace over the site has been reviewed for compliance with obstacle limitation surfaces (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS OPS). Relevant authorities are almost certain to advise, in relation to the development, that site structures and cranes WILL NOT penetrate the OLS or the PANS OPS lower limit for the Nancy Bird Walton Western Sydney Airport or RAAF Base Richmond. The proximity of the Penrith Lakes site and the respective airports is shown at Image 6.

Image 6: Penrith Lakes and the Airport and RAAF Richmond Airport sites (Image Aust Govt Plan)

Due to the predominantly south-west/north-east orientation of the Airport runway alignment, the Obstacle Limitation Surfaces (OLS) associated with the Airport at RL 230.5, will not be impacted by the Penrith Lakes development. Image 7.

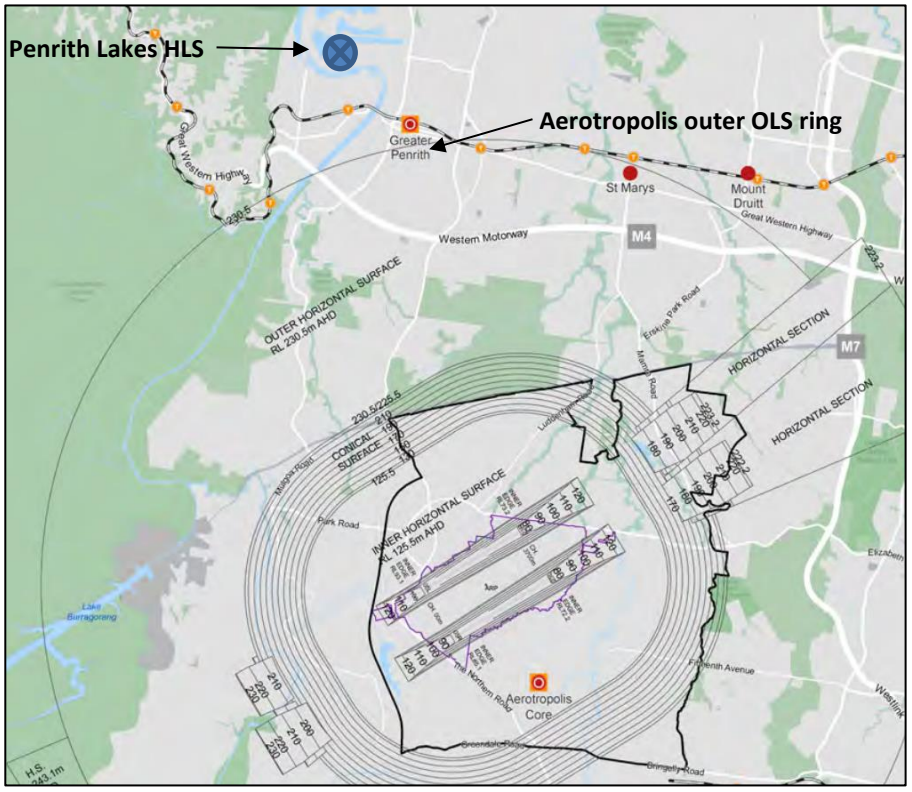

Image 7: OLS for Western Sydney (Nancy Bird Walton) Airport

The exact details of Western Sydney Airport and any associated flight paths are far from being completed. Recent contact with Air Services operations management supports the following extract from the Department of Infrastructure, Cities and Regional Development website on the Western Sydney Airport. The development of the Western Sydney Airport is well advanced. Image 8 provides an indication of the flight path studies currently being conducted.


The flight paths for Western Sydney Airport are currently being developed.

Airspace design in Australia generally starts with developing proof-of-concept flight paths. This first step was completed for Western Sydney Airport through developing indicative flight paths for the Environmental Impact Statement. These flight paths showed that Western Sydney Airport could operate safely and efficiently in the Sydney basin.

Detailed work to begin planning for the flight paths design started in 2017 and will be finalised in 2024. Before flight paths are finalised, the proposed design will be open for public consultation as part of the environmental assessment. This is expected to take place around 2021.

Image 8: Flight path status extract from DIRD Western Sydney Airport site

The flight paths and airspace associated with the Western Sydney Airport were discussed with all relevant stakeholders at a meeting between:

- Department of Infrastructure Transport, Regional Development and Communications
- Civil Aviation Safety Authority
- AirServices Australia
- Western Sydney Airport Planning Authority
- Sydney Helicopters
- Colliers International (Project Managers)
- Urbis International (Urban Planners)
- AviPro (Aviation Consultants - HLS and Operations)

During this meeting it was considered that the positioning of the HLS and subsequent flight operations into/from the site, would not impact the design or use of the Western Sydney Airport airspace or flight paths. This was expected as this was a core reason for site selection.

5.7.1. Operations Impact Summary

The Nancy Bird Walton Airport runway directions are 050/230 degrees magnetic and oriented in a way that will not be impacted by the development of the Penrith Lakes site nor from helicopter operations into/from the site. Equally, due to the distance between the RAAF Richmond runway complex and the Penrith Lakes site and the generally east/west runway alignment, there will be NO IMPACT on the development and operations of RAAF Richmond caused by the building of the Penrith Lakes HLS development.

5.8. Impact of Penrith Lakes HLS on Nepean Hospital HLS Operations

Nepean Hospital has one operational HLS and another currently undergoing commissioning by AviPro. The distance between the Hospital HLS and the Penrith lakes site is 10.2km. As with normal air traffic coordination between aircraft, helicopters using the Penrith lakes HLS will broadcast their intentions by radio. This will be the same for medical helicopters using the Nepean Hospital HLS. Given the distance and established communication procedures, the Penrith Lakes HLS development WILL NOT impact flight operations into/from the Nepean Hospital HLS.

Image 9: Nepean Hospital tower and new HLS

6. SEAR REQUIREMENT 2: HLS IMPACTS FROM ADJOINING LAND USE

6.1. Site Location

The procurement of the Penrith Lakes site was a result of a comprehensive selection process. Criteria for the selection included security from potential adjacent land use impacting flight operations. As a consequence of this process, Penrith Lakes with an east/west aligned flight path design was considered the most suitable outcome.

The remoteness of the site and the distance from established residential areas were major factors in the selection of the site. The contributing factors and considerations in the robustness of this site as an HLS included:

a. the orientation of the flight paths east/west;
b. the nature vegetation protection to the south, along Old Castlereagh Road;
c. the distance between the flight path and the Regatta Centre rowing course and spectator areas; and
d. the distance from residential areas.

Image 10: Isolation of the proposed HLS

6.2. Adjoining Land Use

Adjoining land use for the site includes the Sydney International Regatta Centre to the north and a potential industrial and business park to the south.

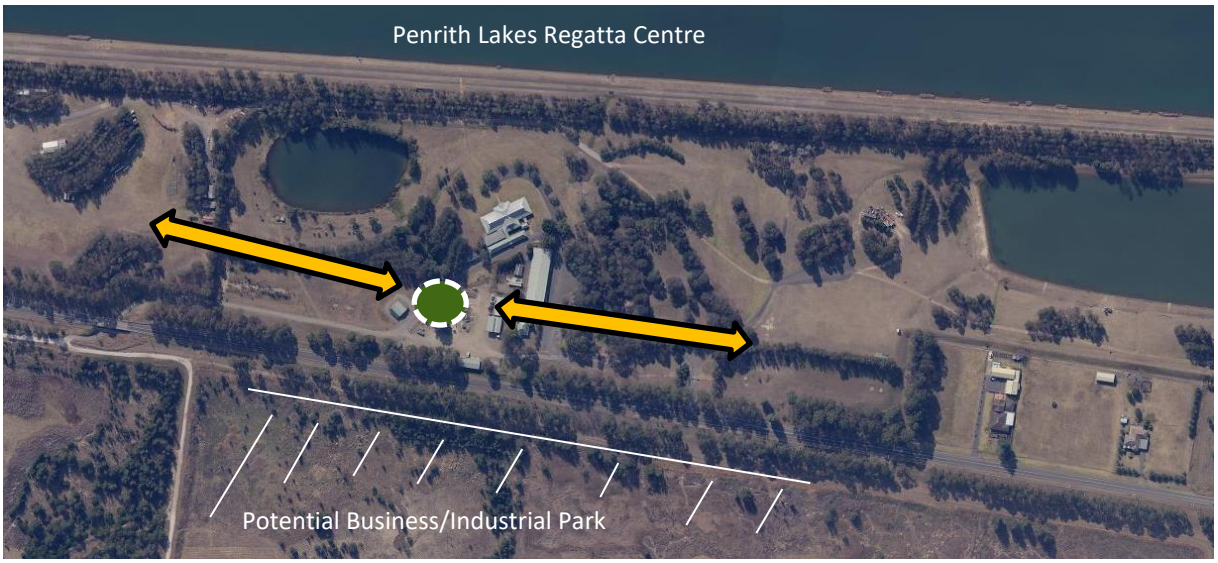

Image 11: Adjoining land use illustration

Developments on the Regatta Centre side of the HLS is unlikely and the orientation of the flight paths negates the impacts of any structures or cranes. Equally, developments to the south in the proposed industrial and business park to the south will not impact the operations of the HLS.

From a noise management perspective, the existing tree line along Old Castlereagh Road and the trees around the HLS will minimise helicopter noise impact.

6.3. Specific DPIE Requests – International Regatta Centre

DPIE has requested specific items be addressed. In summary, the impact of the HLS itself will be nil to minimal. It is a ground-based facility that hosts helicopter operations.

The following impacts of helicopter operations have been addressed individually for clarity. Importantly, the frequency of use of the Regatta Centre for major events needs to be considered when assessing the actual impact any neighbouring activity may have.

6.3.1. Noise – prevailing wind

The impact of noise on activities at the Regatta Centre will be fully dependant on the prevailing winds. This site has been selected due to the predominately east/west prevailing wind direction and therefore the impact of noise would be significantly reduced.

6.3.2. Noise – helicopter size

The size of the helicopter is also a determining factor in the measurement of noise. Sydney Helicopters' main fleet will comprise of smaller or light type helicopters. Helicopters identical to the media helicopters used all over Sydney including for major events at the Regatta Centre. The Company does operate some medium sized helicopters that are contracted to seasonal fire operations.

Image 12: Typical light helicopter

During fire of flood emergencies, it can be expected that heavier helicopters operated for the Rural Fire Service, National Parks and Wildlife Service, NSW State Emergency Service, critical care Ambulance aeromedical and rescue and potentially Police may use the site.

By way of familiarisation with operating helicopters in the vicinity of sensitive areas, Sydney Helicopters have been operating in close proximity to the Rosehill Gardens Race Course for over 25 years (no more than 300m away from the stables) without a single complaint or objection from the horse racing community. As can be imagined, these thoroughbreds are priceless and there were no complaints or incidents.

Additionally, the event broadcaster contracted the helicopters to film major race day events without incident, such is the minimal impact these light helicopters have.

6.3.3. Vibration

The vibration coming from the light helicopters illustrated in Image 12 is minimal. The Regatta Centre will be used to the types of helicopters operated by Sydney Helicopters as they are predominately the type used by the media.

Similar to noise, the prevailing wind will also reduce the impact of any vibration on neighbouring properties including the Regatta Centre. As with noise, the concurrent use of the Regatta Centre for major events and the frequency of use of the HLS needs to be considered.

As stated, Sydney Helicopters have been operating in close vicinity to the Rosehill Gardens Race Course for over 25 years without a single complaint or objection from the horse racing community.

6.3.4. Wind

The impact of the prevailing wind has been addressed in part 5.2.1 and 6.3.1. The prevailing wind will minimise noise and vibration. It also aligns the normal flight paths so that flight over the Regatta Centre can be avoided for normal approach/departures from the HLS.

6.3.5. Air Turbulence

It is assumed that the use of the term air turbulence refers to helicopter downwash, as there is no other air disturbance created by helicopter flight. Downwash is discussed in detail at Part 5.6.

Given the selected flight path for approach departure into/from the HLS, and the negligible downwash generated, the impact of downwash (air turbulence) is nil.

When heavier helicopters use the HLS the flight path alignment and the ‘fly neighbourly’ techniques used by the pilots will minimise or eliminate the potential impact of air turbulence on the Regatta Centre.

6.3.6. Major Event Scheduling

Sydney Helicopters has already engaged with the Regatta Centre executive and discussed interoperability during major event days. This includes the use of helicopters to support the transport of visitors to the events, media coverage of the event and also the normal flight operations.

As a normal procedure, unless as part of a major event passenger charter or filming task, helicopters will not fly over the Regatta Centre. Image 11 illustrates the normal flight paths and shows the separation between normal flight operations and the Regatta Centre.

As stated, Sydney Helicopters have been operating in close vicinity to the Rose Hill Race Course for over 15 years without a single complaint or objection from the horse racing community. They know how to fly neighbourly and with appropriate sensitivity around major events.

Drone operations during major events is covered in Part 9.

6.3.7. Co-location Management Measures

As stated above, Sydney Helicopters has already engaged with the Regatta Centre executive and discussed interoperability during major event days. This relationship, including the production of fly neighbourly procedures, will be further developed.

Sydney Helicopters has been supporting major events for a number of years and is expert and proficient at engaging with event management and all relevant stakeholders for the safe and non-obtrusive conduct of flight operations over and near large crowds, infrastructure and sporting events.

6.3.8. Stakeholder engagement

In addition to the established engagement with the Regatta Centre executive, stakeholder engagement re the conduct of flight operations has occurred with:

- Department of Infrastructure Transport, Regional Development and Communications
- Civil Aviation Safety Authority
- AirServices Australia
- Western Sydney Airport Planning Authority
- Sydney Helicopters
- Colliers International (Project Managers)
- Urbis International (Urban Planners)
- AviPro (Aviation Consultants - HLS and Operations)

6.4. Summary Adjoining Land Use Impact (Reverse Sensitivity Analysis)

In summary, the selection of the site in this reasonably remote area in combination with the existing mature vegetation and flight path alignment, mitigates the impact of external developments on the operations of the HLS and also mitigates any impact of helicopter operations into or from the site.

The impact of the operation of helicopters from the site on the events of the Regatta Centre will be minimal and closely managed through the relationship between the Regatta Centre and Sydney Helicopters.

7. SEAR REQUIREMENT 3: NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK

7.1. Summary

The National Airports Safeguarding Framework (NASF) Guideline F – Managing the Risk of Intrusions into the Protected Operational Airspace of Airports – provides detailed background and guidance on the requirements and implications of infringing the OLS or PANS-OPS at airports such as RAAF Richmond and the developing Western Sydney Airports.

In general, the PANS-OPS instrument approach protection surfaces cannot be permanently penetrated under any circumstances. Ideally the OLS surfaces should not be penetrated, however if it can be demonstrated that an OLS penetration does not impact on the safe operation of aircraft and will not impose operational restrictions on the airport in order to mitigate any identified risk, then subject to CASA and aerodrome approval an obstacle may be able to remain provided the appropriate mitigation measures are in place.

From a helicopter perspective, the National Airports Safeguarding Framework (NASF) Guideline H addresses protecting strategically important helicopter landing sites. The Penrith Lakes HLS is not a strategically important site and therefore this Guideline does not apply.

7.2. NSAF as it applies to the Penrith Lakes HLS Development

The National Airports Safeguarding Advisory Group (NASAG) developed the National Airports Safeguarding Framework (NASF) as a national land use planning framework at Australian airports. The Framework requires consideration of:

a. aircraft noise,
b. protected operational airspace,
c. wildlife strike,
d. wind shear,
e. public safety areas,
f. lighting,
g. wind turbines,
h. communication,
i. navigation and surveillance systems, and
j. helicopter landing sites

Following stakeholder engagement with a number of agencies and organisations, it was considered highly unlikely that the operations of helicopters into/from this site would impact the operations of the Western Sydney Airport OLS or flight paths. The helicopter operations will be using proposed ‘free’ corridors along the axis of the Great Western Highway and M4 Motorway. The stakeholders engaged in this discussion were:

- Department of Infrastructure Transport, Regional Development and Communications
- Civil Aviation Safety Authority
- AirServices Australia
- Western Sydney Airport Planning Authority
- Sydney Helicopters
- Colliers International (Project Managers)
- Urbis International (Urban Planners)
- AviPro (Aviation Consultants - HLS and Operations)

Guideline H to the NSAF Guidelines addresses protecting strategically important helicopter landing sites. As the Penrith Lakes HLS is NOT a strategically important HLS (for example: Westmead Hospital HLS, Nepean Hospital HLS, RPA Hospital HLS or Royal North Shore Hospital HLS), the application of NSAF needs to be assessed on what aspects of the Penrith Lakes development would impact the Western Sydney Airport or RAAF Richmond.

As previously detailed in Part 5.7 of this Report, the location, development of operations into the Penrith Lakes HLS WILL NOT impact the prescribed airspace of the Western Sydney Airport or RAAF Richmond.

7.3. State Environmental Planning Policy (Western Sydney Airport) 2020

Nothing in the State Environment Policy (Western Sydney Airport) 2020 Part 3, Development Controls – Airport Safeguards, is relevant to the Penrith Lakes site.

7.4. The Western Sydney Airport Plan.

Nothing in the Western Sydney Airport Plan Part 2.2.7 is relevant to the Penrith Lakes site.

8. SEAR REQUIREMENT 4: AN AVIATION REPORT

8.1. HLS Aviation Report

The HLS Aviation Report is attached at Appendix 1.

9. SEAR REQUIREMENT 5: HLS FLIGHT PATHS AND PRECINCT DRONES

9.1. Aircraft and Remote Aerial Vehicles Interoperability

The issue at hand here is the interoperability of drones near aircraft. CASA has implemented rules for the use of drones within a minimum distance of aerodromes or airports. This is problematic for a number of reasons including:

a. An HLS is not a registered landing site and is not licenced, and
b. Not all drone operations are licenced.

The drone/aircraft interoperability issue is not restricted to sites such as the Regatta Centre, incidents and inflight confliction occurs on a regular basis. This includes in regional and urban environments. If all drone operators were licenced, they would be aware of the need to understand other airspace users and ensure the operation of their craft was conducted in a responsible manner.

The solution for the Regatta site is to ensure event organisers manage the use of drones and that the helicopter operators ensure they use agreed flight paths. This will ensure a separation between the helicopters and drones when the drones are operated by responsible/licenced operators.

Should the Regatta Centre wish to have additional filming by the helicopters, this can be accommodated and the usual coordination between helicopter pilot and drone operators would occur.

9.2. HLS Flight Paths

The HLS flight paths have been designed to parallel the Regatta Centre rowing course. Using this direction ensures a separation between the flight path and the Regatta event space.

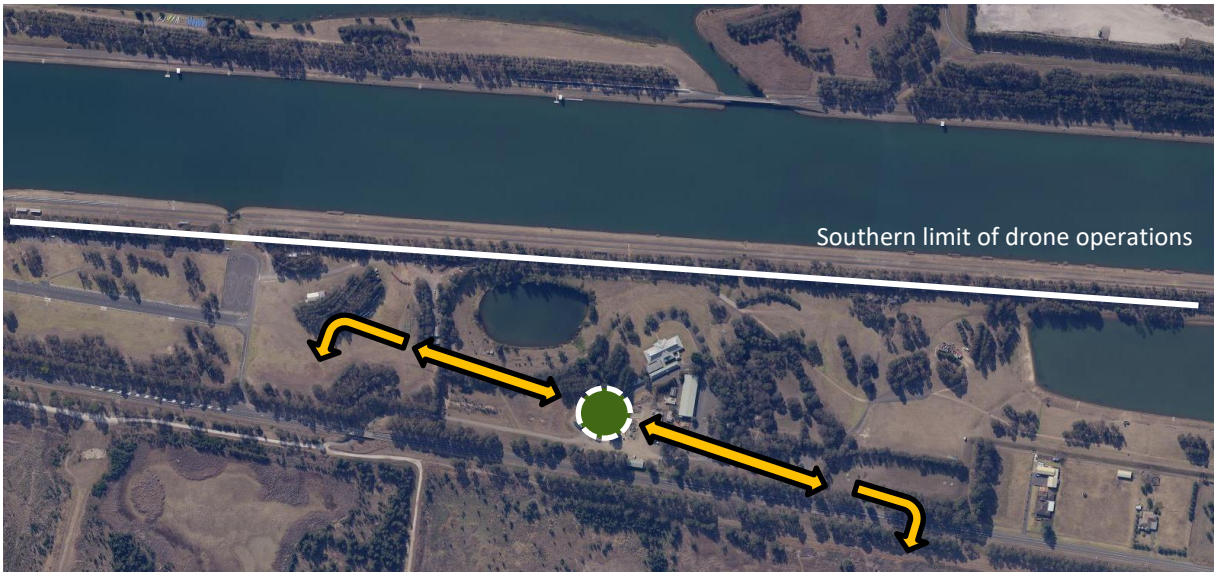

Image 13: Indicative flight path and circuits away from the Regatta Course

Keeping helicopters away from the Regatta Course during event days will ensure less conflict between air vehicles. Equally, the event managers should ensure drone operators are made aware of the HLS and presence of helicopter operations.

Harmonious aircraft/drone operations are possible and will be a matter of fact in years ahead. Interoperability is possible and should be embraced by all stakeholders.

10. CONCLUSION AND SUMMARY

10.1. Conclusion

The Penrith Lakes HLS are proposed, will not impact the airspace or flight operations at RAAF Richmond or Western Sydney Airport.

Although early planning has not finalised the airspace, early consultation with Western Sydney Airport stakeholders indicated the non-controlled flight area using the Great Western Highway and the M4 corridor will should provide unencumbered access to the proposed site.

Development or operations into/from the Penrith Lakes HLS:

- will not infringe prescribed airspace OLS of the Western Sydney Airport or RAAF Base Richmond;
- will not impact on any aviation communications, navigation and surveillance infrastructure; and
- will not impinge upon helicopter operations to and from the existing Nepean Hospital HLS.

Aviation safety will not be compromised by the development of the Penrith Lakes HLS.

The development of the Penrith Lakes HLS will not impact aviation operations of any nearby airports (Airport and RAAF Richmond) and affected flight paths of the existing Nepean HLS in accordance with the relevant sections of the National Airports Safeguarding Framework (NASF).

Operations into/from the proposed HLS have been designed in such a way that they do not impact Regatta Centre events. On the contrary, the Regatta Centre management are engaged with the proposal and reportedly are supportive.

APPENDIX 1: HELICOPTER LANDING SITE AVIATION REPORT

References:

A. CASA CAAP 92.2(2) dated February 2014

Introduction

The Basic[1] helicopter landing site (HLS) proposed for the Penrith Lakes site will support the flight operations of Sydney Helicopters. The site selection has been made considering the functionality of the HLS.

Reference A, is an advisory publication that sets out factors that may be used to determine the suitability of a place for the landing and taking-off of helicopters. Further, the application of the Reference, will enable a take-off or landing to be completed safely, provided that the pilot in command has sound piloting skills and displays sound airmanship.[2]

Components

This report has been prepared by AviPro, a division of Resolution Response Pty Ltd. AviPro have been engaged by Colliers International on behalf of Heliport Developers Pty Ltd, to provide expert and independent aviation review and commentary on the Secretary's Environmental Assessment Requirements – Aviation.

AviPro is presently engaged by a number of Australian jurisdictions to provide expert planning, operational design guidance, and regulatory compliance assessments for helicopter and aircraft operational bases and flight operations. As such, AviPro can be considered a suitably qualified aviation specialist.

The following components of the Aviation Report will be provided:

- HLS location
- HLS size, shape and layout
- TLOF detail
- Approach and departure paths
- Structural design standards
- HLS markings
- Support facilities
- Flight Operations
- Safety and risk

HLS Location

The HLS will be located on the Penrith Lakes site in the vicinity of the existing work sheds per the illustration in Images 1.1, and 1.2.

Image 1.1: HLS location

[1] Reference A. Para 7.1.3

[2] Ibid: cover page, preface.

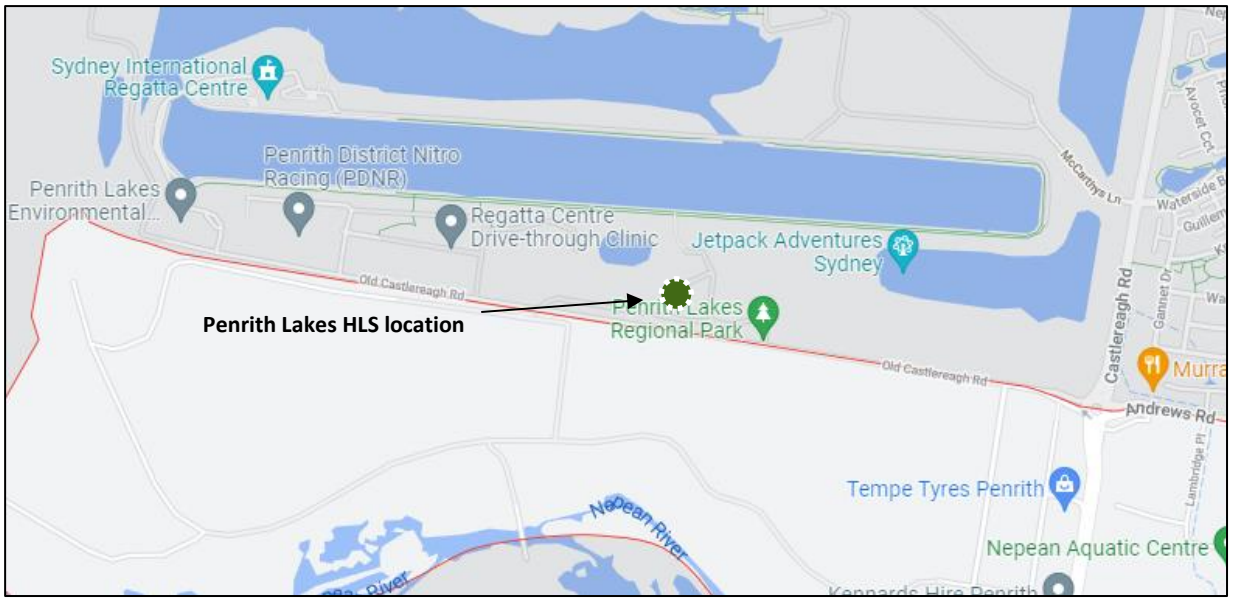

Image 1.2: HLS location

The location within the site has been selected due to ground slope, surrounding trees, buildings and obstructions. This is the least invasive siting for the HLS and once prepared, will meet the siting requirements of a Basic HLS.

HLS Size, Shape and Layout

The size of the HLS will meet the expected operations of the Bell 412 helicopter, the expected largest helicopter to use the site. As this is a Basic HLS, the size is not mandated by CASA. The developer however, has elected to use a factor of 0.83 times the overall length of the helicopter when operating (D factor). This translates into 0.83 x 17.10m = a diameter of 14.19m, rounded down to 14m of sealed, load bearing surface.

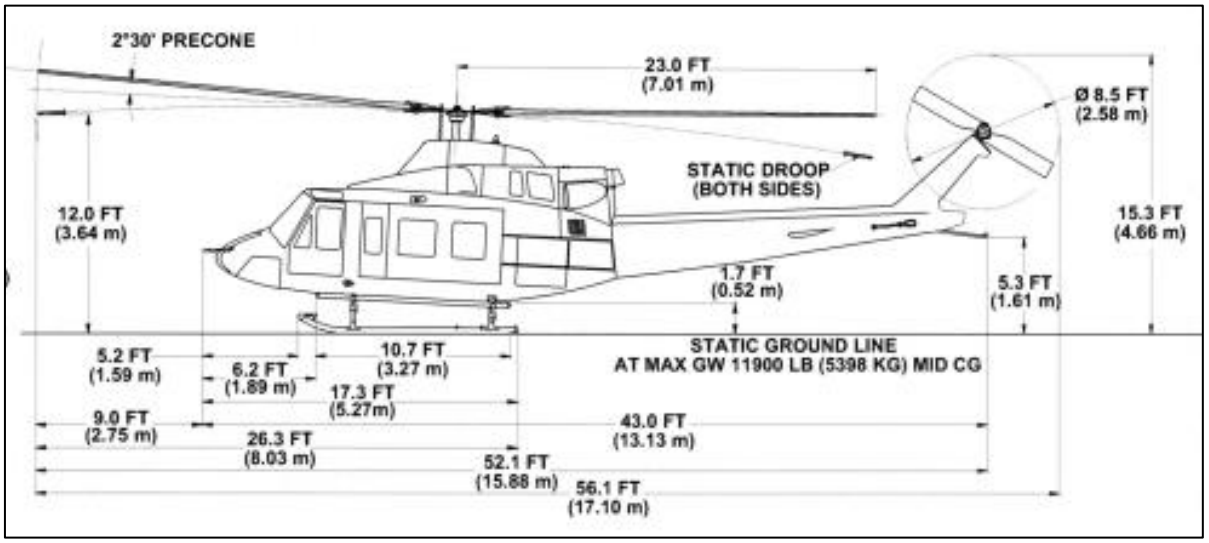

Image 1.3: Bell B412 dimensions

The HLS will be a sited on flat ground in an open area. Image 1.4 illustrates the proposed location of the HLS.

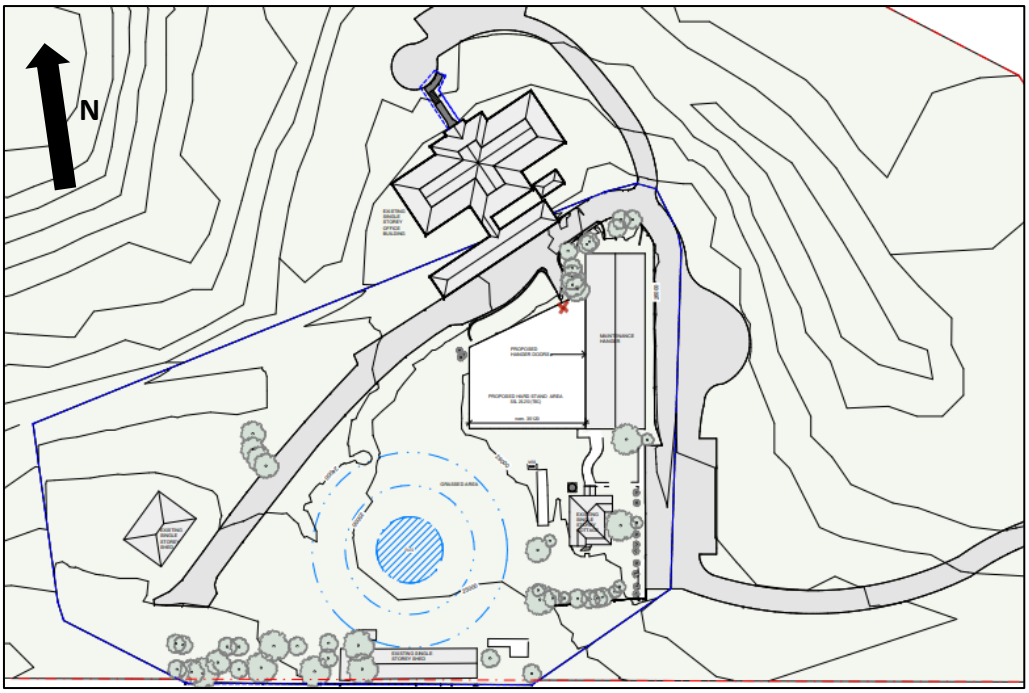

Image 1.4: HLS layout

Image 1.5 details the proposed demolitions to ensure:

- Sufficient manoeuvring space for a helicopter
- Safe and obstruction free approach and departure paths, and
- Sufficient distance from potential onlookers (outside the property boundary).

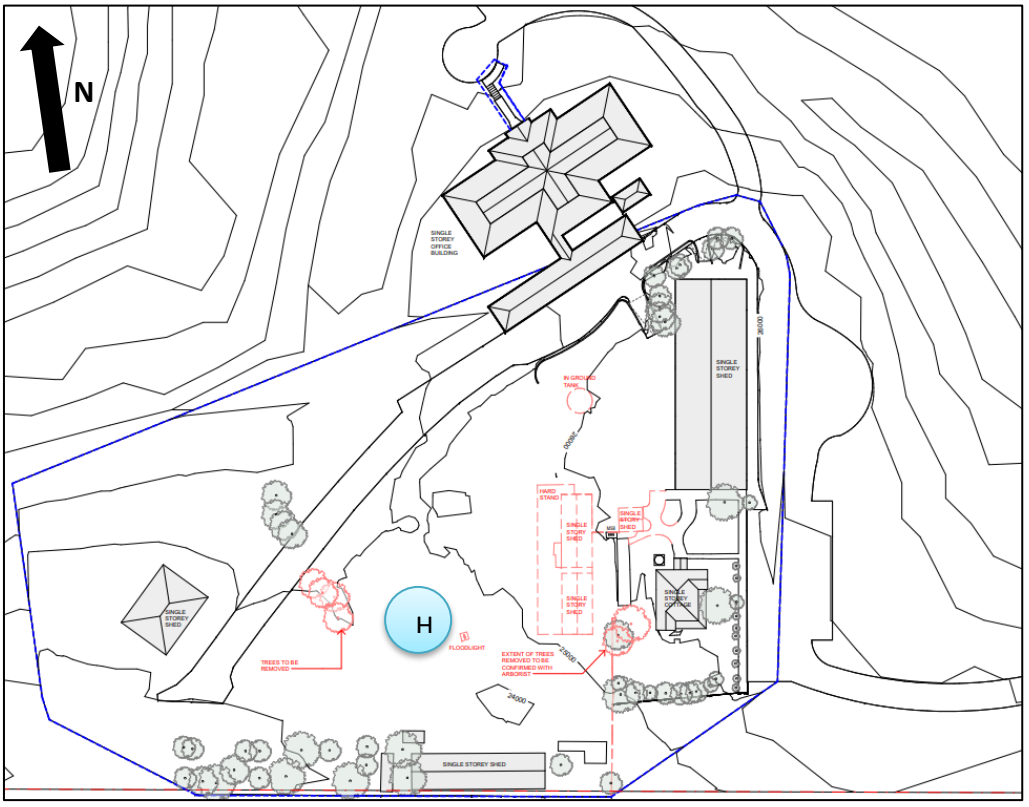

Image 1.5: HLS layout with planned demolitions

The intended demolitions/tree removal facilitates opening the available space for the planned TLOF.

TLOF Detail

The touch down and lift-off area (TLOF) is the defined area on an HLS in which a helicopter may touchdown or lift-off[3]. In this case, the TLOF has been located in a position that has flight path access (generally east/west) and provides for sufficient space for the helicopter to safely position of take-off and land. The TLOF will be constructed to meet the static loads of the Bell B412 helicopter. This means a static load capacity of 5.5 tonne.

Image 1.6 below illustrates the position and shape of the TLOF. The selected area also has a tree line and fence along the southern border and this will ensure security from any pedestrians on Old Castlereagh Road, in the most unlikely event that there are any.

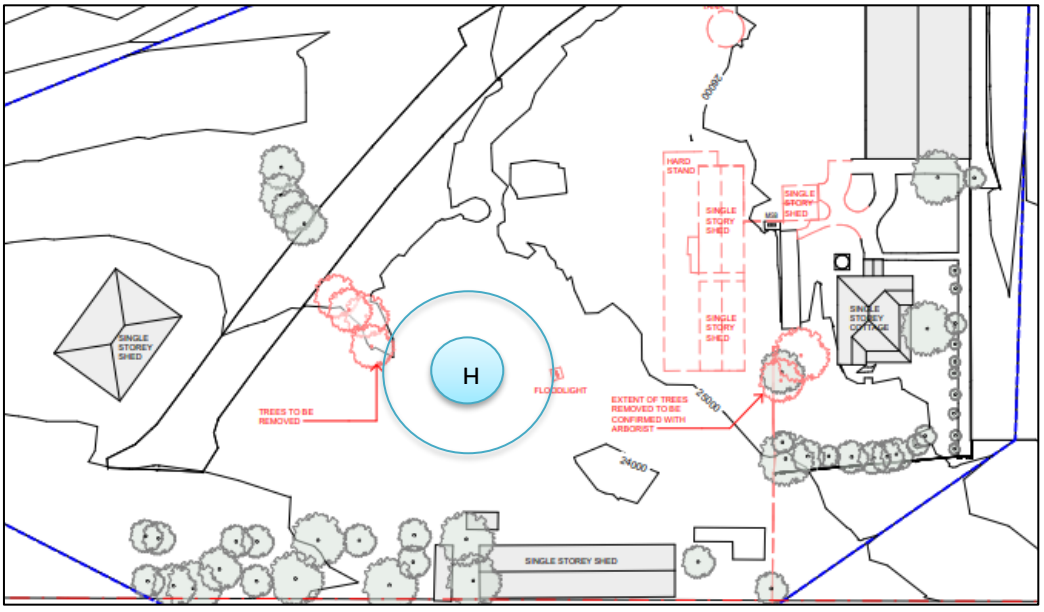

Image 1.6: TLOF

Approach and Departure Paths

Image 1.7 illustrates the preferred approach and departure paths, generally east/west through the property. It will have sufficient obstacle free approach and departure gradients to provide for safe helicopter operations into and out of the site under all expected operational conditions.

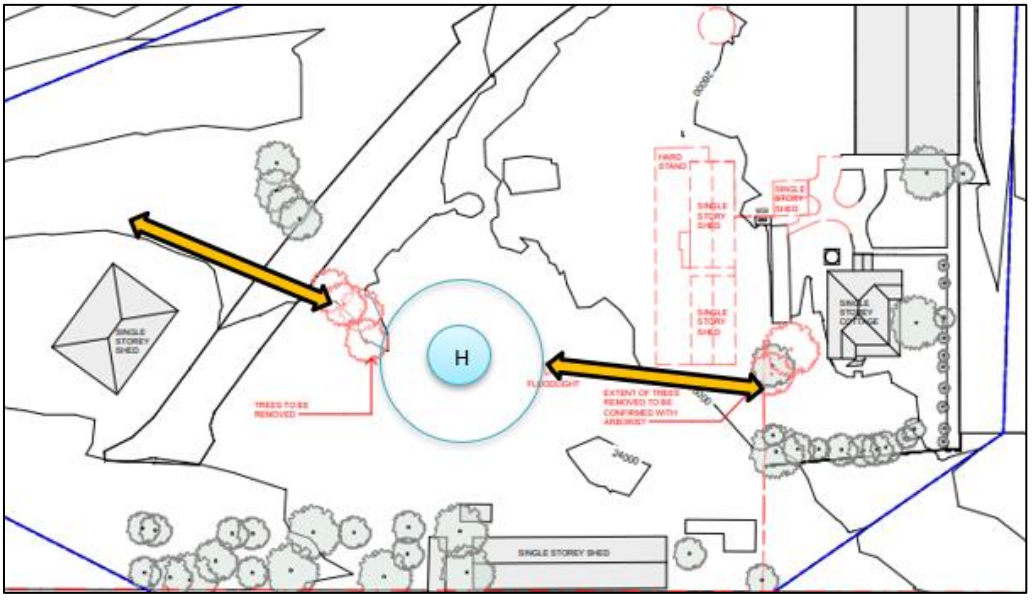

Image 1.7: Approach and departure paths

[3] Reference B, TLOF definition.

The developer has a plan to remove buildings and trees (red elements in Image 1.7). This activity will open the proposed HLS to facilitate the acceptable approach and departure gradients needed for safe operations.

The generally east/west orientation of the approach/departure paths will greatly minimise the effects of any mechanical turbulence. Analysis of the Penrith Lakes annual wind rose supports the orientation of the approach/departure paths.

Structural Design Standards

CASA does not regulate the size or structural design standards for a Basic HLS. A grassed area or a concrete pad would equally meet the requirements as they are determined by the site operator. In this case however, the operator has elected to ensure a safe HLS for the B412 helicopter through the following:

- Static load bearing capacity of 5.5 tonne
- A TLOF dimension of 14m
- Sufficient approach and departure path clearance through building/tree removal

HLS Markings

CASA does not regulate and marking standards for a Basic HLS.

Support Facilities

The developer plans to utilise existing buildings and sheds to support helicopter operations at the site. This will include apron areas for the conduct of ground runs and also sheltered areas for the conduct of helicopter maintenance.

It is understood an appropriately constructed fuel facility will be positioned with all environmental planning considerations addressed.

Flight Operations

The HLS is planned for day time operations. As a consequence, lighting has not been addressed in this report.

Given the proximity of this HLS to the Sydney International Regatta Centre, interoperability procedures will need to be considered. These will include the presence of drones in support of Regatta Centre operations and a fly neighbourly practice where helicopters do not over fly events in the Regatta precinct.

Image 1.8: Approach and departure paths and Regatta operations

Safety and Risk

The operator will complete a risk assessment of the site to ensure it meets the risk appetite of the organisation.

Once the items identified for demolition have been removed, and the TLOF hardstand constructed, the site will be suitable for flight operations.