



Health Infrastructure

AVIATION IMPACT ASSESSMENT REPORT



AIRSPACE IMPLICATIONS DUE TO THE CESSNOCK HOSPITAL REDEVELOPMENT

PREPARED BY:





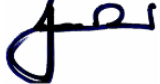
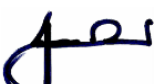
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This Report on the airspace implications, both during and following construction of the Cessnock Hospital Redevelopment is prepared for NSW Health Infrastructure, directed by Turner & Townsend, by Resolution Response Pty. Ltd. ABN: 94 154 052 883, trading as 'AviPro'.

The Report relates to the coordination aspects associated with prescribed/protected airspace at Cessnock Aerodrome due to the establishment and site design of the proposed Cessnock Hospital Redevelopment. 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 the proposed Cessnock Hospital Redevelopment at 24 View Street, Cessnock on the aviation operations into and out of Cessnock Aerodrome. The report analyses the likely impact of the proposed building envelope, and any associated, future construction cranes, on aviation activities.

The following key outcomes arose from the analysis:

- The proposed Cessnock Hospital Redevelopment building will not intrude into the Cessnock Aerodrome Obstacle Limitation Surface (OLS).
- The proposed Cessnock Hospital Redevelopment building's construction crane(s) may intrude into the Cessnock Aerodrome OLS.
- The proposed Cessnock Hospital Redevelopment building's construction crane(s) will need to be assessed by the Civil Aviation Safety Authority (CASA) if it intended that it/they are to operate above RL 109.
- The proposed Cessnock Hospital Redevelopment building's construction crane(s) will require aviation-standard obstacle lighting if it intended that it/they are to operate above RL 109.
- No hospital or other strategically import Helicopter Landing Site (HLS) will be impacted by the Cessnock Hospital Redevelopment.

The proposed building envelope, and any future construction cranes on the site, will not impact aviation safety in relation to Cessnock Aerodrome.

Cranes must be assessed by CASA if it is intended that they operate above RL 109. The project must ensure that any proposed Cessnock Hospital Redevelopment construction tower crane(s) is/are fitted with CASA-standard obstacle lighting. If operating at night or in low visibility, the project must ensure that any proposed Cessnock Hospital Redevelopment construction mobile crane(s) is/are fitted with CASA-standard obstacle lighting.

2. BACKGROUND

2.1. Introduction

This Aviation Impact Assessment Report has been prepared by AviPro on behalf of Health Infrastructure to assess the potential environmental impacts that could arise from the redevelopment of the Cessnock Hospital Health Service at 24 View Street, Cessnock.

This report has been prepared to assess, analyse and advise on the airspace implications of the development.

This report accompanies a Review of Environment Factors that seeks approval for the construction and operation of a new two-storey clinical services building including:

- Demolition of select existing structures.
- Construction of a new hospital building on the site's northern portion.
- New kerb, gutter and road resurfacing on Jurd Street.
- Realignment of internal roads and a new primary vehicular and pedestrian entrance to the hospital campus from Jurd Street.
- Refurbishment of the existing at-grade car park.
- Installation and realignment of selected services.
- Installation of ancillary development including, but not limited to, lighting and signage.
- Landscaping.

For a detailed project description, refer to the Review of Environmental Factors prepared by Ethos Urban.

2.2. Site Description

The site is located at 24 View Street, Cessnock, in the Cessnock Local Government Area. It is occupied by Cessnock Hospital Health Service, a district-level hospital in the Hunter New England Local Health District. The site comprises the following lots:

- Lot 2 DP1173784
- Lot 7 DP13203
- Lot 8 DP13203
- Lot 1 DP103663
- Lot 10 DP5442
- Lot B DP103664
- Lot 2 Section 20 DP5442
- Lot 1 DP254743
- Lot 11 DP882585

An aerial image of the site is shown at [Figure 1](#).



Figure 1: The Site

2.3. Review of Environmental Factors (REF) Compliance

No aviation-specific conditions have been applied to this REF. In preparing this report, the following general compliance requirements have been addressed as described in [Table 1](#) below.

General Compliance Description:	Relevant Section
Prior to commencement of construction, review and confirm that aerodrome operations at Cessnock Aerodrome will remain of safe operation during construction.	See Sections 4.5 to 4.8
Prior to commencement of construction, review and confirm that helicopter operations to any adjacent, strategically important Helicopter Landing Site will remain of safe operation during construction.	See Section 4.9
Consider the expected construction methodology, including lighting and cranes, and where necessary, recommend any amendments to the construction management to ensure safe, on-going aerodrome and HLS operations.	See Sections 4.10 and 4.11

Table 1: General Compliance - Aviation

2.4. Methodology

Criteria from all relevant references were assessed, including:

- Australian Department of Infrastructure, Transport, Regional Development, Communication and the Arts: National Airports Safeguarding Framework (NASF);
- Australian Civil Aviation Safety Authority Manual of Standards Part 139;
- International Civil Aviation Organisation (ICAO) Annex 14 to the Convention on Civil Aviation – Aerodromes – Volume I: Aerodrome Design and Operations

2.5. Consultation

In preparing this report, consultation was undertaken on 28-29 June 2023 with Tony Allen, Airport Coordinator for the Cessnock City Council.

2.6. Explanation of Terms

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

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.

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.

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.

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.

2.7. Applicable Abbreviations

Acronym	Meaning
AC	Advisory Circular (issued by an aviation regulator)
ACFT	Aircraft
ACMA	Australian Communication and Media Authority
AD	Aerodrome
AGL	Above Ground Level (Height)
AHD	Australian Height Datum
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
ALARP	As Low As Reasonably Practicable
Alt	Altitude
AMSL	Above Minimum Sea Level
ANEF	Australian Noise Exposure Forecast
ANSP	Airspace and Navigation Service Provider
APCH	Approach
ARP	Aerodrome Reference Point
AsA	Airservices Australia
ASDA	Accelerated Stop Distance Available
ATC	Air Traffic Control
ATM	Air Traffic Management
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulation (1998) Australia
Cat	Category
CBD	Central Business District
CG	Climb Gradient
CMP	Construction Management Plan
CNS/ATM	Communications, Navigation, Surveillance / Air Traffic Management

Acronym	Meaning
CTAF	Common Traffic Advisory Frequency (5 nm. Radius, ground level to 3,000')
DAH	Designated Airspace Handbook
DAP	Departure and Approach Procedures
DEP	Departure
DER	Departure End of Runway
DH	Decision Height
DITRDCA	Department of Infrastructure, Transport, Regional Development, Communications and the Arts (Commonwealth)
DME	Distance Measuring Equipment
DPIE	Department of Planning, Industry & Environment (NSW)
EIS	Environmental Impact Statement
ELEV	Elevation (above mean sea level)
ENE	East North East
ERSA	EnRoute Supplement Australia
ESE	East South East
FAA	Federal Aviation Administration (USA)
FAF	Final Approach Fix
FAP	Final Approach Point
ft	Feet
GNSS	Global Navigation Satellite System
GP	Glide Path
GPS	Global Positioning System
HIAL	High Intensity Approach Light
HLS	Helicopter Landing Site
IAS	Indicated Air Speed
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IHS	Inner Horizontal Surface, an Obstacle Limitation Surface
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions - requiring flight under IFR
ISA	International Standard Atmosphere
IVA	Independent Visual Approach
km	Kilometres
kt	Knot
LAT	Latitude
LDA	Landing Distance Available
LEP	Local Environment Plan
LGA	Local Government Area
LiDAR	Light Detection and Ranging
LLZ	Localizer
LNAV	Lateral Navigation
LONG	Longitude
LSALT	Lowest Safe Altitude
M	Metres
MAPt	Missed Approach Point
MDA	Minimum Descent Altitude
MDH	Minimum Descent Height
MGA94	Map Grid Australia 1994
MOC	Minimum Obstacle Clearance
MOCA	Minimum Obstacle Clearance Altitude
MOS	Manual Of Standards

Acronym	Meaning
MSA	Minimum Sector Altitude
MVA	Minimum Vector Altitude
NASF	National Airports Safeguarding Framework
NDB	Non-Directional Beacon
NE	North East
NM	Nautical Mile (= 1.852 km)
NNE	North North East
NNW	North North West
NOTAM	Notice to Airmen
OCA	Obstacle Clearance Altitude
NVG	Night Vision Goggle(s)
OCH	Obstacle Clearance Height
OHS	Outer Horizontal Surface, an Obstacle Limitation Surface
OLS	Obstacle Limitation Surface
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
PAPI	Precision Approach Path Indicator
PBN	Performance Based Navigation
PRM	Precision Runway Monitor
RAAF	Royal Australian Air Force
REF	Reference
RL	Relative Level
RNAV	Area Navigation
RNP	Required Navigation Performance
RPT	Regular Public Transport
RTCC	Radar Terrain Clearance Chart
RWY	Runway
SARPS	Standards and Recommended Practices developed by ICAO and promulgated in the Annexes to the Convention of International Civil Aviation
SID	Standard Instrument Departure
SSDA	State Significant Development Application
SSR	Secondary Surveillance Radar
STAR	Standard Arrival
TAR	Terminal Approach Radar
TAS	True Airspeed
THR	Threshold
TMA	Terminal Area
TNA	Turn Altitude
TODA	Take-off Distance Available
TORA	Take-Off Runway Available
VFR	Visual Flight Rules
VHF	Very High Frequency (radio)
VIS	Visual
VMC	Visual Meteorological Conditions - allowing flight under VFR
VNAV	Vertical Navigation
VNC	Visual Navigation Chart
VOR	Very High Frequency Omni-directional Range
VSS	Visual Segment Surface
VTC	Visual Terminal Chart
WAC	World Aeronautical Chart
WAM	Wide-Area Multilateration
WNW	West North West
WSW	West South West
WGS84	World Geodetic System 1984

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1	The Site
2	Example of Obstacle Limitation Surfaces
3	Example of PANS-OPS Surfaces
4	Example of a Radar Terrain Clearance Chart
5	Location of the Proposed Cessnock Hospital Redevelopment
6	Elevation of the Proposed Building
7	Cessnock Aerodrome General Airspace
8	Cessnock Aerodrome Obstacle Limitation Surfaces

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/HLSs in order to be able to understand the analysis later in this report. Section 3 provides this general overview.

3.2. Airspace Regulation in Australia - Aerodromes

Approvals will be required if prescribed airspace could be impinged. The normal contact for this process is through the operator of the airport.

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, and the airspace associated with the Radar Terrain Clearance Chart (RTCC) must be considered.

The origins for regulation of non-Government leased airports in Australia emanates from Civil Aviation Safety Regulation (CASR) Part 139.

CASR Part 139 has been supported by the Commonwealth Department of Infrastructure, Transport, Regional Development, Communication and the Arts' development of Guidelines for protecting aviation infrastructure once built. This suite of documentation is known as the National Airports Safeguarding Framework (NASF).

3.3. Helicopter Landing Sites in Australia – Regulation

Helicopter Landing Sites (HLSs) are not regulated in Australia. Protection of existing HLSs is achieved through observance of Guideline H of the NASF (See [Section 2.4](#)).

3.4. State Government Requirements - Aerodromes

The legislative/regulatory requirements relating to aerodromes in NSW are contained in the Environmental Planning and Assessment Regulation, Schedule 3, Part 2, Clause 4 "Aircraft facilities".

3.5. Local Government Requirements - Aerodromes

Requirements emanate from the Civil Aviation Safety Regulations Part 139, and the Part 139 Manual of Standards (MOS). Requirements are found in either the Local Environment Plan (LEP) or the Development Control Plan (DCP) of the Local Government Area (LGA).

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 2](#) below:

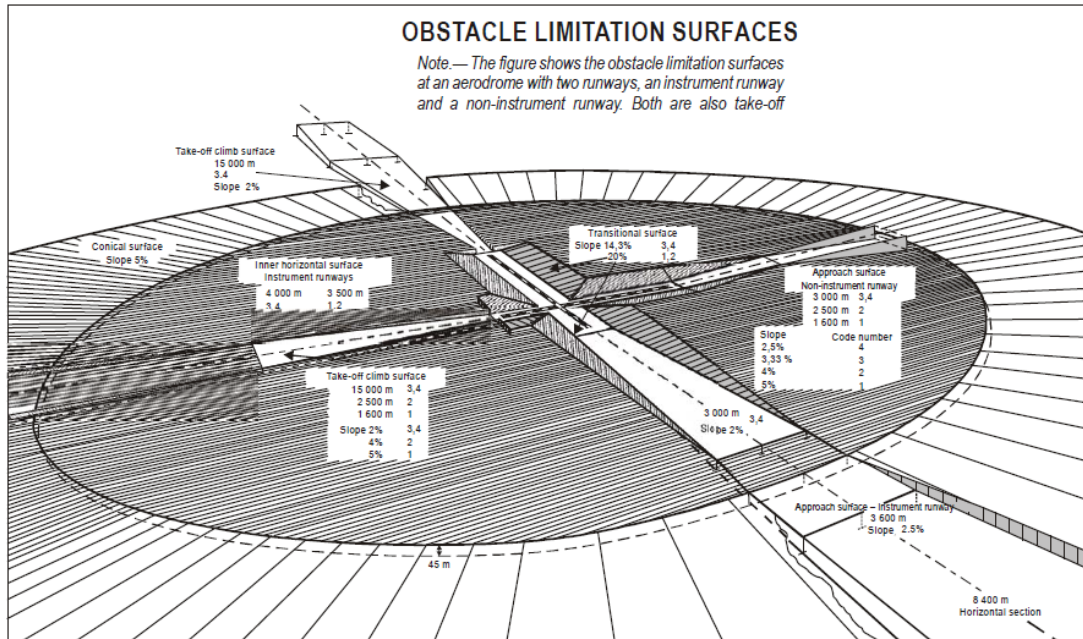


Figure 2: Example of Obstacle Limitation Surfaces

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

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

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

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

PANS-OPS surfaces are constructed differently to OLS however they serve a similar purpose. An example of PANS-OPS surfaces is in [Figure 3](#) below:

4. SPECIFIC PROPOSED DEVELOPMENT CONSIDERATIONS

4.1. The Proposed Development Location

The location of the proposed Cessnock Hospital Redevelopment is shown in [Figure 5](#) below. It is approximately 5km from the Cessnock Aerodrome.

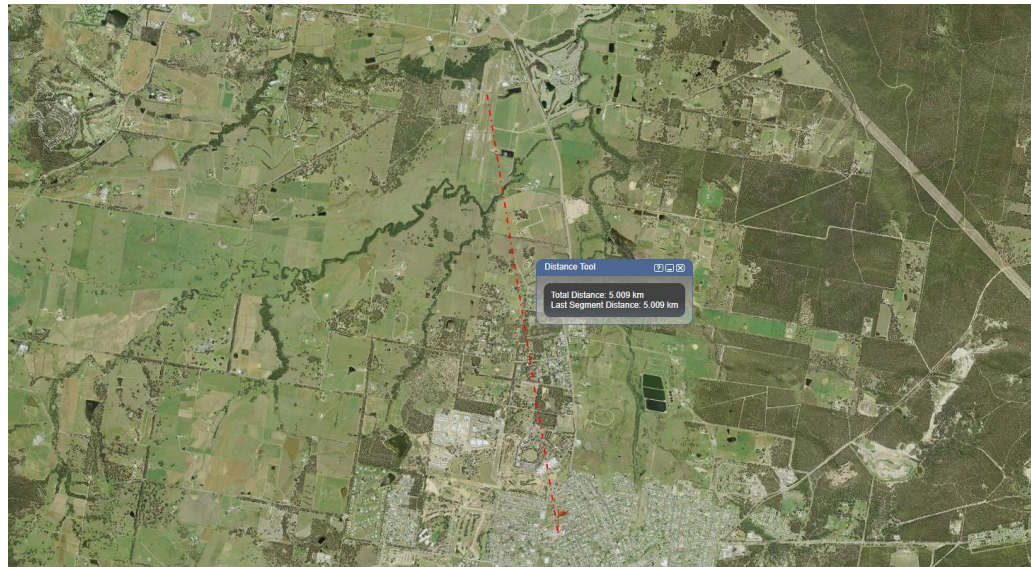


Figure 5: Location of the Proposed Cessnock Hospital Redevelopment

4.2. The Proposed Development Elevation

The ground level in the vicinity of the proposed Cessnock Hospital Redevelopment site ranges from 80-85m AHD. The proposed building envelope is up to RL 97.16 (see [Figure 6](#) below) to the highest flue. Airspace assessment for the building will therefore need to be undertaken up to RL 97.16.

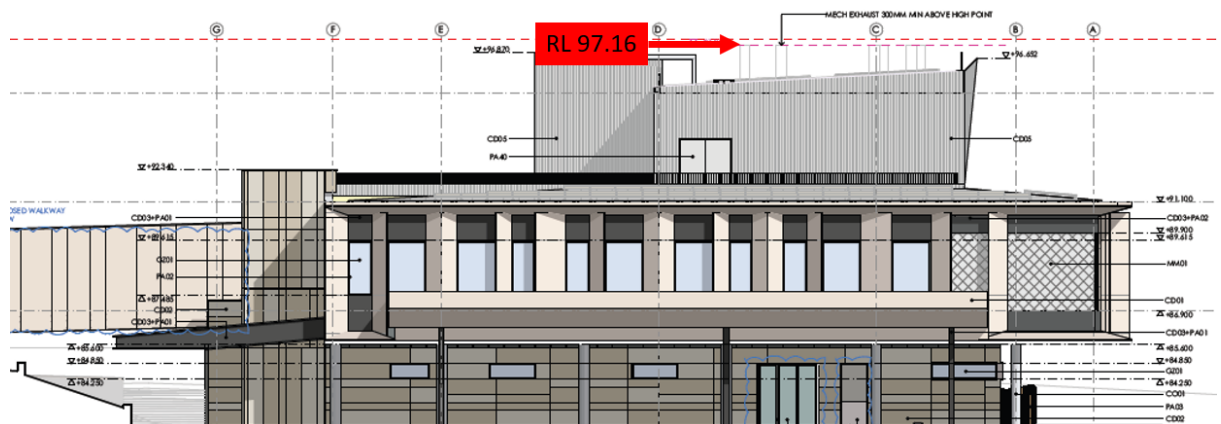


Figure 6: Elevation of the Proposed Building

4.3. General Airspace Overhead the Proposed Development Site

The proposed Cessnock Hospital Redevelopment sits outside controlled airspace but within the Common Traffic Advisory Frequency (CTAF) area of Cessnock Aerodrome. See [Figure 7](#) below.

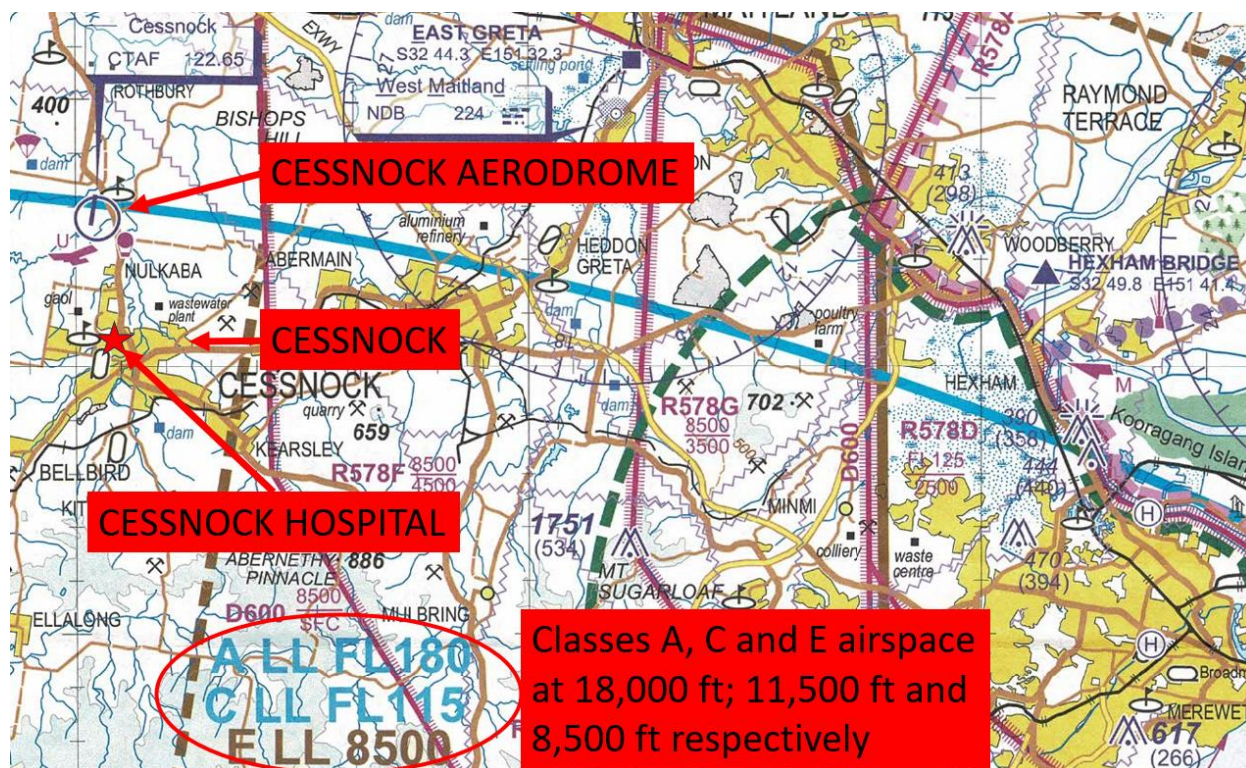


Figure 7: Cessnock Aerodrome General Airspace

4.4. Cessnock Local Environment Plan (LEP) 2011

Cessnock LEP Clause 7.4 **Airspace operations** states that:

- (1) The objectives of this clause are as follows—
 - (a) to provide for the effective and ongoing operation of the Cessnock Airport by ensuring that such operation is not compromised by proposed development that penetrates the Limitation or Operations Surface for that airport,
 - (b) to protect the community from undue risk from that operation.
- (2) If a development application is received and the consent authority is satisfied that the proposed development will penetrate the Limitation or Operations Surface, the consent authority must not grant development consent unless it has consulted with the relevant Commonwealth body about the application.
- (3) The consent authority may grant development consent for the development if the relevant Commonwealth body advises that—
 - (a) the development will penetrate the Limitation or Operations Surface but it has no objection to its construction, or
 - (b) the development will not penetrate the Limitation or Operations Surface.
- (4) The consent authority must not grant development consent for the development if the relevant Commonwealth body advises that the development will penetrate the Limitation or Operations Surface and should not be constructed.

(5) In this clause—

Limitation or Operations Surface means the Obstacle Limitation Surface or the Procedures for Air Navigation Services Operations Surface as shown on the Obstacle Limitation Surface Map or the Procedures for Air Navigation Services Operations Surface Map for the Cessnock Airport.

relevant Commonwealth body means the body, under Commonwealth legislation, that is responsible for development approvals for development that penetrates the Limitation or Operations Surface for the Cessnock Airport.

4.5. The Cessnock Aerodrome OLS Overlay

The Cessnock Aerodrome OLS (south) is depicted in [Figure 8](#) below. The location of the Cessnock Hospital is also indicated. Above the proposed development, the Cessnock Aerodrome OLS lower limit is, in the main, 109m above mean sea level (RL109 or 109m AHD), and slightly higher in the most southern portion of the lot.

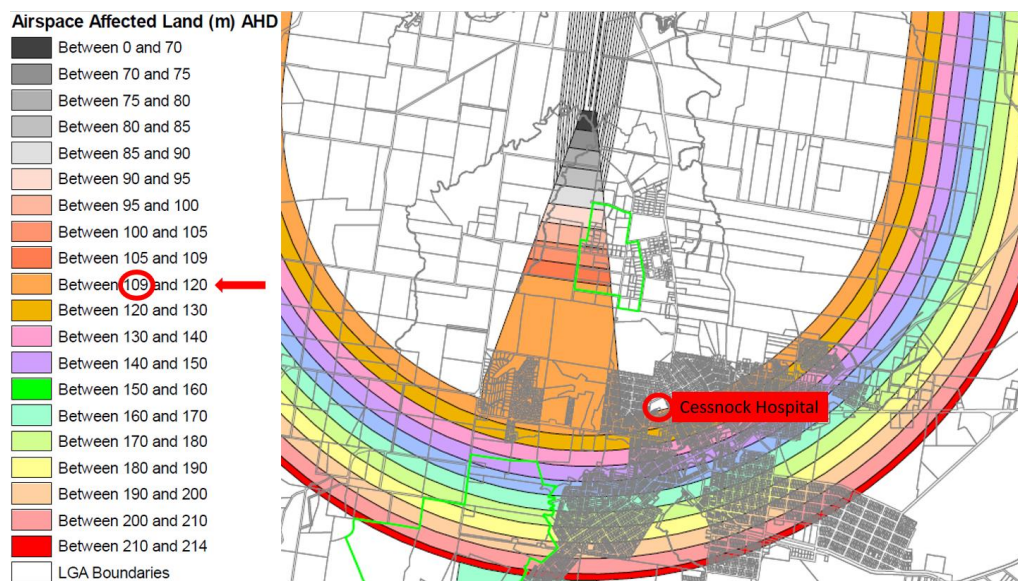


Figure 8: Cessnock Aerodrome Obstacle Limitation Surfaces

4.6. Proposed Building within the Cessnock Aerodrome OLS

The proposed Cessnock Hospital Redevelopment building will not be within the Cessnock Aerodrome OLS.

4.7. Proposed Building within the Cessnock Aerodrome PANS-OPS Surfaces

The Cessnock Aerodrome does not have any associated instrument approaches thus it does not have any PANS-OPS surfaces.

4.8. Proposed Building within the Cessnock Aerodrome RTCC

The Cessnock Aerodrome does not have an RTCC.

4.9. Helicopter Landing Site Considerations

It is normal for a hospital development or redevelopment to consider the impact of the new building(s) and construction cranes on any adjacent hospital (or other strategically important) Helicopter Landing Site (HLS).

Guideline H of the NASF provides relevant detail of what is required. There is no hospital or other strategically important HLS in proximity to the Cessnock Hospital Redevelopment. Consideration of HLS protection requirements is therefore not applicable.

4.10. Construction Crane Considerations

As a construction crane will be above the elevation of the Cessnock Hospital Redevelopment building, those crane elevations will need to be reviewed in order to determine whether they must be assessed by CASA and given formal approval by Cessnock Aerodrome's operator to be allowed to be erected.

If a crane enters the OLS (at RL 109) it will need to be illuminated. It should be noted that there are no specified lighting requirements for mobile cranes however a similar level of safety should be applied for these as would be applied for tower cranes.

As a minimum for all tower [hammerhead] 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 fluoro lights are to be LED weather proof emergency fluoros controlled via a PE cell with a minimum 90 minute battery back-up.

4.11. Deductions: Airspace, Cranes, and Obstructions

The following key deductions can be made:

- The proposed Cessnock Hospital Redevelopment building will not intrude into the Cessnock Aerodrome OLS.
- The proposed Cessnock Hospital Redevelopment building's construction crane(s) may intrude into the Cessnock Aerodrome OLS.
- The proposed Cessnock Hospital Redevelopment building's construction crane(s) will need to be assessed by CASA if it intended that it/they are to operate above RL 109.
- The proposed Cessnock Hospital Redevelopment building's construction crane(s) will require aviation-standard obstacle lighting if it intended that it/they are to operate above RL 109.
- No hospital or other strategically important HLS will be impacted by the Cessnock Hospital Redevelopment.

4.12. 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 aviation impacts exist for this proposed development.

4.13. Mitigation Measures

There is nothing to mitigate in relation to aviation impact and airspace protection matters for the proposed Cessnock Hospital Redevelopment. Aviation-standard obstacle lighting for construction crane(s) are routine issues that are considered on all projects in the vicinity of airports, helicopter landing sites or helicopter routes. See [Table 2](#) below.

Project Stage	Mitigation Measures	Relevant Section
N/A	Nil.	N/A

Table 2: Mitigation Measures

4.14. Conclusion

The proposed building envelope, and any future construction cranes on the site, will not impact aviation safety in relation to Cessnock Aerodrome.

4.15. Recommendations

Cranes must be assessed by CASA if it is intended that they operate above RL 109. Ensure that any proposed Cessnock Hospital Redevelopment construction tower crane(s) is/are fitted with CASA-standard obstacle lighting. If operating at night or in low visibility, ensure that any proposed Cessnock Hospital Redevelopment construction mobile crane(s) is/are fitted with CASA-standard obstacle lighting.