

APPENDIX G

OBSTACLE LIMITATION SURFACE ASSESSMENT

AVIATION PROJECTS PTY LTD



Mr Maurizio Zappacosta
Director
C/-ZM Partners
Anambah Estates Pty Ltd
Level 5, 350 Kent Street
Sydney, NSW 2000

By email: Maurizio@zmp.com.au

Our ref: 063601-01

Dear Maurizio

Re: Subdivision of land adjacent to Anambah House - Obstacle Limitation Surface assessment

Please find in this correspondence an Obstacle Limitation Surface assessment of land adjacent to Anambah House, which is located at 200 Anambah Road, Anambah, 2320 in New South Wales.

1.1. Project background

Anambah Estates Pty Ltd is preparing a subdivision proposal for 72 large residential lots in Anambah, New South Wales.

The subject land is located near Maitland Airport which is operated by Royal Newcastle Aero Club. Maitland Airport is a registered, code 2 and non-instrument approach runway aerodrome.

Anambah Estates Pty Ltd has engaged Aviation Projects to prepare an OLS assessment of the subject land.

1.2. Scope of Works

The scope of work is to prepare an OLS assessment of the subject land as part of a subdivision proposal which will be lodged with Maitland City Council.

1.3. Task methodology

The engagement will generally be conducted as follows:

1. review supplied client material;
2. prepare an OLS assessment;
3. prepare a draft letter report for client review; and
4. prepare a final letter report for client acceptance.

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Aviation Projects Pty Ltd / ABN 88 127 760 267

E enquiries@aviationprojects.com.au

P +61 7 3371 0788 **F** +61 7 3371 0799

PO Box 116, Toowong DC, Toowong Qld 4066

19/200 Moggill Road, Taringa Qld 4068

aviationprojects.com.au

1.4. References

References used or consulted in the preparation of this report include:

- Airservices Australia, Aeronautical Information Package; including AIP Book, Departure and Approach Procedures, and En Route Supplement Australia effective 07 November 2019;
- Civil Aviation Safety Authority, *Manual of Standards Part 139 – Aerodromes*, version 1.14: dated January 2017;
- Maitland City Council, Maitland Local Environmental Plan 2011; and
- other references as noted.

1.5. Client material

Anambah provided the following materials for the purposes of this assessment:

- HDB, Base Layout, drawing No. 17/003-2, revision E, dated 27 September 2019;
- HDB, Anambah Lakes, drawing No. 17/003-6, revision B, dated 21 October 2019;
- Royal Newcastle Aero Club, Maitland Airport Obstacle Limitation Surface Chart, dated May 2013;
- Royal Newcastle Aero Club, Maitland Airport Obstacle Limitation Surface Chart, dated April 2012; and
- Spectrum Acoustics, Anambah Rezoning – Aircraft Noise Assessment, report ref: 171414/7212, dated 29 June 2017.

1.6. Site overview

The subject land site is located north east of Anambah Road and approximately 400 m north east from Maitland Airport's runway 23 threshold.

Figure 1 shows the subject land site relative to Maitland Airport (source: HDB, drawing No. 17/003-2, revision E, dated 27 September 2019).



Figure 1 Proposed subdivision land site relative to Maitland Airport

1.7. Planning context

The Civil Aviation Safety Authority (CASA) regulates aviation activities in Australia. Applicable requirements include the Civil Aviation Regulations 1988 (CAR), Civil Aviation Safety Regulations 1998 (CASR) and associated Manual of Standards (MOS) and other guidance material.

Chapter 7 of Manual of Standards Part 139—Aerodromes, provides specific regulatory provisions relating to obstacle limitation surfaces which are copied below:

7.1.3.1 An aerodrome operator must establish the OLS applicable to the aerodrome.

Note: A description and illustration of the obstacle limitation surfaces is provided in Section 7.3.

7.1.3.2 The following OLS must be established for a non-instrument runway and a non-precision instrument runway:

- (a) conical surface;
- (b) inner horizontal surface;
- (c) approach surface;

(d) transitional surface; and

(e) take-off climb surface.

7.1.3.4 The physical dimensions of the OLS surfaces, for approach runways, must be determined using Table 7.1-1.

A copy of Table 7.1-1 is provided in Figure 2.

Table 7.1-1: Approach Runways

| OLS & Dimensions (in metres and percentages) | Runway Classification | | | | | | | | | |
|---|-----------------------|------|------------------|-------|---------------|--------------------|------------------|--------------|---------------------|-------|
| | Non-instrument | | | | Instrument | | | | | |
| | | | | | Non-precision | | | Precision | | |
| | Code No | | | | Code No | | | I Code No | II & III Code No | |
| | 1* | 2 | 3 | 4 | 1, 2 | 3 | 4 | 1, 2 | 3, 4 | 3, 4 |
| OUTER HORIZONTAL | | | | | | | | | | |
| Height (m) | | | | | | | | | 150 | 150 |
| Radius (m) | | | | | | | | | 15000 | 15000 |
| CONICAL | | | | | | | | | | |
| Slope | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% | 5% |
| Height (m) | 35 | 55 | 75 | 100 | 60 | 75 | 100 | 60 | 100 | 100 |
| INNER HORIZONTAL | | | | | | | | | | |
| Height (m) | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Radius (m) | 2000 | 2500 | 4000 | 4000 | 3500 | 4000 | 4000 | 3500 | 4000 | 4000 |
| APPROACH | | | | | | | | | | |
| Length of inner edge (m) | 60 | 80 | 150 ^a | 150 | 90 | 150 | 300 ^b | 150 | 300 | 300 |
| Distance from threshold (m) | 30 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Divergence each side | 10% | 10% | 10% | 10% | 15% | 15% | 15% | 15% | 15% | 15% |
| First section length (m) | 1600 | 2500 | 3000 | 3000 | 2500 | 3000 | 3000 | 3000 | 3000 | 3000 |
| Slope | 5% | 4% | 3.33% | 2.5% | 3.33% | 3.33% | 2% | 2.5% | 2% | 2% |
| Second section length (m) | - | - | - | - | - | 3600 ^c | 3600 | 12000 | 3600 | 3600 |
| Slope | - | - | - | - | - | 2.5% ^c | 2.5% | 3% | 2.5% | 2.5% |
| Horizontal section length (m) | - | - | - | - | - | 8400 ^c | 8400 | - | 8400 | 8400 |
| Total length (m) | 1600 | 2500 | 3000 | 3000 | 2500 | 15000 ^d | 15000 | 15000 | 15000 | 15000 |
| INNER APPROACH | | | | | | | | | | |
| Width (m) | | | | | | | | 90 | 120 | 120 |
| Distance from threshold (m) | | | | | | | | 60 | 60 | 60 |
| Length (m) | | | | | | | | 900 | 900 | 900 |
| Slope | | | | | | | | 2.5% | 2% | 2% |
| TRANSITIONAL | | | | | | | | | | |
| Slope | 20% | 20% | 14.3% | 14.3% | 20% | 14.3% | 14.3% | 14.3% | 14.3% | 14.3% |
| INNER TRANSITIONAL | | | | | | | | | | |
| Slope | | | | | | | | 40% | 33.3% | 33.3% |
| BAULKED LANDING | | | | | | | | | | |
| Length of inner edge (m) | | | | | | | | 90 | 120 | 120 |
| Distance from threshold (m) | | | | | | | | ^e | 1800 ^f | 1800 |
| Divergence each side | | | | | | | | 10% | 10% | 10% |
| Slope | | | | | | | | 4% | 3.3% | 3.3% |

Figure 2 Copy of Table 7.1-1

1.8. Maitland Local Environmental Plan

Maitland Local Environmental Plan dated 2011 has no provision to airspace.

1.9. Maitland Airport

Maitland Airport (YMND) is a registered, code 2, non-instrument approach aerodrome, operated by Royal Newcastle Aero Club, with a published aerodrome elevation of 25.9 m Australian Height Datum (AHD) (85 ft above mean sea level (AMSL)) (source: Airservices Australia, Aerodrome Chart, 15 August 2019).

Maitland Airport has three runways. The main runway is runway 05/23 which is sealed with a length of 1226 m, width 15 m and runway strip 80 m.

Figure 3 shows the Maitland Airport (YMND)) runway layout.

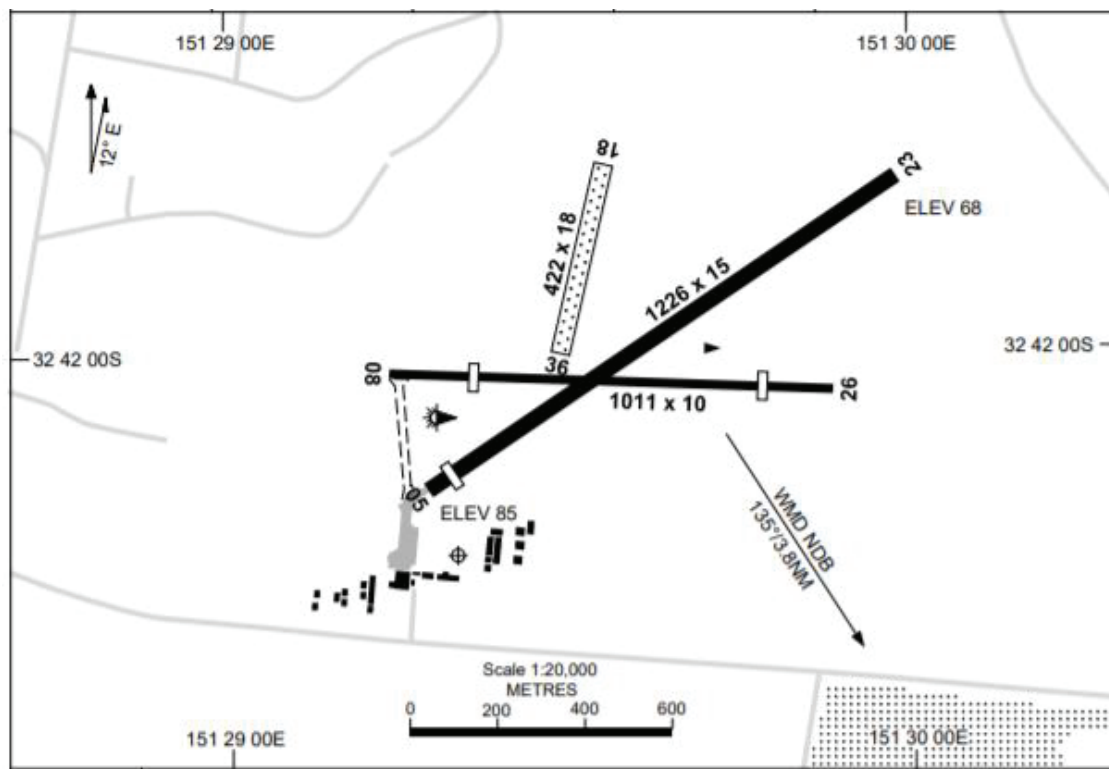


Figure 3 Maitland Airport (YMND) runway layout

1.10. Obstacle limitation surfaces

According to MOS 139 Chapter 7, the critical obstacle limitation surfaces for a non-instrument Code 2 runway are as follows:

- Conical surface at 5% slope and 55 m in height;
- Inner horizontal surface 2500 m in radius and up to 45 m in height;

- Approach surface's total length 2500 m, divergence to each side 10% and slope 4%;
- Take-off surface's total length 2500 m, divergence to each side 10% and slope 4%; and
- Transitional surface – at 20% slope from the edge of a runway strip.

Figure 4 shows the contours of Maitland Airport's OLS (in white colour) with an indicative location of the subject land (source: Royal Newcastle Aero Club, May 2013). The validity of this OLS model has not been verified, although there is some question about its validity since the inner horizontal surface height should be an even metre or half a metre.

Our assessment and conclusions have been made independently of the information represented by this OLS drawing.



Figure 4 Subject land site relative to Maitland Airport's OLS

The subject land site is located within the lateral extents of the following OLS surfaces:

- approach surface for runway 23;
- take-off surface for runway 05;
- the northern transitional surface of runway 05/23; and

- inner horizontal surface.

The assessment of the OLS in relation to available clearance heights is presented in the next paragraphs.

1.11. Approach surface

The illustration of the subject land and its ground elevation profile relative to approach surface for runway 23 is provided in Figure 5 and (source: Google Earth).

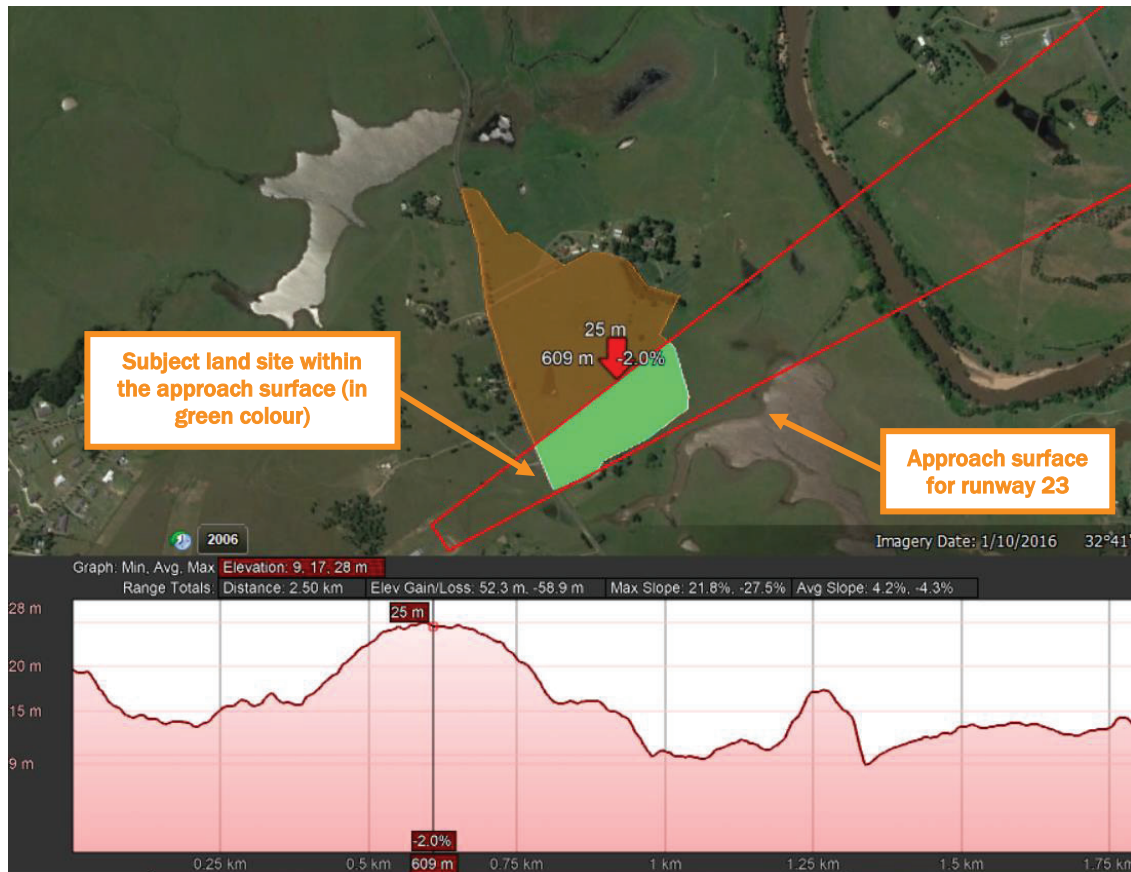


Figure 5 Approach surface for runway 23 and the subdivision land

The southern side of the subject land (in green) is constrained by the approach surface for runway 23. The available building height clearance for this portion of land ranges as the approach surface slopes at 4%.

The ground elevation of the southern side of the subject land varies from 16 m AHD to 25 m AHD.

For instance, the height of the approach surface over the maximum ground level, which is 25 m AHD at 609 m north east of the runway 23 end, is 45 m AHD. At this location a building height of up to approximately 20 m is acceptable without penetrating into the approach surface for runway 23.

1.12. Take-off surface

The illustration of the subject land and its ground elevation profile relative to take-off surface for runway 05 is shown in Figure 6 (source: Google Earth).



Figure 6 Take-off surface for runway 05 relative to the subject land

The southern side of the subject land (in green) is constrained by the take-off surface for runway 05. The available building height clearance for this portion of land ranges as the take-off surface slopes at 4%.

The ground elevation of the southern side of the subject land varies from 16 m AHD to 25 m AHD.

For instance, the height of the take-off surface over the maximum ground level at 25 m AHD, is 44 m AHD, which allows a building height of up to approximately 19 m.

1.13. Transitional surface

A small portion (in green colour) of the southern side of the subject land is located within the horizontal extent of the transitional surface. Refer to Figure 7 (source: Google Earth).

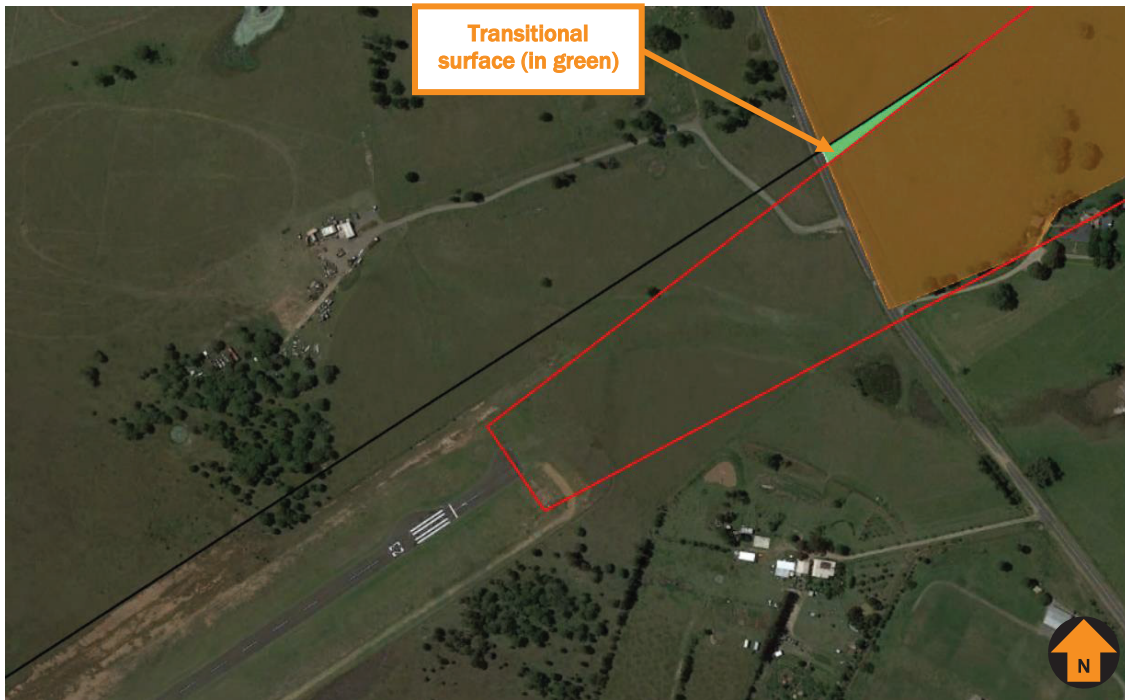


Figure 7 Transitional surface vs subject land

The slope of the transitional surface is measured in the vertical plane above the horizontal, and normal to, the centreline of each runway. For a code 2 non-instrument approach runway, the slope is 20% (1:5).

The elevation of any point on the lower edge of the surface is:

- along the side of the approach surface, equal to the elevation of the approach surface at that point;
- along the strip, equal to the elevation of the centreline of the runway opposite that point.

This means that a specified distance from the threshold along the extended runway centreline, the transitional surface commences at the height of the approach surface and then increases in height the further it gets from the runway centreline.

Therefore, a new development located in this section of the subject land will be limited by the height of the approach surface for runway 23 (which would be lower than the transitional surface).

1.14. Inner horizontal surface

The northern side of the subject land (in green) is constrained by the inner horizontal surface of Maitland Airport at a height of 68 m AHD. Refer to Figure 8 (source: Google Earth).

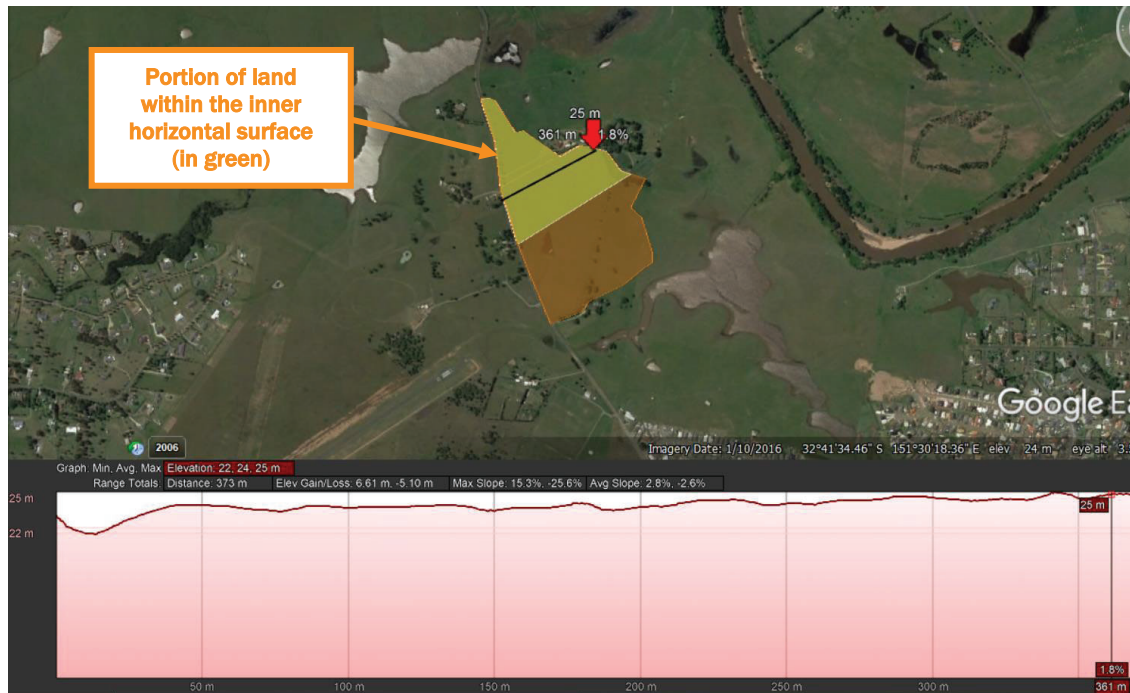


Figure 8 Subject land relative to the inner horizontal surface

The ground level of this portion land ranges between approximately 22 m AHD and 25 m AHD, allowing a building height in the range between approximately 43 m and 46 m.

1.15. Summary

Aviation Projects has concluded that the subdivision land adjacent to Anambah House, which is located at 200 Anambah Road, Anambah, New South Wales will be located within the horizontal extent of approach surface for runway 23, take-off surface for runway 05, the northern transitional surface and inner horizontal surface of Maitland Airport.

The vertical development located on the subdivided land will be permissible according to the actual height of the overlying controlling surfaces. Based on our assessment, and assuming residential houses are 8.5 m above natural ground level, the development will not impact on the obstacle limitation surfaces of Maitland Airport.

If you wish to clarify or discuss the contents of this correspondence, please contact me on 0417 631 681.

Kind regards



Keith Tonkin

Managing Director

11 February 2020