

MANJIMUP AERODROME

Approach and Take Off Survey 2017

Date: 15/05/17

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INTRODUCTION

The approach survey was conducted on the 8th May 2017. The weather was fine but windy causing a difficulty in observations to the trees.

After the onsite approach survey was completed, a comprehensive assessment of the district was conducted to locate any new obstacles that may affect the PANSOP surfaces.

Five obstacles were located. These have been plotted on the drawing MJM/17/01 (Appendix C)

Obstacle MJM 01 is listed as terrain but it is noted on the 1 in 25000 plan and the aerial photograph that there is a fire tower on a site close to this which could not be physically located on the day.

MANUAL OF STANDARDS PART 139 REQUIREMENTS

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

Table 7.1-2: Take-off runways

Take-off climb surface – Dimensions (in metres and percentages)	Take-off Runways Code number		
	1*	2 ^a	3 or 4
Length of inner edge	60	80	180 ^b
Minimum distance of inner edge from runway end ^c	30	60	60
Rate of divergence (each side)	10%	10%	12.5%
Final width	380	580	1800 ^d
Overall length	1600	2500	15000
Slope	5%	4%	2% ^e

SURVEY BASLINES

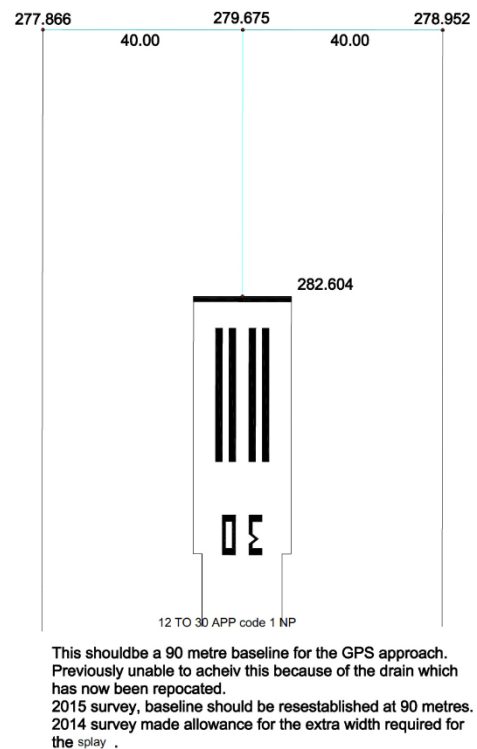
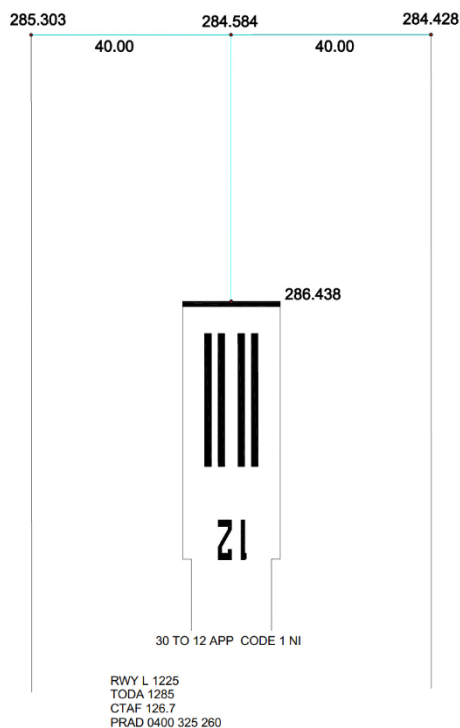
The survey dimensions of the baselines were checked during the survey.

The RWY 12 take off baseline was found to be 80.08 metres.

The RWY 30 take off baseline was found to be 80 metres

Manjimup now has a GPS Non Precision approach at each end. The Take off and Approach survey is required to be conducted from a 90 metre baseline. The baselines for the surveys on the 12 Takeoff at Manjimup were established on an 80 metre baseline due to the presence of a wash out drain on the south side and terrain issues on the north side making a 90 metre baseline impossible to achieve. The 30 Takeoff was placed at 80 metres for uniformity.

Survey results are plotted over an aerial photograph to ensure the survey takes into consideration obstacles affecting a 90 metre baseline.



RECOMMENDATIONS

The current Manual of Standards (MOS) has a perceived ambiguity concerning the approach gradient standard required.

The note associated with 6.2.1 Location of Runway Threshold requires an obstacle free approach of 5.0% for a code 3 Runway but the table 7.1-1 requires an approach slope of 3.33% for a code 1 NP runway. The Civil Aviation Safety Authority are reissuing the MOS later in 2017 that apparently will remove this type of ambiguity.

It is suggested that no action is taken until the new MOS clarifies this issue apart from the clearing noted associated with the northwest end.

Lower or clear the trees at the north west end as noted in the report.

Training

It is recommended that the Shire review its training requirements.

PANSOP

It is a CASA requirement that the newly located PANSOP obstacles are reported to Air Services Australia.

NOTAM

The following NOTAM is required.

RWY	TORA	TODA	ASDA	LDA
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12	1225	1285 (4.13%)	1225	1225
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30	1225	1285 (4.44%)	1225	1225
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Supplementary Takeoff Distances

RWY 12	831(1.6%)	944(1.9%)	1029(2.2%)	1096(2.5%)	1225(3.3%)
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RWY 30	816(2.2%)	917(2.5%)	1079(3.3%)
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SURVEY RESULTS

RWY 12 Take Off RWY 30 Approach (NP) Code 1

CODE	1NP			
App	8°32'	TO	5°43'	Transitions
Splay		Splay		
APP GRAD	3.33%	TKOF	5%	20%
		GRAD		



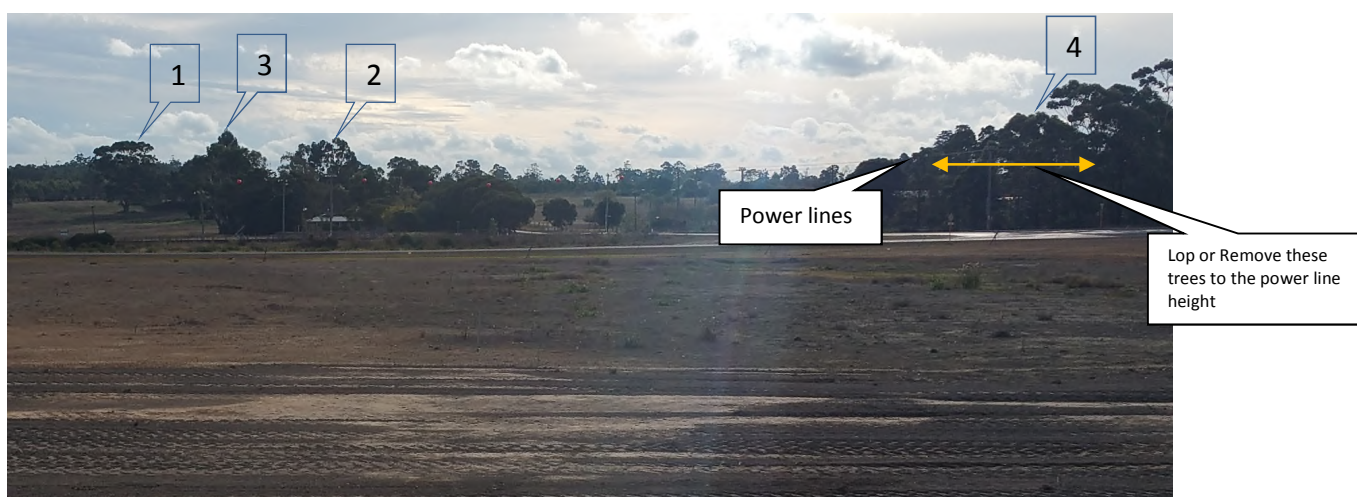
Obst#	Obstacle	Dist Out	Offset	RL TOP	Gradient %
1	TREE	156	62L	289.03	4.13
2	TREE	311	1L	292.46	3.17
3	TREE	280	8R	292.00	3.36
4	TREE	375	101R	297.29	3.91

Supplementary Takeoff Distances

831(1.6%) 944(1.9%) 1029(2.2%) 1096(2.5%) 1225(3.3%)

RWY 30 Take Off RWY 12 Approach (NP) Code 1

CODE	1NP	TO		Transitions
App	8°32'	Splay	5°43'	
Splay	3.33%	TKOF	5.0%	20%
APP GRAD		GRAD		



Obst#	Obstacle	Dist Out	Offset	RL TOP	Gradient %
1	TREE	601	102L	308.48	3.67
2	TREE	560	64L	311.31	4.44
3	TREE	577	29L	308.93	3.90
4	TREE	225	83R	298.23	5.23

The RWY 12 approach now has a new GPS NPA associated with it and the tree noted as Obstacle 4 now comes within the splay for that end. This exceeds the allowable gradient and needs to be lopped or removed. It is recommended that the other trees shown are also lopped or removed. Obstacle 2 will then become the critical object.

Lop or remove obstacle 4 and associated Trees

Supplementary Takeoff Distances

816(2.2%) 917(2.5%) 1079(3.3%)

CHANGES TO PUBLISHED INFORMATION

2017 Enroute Supplement Australia (ERSA) Extract

MANJIMUP

RWY	(CN)	TORA	TODA	ASDA	LDA
12	(1)	1225 (4019)	1285 (4216) (4.36%)	1225 (4019)	1225 (4019)
Transition surface may be infringed by vegetation, IWI and parked aircraft adjacent to RWS.					
30	(1)	1225 (4019)	1285 (4216) (4.25%)	1225 (4019)	1225 (4019)
Transition surface may be infringed by vegetation, IWI and parked aircraft adjacent to RWS.					
Slope 0.05% down to SE. RWY WID 18 RW WID 80 Graded 90. RWY WID 18 RWS WID 80					
Graded 90					

SUPPLEMENTARY TAKEOFF DISTANCES

RWY12- 1029(3376)(1.6) 1102(3615)(1.9) 1156(3793)(2.2) 1186(3891)(2.5) 1243(4078)(3.3)
RWY30- 823(2700)(2.2) 839(2753)(2.5) 1115(3658)(3.3)

REQUIRED NOTAM

RWY	TORA	TODA	ASDA	LDA
12	1225	1285 (4.13%)	1225	1225
30	1225	1285 (4.44%)	1225	1225

Supplementary Takeoff Distances

RWY 12	831(1.6%)	944(1.9%)	1029(2.2%)	1096(2.5%)	1225(3.3%)
RWY 30	816(2.2%)	917(2.5%)	1079(3.3%)		

PANSOP SURFACES

Airservices wrote to the Shire in July of 2014 advising that the obstacles associated with the Runway 30 Approach are required to be surveyed or checked when the annual approach survey is conducted. These letters sent to all aerodromes were generally sent to the wrong person or overlooked and subsequently were not action. When this came to light with other aerodromes, I took the opportunity to request copies of the letters associated with the clients that I service. When I further became aware of the new approach plate for the 12 runway I wrote to Airservices and requested a copy of that as well.

The two letters or documents are shown in Appendices A and B.

To assist the Shire I have produced a drawing using a 1 in 25000 scale plan to plot the identified obstacles from Airservices as well as those that I located at the time of the survey.

This is included at Appendix C and a PDF copy accompanies this report. If you require the DWG file I will be happy to send that as well.

It is incumbent upon the aerodrome owner/operator to advise Airservices of the new obstacles so they can assess them against the approach design.

OTHER ISSUES

Training of Operational staff.

It is recommended that you budget for training of any new operation staff or any existing staff that has not had refresher training within two years.



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Protection of PANS-OPS surfaces for Non-Precision Approach Procedures

Dear Sir,

Pursuant to CASR Part 139 Section 7.1.7 **Monitoring of Obstacles Associated with Instrument Runways**, I am writing to you to provide information with respect to the Instrument Flight Procedures at Manjimup. The following text is considered in the provision of this data.

- "...besides monitoring the applicable OLS, obstacle monitoring includes areas outside the OLS, also known as PANS-OPS surfaces, used in the design of the NPA procedures. To make it easier for aerodrome operators to carry out this task, procedure designers will ... provide aerodrome operators with a drawing or drawings of the area around the aerodrome, showing the designed approach paths, the circling areas and locations of critical obstacles taken into account in the design."
- "Aerodrome operators must establish procedures to monitor ... the critical obstacles associated with the NPA procedures and have them included in the Aerodrome Manual."
- "... designer must be advised of any changes of the status of the existing critical obstacles and any proposed development that is likely to be higher than the critical obstacles within the area depicted"

To assist with your obligations regarding the protection of Instrument Flight Procedure Areas, you will find the following tabulated data and cross referenced diagrams. This information has been extracted from the flight validation information that has been compiled for instrument approach procedures at your aerodrome and includes;

- A table of critical obstacles as a function of range and bearing from the Manjimup ARP. **Relevant fields are highlighted in yellow**
- The diagrams which display the circling areas associated with the aerodrome along with the approach, missed approach and, where applicable, the departure protection areas.

- The parameters for the visual segment surface (VSS) for instrument procedures, as well as a VSS diagram with contours. (Note – VSS is only for procedures that have a published straight-in (SI) minima and is not included in procedures with a minima based on circling altitude):
 - VSS RWY 30
 - Circling Areas
 - NDB RWY 30
 - RNAV _{GNSS} RWY 30

Should any obstacles be observed to extend above those elevations listed and in the areas marked on the maps, it is imperative that you advise this office. Based on that feedback, a safety assessment will be conducted and any necessary amendments made to protect aircraft using Instrument Flight Procedures.

In addition to any agreement in place regarding the supply of survey data and monitoring of areas, it is requested that a copy of the yearly aerodrome OLS survey be forwarded to Airservices. This does not absolve the operator from the obligations indicated in CASR Part 139, however provision of current survey information assists the review of extant Instrument Flight Procedures and aircraft minimum safe altitudes.

If you have any questions regarding the contents of this letter, please contact James Kaminski on phone 1300 301 120 or 1800 026 147 (freecall within Australia excludes mobile phones) or email pds.procs@airservicesaustralia.com



James Kaminski
Designer
Procedure Design Section
Aeronautical Information Management

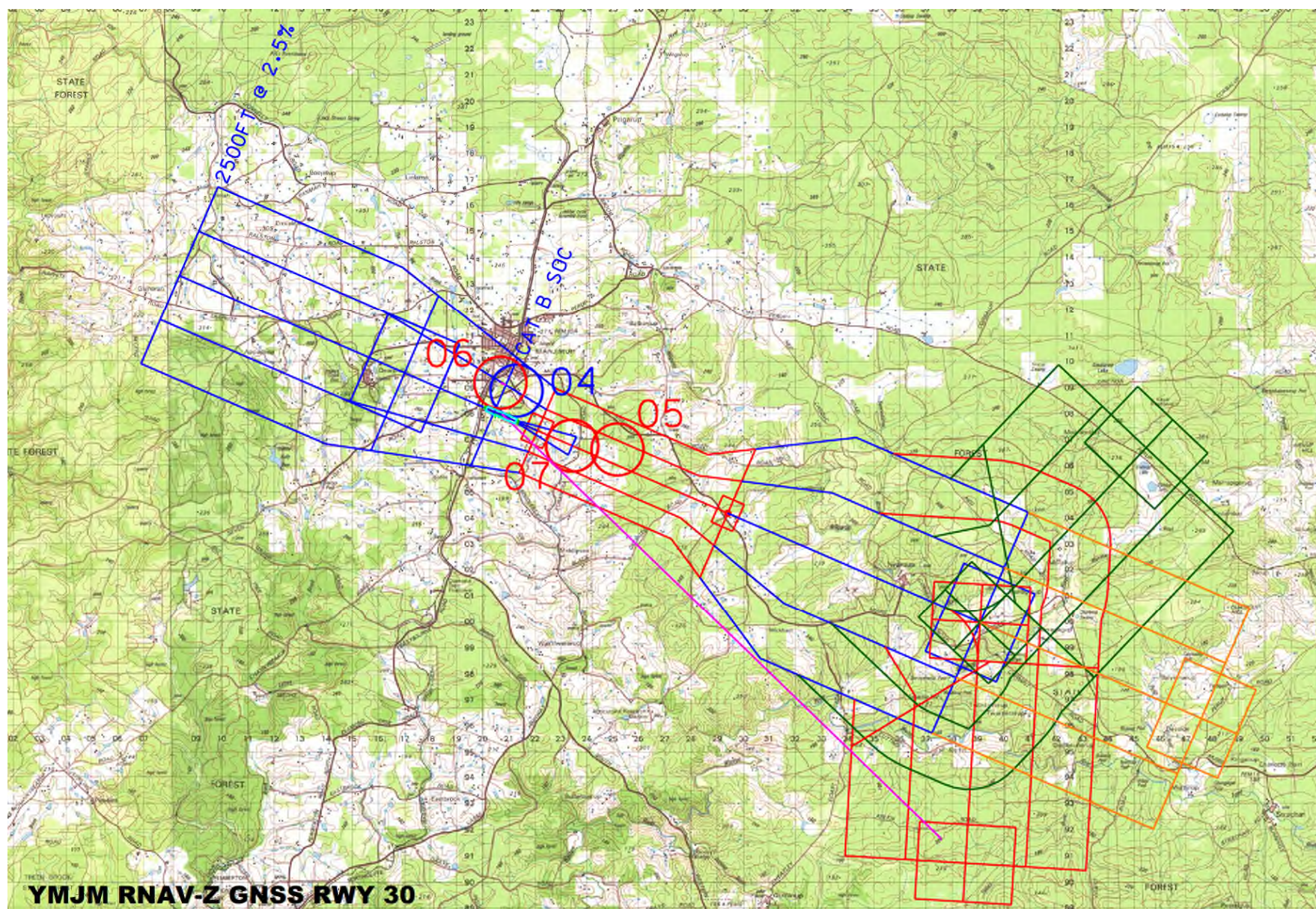
25/07/2014

cc

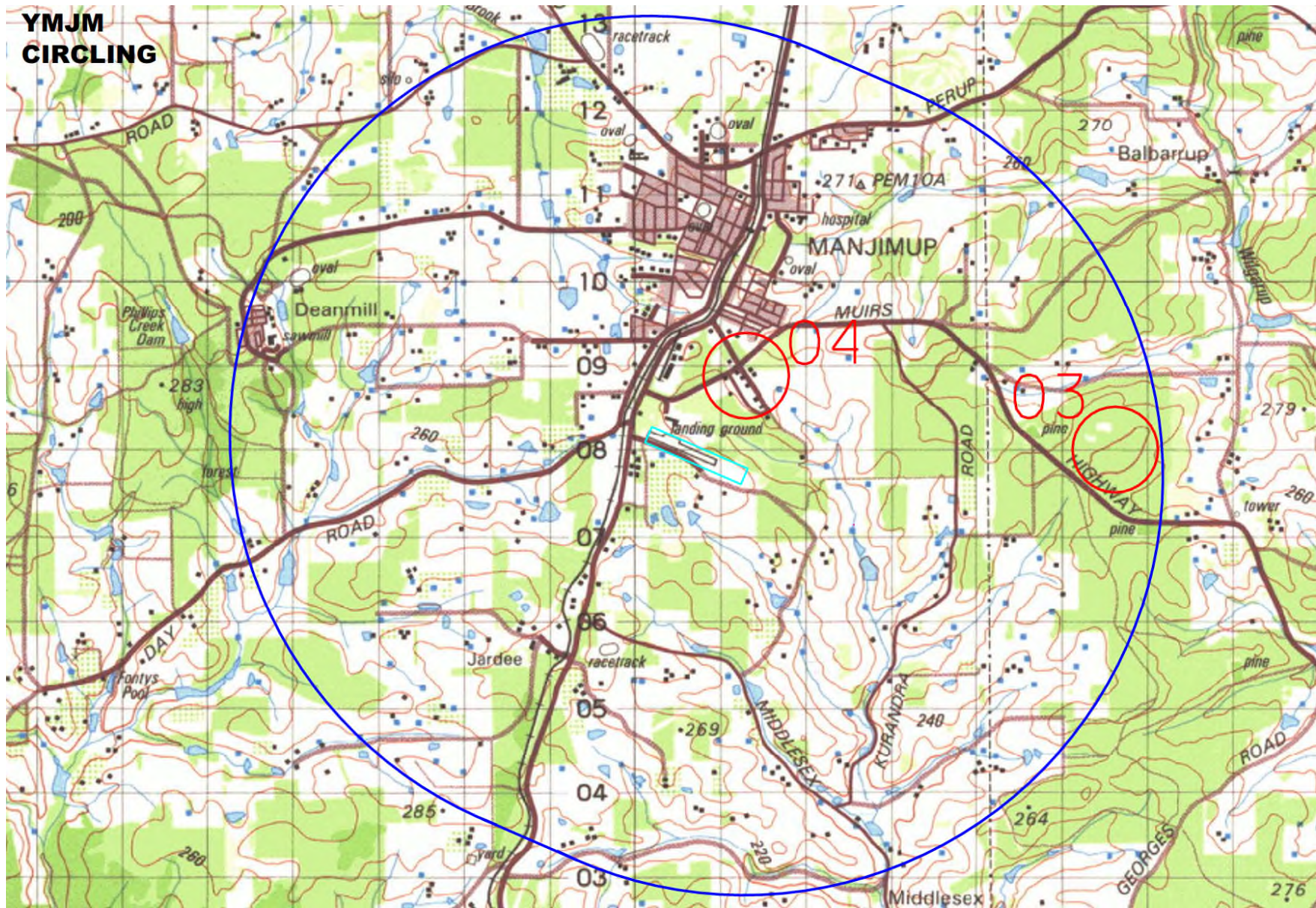
Mr Kevin Dyer
Senior Aerodrome Inspector
Civil Aviation Safety Authority
GPO Box 2005
CANBERRA ACT 2601

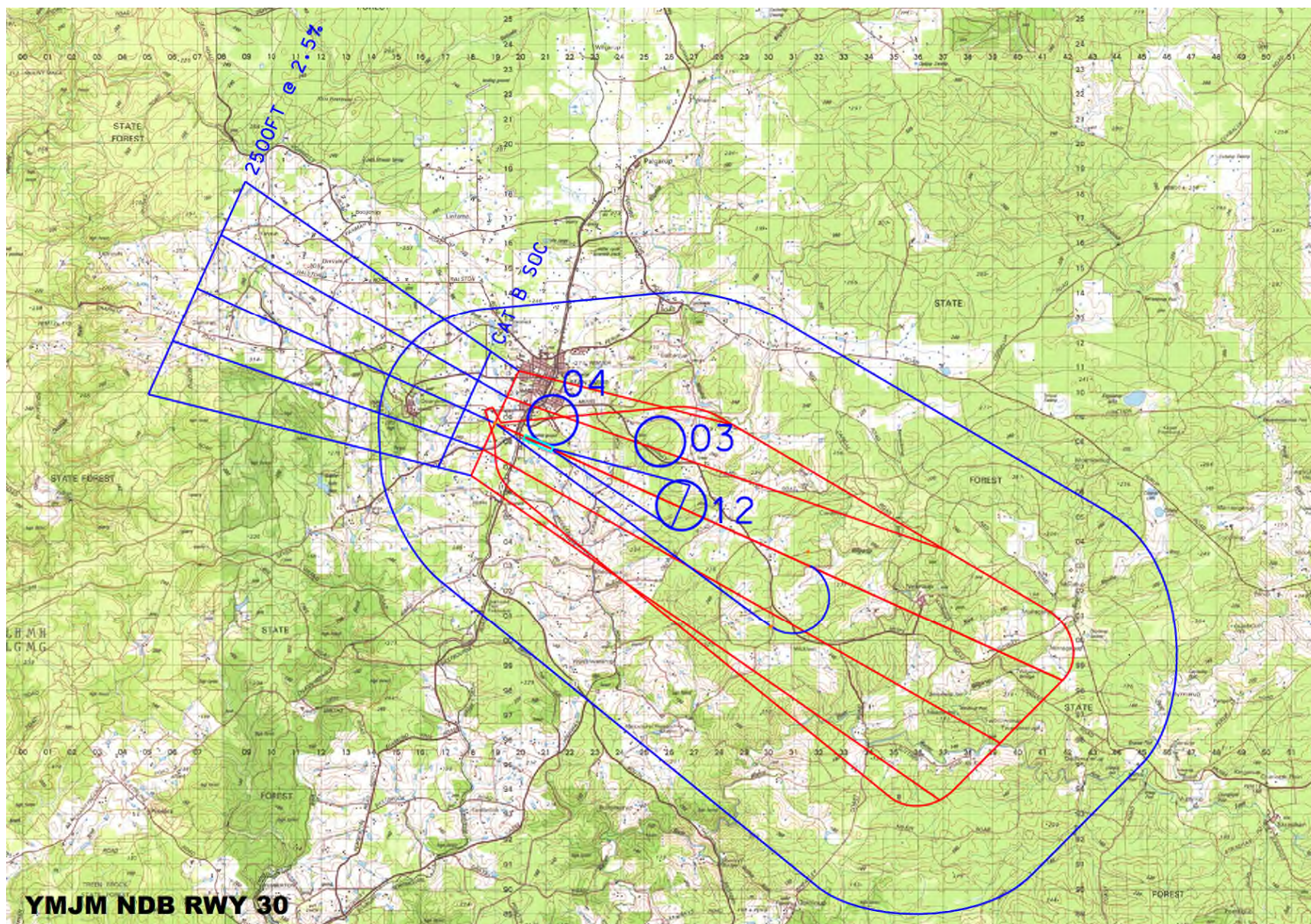
AERODROME: (YMJM) OBSTACLES

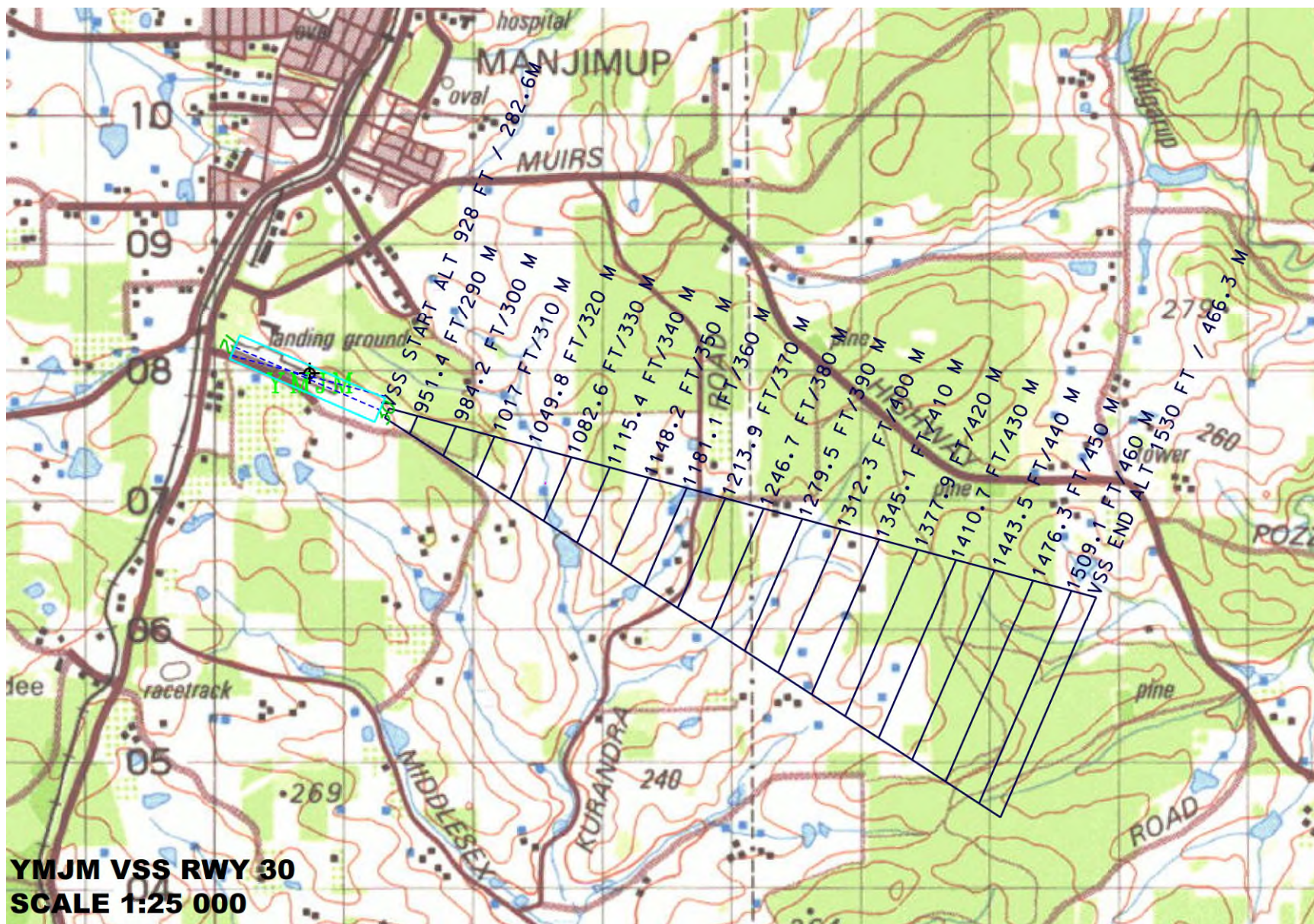
Serial	Segment	Description	BRG °T ARP	Dist (KM)	Dist (NM)	Elev (ft)	MOC	Nominal Alt (ft)	OIS / Fit Alt (ft)	Approximate Position	
MJM01	INITIAL	360M CONT	330°	44.76	24.17	1414	1000	2500	1500	33 54.89	115 53.96
MJM02	INITIAL	1394FT TOWER	008°	23.72	12.81	1394	1000	2500	1500	34 03.21	116 10.88
MJM03	FINAL	300M CONT	090°	4.89	2.64	1233	295	1530	1240	34 15.91	116 11.61
MJM04	MISSED	1230FT TOWER	032°	1.06	0.57	1230	133	1420	1290	34 15.43	116 08.80
MJM05	FINAL	280M CONT	107°	4.64	2.51	1188	246	1420	1180	34 16.67	116 11.31
MJM06	FINAL	300M CONT	358°	1.20	0.65	1233	300	1600	1300	34 15.26	116 08.40
	INITIAL L	GENERAL AREA					984	2500	1520		
	INITIAL C	GENERAL AREA					984	2500	1520		
	INITIAL R	GENERAL AREA					984	2500	1520		
	INITIAL	GENERAL AREA					1000	2500	1500		
MJM12	VSS	RWY 30							1235	34 17.31	116 12.15
MJM13	INTERM	320M CONT	286°	14.40	7.77	1299	500	1800	1300	34 13.73	115 59.42
MJM14	INTERM	320M CONT	277°	11.58	6.25	1299	500	1800	1300	34 15.06	116 00.95



**YMJM
CIRCLING**







CRITICAL OBSTACLES

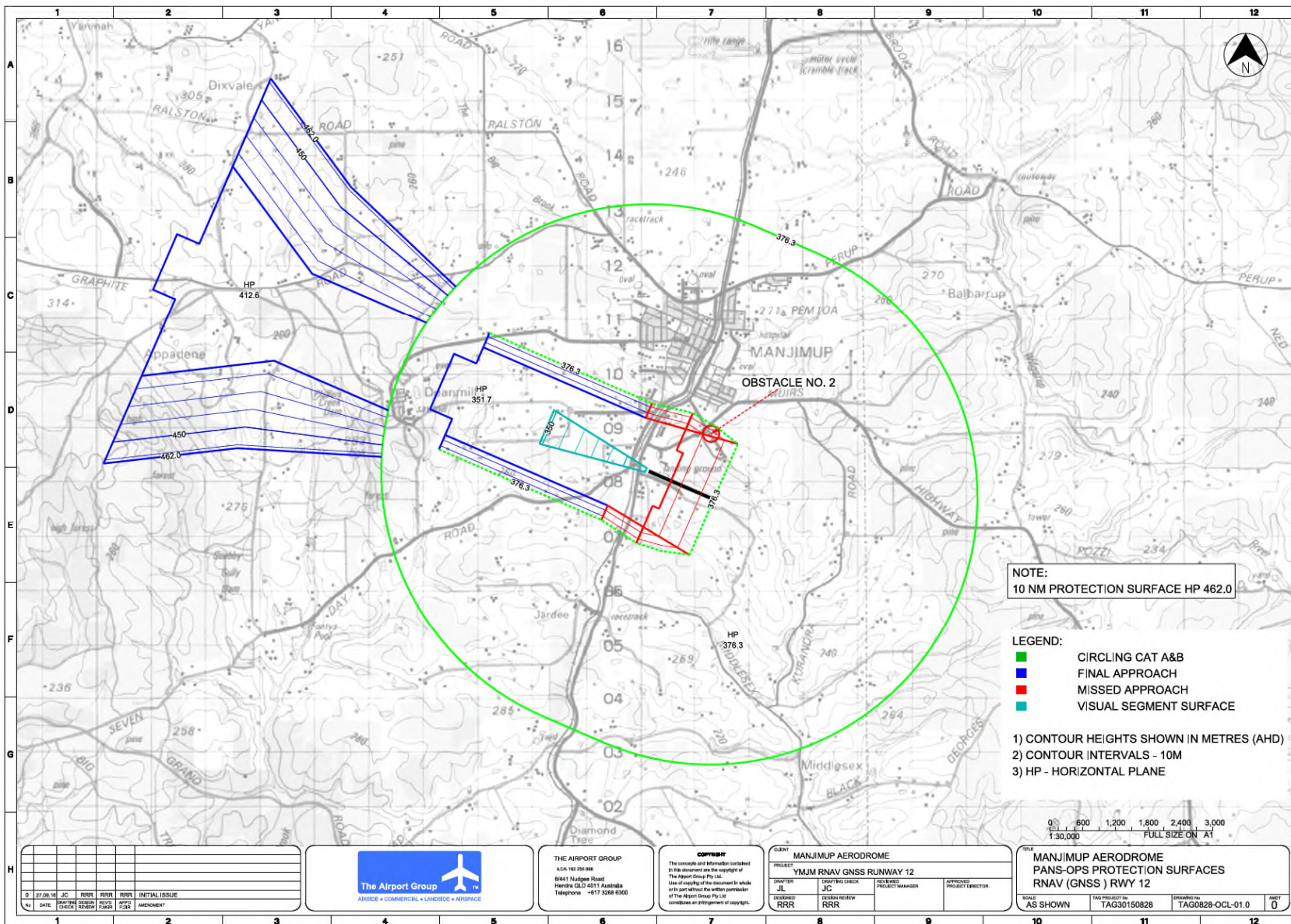
YMJM ARP and THRESHOLD POSITIONS (WGS84/GDA94 AHD)			
	Latitude Easting	Longitude Northing	Elevation (AHD)
ARP	34° 15' 54.54" S	116° 08' 25.46" E	286.5m 940ft
Runway 12	34° 15' 47.76" S	116° 08' 02.92" E	286.5m 940ft
Runway 30	34° 16' 03.89" S	116° 08' 46.64" E	282.5m 927ft

CIRCLING			
Obstacle Number	Segment Description/ Obstacle Description	Obstacle Position: Reference: ARP (BRG °T/RNG km)	PANS-OPS Elevation (ft/m AHD)
2	Cat A&B Circling Green coloured area 1227ft COMMS Tower	033° / 1.1km	1234ft/ 376.3m

VSS RWY 12			
Obstacle Number	Segment Description/ Obstacle Description	Obstacle Position: Reference: ARP (BRG °T/RNG km)	PANS-OPS Elevation (ft/m AHD)
	Cyan coloured area Nil Significant		Refer Diagram for Surface Elevation

RNAV-Z (GNSS) FINAL RWY 12			
Obstacle Number	Segment Description/ Obstacle Description	Obstacle Position: Reference: ARP (BRG °T/RNG km)	PANS-OPS Elevation (ft/m AHD)
	2nm SDF to MAPt Blue coloured area. Controlled by Missed Approach climb	033° / 1.1km	1153ft/ 351.7m

RNAV-Z (GNSS) MISSED APPROACH RWY 12			
Obstacle Number	Segment Description/ Obstacle Description	Obstacle Position: Reference: ARP (BRG °T/RNG km)	PANS-OPS Elevation (ft/m AHD)
2	Initial Missed Approach Red coloured area 1227ft COMMS Tower	033° / 1.1km	1228ft/ 374.5m



Appendix C PANSOP Obstacle Plan

MJM 01 TERRAIN	330 deg	44.76 km	fm ARP	1414ft
MJM 02 TOWER	008 deg	23.7 km	fm ARP	1394ft
MJM 03 TERRAIN	090 deg	2.64 km	fm ARP	1233ft
MJM 04 TOWER	032 deg	1.68 km	fm ARP	1230ft
MJM 05 TERRAIN	107 deg	4.64 km	fm ARP	1168ft
MJM 06 TERRAIN	358 deg	1.20 km	fm ARP	1233ft
MJM 13 TERRAIN	286 deg	14.40 km	fm ARP	1299ft
MJM 14 TERRAIN	277 deg	11.58 km	fm ARP	1299ft

NEW OBSTACLES

MJM 07 TOWER 019 deg 1.23 km fm ARP 1023 ft
MJM 08 TOWER 014 deg 1.21 km fm ARP 1085 ft
MJM 09 TOWER 025 deg 1.40 km fm ARP 1134 ft
MJM 15 TOWER 097 deg 6.4 km fm ARP 947 ft
MJM 16 TOWER 007 deg 23.7 km fm ARP 1141 ft

[illegible]

STRATEGIC SAFETY ALLIANCE

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CHAMBER	MANJUMU AERODROME
	PANOP

PROJECT : PANSOP OBSTACLE LAYOUT PLAN

DRAWN BY	WJ
CHECKED BY	
SCALE	As Shn
DATE	15/05/17
PROJECT #	
OWN NO.	
	MJM/17/1