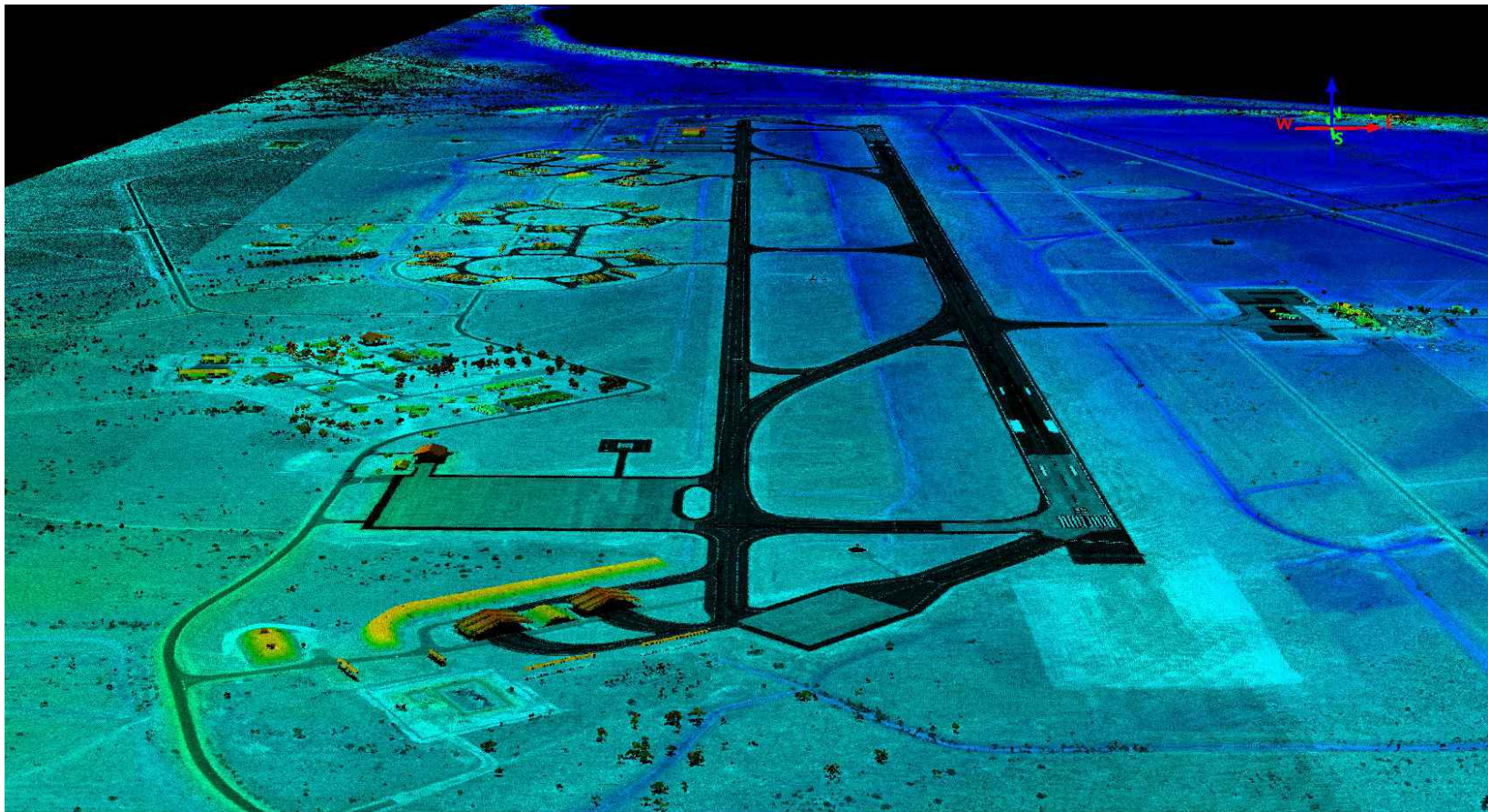




# OBSTACLE LIMITATION SURVEYS AND ASSESSMENT

RAAF BASE LEARMONTH  
AERODROME OBSTACLE CHART ICAO TYPE A  
(OPERATING LIMITATIONS ) ISSUED NOVEMBER 2024



| CLIENT   |  |  | REV | DATE     | REVISION DETAILS   | APPROVED | SCALE                        | SIZE  | FOR ISSUE            | PROJECT  | OBSTACLE LIMITATION SURVEYS AND ASSESSMENT<br>RAAF BASE LEARMONTH   |                              |                              |                            |                      |                       |                        |                      |                   |
|--|--|--|-----|----------|--|----------|------------------------------|-------|----------------------|--|---|------------------------------|------------------------------|----------------------------|----------------------|-----------------------|------------------------|----------------------|-------------------|
| <br><b>Australian Government</b><br><br><b>Department of Defence</b><br>Security and Estate Group |  |  | A   | 10.11.23 | FOR REVIEW   | DG       | AS SHOWN                     | A1/A3 | NOT FOR CONSTRUCTION | <br>DANIEL GEEVES | <b>TITLE</b><br>AERODROME OBSTACLE CHART ICAO TYPE A<br>(OPERATING LIMITATIONS) ISSUED NOVEMBER 2024<br>COVER SHEET | <b>DRAWING No.</b><br>520002 | <b>PROJECT No.</b><br>520002 | <b>WBS</b><br>- EST09759 - | <b>TYPE</b><br>DRG - | <b>DISC</b><br>- UU - | <b>SITE</b><br>- LEA - | <b>NUMBER</b><br>001 | <b>REV</b><br>- E |
|  |  |  | B   | 30.11.23 | 100% ISSUE FOR REVIEW                                    | DG       | <b>DRAWN</b><br>MH           |       |                      |  |   |                              |                              |                            |                      |                       |                        |                      |                   |
|  |  |  | C   | 12.02.24 | 100% ISSUE   | DG       | <b>SURVEYED</b><br>KI/MH/AAM |       |                      |  |   |                              |                              |                            |                      |                       |                        |                      |                   |
|  |  |  | D   | 25.03.24 | 100% ISSUE - AMMEND RWS WIDTH AS PER DEFENCE INSTRUCTION | DG       | <b>CHECKED</b><br>GH         |       |                      |  |   |                              |                              |                            |                      |                       |                        |                      |                   |
|  |  |  | E   | 15.11.24 | 100% ISSUE - UPDATE RWS WIDTH                            | DG       |                              |       |                      |  |   |                              |                              |                            |                      |                       |                        |                      |                   |
|  |  |  |     |          |  |          |                              |       |                      |  |   |                              |                              |                            |                      |                       |                        |                      |                   |
|  |  |  |     |          |  |          |                              |       |                      | DATE<br>15/11/2024   |   |                              |                              |                            |                      |                       |                        |                      |                   |

| DECLARED DISTANCES FOR RUNWAY 18                  |   |
|---|---|
| TAKE OFF RUN AVAILABLE (TORA)                     | 3047m (9996')   |
| TAKE OFF DISTANCE AVAILABLE (TODA)                | 3352m (10997') 3.15%  |
| ACCELERATE STOP DISTANCE AVAILABLE (ASDA)         | 3047m (9996')   |
| LANDING DISTANCE AVAILABLE (LDA)                  | 3047m (9996')   |
| SUPPLEMENTARY TAKE OFF DISTANCE AVAILABLE (STODA) | 3208m (10524') 1.6%, 3256m (10682') 1.9%, 3267m (10718') 2.0%, 3289m (10790') 2.2%, 3314m (10872') 2.5% |

LEGEND

- LOWEST SURVEYED SLOPE
- GROUND LEVEL
- MOST LIMITING OBSTACLE
- ①

OBSTACLE

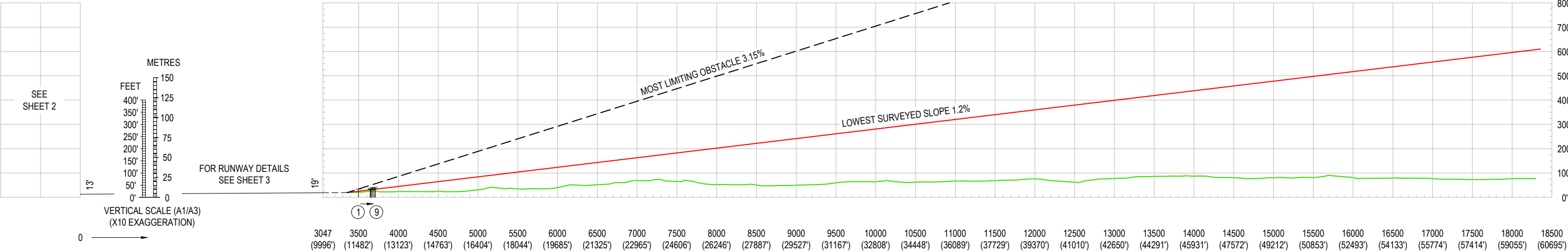
NOTES

1. AZIMUTH AND COORDINATES FOR THIS SURVEY ARE BASED ON MGA2020 ZONE 50 THE VERTICAL DATUM BEING AHD.
2. HORIZONTAL DIMENSIONS IN METRES (FEET) ELEVATIONS IN FEET
3. USERS OF THIS CHART SHOULD NOTIFY ANY ERRORS OR OMISSIONS AS SOON AS THEY BECOME APPARENT TO : -  
  
AERONAUTICAL INFORMATION SERVICE – AIR FORCE  
EMAIL: AIS.AF@DEFENCE.GOV.AU
4. FOR FURTHER INFORMATION REGARDING THIS CHART CONTACT THE ABOVE
5. MAGNETIC VARIATION 0°15' E (MARCH 2023)
6. AERIAL SURVEY COMPLETED MARCH 2016.  
GROUND SURVEY CHECKS AND VERIFICATION NOVEMBER 2022.

LEGEND

OBSTRUCTIONS AND OBSTACLES

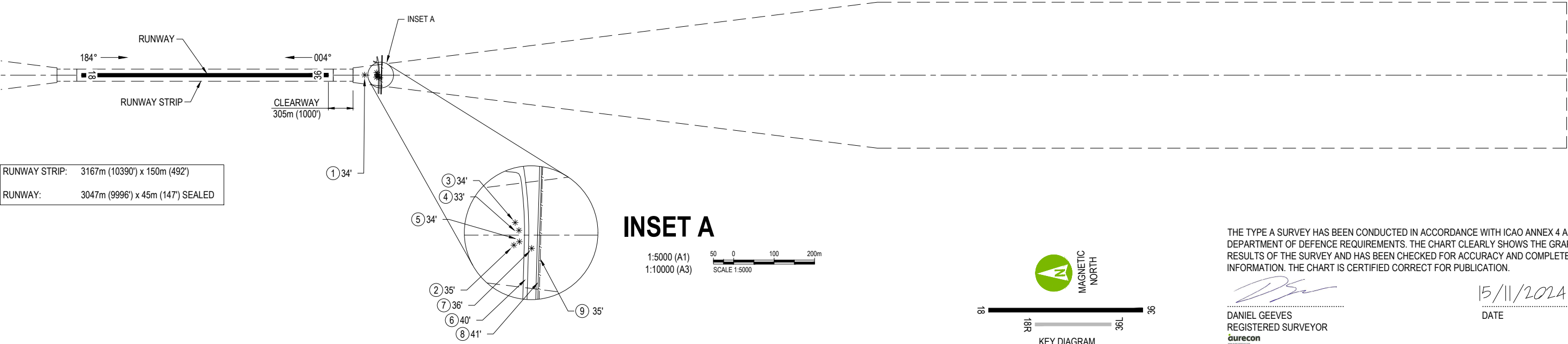
- ① OBJECT NUMBER
- 392' TOP ELEVATION IN FEET
- \* TREE(S) OR VEGETATION
- BUILDING OR LARGE STRUCTURE
- POLE, TOWER, SPIRE ETC
- △ ANTENNA
- MOVING (ROADS, RAILWAY TRACKS ETC)
- TERRAIN PENETRATING LOWEST SURVEYED SLOPE
- OVERHEAD TRANSMISSION LINE
- FENCE LINE



RUNWAY 18

1:25000 (A1)  
1:50000 (A3)

250 0 500 1000m  
SCALE 1:25000



THE TYPE A SURVEY HAS BEEN CONDUCTED IN ACCORDANCE WITH ICAO ANNEX 4 AND DEPARTMENT OF DEFENCE REQUIREMENTS. THE CHART CLEARLY SHOWS THE GRAPHICAL RESULTS OF THE SURVEY AND HAS BEEN CHECKED FOR ACCURACY AND COMPLETENESS OF INFORMATION. THE CHART IS CERTIFIED CORRECT FOR PUBLICATION.

DANIEL GEEVES  
REGISTERED SURVEYOR  
aurecon

15/11/2024  
DATE

| REV | DATE     | REVISION DETAILS   | APPROVED |
|-----|----------|--|----------|
| A   | 10.11.23 | FOR REVIEW   | DG       |
| B   | 30.11.23 | 100% ISSUE FOR REVIEW                                    | DG       |
| C   | 12.02.24 | 100% ISSUE   | DG       |
| D   | 25.03.24 | 100% ISSUE - AMMEND RWS WIDTH AS PER DEFENCE INSTRUCTION | DG       |
| E   | 15.11.24 | 100% ISSUE - UPDATE RWS WIDTH                            | DG       |

| SCALE    | SIZE      |
|----------|-----------|
| AS SHOWN | A1/A3     |
| DRAWN    | MH        |
| SURVEYED | KI/MH/AAM |
| CHECKED  | GH        |

| FOR ISSUE            | DATE       |
|----------------------|------------|
| NOT FOR CONSTRUCTION | 15/11/2024 |
| APPROVED             |            |
| DANIEL GEEVES        |            |

| PROJECT     | OBSTACLE LIMITATION SURVEYS AND ASSESSMENT<br>RAAF BASE LEARMONTH  |
|-------------|--|
| TITLE       | AERODROME OBSTACLE CHART ICAO TYPE A<br>(OPERATING LIMITATIONS) ISSUED NOVEMBER 2024<br>RUNWAY 18 - SHEET 1 OF 6 |
| DRAWING No. | 520002   |
| PROJECT No. | EST09759   |
| WBS         | DRG  |
| TYPE        | UU   |
| DISC        | LEA  |
| SITE        | 002  |
| NUMBER      | E  |
| REV         |  |





DEPARTMENT OF DEFENCE

SECURITY AND ESTATE GROUP

AERODROME OBSTACLE CHART - ICAO TYPE A  
(OPERATING LIMITATIONS) NOVEMBER 2024, COMPILED BY AURECON

TO BE READ IN CONJUNCTION WITH CURRENT NOTAMs

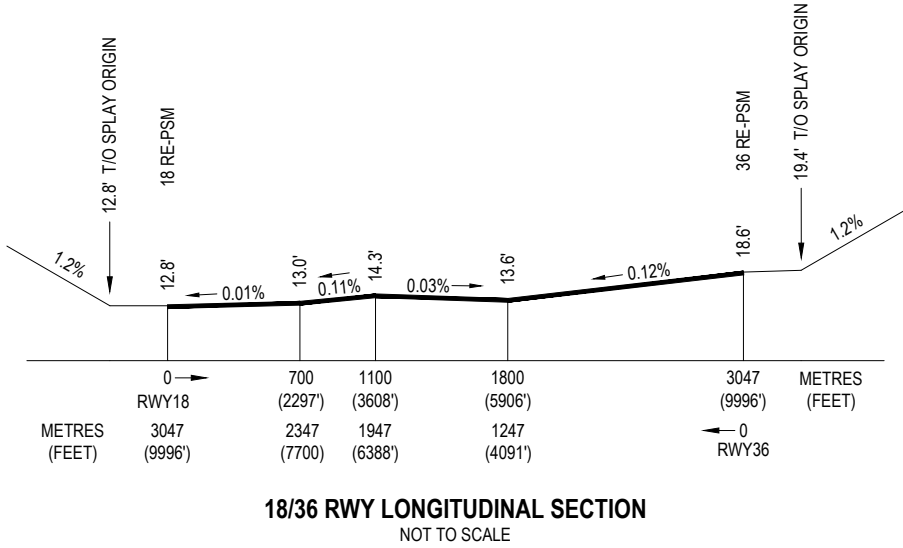
THE ORIGIN OF THE TAKE OFF SURFACE IS LOCATED AT THE END OF THE CLEARWAY  
DISTANCES COMMENCE FROM THE RAAF RE-PSM AT THE START OF THE TAKE-OFF RUNWAY (SOT)

DATUM

AZIMUTH AND COORDINATES FOR THIS SURVEY ARE BASED ON MGA2020 ZONE 50  
THE VERTICAL DATUM BEING AHD.

DEFINITIONS

- RE-PSM: RUNWAY END PERMANENT SURVEY MARK
- LENGTH OF INNER EDGE 180m
- RATE OF DIVERGENCE OF SPLAY (EACH SIDE) 12.5%
- FINAL WIDTH 1800m
- OVERALL LENGTH 15000m



| 18 TAKE OFF                       |             |       |       |         |             |       |       |         |           |            |               |      |                  |                         |         |        |       |            |                 |     |                          |  |
|-----------------------------------|-------------|-------|-------|---------|-------------|-------|-------|---------|-----------|------------|---------------|------|------------------|-------------------------|---------|--------|-------|------------|-----------------|-----|--------------------------|--|
| REPSM AT START OF TORA (REPSM 18) |             |       |       |         |             |       |       |         |           |            |               |      |                  | RUNWAY MAGNETIC BEARING |         |        | TORA  |            | TODA            |     | ELEVATION AT T.O. ORIGIN |  |
|                                   | GEOGRAPHIC  |       |       |         |             |       |       |         | MGA       |            | ELEVATION     |      | (DEG)            | (MIN)                   | (SEC)   | (m)    | (Ft)  | (m)        | (Ft)            | (m) | (Ft)                     |  |
|                                   | LAT         |       |       |         | LONG        |       |       |         | EASTING   | NORTHING   | (m)           | (Ft) |                  |                         |         |        |       |            |                 |     |                          |  |
|                                   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   |           |            |               |      |                  |                         |         |        |       |            |                 |     |                          |  |
|                                   | -22.2199693 | -22°  | 13'   | 11.890" | 114.0911514 | 114°  | 05'   | 28.145" | 200118.84 | 7539944.79 | 3.9           | 12.8 | 183°             | 36'                     | 36.076" | 3047   | 9996  | 3352       | 10997           | 5.9 | 19.4                     |  |
| OBJECTS THAT APPEAR ON THE CHART  |             |       |       |         |             |       |       |         |           |            |               |      |                  |                         |         |        |       |            |                 |     |                          |  |
| REF No                            | GEOGRAPHIC  |       |       |         |             |       |       |         | MGA       |            | ELEVATION TOP |      | TYPE OF OBSTACLE | DISTANCE FROM SOT       |         | OFFSET |       |            | GRADIENT TO TOP |     |                          |  |
|                                   | LAT         |       |       |         | LONG        |       |       |         | EASTING   | NORTHING   | (m)           | (FT) |                  | (m)                     | (FT)    | (m)    | (FT)  | LEFT/RIGHT | %               |     |                          |  |
|                                   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   |           |            |               |      |                  |                         |         |        |       |            |                 |     |                          |  |
| 1                                 | -22.251449  | -22°  | 15'   | 05.21"  | 114.088891  | 114°  | 05'   | 20.00"  | 199952.76 | 7536452.59 | 10.4          | 34.0 | TREE             | 3493.7                  | 11462.1 | 2.1    | 6.9   | L          | 3.15            |     |                          |  |
| 2                                 | -22.252761  | -22°  | 15'   | 09.94"  | 114.088536  | 114°  | 05'   | 18.72"  | 199918.92 | 7536306.50 | 10.7          | 35.2 | TREE             | 3641.1                  | 11945.9 | 24.6   | 80.8  | R          | 1.67            |     |                          |  |
| 3                                 | -22.252825  | -22°  | 15'   | 10.17"  | 114.089072  | 114°  | 05'   | 20.66"  | 199974.42 | 7536300.48 | 10.4          | 34.1 | TREE             | 3644.4                  | 11956.8 | 31.0   | 101.9 | L          | 1.54            |     |                          |  |
| 4                                 | -22.252897  | -22°  | 15'   | 10.42"  | 114.088881  | 114°  | 05'   | 19.97"  | 199954.80 | 7536292.16 | 10.1          | 33.2 | TREE             | 3653.7                  | 11987.2 | 11.9   | 38.9  | L          | 1.40            |     |                          |  |
| 5                                 | -22.252890  | -22°  | 15'   | 10.40"  | 114.088610  | 114°  | 05'   | 18.99"  | 199926.86 | 7536292.43 | 10.4          | 34.2 | TREE             | 3654.8                  | 11990.7 | 16.0   | 52.6  | R          | 1.49            |     |                          |  |
| 6                                 | -22.252956  | -22°  | 15'   | 10.64"  | 114.087681  | 114°  | 05'   | 15.65"  | 199831.17 | 7536283.24 | 12.3          | 40.2 | MOVING           | 3668.5                  | 12035.9 | 111.1  | 364.5 | R          | 2.01            |     |                          |  |
| 7                                 | -22.253155  | -22°  | 15'   | 11.35"  | 114.088431  | 114°  | 05'   | 18.35"  | 199908.95 | 7536262.73 | 11.0          | 36.1 | TREE             | 3685.3                  | 12090.8 | 32.5   | 106.6 | R          | 1.53            |     |                          |  |
| 8                                 | -22.253252  | -22°  | 15'   | 11.70"  | 114.087591  | 114°  | 05'   | 15.32"  | 199822.56 | 7536250.31 | 12.6          | 41.3 | MOVING           | 3701.8                  | 12145.1 | 118.1  | 387.5 | R          | 1.92            |     |                          |  |
| 9                                 | -22.253317  | -22°  | 15'   | 11.94"  | 114.088162  | 114°  | 05'   | 17.38"  | 199881.56 | 7536244.20 | 10.6          | 34.7 | FENCE            | 3705.1                  | 12155.8 | 58.9   | 193.3 | R          | 1.32            |     |                          |  |

| 36 TAKE OFF                       |             |       |       |         |             |       |       |         |           |            |               |                         |                  |                   |         |        |       |            |                          |     |      |
|-----------------------------------|-------------|-------|-------|---------|-------------|-------|-------|---------|-----------|------------|---------------|-------------------------|------------------|-------------------|---------|--------|-------|------------|--------------------------|-----|------|
| REPSM AT START OF TORA (REPSM 36) |             |       |       |         |             |       |       |         |           |            |               | RUNWAY MAGNETIC BEARING |                  |                   | TORA    |        | TODA  |            | ELEVATION AT T.O. ORIGIN |     |      |
|                                   | GEOGRAPHIC  |       |       |         |             |       |       |         | MGA       |            | ELEVATION     |                         |                  |                   |         |        |       |            |                          |     |      |
|                                   | LAT         |       |       |         | LONG        |       |       |         | EASTING   | NORTHING   | (m)           | (ft)                    | (DEG)            | (MIN)             | (SEC)   | (m)    | (ft)  | (m)        | (ft)                     |     |      |
|                                   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   |           |            |               |                         |                  |                   |         |        |       |            |                          |     |      |
|                                   | -22.2474242 | -22°  | 14'   | 50.727" | 114.0891620 | 114°  | 05'   | 20.983" | 199972.14 | 7536899.07 | 5.7           | 18.6                    | 3°               | 36'               | 36.076" | 3047   | 9996  | 3352       | 10997                    | 3.9 | 12.8 |
| OBJECTS THAT APPEAR ON THE CHART  |             |       |       |         |             |       |       |         |           |            |               |                         |                  |                   |         |        |       |            |                          |     |      |
| REF No                            | GEOGRAPHIC  |       |       |         |             |       |       |         | MGA       |            | ELEVATION TOP |                         | TYPE OF OBSTACLE | DISTANCE FROM SOT |         | OFFSET |       |            | GRADIENT TO TOP          |     |      |
|                                   | LAT         |       |       |         | LONG        |       |       |         | EASTING   | NORTHING   | (m)           | (FT)                    |                  | (m)               | (FT)    | (m)    | (FT)  | LEFT/RIGHT | %                        |     |      |
|                                   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   | DECIMAL DEG | (DEG) | (MIN) | (SEC)   |           |            |               |                         |                  |                   |         |        |       |            |                          |     |      |
| 1                                 | -22.216873  | -22°  | 13'   | 00.74"  | 114.091978  | 114°  | 05'   | 31.12"  | 200197.55 | 7540289.43 | 4.9           | 16.2                    | TREE             | 3394.9            | 11138.0 | 62.0   | 203.4 | R          | 2.40                     |     |      |
| 2                                 | -22.214784  | -22°  | 12'   | 53.22"  | 114.092200  | 114°  | 05'   | 31.91"  | 200215.93 | 7540521.37 | 8.4           | 27.6                    | MOVING           | 3627.3            | 11900.4 | 69.2   | 227.0 | R          | 1.64                     |     |      |

THE TYPE A SURVEY HAS BEEN CONDUCTED IN ACCORDANCE WITH ICAO ANNEX 4 AND DEPARTMENT OF DEFENCE REQUIREMENTS. THE CHART CLEARLY SHOWS THE GRAPHICAL RESULTS OF THE SURVEY AND HAS BEEN CHECKED FOR ACCURACY AND COMPLETENESS OF INFORMATION. THE CHART IS CERTIFIED CORRECT FOR PUBLICATION.

DANIEL GEEVES  
REGISTERED SURVEYOR  
aurecon

15/11/2024  
DATE



www.aurecongroup.com



Australian Government  
Department of Defence  
Security and Estate Group

| REV | DATE     | REVISION DETAILS   | APPROVED |
|-----|----------|--|----------|
| A   | 10.11.23 | FOR REVIEW   | DG       |
| B   | 30.11.23 | 100% ISSUE FOR REVIEW                                    | DG       |
| C   | 12.02.24 | 100% ISSUE   | DG       |
| D   | 25.03.24 | 100% ISSUE - AMMEND RWS WIDTH AS PER DEFENCE INSTRUCTION | DG       |
| E   | 15.11.24 | 100% ISSUE - UPDATE RWS WIDTH                            | DG       |
|     |          |  |          |
|     |          |  |          |

| SCALE    | SIZE      |
|----------|-----------|
| AS SHOWN | A1/A3     |
| DRAWN    | MH        |
| SURVEYED | KI/MH/AAM |
| CHECKED  | GH        |

| FOR ISSUE<br>NOT FOR CONSTRUCTION |                    |
|-----------------------------------|--------------------|
| APPROVED                          |                    |
|                                   | DATE<br>15/11/2024 |
| DANIEL GEEVES                     | :                  |

| PROJECT     | OBSTACLE LIMITATION SURVEYS AND ASSESSMENT<br>RAAF BASE LEARMONTH   |             |          |     |     |      |    |      |     |  |     |        |     |     |   |
|-------------|---|-------------|----------|-----|-----|------|----|------|-----|--|-----|--------|-----|-----|---|
| TITLE       | AERODROME OBSTACLE CHART ICAO TYPE A<br>(OPERATING LIMITATIONS) ISSUED NOVEMBER 2024<br>RUNWAY 18 & 36 - SHEET 3 OF 6 |             |          |     |     |      |    |      |     |  |     |        |     |     |   |
| DRAWING No. | 520002  | PROJECT No. | EST09759 | WBS | DRG | TYPE | UU | DISC | LEA | SITE <td>004</td> <th>NUMBER</th> <td>004</td> <th>REV</th> <td>E</td> | 004 | NUMBER | 004 | REV | E |

| DECLARED DISTANCES FOR EMERGENCY RUNWAY 18R (TWY A) |                      |
|---|----------------------|
| TAKE OFF RUN AVAILABLE (TORA)                       | 1502m (4927')        |
| TAKE OFF DISTANCE AVAILABLE (TODA)                  | 1562m (10997') 1.68% |
| ACCELERATE STOP DISTANCE AVAILABLE (ASDA)           | 1502m (4927')        |
| LANDING DISTANCE AVAILABLE (LDA)                    | 1502m (4927')        |
| SUPPLEMENTARY TAKE OFF DISTANCE AVAILABLE (STODA)   | 1521m (4990') 1.6%   |

LEGEND

- LOWEST SURVEYED SLOPE
- GROUND LEVEL
- MOST LIMITING OBSTACLE
- ①

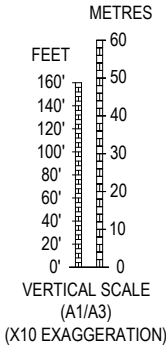
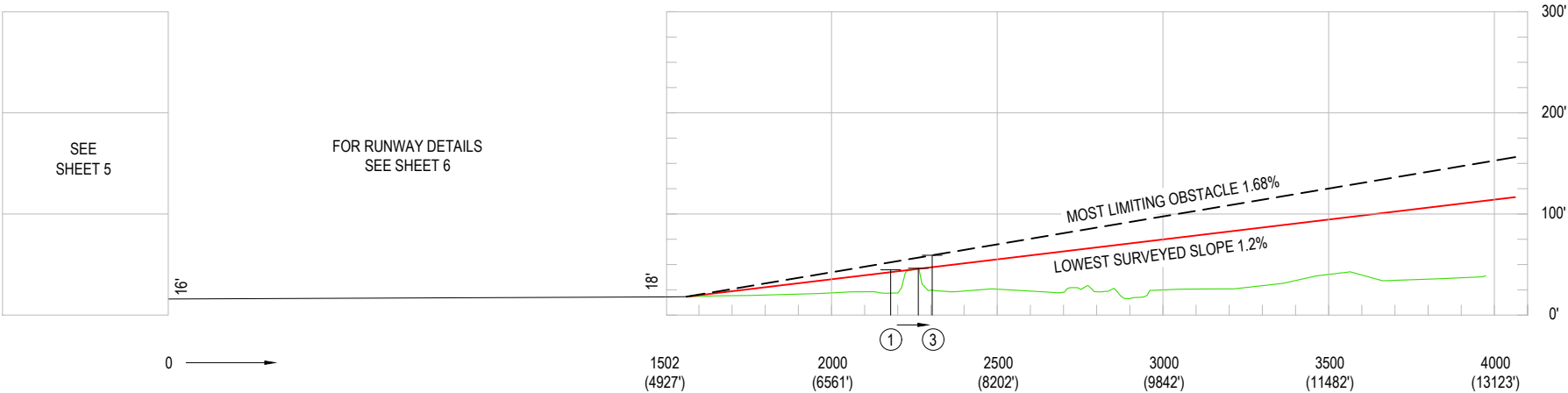
OBSTACLE

NOTES

1. AZIMUTH AND COORDINATES FOR THIS SURVEY ARE BASED ON MGA2020 ZONE 50 THE VERTICAL DATUM BEING AHD.
2. HORIZONTAL DIMENSIONS IN METRES (FEET) ELEVATIONS IN FEET
3. USERS OF THIS CHART SHOULD NOTIFY ANY ERRORS OR OMISSIONS AS SOON AS THEY BECOME APPARENT TO :-  
  
AERONAUTICAL INFORMATION SERVICE – AIR FORCE  
EMAIL: AIS.AF@DEFENCE.GOV.AU
4. FOR FURTHER INFORMATION REGARDING THIS CHART CONTACT THE ABOVE
5. MAGNETIC VARIATION 0°15' E (MARCH 2023)
6. AERIAL SURVEY COMPLETED MARCH 2016.  
GROUND SURVEY CHECKS AND VERIFICATION NOVEMBER 2022.

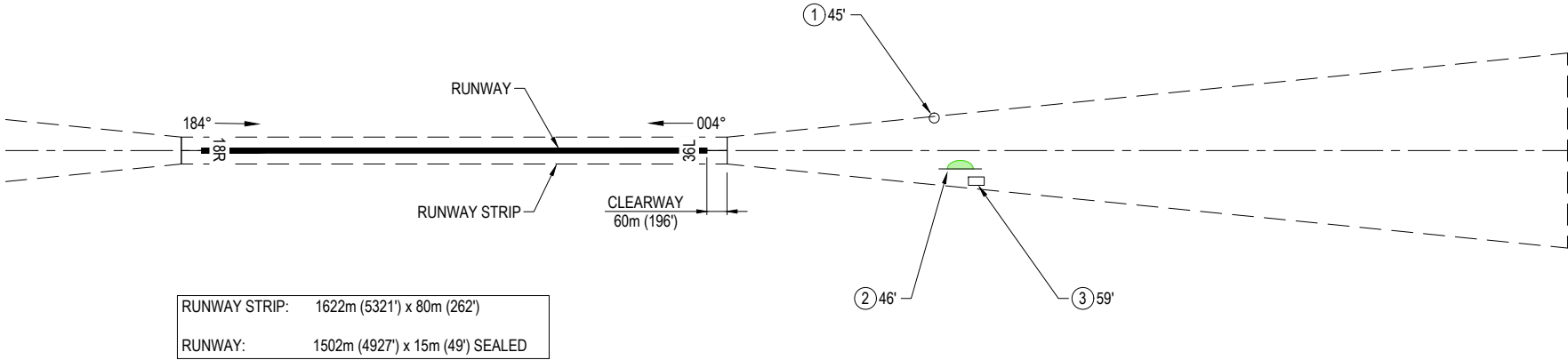
LEGEND

- OBSTRUCTIONS AND OBSTACLES
- ① OBJECT NUMBER
- 392' TOP ELEVATION IN FEET
- \* TREE(S) OR VEGETATION
- BUILDING OR LARGE STRUCTURE
- POLE, TOWER, SPIRE ETC
- △ ANTENNA
- MOVING (ROADS, RAILWAY TRACKS ETC)
- TERRAIN PENETRATING LOWEST SURVEYED SLOPE
- OVERHEAD TRANSMISSION LINE
- FENCE LINE



EMERGENCY RUNWAY 18R  
TWY A (CODE 2)

1:10000 (A1)  
1:20000 (A3)  
SCALE 1:10000

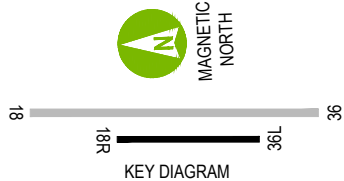


RUNWAY 18R (TWY A) SURVEY HAS BEEN ASSESSED BASED ON THE FOLLOWING "CODE 2" TAKE-OFF PARAMETERS FOR AN EMERGENCY RUNWAY:  
LENGTH OF INNER EDGE - 80m  
RATE OF DIVERGENCE (EACH SIDE) - 10%  
FINAL WIDTH - 580m  
OVERALL LENGTH - 2500m

THE TYPE A SURVEY HAS BEEN CONDUCTED IN ACCORDANCE WITH ICAO ANNEX 4 AND DEPARTMENT OF DEFENCE REQUIREMENTS. THE CHART CLEARLY SHOWS THE GRAPHICAL RESULTS OF THE SURVEY AND HAS BEEN CHECKED FOR ACCURACY AND COMPLETENESS OF INFORMATION. THE CHART IS CERTIFIED CORRECT FOR PUBLICATION.

DANIEL GEEVES  
REGISTERED SURVEYOR  
aurecon

15/11/2024  
DATE



| REV | DATE     | REVISION DETAILS   | APPROVED |
|-----|----------|--|----------|
| A   | 10.11.23 | FOR REVIEW   | DG       |
| B   | 30.11.23 | 100% ISSUE FOR REVIEW                                    | DG       |
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| E   | 15.11.24 | 100% ISSUE - UPDATE RWS WIDTH                            | DG       |

| SCALE    | SIZE      |
|----------|-----------|
| AS SHOWN | A1/A3     |
| DRAWN    | MH        |
| SURVEYED | KI/MH/AAM |
| CHECKED  | GH        |

| FOR ISSUE            | DATE       |
|----------------------|------------|
| NOT FOR CONSTRUCTION | 15/11/2024 |
| APPROVED             |            |
| DANIEL GEEVES        |            |

| PROJECT     | OBSTACLE LIMITATION SURVEYS AND ASSESSMENT<br>RAAF BASE LEARMONTH   |
|-------------|---|
| TITLE       | AERODROME OBSTACLE CHART ICAO TYPE A<br>(OPERATING LIMITATIONS) ISSUED NOVEMBER 2024<br>EMERGENCY RUNWAY 18R - SHEET 4 OF 6 |
| DRAWING No. | 520002  |
| PROJECT No. | EST09759  |
| WBS         | DRG   |
| TYPE        | UU  |
| DISC        | LEA   |
| SITE        | 005   |
| NUMBER      | E   |
| REV         |   |







## Project Number and Title

### 520002-22-EST09759 National OLS Update

#### RAAF Base Learmonth

#### Obstacle Chart ICAO Type A (Operating Limitations) – Survey Report Issued 15/11/2024

## Purpose and Scope

This report contains the supporting survey information relating to the Aerodrome Obstacle Chart Type A (Operating Limitations) for RAAF Base Learmonth completed and signed in November 2024 by Aurecon.

The information obtained from these surveys is used for the compilation of Type A (Operating Limitations) Charts to be used by flight planners to determine the maximum performance of aircraft on take-off, in recognition of existing obstacles within the take-off area on nominated runways.

## Methodology

The runways at RAAF Base Learmonth were surveyed by ground instrument equipment and combined with aerial survey and assessed based on the following classification and physical characteristics:

- RWY18/36 Code 4, Instrument, Non-Precision Runway
- Emergency RWY 18R/36L (TWY A) Code 2, Non-Instrument Runway

The survey captured all objects and structures which project above a plane surface having a 1.2% slope in accordance with ICAO Annex 4, subject to applying shielding principles. If no obstacles were detected above the 1.2% plane surface, the plane was surveyed down to 1.0%.

The field survey was completed in November 2022 to support the aerial Light Detection and Ranging (LiDAR) survey which was captured in 2016 to support the previous Type A chart produced by Aurecon. It was determined that due to the nature of the terrain surrounding RAAF Base Learmonth an update of the LiDAR survey was not warranted. The November 2022 ground survey is sufficient to identify the changes between the 2016 LiDAR, 2016 ground survey and current conditions on site.

The aerial imagery captured with the LiDAR survey assisted identifying obstructions detected in the LiDAR and ground survey. The LiDAR captured provided a comprehensive coverage of the assessment area and was deemed the most efficient way to survey the Type A Plane which extends up to 15km from the end of the clearway.

The take-off flight path area is listed in ICAO Annex 4, Chapter 3 however, at the request of Defence, the survey of the take-off flight path area is extended for the full length of the take-off climb surface splay to a total distance of 15,000m for a code 3 or 4 runway as annotated in Civil Aviation Safety Authority (CASA) Manual of Standards Part 139 (MOS139) for a take-off runway. Code 1 and 2 runways are to be surveyed to the take-off climb surface OLS elements and dimensions annotated in MOS139 for a take-off runway.

Moving obstacles are assessed to a height of 4.6m above road/track level. Roads and tracks in areas where vehicles are in direct contact with Air Traffic Control (ATC) are considered controlled and not shown on the Type A charts. Likewise, any roads that are acceptably signed or otherwise controlled e.g. traffic lights.

## Obstacle Summary

Obstacles listed in this summary are unshielded obstacles and are shown on the Type A charts and listed in the obstacle tables. Objects above the 1.2% plane but below the OLS gradient are shown on the charts and images but are not discussed here. Note that object numbering re-starts from #1 for each take-off.

### RWY 18 Obstacles

RWY18 Obstacles consist of a tree (Obs. #1) and a moving object (Obs. #6) as shown on Image 1. Obs. #6 is the main base access road.

The critical obstacle for take-off is Obs. #1 (Tree). The critical climb gradient is 3.15%.

### RWY 36 Obstacles

RWY36 Obstacles are a single tree (Obs. #1).

The critical obstacle for take-off is Obs. #1 (Tree) as shown on Image 2. The critical climb gradient is 2.40%.



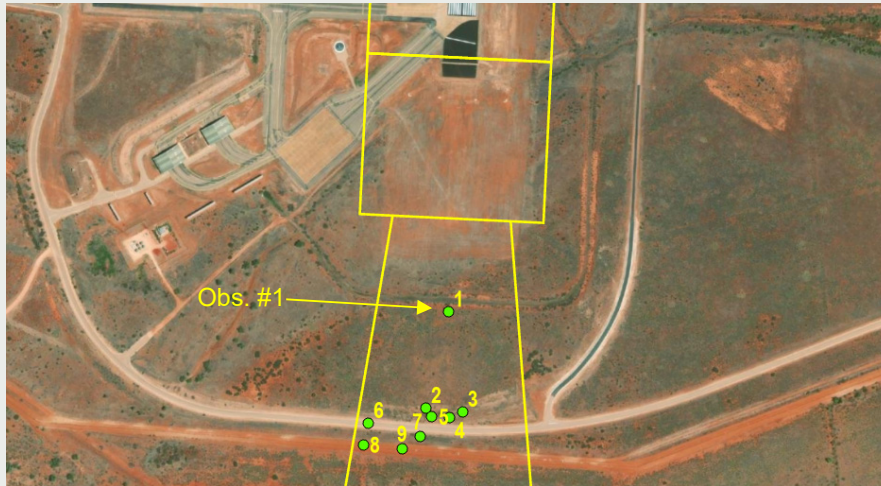


Image 1 – RWY 18 Take Off Splay



Image 2 – RWY 36 Take Off Splay

### Emergency RWY 18R (TWY A) Obstacles

No obstacles infringe the RWY18R take-off.

The critical object for take-off is Obs. #3 (Hanger roof) as shown on Image 3. The critical climb gradient is 1.68%.

### Emergency RWY 36L (TWY A) Obstacles

No obstacles infringe the RWY36L take-off.

The critical object for take-off is Obs. #3 (Hanger) as shown on Image 4. The critical climb gradient is 2.36%.

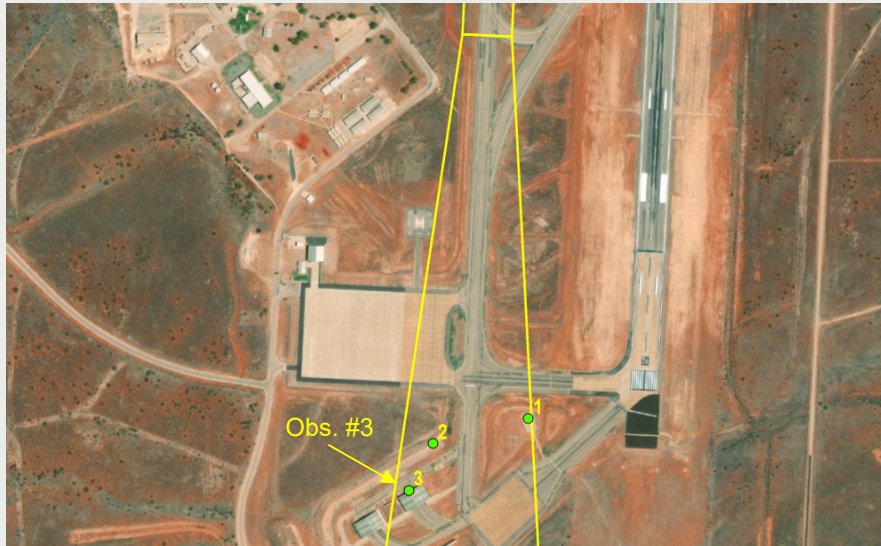


Image 3 – RWY 18R Take Off Splay

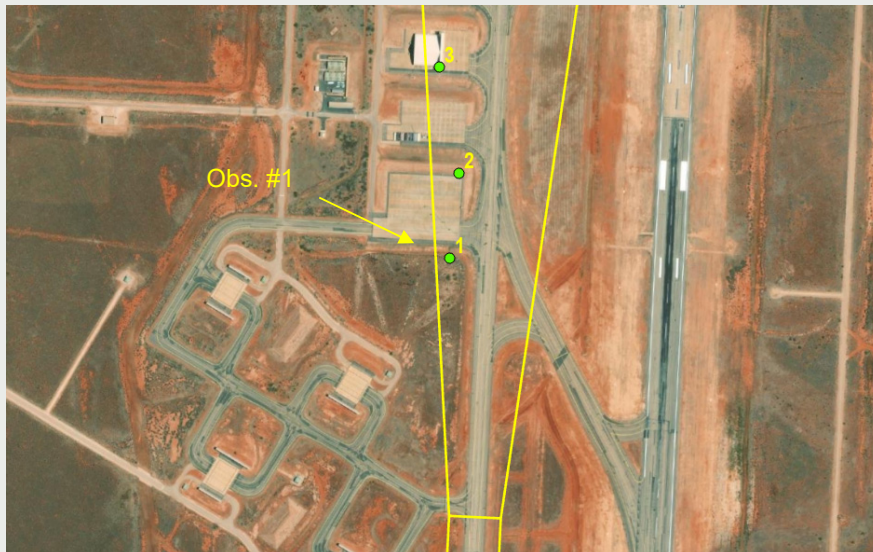


Image 4 – RWY 36L Take Off Splay

## Moving Objects

### **RWY 18 Moving Objects** (Refer Image 1)

Obs. #6 is the main base access road and Obs. #8 is the track adjacent to the perimeter fence. Neither are controlled roads.

### **RWY 36 Moving Objects** (Refer Image 2)

Obs. #2 has signage on the road either side of the take-off splay but is otherwise uncontrolled. The road is an alternate site access.

### **Emergency RWY 18R (TWY A) Moving Objects** (Refer Image 3)

No uncontrolled roads or tracks infringe the take-off. A moving object hazard exists from aircraft and vehicles on TWYs and Apron areas south of THR 36L. These obstacles are considered to be controlled and hence not considered in the Type A chart calculations.



## Emergency RWY 36L (TWY A) Moving Objects (Refer Image 4)

No uncontrolled roads or tracks infringe the take-off. A moving object hazard exists from aircraft and vehicles on TWYs and Apron areas north of THR 18R. These obstacles are considered to be controlled and hence not considered in the Type A chart calculations.

### Datum

The ARP and REPSMs are delivered in the following datums:

- Horizontal Datum: Geocentric Datum of Australia 2020 (GDA2020).
- Vertical Datum: Australian Height Datum (AHD).
- UTM Coordinates: Map Grid of Australia 2020 (MGA2020).

Accuracy: Horizontal: +/- 0.010m @95% Confidence Interval  
Vertical: +/- 0.020m @95% Confidence Interval

### Survey Control

**Table 1 – Survey Control Marks GDA2020**

| Control  | Datum           | Easting (m) / Longitude | Northing (m) / Latitude | Elevation (mAHD) |
|--|-----------------|-------------------------|-------------------------|------------------|
| <b>ARP</b><br>(Existing bolt)<br>Good Condition      | UTM Zone 50     | 199883.228              | 7538223.080             | 3.910            |
|  | Degrees         | E 114° 05' 18.770"      | S 22° 14' 07.666"       |                  |
|  | Decimal Degrees | 114.0885472             | -22.2354627             |                  |
| <b>REPSM 18</b><br>(Existing bolt)<br>Good Condition | UTM Zone 50     | 200118.837              | 7539944.789             | 3.903            |
|  | Degrees         | E 114° 05' 28.145"      | S 22° 13' 11.890"       |                  |
|  | Decimal Degrees | 114.0911514             | -22.2199693             |                  |
| <b>REPSM 36</b><br>(Existing bolt)<br>Good Condition | UTM Zone 50     | 199972.143              | 7536899.067             | 5.684            |
|  | Degrees         | E 114° 05' 20.983"      | S 22° 14' 50.727"       |                  |
|  | Decimal Degrees | 114.0891620             | -22.2474242             |                  |
| <b>REPSM 18R</b><br>(New bolt)<br>Good Condition     | UTM Zone 50     | 199794.704              | 7539038.637             | 4.845            |
|  | Degrees         | E 114° 05' 16.229"      | S 22° 13' 41.120"       |                  |
|  | Decimal Degrees | 114.0878414             | -22.2280889             |                  |
| <b>REPSM 36L</b><br>(New bolt)<br>Good Condition     | UTM Zone 50     | 199722.402              | 7537536.760             | 5.481            |
|  | Degrees         | E 114° 05' 12.698"      | S 22° 14' 29.858"       |                  |
|  | Decimal Degrees | 114.0868605             | -22.2416271             |                  |

### Photos – Survey Control



Photo 1 – ARP Survey Control Mark (Existing Brass Plaque)



Photo 2 – REPSM18 (Existing bolt in concrete)

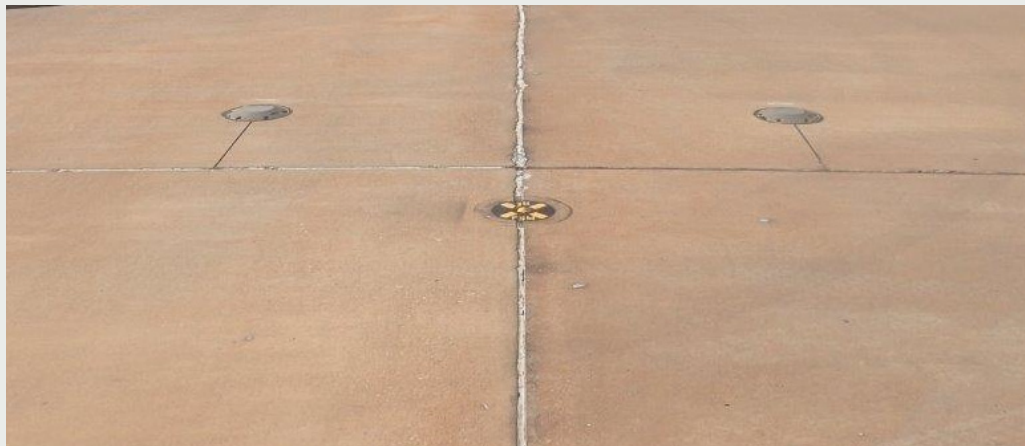


Photo 3 – REPSM36 (Existing bolt in concrete)



Photo 4 – Emergency RWY (TWY A) REPSM18R (New bolt in asphalt)



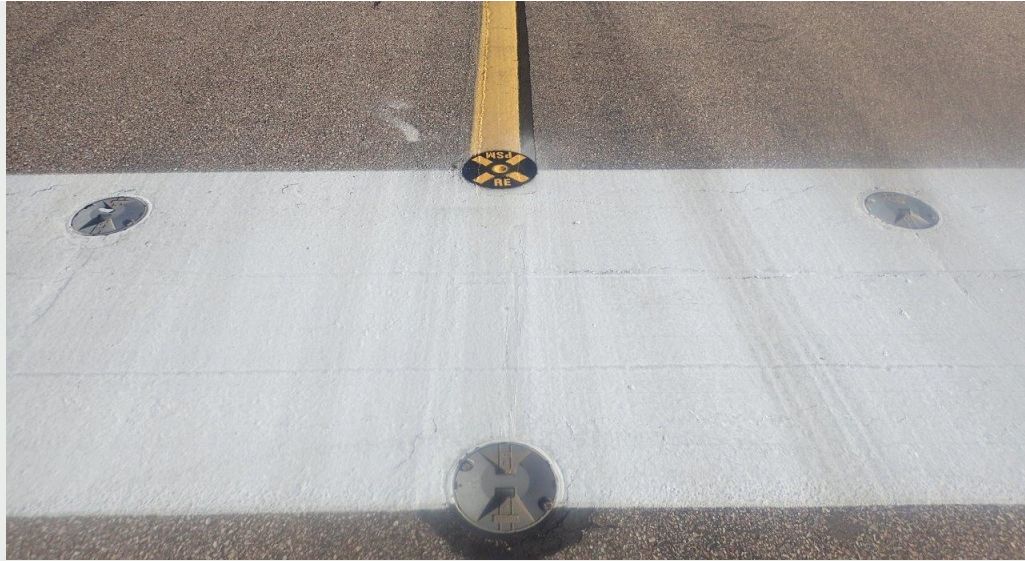


Photo 5 – Emergency RWY (TWY A) REPSM36L (New bolt in asphalt)

Photos - Take  
Off Climb  
Surface  
Horizon



Photo 6 – View North from RWY 18 Threshold



Photo 7 – View South from RWY 36 Threshold



Photo 8 – View North from RWY 18R Threshold





Photo 9 – View South from RWY 36L Threshold

Author(s)

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|--|--|
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Approval

| Approval | Name          | Signature   | Title                               | Date       |
|----------|---------------|---|-------------------------------------|------------|
| Author   | Mark Hansen   |  | Spatial Consultant                  | 15/11/2024 |
| Approver | Daniel Geeves |  | Geospatial Practice<br>Leader (QLD) | 15/11/2024 |

## Project Deliverables

Included with this report are the following deliverables:

- Type A Chart as PDF File
- Survey control and obstacles as CSV Files

Any further questions regarding this Type A Chart production should be directed to:

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