Appendix 4

N70 Noise Contours:

Option 1D

Option 2B

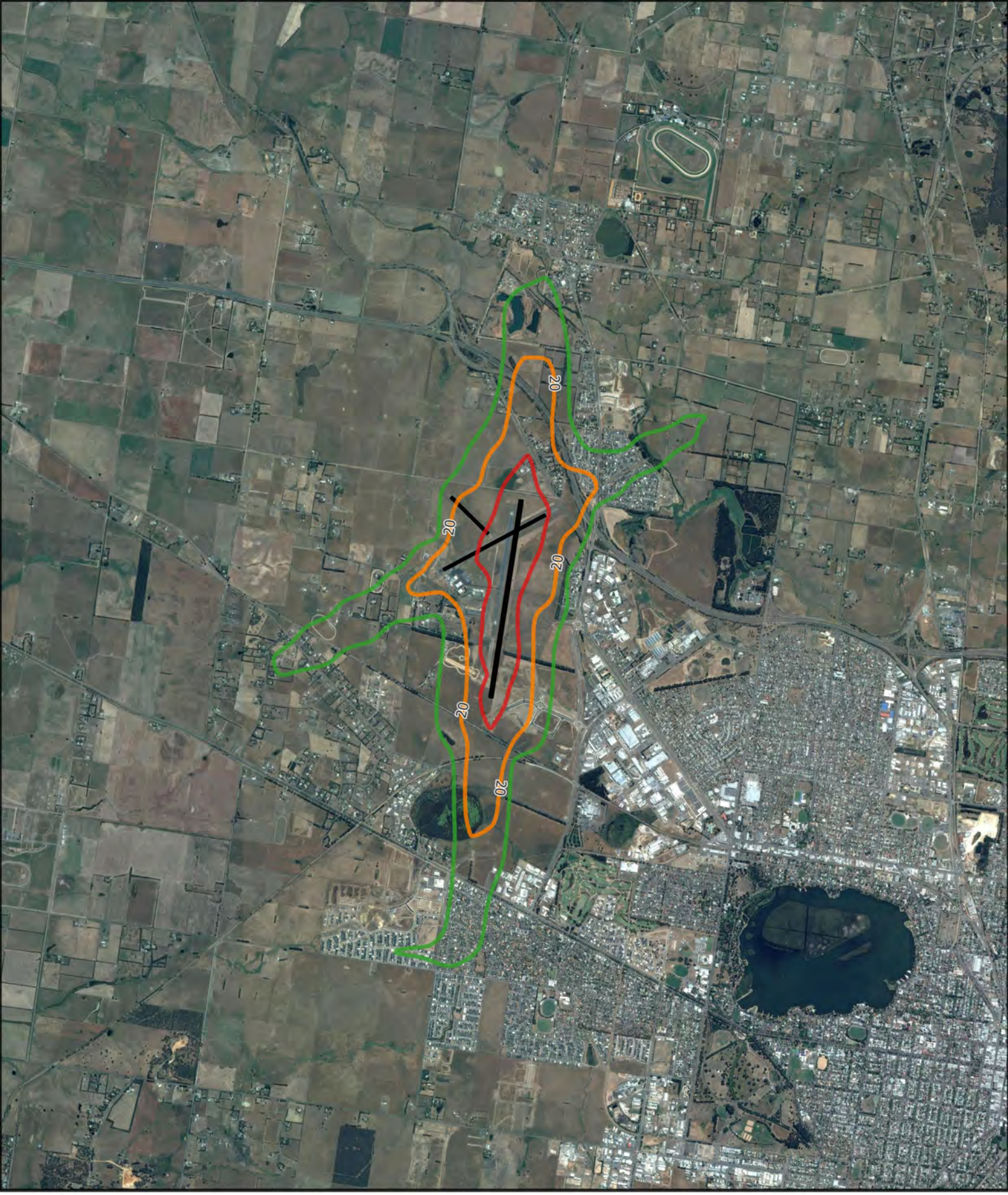
Options 1D & 2B Combined

Ballarat Aerodrome
N70 - Option 1D

0 1000 2000 m

N

10 50
20

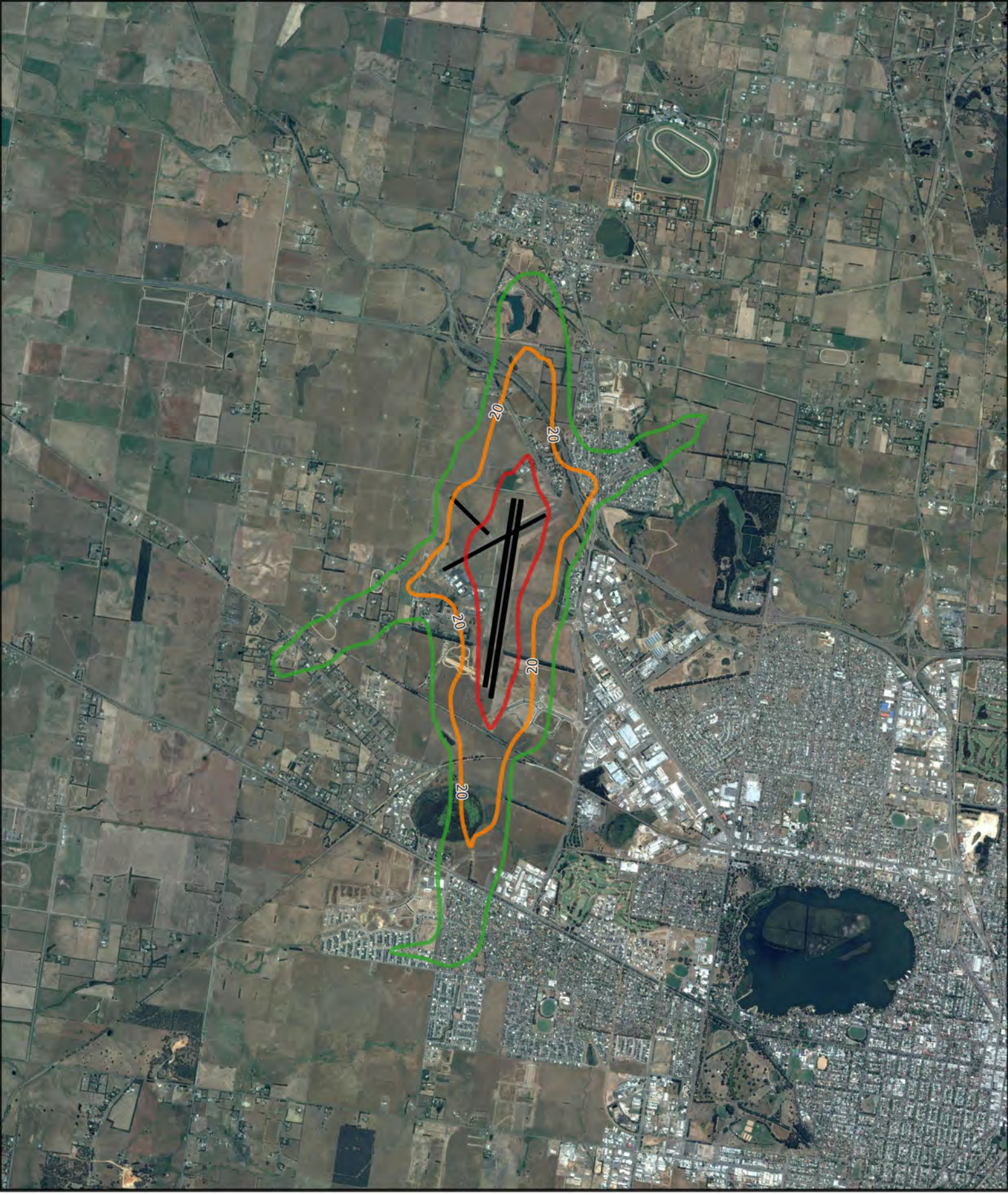


Ballarat Aerodrome
N70 - Option 2B

0 1000 2000 m

N

10 50
20



Ballarat Aerodrome
N70 - Merged (Option 1D & 2B)

0 1000 2000 m

N

10 50
20

Appendix 5

Obstacle Limitation Surfaces:

Option 1D

Option 2B

Options 1D & 2B Combined

DDO and OLS Comparison

735000 740000 745000 750000 755000 760000

5860000 5855000 5850000 5845000 5840000 5835000 5830000

HORIZONTAL SECTION RL 586.6 metres

RL 736.60

RL 586.60 RL 580 RL 570 RL 560 RL 580 RL 570 RL 950

RL 580.5 RL 580 RL 570 RL 560 RL 550 RL 540 RL 530 RL 520 RL 510 RL 500 RL 490 RL 480.5

INNER HORIZONTAL SURFACE RL 480.5 metres

RL 480.5 RL 490 RL 470 RL 460 RL 450 RL 480.5 RL 480 RL 470 RL 460 RL 450 RL 480.5 RL 480

18 36 81 27 SEALED 1260 x 45m SEALED RUNWAY

INNER HORIZONTAL SURFACE RL 480.5 metres

RL 460 RL 470 RL 480

HORIZONTAL SECTION RL 625.6

RL 625.6 RL 620 RL 610 RL 600 RL 590 RL 580 RL 570 RL 560 RL 540 RL 610 RL 620 RL 625.6 RL 610 RL 600 RL 590 RL 580 RL 570 RL 560 RL 625.6 RL 620 RL 610

HORIZONTAL SECTION RL 624.6

RL 610 RL 620 RL 624.6 RL 620 RL 610 RL 600 RL 590 RL 580 RL 570 RL 560 RL 550 RL 540 RL 624.6

RL 570 RL 550 RL 560 RL 580 RL 590 RL 570 RL 580 RL 590 RL 591.1 RL 591.10

HORIZONTAL SECTION RL 591.10 metres

RL 741.6

BALLARAT AERODROME

OBSTACLE LIMITATION SURFACE DIMENSIONS
CO-ORDINATES ARE MGA94 ZONE 54

RUNWAY 18- 36

CODE 4 NON-PRECISION INSTRUMENT APPROACH RUNWAY

18 Approach Inner Edge
E 747057.452 N 5845277.121 RL 436.665

18 Threshold
E 747046.548 N 5845218.120 RL 436.606

Runway 18 Start of TORA/TODA
E 747073.8 N 5845365.6 RL 436.75

36 Approach Inner Edge
E 746721.226 N 5843457.931 RL 441.588

Threshold
E 746732.130 N 5843516.932 RL 441.112

Runway 36 Start of TORA/TODA
E 746695.8 N 5843320.3 RL 442.70

TAKE OFF SURFACE

TAKE OFF GRADE 2%
LENGTH OF TAKE OFF AREA 15000 metres
INNER EDGE LENGTH 180 metres
DIVERGENGE ANGLE 12.5%

APPROACH SURFACE

FIRST SECTION GRADE 2%
FIRST SECTION LENGTH 3000 metres
SECOND SECTION GRADE 2.5%
SECOND SECTION LENGTH 3600 metres
HORIZONTAL SECTION LENGTH 8400 metres
INNER EDGE LENGTH 300 metres
DIVERGENCE ANGLE 15%

TRANSITIONAL SLOPE 14.3%
INNER HOR. SURFACE HT 45 metres
INNER HOR. SURFACE RAD 4000 metres
CONICAL SURFACE SLOPE 5%
CONICAL SURFACE WIDTH 2000 metres

RUNWAY 05 - 23

CODE 3 NON-INSTRUMENT APPROACH RUNWAY

05 THRESHOLD 746278.891 5844613.896 434.682
23 THRESHOLD 747413.806 5845179.785 435.681
CENTRELINE BEARING 63°29' 54"

TAKE OFF SURFACE

TAKE OFF GRADE 2%
LENGTH OF TAKE OFF AREA 15000 metres
INNER EDGE LENGTH 180 metres
DIVERGENGE ANGLE 12.5%

APPROACH SURFACE

FIRST SECTION GRADE 3.33%
FIRST SECTION LENGTH 3000 metres
SECOND SECTION GRADE 2.5%
SECOND SECTION LENGTH 3600 meters
HORIZTONAL SECTION LENGTH 8400 meters
INNER EDGE LENGTH 150 metres
DIVERGENCE ANGLE 15%

RUNWAY 13 - 31

CODE 1 NON-INSTRUMENT APPROACH RUNWAY

13 THRESHOLD 746385.296 5845406.570 433.022
31 THRESHOLD 746778.650 5844994.647 435.761
CENTRELINE BEARING 316° 19' 16"

TAKE OFF SURFACE

TAKE OFF GRADE 5%
LENGTH OF TAKE OFF AREA 1600 metres
INNER EDGE LENGTH 90 metres
DIVERGENGE ANGLE 10%

APPROACH SURFACE

FIRST SECTION GRADE 5%
FIRST SECTION LENGTH 1600 metres
INNER EDGE LENGTH 90 metres
DIVERGENCE ANGLE 10%

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DATE	15/04/2018
SURVEYED	
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ARCHIVED	
DRAWING No.	BLT/010 Sheet 1 of 1 Sheets

NOTE:

- LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD)
- CO-ORDINATES ARE MGA94 ZONE 54
- DUE TO THE VARIABLE NATURE OF THE TRANSITIONAL SURFACE, OBJECTS LOCATED WITHIN IT SHOULD BE CHECKED BY GROUND SURVEY FOR CLEARANCE

CLIENT

BALLARAT AERODROME

AIRPORT SURVEYS
0409 230 650
paul@airportsurveys.com.au

PROJECT

OBSTACLE LIMITATION SURFACES - OPTION 1D

Meters
1000 0 1000 2000
1:50000

AMENDMENTS		
DATE	AMENDMENT	SIGNED

735000 740000 745000 750000 755000 760000

5860000 5855000 5850000 5845000 5840000 5835000 5830000

HORIZONTAL SECTION RL 587.2 metres

HORIZONTAL SECTION RL 625.6

INNER HORIZONTAL SURFACE RL 480.5 metres

INNER HORIZONTAL SURFACE RL 480.5 metres

HORIZONTAL SECTION RL 624.6

HORIZONTAL SECTION RL 591.5 metres

BALLARAT AERODROME

OBSTACLE LIMITATION SURFACE DIMENSIONS
CO-ORDINATES ARE MGA94 ZONE 54

RUNWAY 18- 36

CODE 4 NON-PRECISION INSTRUMENT APPROACH RUNWAY

18 Approach Inner Edge
E 747130.42 N 5845222.96 RL 437.2
18 Threshold
E 747119.52 N 5845163.96 RL 436.77
Runway 18 Start of TORA/TODA
E 747154.1 N 5845350.8 RL 438.27

36 Approach Inner Edge
E 746796.02 N 5843413.60 RL 441.5
36 Threshold
E 746806.92 N 5843472.60 RL 441.1
Runway 36 Start of TORA/TODA
E 746756.0 N 5843197.2 RL 442.38

TAKE OFF SURFACE

TAKE OFF GRADE 2%
LENGTH OF TAKE OFF AREA 15000 metres
INNER EDGE LENGTH 180 metres
DIVERGENGE ANGLE 12.5%

APPROACH SURFACE

FIRST SECTION GRADE 2%
FIRST SECTION LENGTH 3000 metres
SECOND SECTION GRADE 2.5%
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INNER EDGE LENGTH 300 metres
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INNER EDGE LENGTH 90 metres
DIVERGENCE ANGLE 10%

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CLIENT

BALLARAT AERODROME

AIRPORT SURVEYS
0409 230 650
paul@airportsurveys.com.au

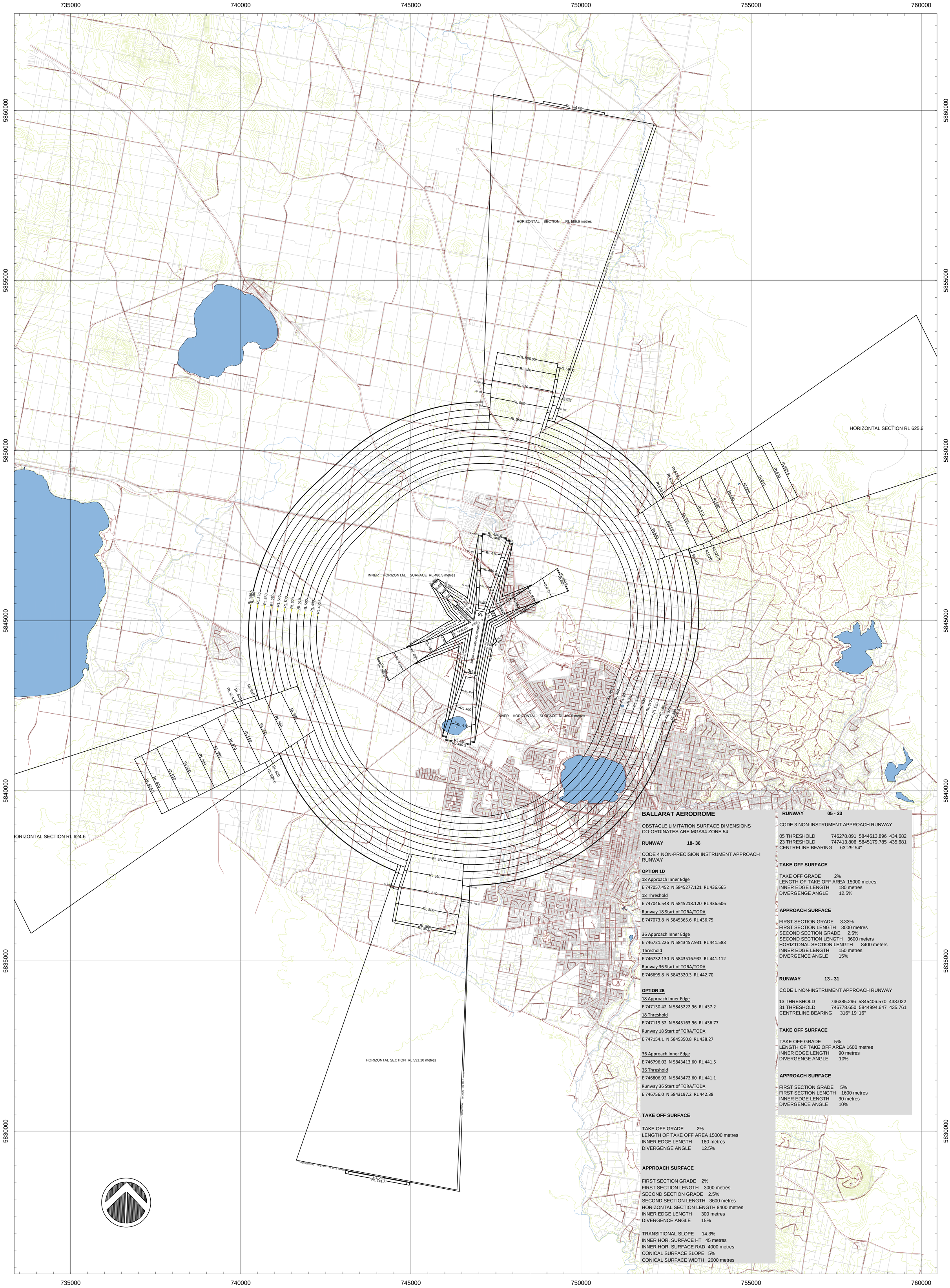
PROJECT

OBSTACLE LIMITATION SURFACES - OPTION 2B

Meters
1000 0 1000 2000
1:50000

AMENDMENTS

DATE	AMENDMENT	SIGNED



BALLARAT AERODROME

OBSTACLE LIMITATION SURFACE DIMENSIONS
CO-ORDINATES ARE MGA94 ZONE 54

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CODE 4 NON-PRECISION INSTRUMENT APPROACH RUNWAY

OPTION 1D

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E 746806.92 N 5843472.60 RL 441.1

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INNER EDGE LENGTH 300 metres
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INNER HOR. SURFACE HT 45 metres
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FIRST SECTION LENGTH 1600 metres
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DATE	
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NOTE:

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CLIENT

BALLARAT AERODROME

AIRPORT SURVEYS
0409 230 650
paul@airportsurveys.com.au

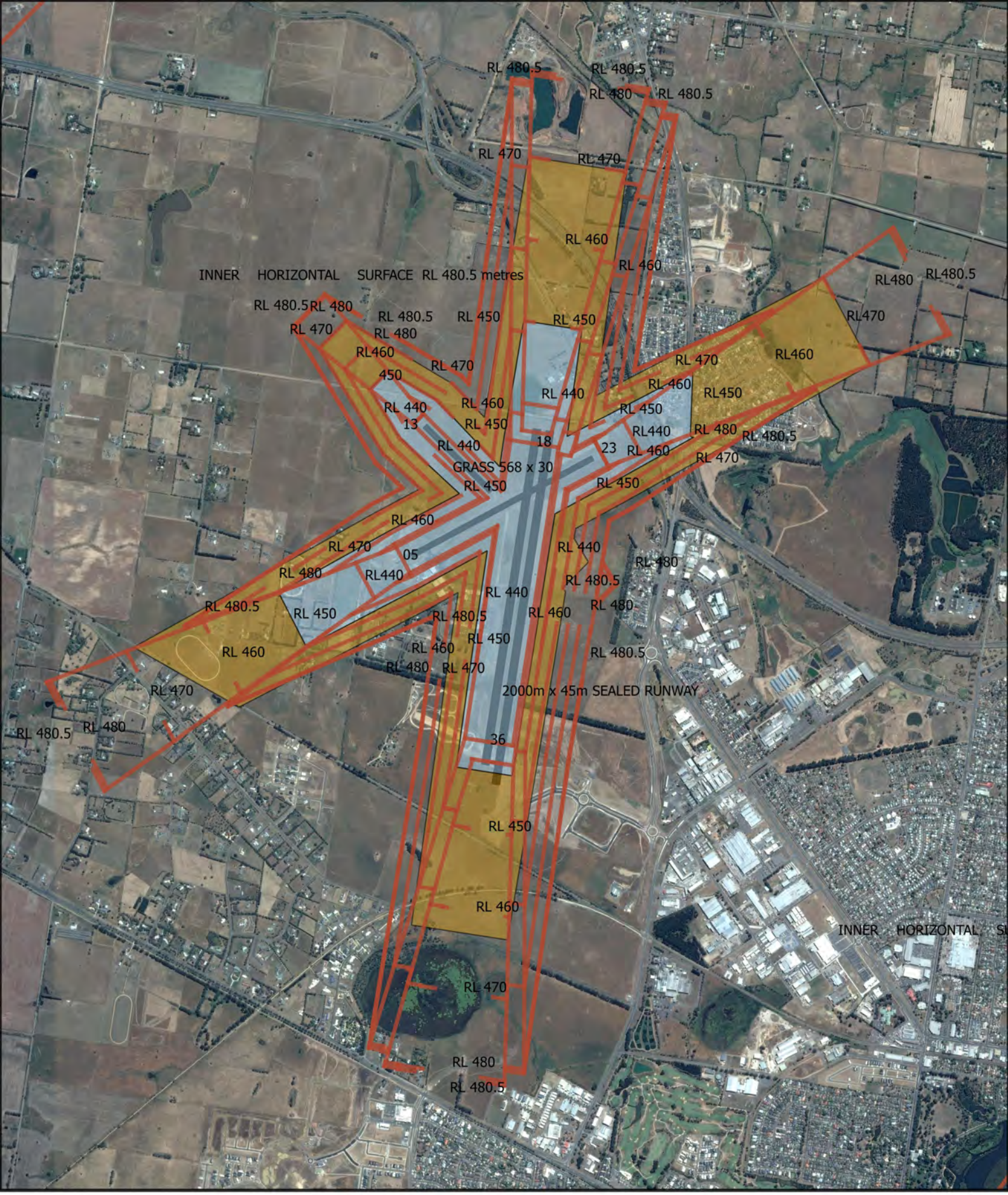
PROJECT

OBSTACLE LIMITATION SURFACES - OPTION 1D & 2B COMBINED

Meters
1000 0 1000 2000
1:50000

AMENDMENTS

DATE	AMENDMENT	SIGNED



Ballarat Aerodrome
DDO & OLS

0 500 1000 1500 2000 m

N

OLS (1D & 2B)
Existing DDO18
Existing DDO17

17.088.01 • June 2018

Ballarat Aerodrome Noise Modelling Report

City of Ballarat

Aviation Consultants

kneebush planning

to70

Ballarat Aerodrome Noise Modelling Report

Report

Report

Prepared for City of Ballarat

T070 Aviation Australia

Suite 19, 70 Racecourse Road,
North Melbourne
VIC 3051
Email: info@to70.com.au

North Melbourne, June 2018

Table of Contents

1 Introduction 4
1.1 Background 4
1.2 Scope and deliverables 4
2 Inputs and assumptions 5
2.1 General settings 5
Weather 5
Aerodrome Reference Point (ARP) 5
Runway and Helipad Coordinates 6
Helipad 6
2.2 Traffic 7
Aircraft mix and INM representatives 7
Forecasts 8
Usage splits 8
Day and Night operations 10
Tracks and usage 11
3 Results 15
3.1 ANEC Results 15

1 Introduction

Kneebush Planning and T070 Aviation Australia (T070) have been appointed by City of Ballarat (CoB) to carry out an airport noise assessment for two runway development options at Ballarat Aerodrome. This required the preparation of ANEC, N60 and N70 noise contours.

The noise contours were produced using Integrated Noise Model (INM) version 7.0d which is the current version. INM is a computer noise prediction model developed by the U.S. Federal Aviation Administration used for airport noise assessments worldwide and Australia.

This report presents the results of the noise modelling, as well as details of the inputs and assumptions used in the noise model calculations.

1.1 Background

Development of land nearby and adjacent to Ballarat Aerodrome triggered a review of safeguarding measures and future airport development as laid out in the 2013 Ballarat Airport Master Plan.

Following an initial meeting with Council on 6th December, Kneebush Planning were asked to provide noise and airspace protection assessments for the runway development options under consideration.

The aim of the assessment was to provide information to Council regarding the upgrades required to support Emergency Management Victoria plans to station large air tankers at Ballarat Airport and the impact of those upgrades on proposed land development in the vicinity.

CoB commissioned a study into upgrading the runway at Ballarat Aerodrome following discussions with Emergency Management Victoria regarding the introduction of Large Aircraft Tankers (LAT) for firefighting. The terms of the study required the assessment of options based on impacts to existing infrastructure and the planned development of the Ballarat West Employment Zone (BWEZ).
In the Ballarat Airport Aviation Emergency Services Hub options analysis, delivered to City of Ballarat in October 2016, there were two runway development options that most closely satisfied the assessment criteria – Options 1D & 2B.

Option 1D
A 2000m long runway, 30m wide enclosed in a 300m runway strip, developed over the existing runway (RWY 18/36), with extensions applied to the north and south.

Option 2B
A 2000m long runway, 45m wide enclosed in a 300m runway strip, developed to the east of the existing runway (RWY 18/36).

1.2 Scope and deliverables

T070 were contracted to carry out noise modelling for Ballarat Aerodrome, specifically to produce

ANEC and N-contours. The scope of work required a review of previous noise modelling undertaken by Kneebush Planning in 2010 in order to reproduce noise contours reflective of envisaged changes to infrastructure and traffic forecasts. Consequently, the following outputs have been produced:

ANEC contours for Ballarat Aerodrome in 2050 for the following scenarios:

- Option 1D Runway configuration
- Option 2B Runway configuration
- Option 1D and 2B merged configuration

N60, N65 and N70 contours in 2050 for the following scenarios:

- Option 1D Runway configuration
- Option 2B Runway configuration
- Option 1D and 2B merged configuration

2 Inputs and assumptions

This section provides detail on the inputs and assumptions used for the noise calculations. These have been discussed and verified by CoB, which are detailed in the Ballarat Noise Assessment Assumptions document. Forecasts and aircraft type assumptions are based on the previous noise model produced in 2010 and CoB input.

2.1 General settings

Weather

Average weather parameters in the model have been created from Bureau of Meteorology (BoM) data for the period from 1908-2010, except for average pressure. The average pressure parameter is sourced from BoM data during the period of March 2017- March 2018. The annual average temperature and pressure at Ballarat Aerodrome was sourced from the nearest weather station at Ballarat Aerodrome (station no. 089002). The INM default headwind value was used.

Weather settings are as follows:

Table 1: Weather settings

Parameter	Value
Temperature	13.8°C
Pressure	826.596 mm-Hg
Relative humidity	67.3%
Headwind	14.8 km/h (INM default)

Aerodrome Reference Point (ARP)

Details of the Ballarat Aerodrome ARP is shown below:

Table 2 - ARP data

Description	Latitude	Longitude	Elevation (m)
ARP	-37.511667	143.791667	436.7784

Runway and Helipad Coordinates

To70 has modelled Options 1D and 2B development configurations from the Ballarat Airport Aviation Emergency Services Hub Design documents provided by CoB.

- Option 1D involves extending the existing runway 18/36 to provide a runway field length of 2000m.
- Option 2B involves constructing a new runway East of the existing runway 18/36 with a field length of 2000m. The existing runway 18/36 will be removed once the new runway is completed. Runway 05/23 and 13/31 will remain unchanged.

Table 3 - Runway end data

Option	Description	Latitude	Longitude	Width (m)	Elevation (m)	Displaced Threshold (m)
1D	Runway 18	-37.505607	143.795186	45	436.75	150
	Runway 36	-37.524122	143.791601		442.70	200
2B	Runway 18	-37.505719	143.796098	45	438.27	190
	Runway 36	-37.525214	143.792322		442.38	280
Existing	Runway 05	-37.512592	143.786467	30	434.64	N/A
	Runway 23	-37.507203	143.799078		435.56	N/A
	Runway 13	-37.505439	143.787400		433.12	N/A
	Runway 31	-37.509036	143.791978		435.56	N/A

Helipad

The helicopter landing site (HLS) location was modelled on coordinates received used in the previous noise model.

Table 4 - Helipad data

Description	Latitude	Longitude	Elevation (m)
H1	-37.513451	143.789015	436.78

2.2 Traffic

This section details the traffic inputs that is used in the INM study.

Aircraft mix and INM representatives

Aircraft types used in the noise modelling have been discussed with CoB during the kick-off meeting and are based on historic traffic levels and traffic forecasts. To70 has modelled the forecast aircraft using the following INM equivalents detailed in Table 5 below.

The aircraft types have generally remained the same as per the previous noise model, with slight modifications to reflect likely operations in the future. It is envisioned that the Embraer 170 included in the previous noise study will not operate in the 20-year time horizon of this study. Furthermore, it is expected that two additional aircraft will operate at Ballarat Aerodrome; the Avro RJ85 and Sikorsky Seahawk

Table 5 - INM Aircraft representatives

Class	Aircraft Type	INM Aircraft
RPT	Dash 8-300	DHC830
	Embraer 135	EMB135[1]
Business, Emergency and Military (BEM)	Beech King Air 200	DHC6
	Gulfstream IV	GIV
	Cessna 441 Conquest II	CNA441
	Cessna 208 Caravan	CNA208
	C130 Hercules	C130
	British Aerospace Avro RJ85	BAE146
General Aviation (GA)	Cessna 172 / Piper Warrior	GASEPF
	Cessna 210 / Beech Bonanza	GASEPV
	Piper PA-31 / Beech Baron	BEC58P
Circuit Training	Cessna 172	GASEPF
Helicopters	Bell 407	B407
	Robinson R22	R22
	Sikorsky Seahawk	S61[2]

[1] INM represents this aircraft as the substitute aircraft "EMB145" by default.

[2] Closest INM representative of the Sikorsky Seahawk.

Where substitute aircraft are required for INM modelling, To70 have utilised the aircraft types suggested within the INM tool.

Forecasts

Forecast traffic movements were agreed with CoB; detailing the predicted number of movements for the year 2050. The forecast is determined using a compound growth rate of 1.5% applied on 35,000 movements in 2018. Table 6 shows the forecast annual and daily movements for the airport.

Table 6 - Forecast annual and daily movements for 2050

Class	% of Total	Movements by Class	Aircraft	Movements[1] by Aircraft
RPT	1.50%	845	Embraer 135	422
			Dash 8-300	422
BEM	4.0%	2254	Beech King Air 200	762
			Gulfstream IV	451
			Cessna 441 Conquest II	451
			Cessna 208 Caravan	451
			C130 Hercules	61
			British Aerospace Avro RJ85	79
GA	46.5%	26208	Cessna 172 / Piper Warrior	8736
			Cessna 210 / Beech Bonanza	8736
			Piper PA-31 / Beech Baron	8736
Circuit Training[2]	45.0%	25362	Cessna 172	25362
Helicopters	3.0%	1691	Bell 407	803
			Robinson R22	803
			Sikorsky Seahawk	85
Total	**100.00%**	**56361**		**56361**

[1] In this report a movement is defined as a landing or a take-off

[2] Circuit training movements represent a training aircraft taking-off from a full stop on the runway, then performing a number of touch-and-go operations without stopping and then concluding with a landing to a full stop. In the INM model circuit movements are modelled as CIR/TGO operations which have both a landing and a take-off. As such, the model comprises 12,681 CIR/TGO operations which, in terms of movements, are counted twice, bringing the total circuit training movements to 25,362 as stated in the table.

Usage splits

CoB have indicated the following runway utilisation proportions based on observation of predominant runway utilisation and aircraft performance characteristics, shown in Table 7 and Table 8. The Gulfstream IV, C130 Hercules and BA Avro RJ85 operations have been allocated to runway 18/36 due to aircraft performance characteristics, as the other runways are not suitable for these aircraft to operate on.

Table 7 - Runway usage split

Runway	Usage proportion
05	10.98%
13	3.25%
18	18.36%

Runway	Usage proportion
23	15.64%
31	4.62%
36	47.16%

Table 8 - Runway utilisation by Aircraft

Aircraft	INM ID	05	13	18	23	31	36	TOTAL
Embraer 135	EMB135	0.0%	0.0%	30.0%	0.0%	0.0%	70.0%	100%
Dash 8-300	DHC830	0.0%	0.0%	30.0%	0.0%	0.0%	70.0%	100%
Beech King Air 200	DHC6	14.0%	0.0%	19.0%	17.0%	0.0%	50.0%	100%
Gulfstream IV	GIV	0.0%	0.0%	36.0%	0.0%	0.0%	64.0%	100%
Cessna 441	CNA441	14.0%	0.0%	19.0%	17.0%	0.0%	50.0%	100%
Cessna 208	CNA208	14.0%	0.0%	19.0%	17.0%	0.0%	50.0%	100%
C130 Hercules	C130	0.0%	0.0%	36.0%	0.0%	0.0%	64.0%	100%
BA Avro RJ85	BAE146	0.0%	0.0%	36.0%	0.0%	0.0%	64.0%	100%
GASEPF	GASEPF	11.0%	3.0%	18.0%	16.0%	4.5%	47.5%	100%
GASEPV	GASEPV	11.0%	3.0%	18.0%	16.0%	4.5%	47.5%	100%
BEC58P	BEC58P	11.0%	3.0%	18.0%	16.0%	4.5%	47.5%	100%
GASEPF (Training)	GASEPF	11.0%	3.0%	18.0%	16.0%	4.5%	47.5%	100%
Bell 407	B407	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	100%
Robinson R22	R22	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	100%
Sikorsky Seahawk	S61	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	100%

Table 9 - Daily movements by aircraft type and runway

Aircraft	INM ID	05	13	18	23	31	36	Grand Total
Embraer 135	EMB135	0.000	0.000	0.347	0.000	0.000	0.809	1.156
Dash 8-300	DHC830	0.000	0.000	0.347	0.000	0.000	0.809	1.156
Beech King Air 200	DHC6	0.292	0.000	0.397	0.355	0.000	1.044	2.088
Gulfstream IV	GIV	0.000	0.000	0.445	0.000	0.000	0.791	1.236
Cessna 441	CNA441	0.173	0.000	0.235	0.210	0.000	0.618	1.236
Cessna 208	CNA208	0.173	0.000	0.235	0.210	0.000	0.618	1.236
C130 Hercules	C130	0.000	0.000	0.060	0.000	0.000	0.107	0.167
BA Avro RJ85	BAE146	0.000	0.000	0.078	0.000	0.000	0.139	0.216
GASEPF	GASEPF	2.633	0.718	4.308	3.829	1.077	11.369	23.934
GASEPV	GASEPV	2.633	0.718	4.308	3.829	1.077	11.369	23.934
BEC58P	BEC58P	2.633	0.718	4.308	3.829	1.077	11.369	23.934
GASEPF (Training)	GASEPF	7.643	2.085	12.507	11.118	3.127	33.005	69.485
Bell 407	B407	0.183	0.183	0.183	0.183	0.183	0.183	2.200

Aircraft	INM ID	05	13	18	23	31	36	Grand Total
Robinson R22	R22	0.183	0.183	0.183	0.183	0.183	0.183	2.200
Sikorsky Seahawk	S61	0.019	0.019	0.019	0.019	0.019	0.019	0.233
Grand Total		**16.566**	**4.625**	**27.960**	**23.768**	**6.744**	**72.432**	**154.411**

Day and Night operations

INM calculations weigh night time flights more heavily than day-time flights. Daytime operations are defined as 0700-1900 and night-time are defined as 1900-0700 in the ANEF system. To accurately model noise impacts, a day / night split of operations needs to be defined. The day / night split is assumed to be identical to the previous 2010 noise assessment modelling report, outlined in Table 10.

Table 10 - Daytime and night-time operation split

Description	Proportion
Day	95%
Night	5%

Tracks and usage

This section shows the expected flight paths at Ballarat Aerodrome in 2050, according to inputs received and discussions with CoB. To70 modelled the flight tracks based on the previous Ballarat Aerodrome Noise Modelling Report undertaken in 2010. The figures below illustrate the approach, departure, and circuit tracks that will be used at Ballarat Aerodrome for both option 1D and 2B configurations.

For the flight track usage, the movements were evenly distributed across the relevant tracks for each respective runway. For example, if the Embraer 135 has 1 arrival per day on runway 36. There are five arrival tracks on runway 36. Therefore 1 divided by five equals 0.2 movements per arrivals track.

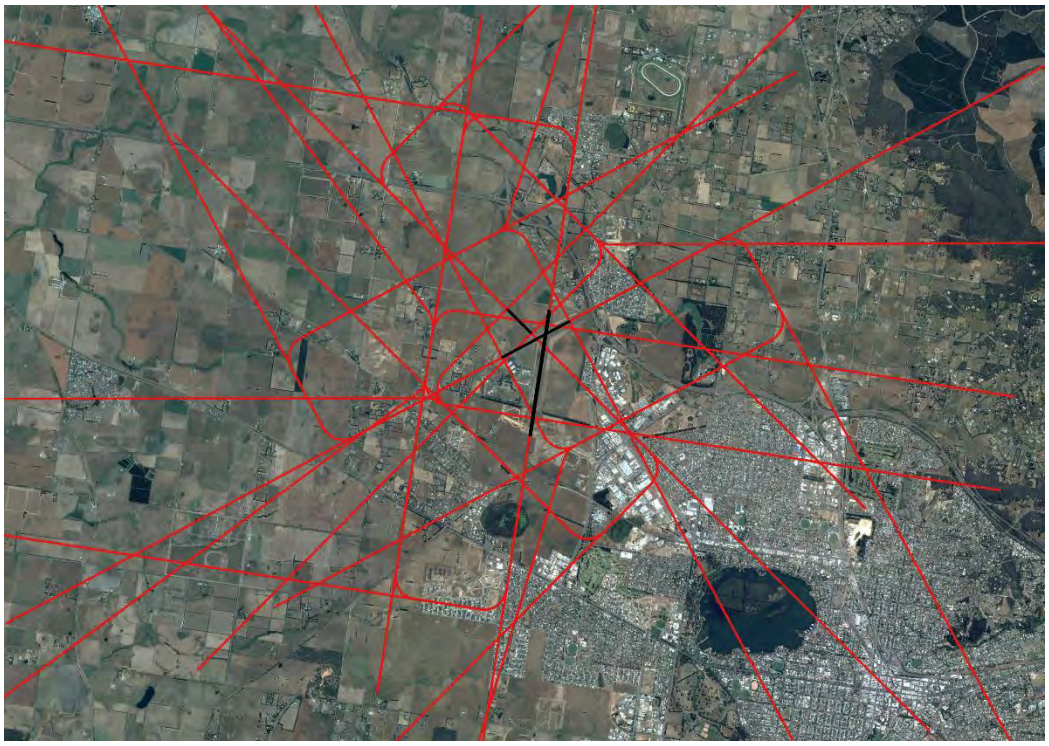


Figure 1 – Option 1D arrival tracks

Figure 2 – Option 1D departure tracks

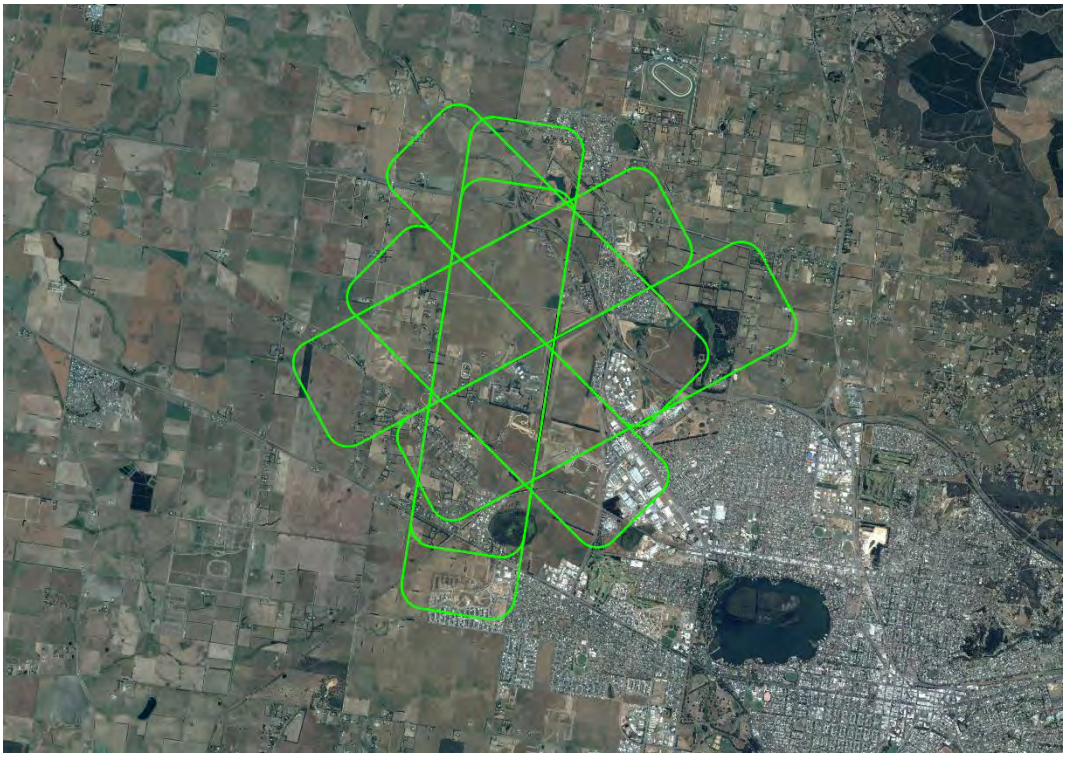


Figure 3 – Option 1D circuit tracks

Figure 4 – Option 2B arrival tracks

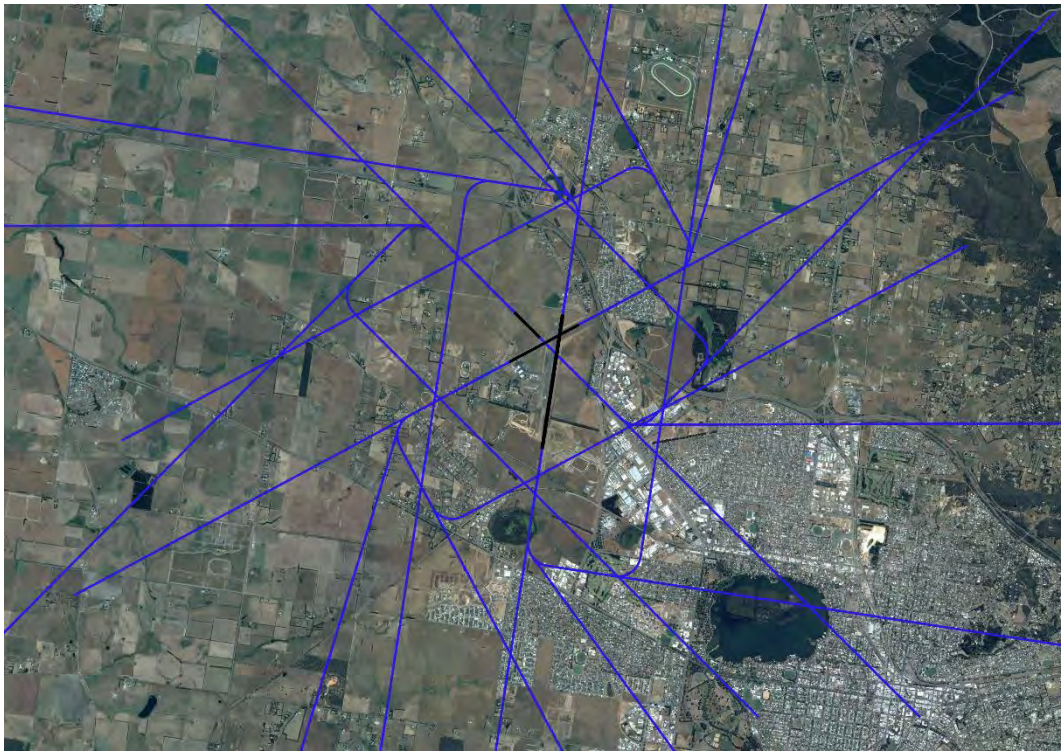


Figure 5 – Option 2B departure tracks

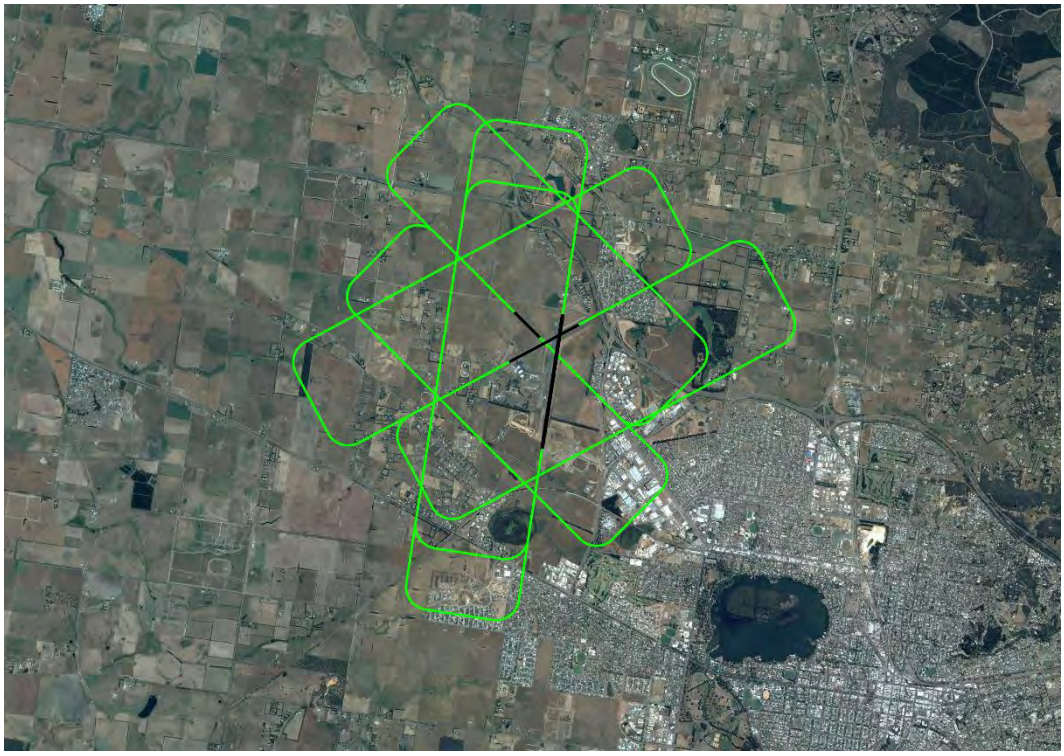


Figure 6 - Option 2B circuit tracks

Figure 7 – Helicopter Tracks

3 Results

In this section, we present the results of the noise modelling and describe the metrics used to generate the contours. To70 has generated the following contours for Option 1D, 2B and merged development scenarios:

- ANEC 2050
- N-contours for 2050

3.1 ANEC results

ANEC contours are used to quantify the noise impact of airport development scenarios. These maps are based on assumptions about the size, shape and demand of aircraft and airport operations, and can relate to the distant future. Because the concepts and scenarios are hypothetical and may never occur, the maps produced have no official status for land-use planning purposes. The ANEC uses the Effective Perceived Noise Level (EPNL) which applies a weighting to account for the fact that by the human ear is less sensitive to low audio frequencies.

The ANEC contours charts are attached in Appendix A. The ANEC contours of the merged scenario shows that the ANEC 20 contour does not extend into any residential areas. The ANEC 20 contour does not extrude beyond the Western Freeway towards the north of the aerodrome. As specified in AS2021:2015, buildings (residences) which fall within the ANEF 20 contour or below are deemed acceptable. Based on the ANEC contours, there is no major impact to nearby dwellings.

3.2 N-Contour results

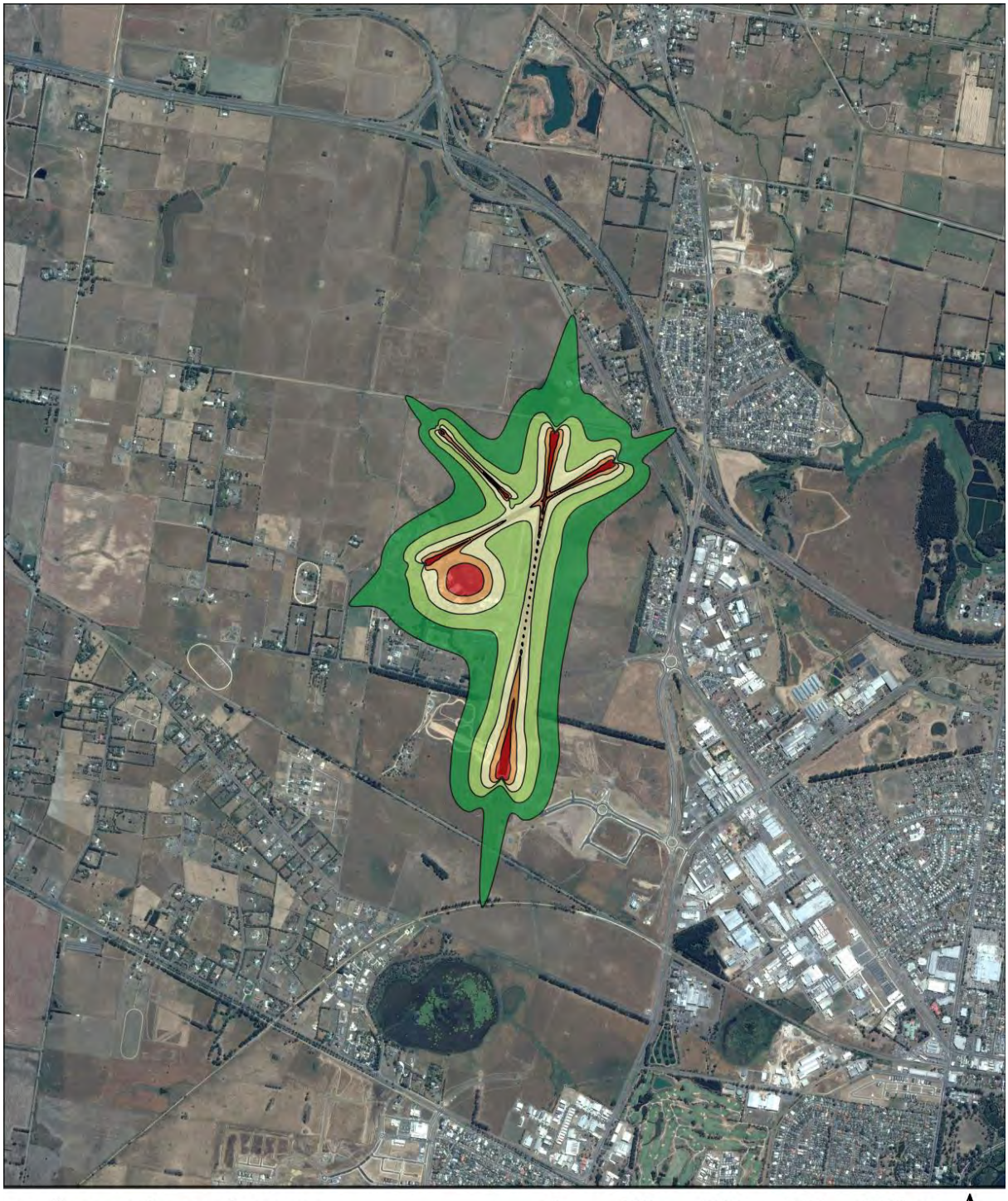
To complement the ANEF maps, Noise-Above contours (N contours) charts show the number of aircraft noise events per day exceeding specific noise levels. N-contours can be used to provide information both on past and planned aircraft operations. This helps communities and individuals to visualise noise impact in specific areas as it takes a person's reaction to noise out of the equation. Further information including a detailed technical explanation of N contours can be found on the Department of Infrastructure, Regional Development and Cities (DIRDC) website at;
https://infrastructure.gov.au/aviation/environmental/transparent_noise/expanding/4.aspx.

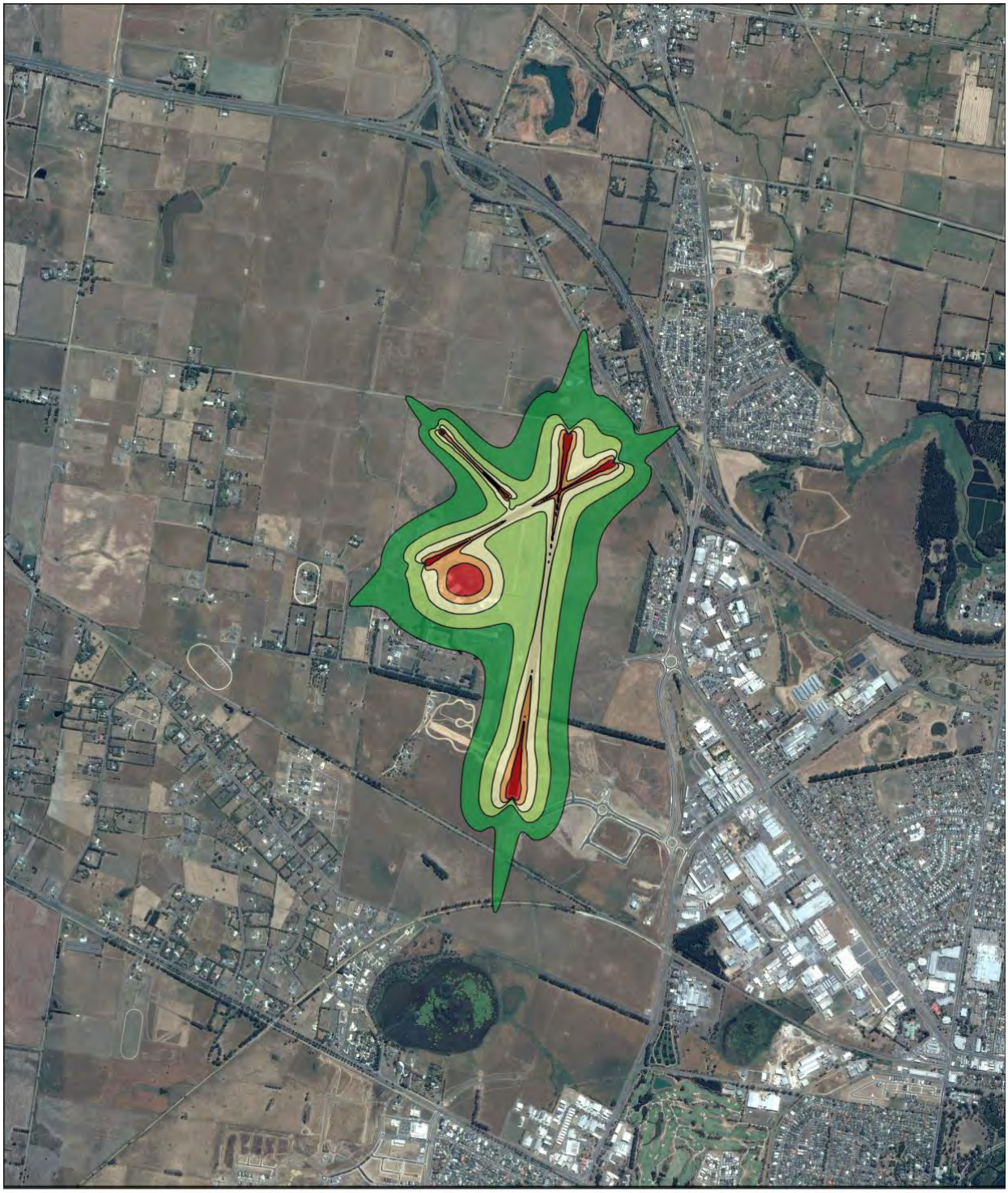
N-contour charts are attached in Appendix B.

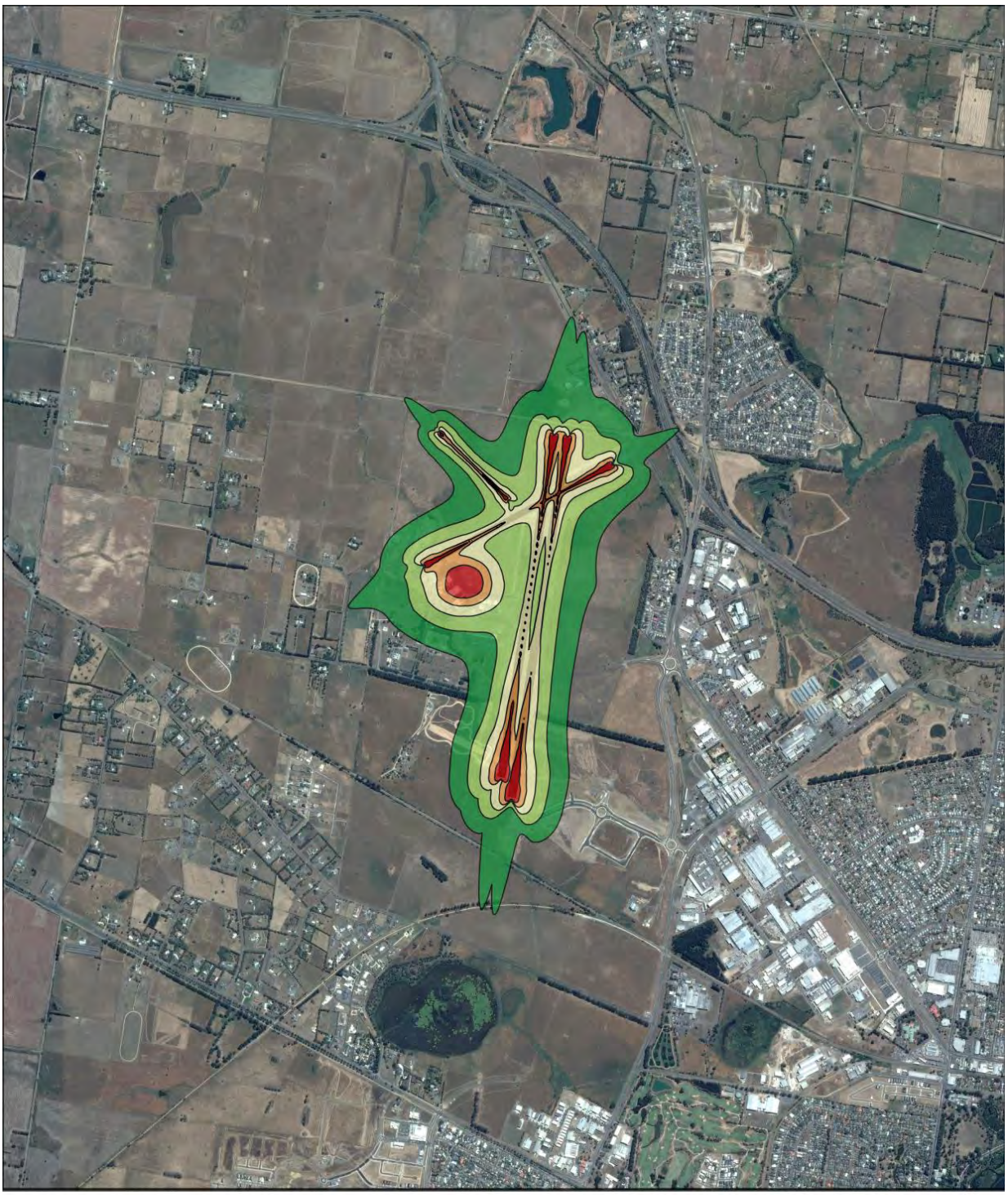
The National Airports Safeguarding Framework (NASF) published by DIRDC outlines the appropriate number of aircraft noise events for each noise level:

- 20 or more daily events greater than 70 dB(A);
- 50 or more daily events of greater than 65 dB(A);
- 100 events or more daily events of greater than 60 dB(A); or
- 6 or more events of greater than 60 dB(A) between the hours of 11pm and 6 am.

Appendix A: ANEC charts




Ballarat Aerodrome
ANEF Option 2B
0
500
1000
1500
2000 m
N
ANEF 20
ANEF 25
ANEF 30
ANEF 35
ANEF 40



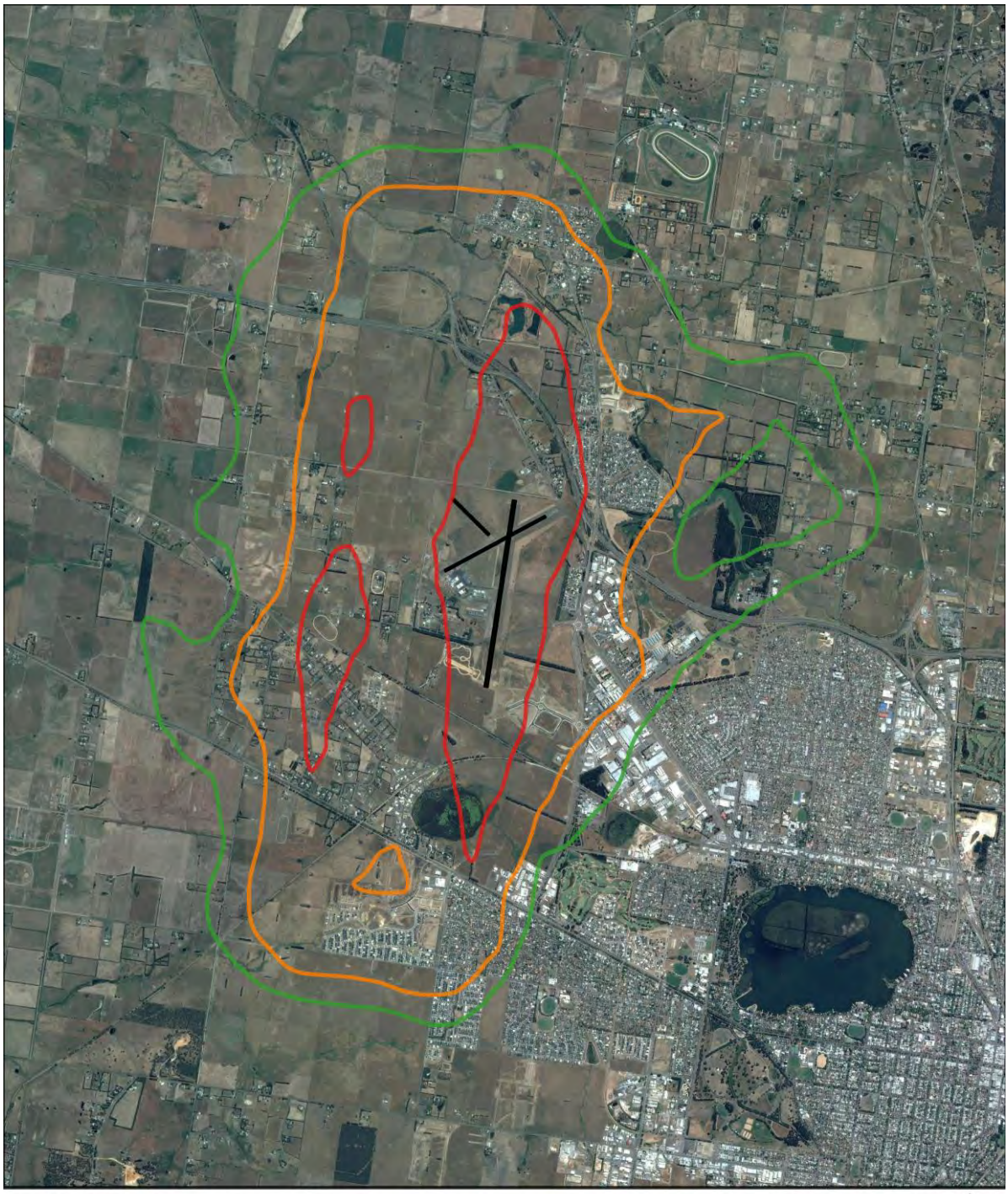
Ballarat Aerodrome
ANEF Merged (Option 1D & 2B)

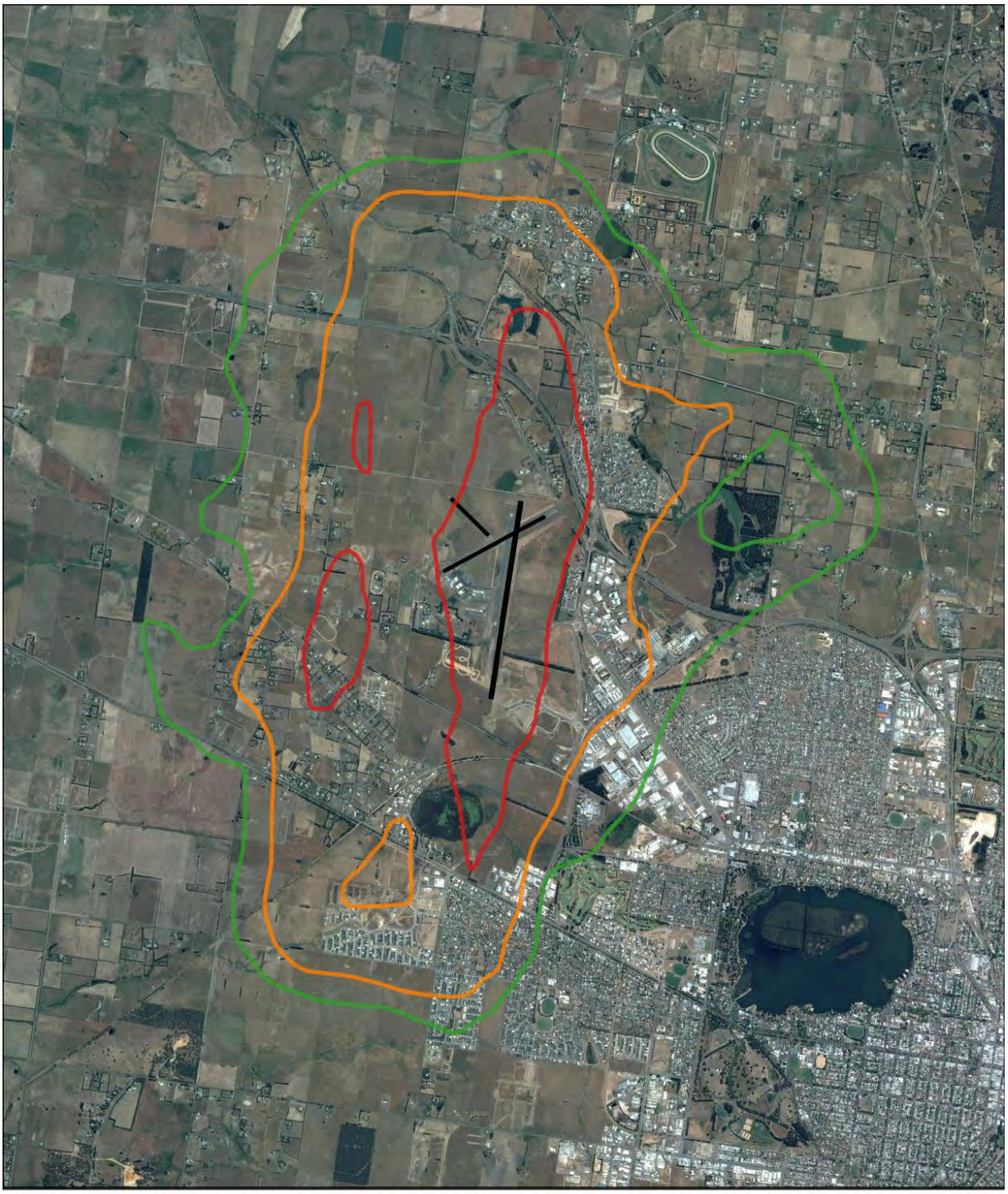
0 500 1000 1500 2000 m

N

ANEF 20
ANEF 25
ANEF 30
ANEF 35
ANEF 40

Appendix B: N-contour charts



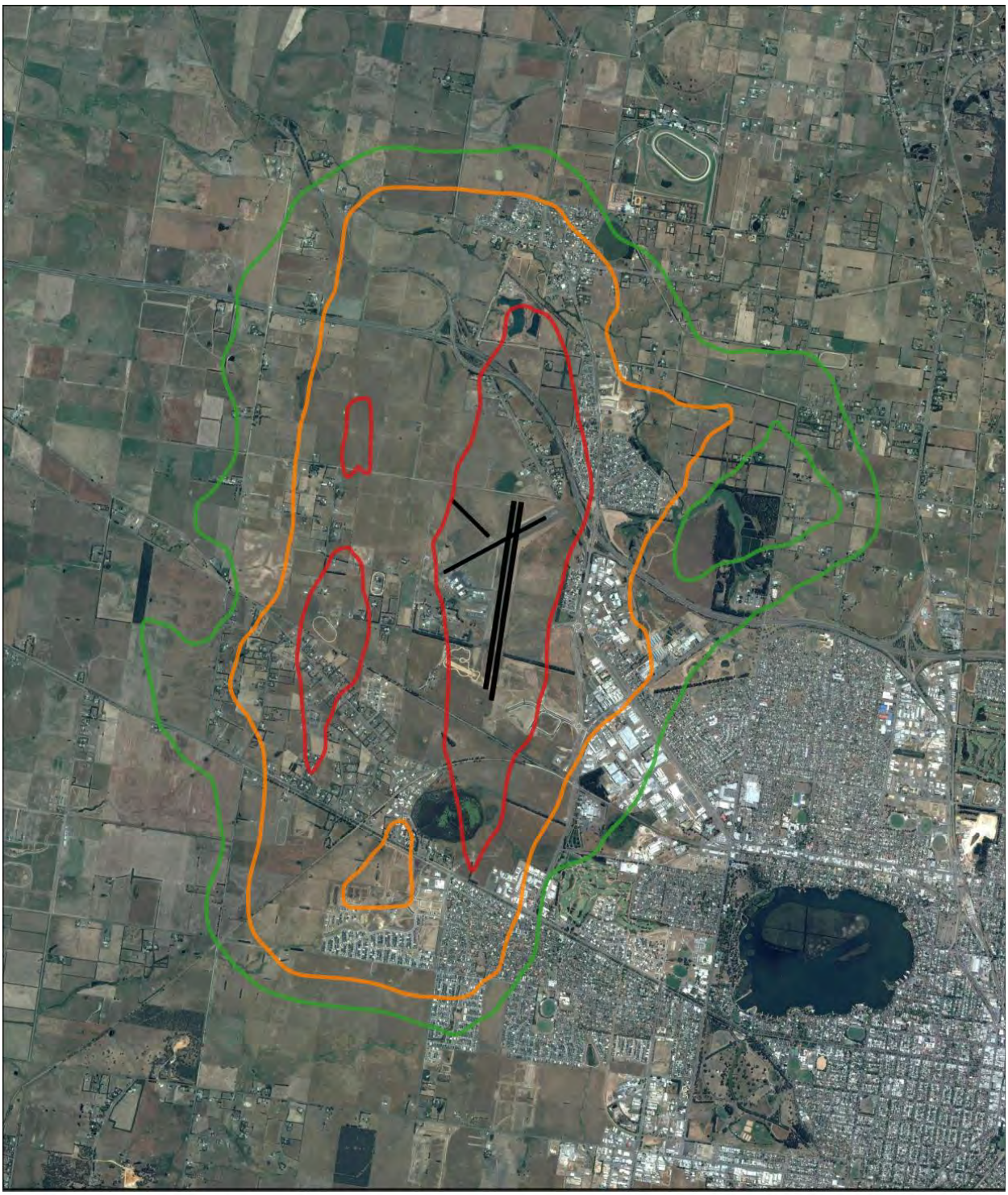


Ballarat Aerodrome
N60 - Option 2B

0 1000 2000 m

10 50
20

N

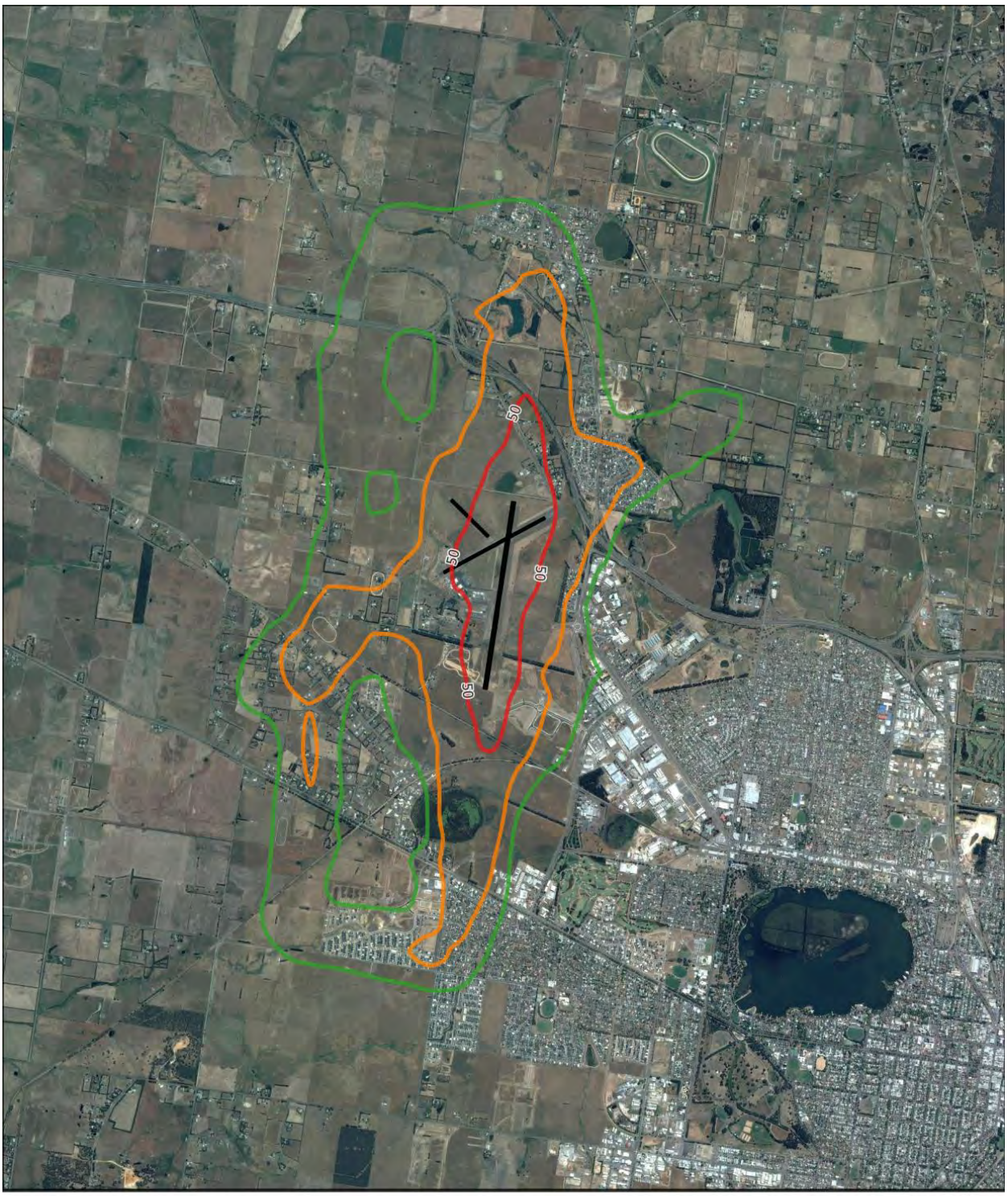


Ballarat Aerodrome
N60 - Merged (Option 1D & 2B)

0 1000 2000 m

10 50
20

N

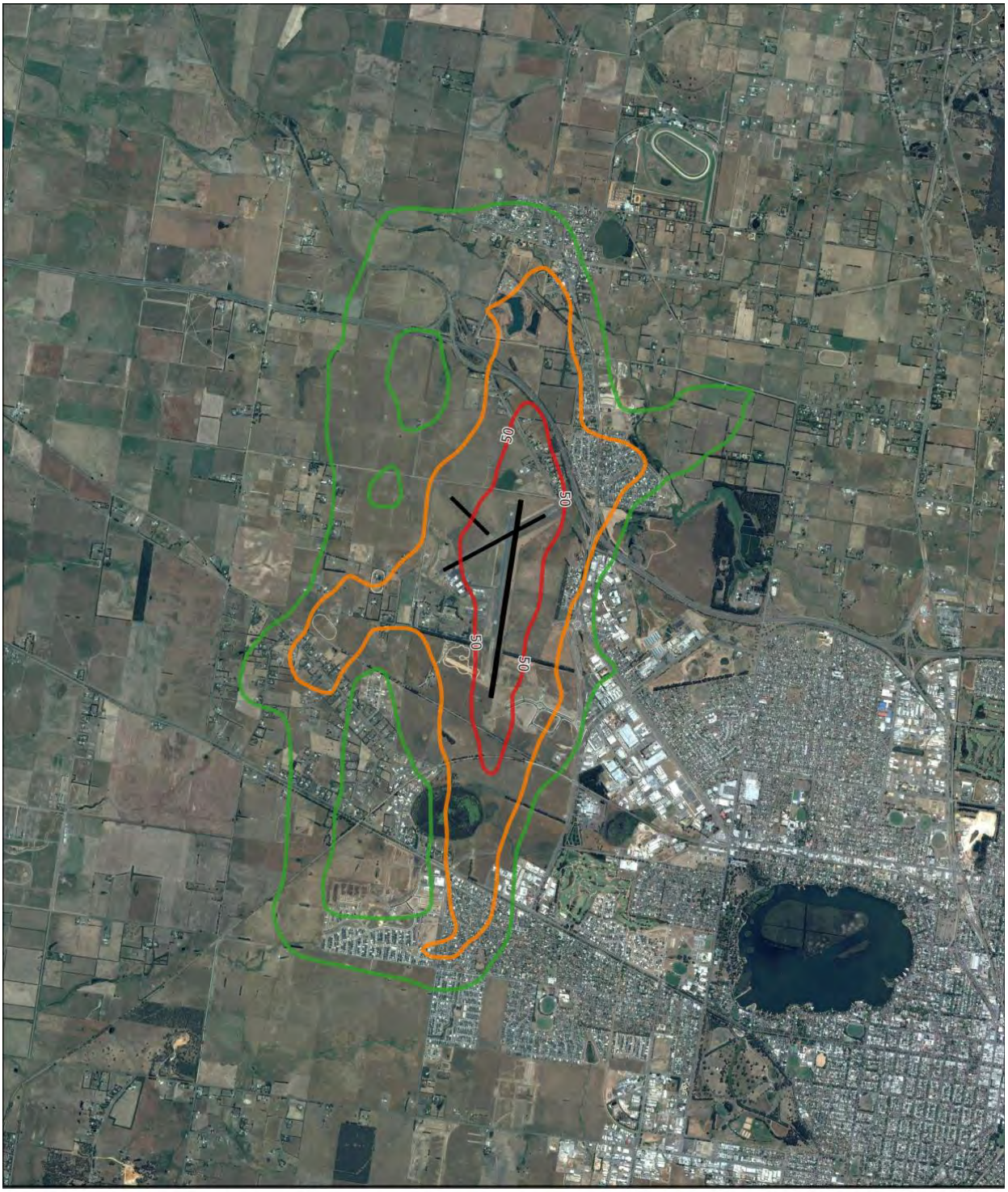


Ballarat Aerodrome
N65 - Option 1D

0 1000 2000 m

10
20
50

N

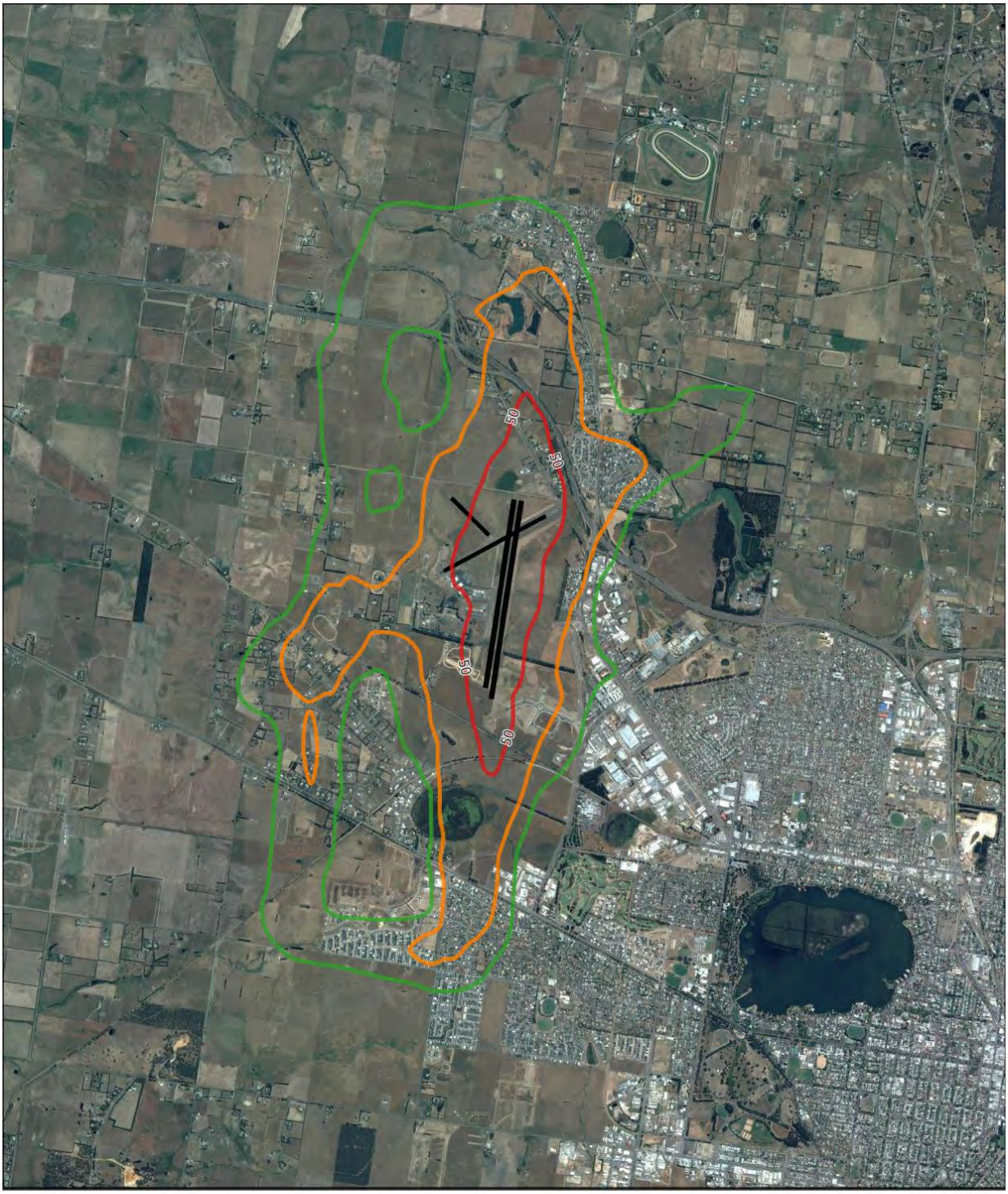


Ballarat Aerodrome
N65 - Option 2B

0 1000 2000 m

N

10 50
20

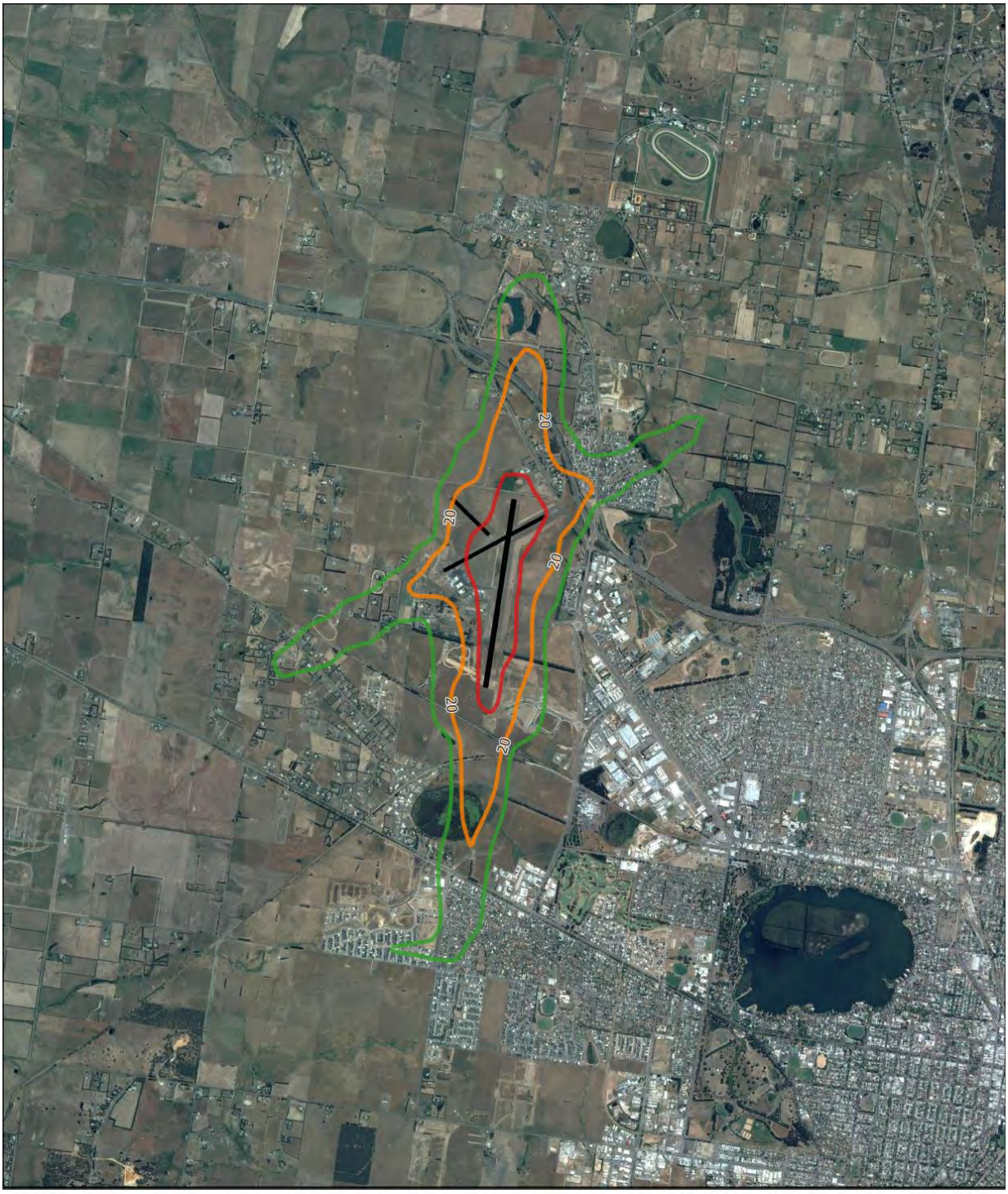


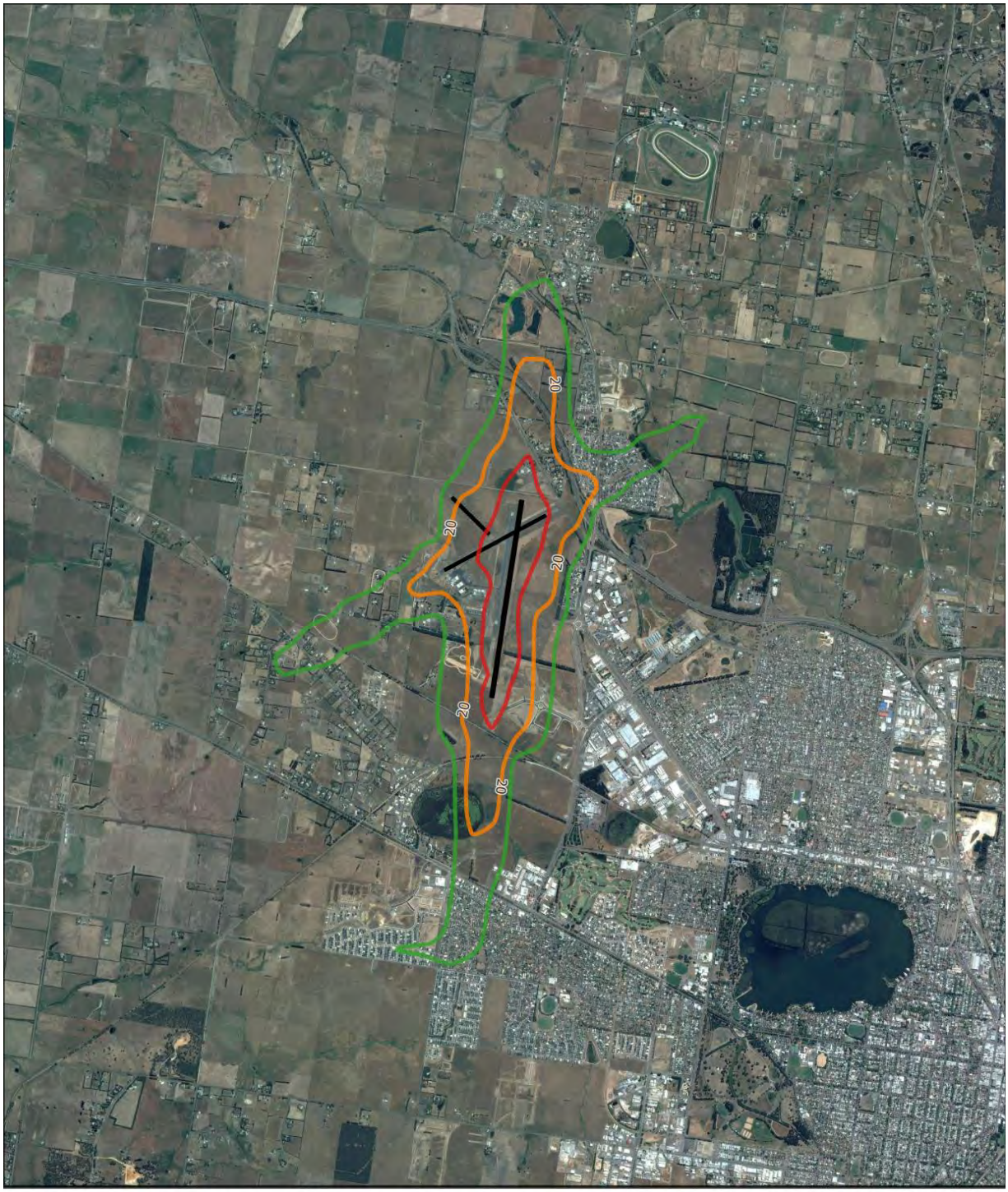
Ballarat Aerodrome
N65 - Merged (Option 1D & 2B)

0 1000 2000 m

10 50
20

N


20
20
20
20
Ballarat Aerodrome
N70 - Option 1D
0
1000
2000 m
N
10
50
20

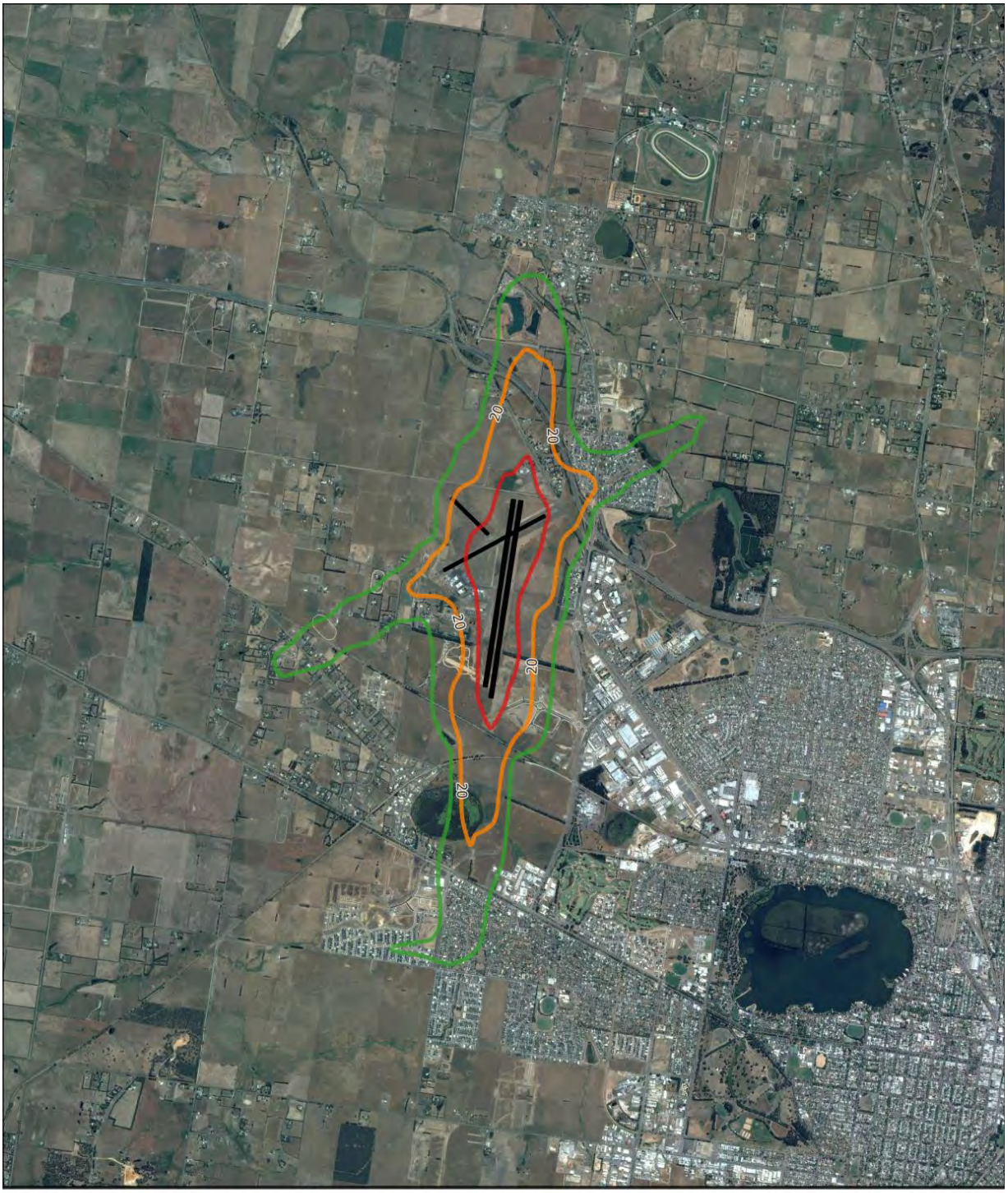


Ballarat Aerodrome
N70 - Option 2B

0 1000 2000 m

10 50
20

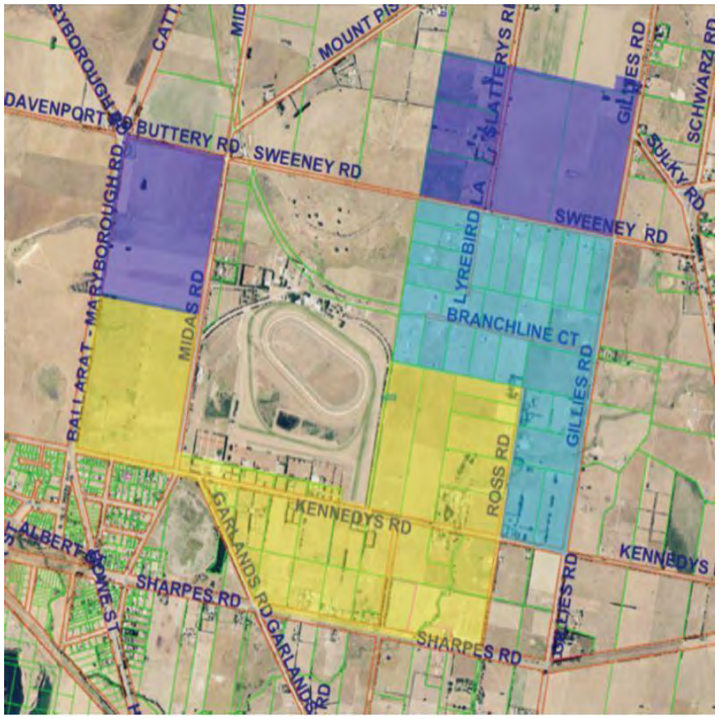
N



Ballarat Aerodrome
N70 - Merged (Option 1D & 2B)

DOWLING FOREST PRECINCT

Property Market Review and Options Analysis



Prepared for Ballarat City Council

Draft Report

August 2018

Contents

Executive Summary 4

Project Purpose 4

Summary of Findings 4

1.0 Introduction 10

1.1 Project Context 10

1.2 Project Purpose 12

1.3 Report Structure 12

2.0 Policy Context 14

2.1 Summary of Documents 14

2.2 Bridal Track Concept 17

3.0 Dowling Forest Racecourse 20

3.1 Site Context 20

3.2 On-Course Investment 21

3.3 New Synthetic Track 22

3.4 Job Trends 23

3.5 Recent Growth in Race Starters 24

3.6 Forecast Growth in Starters and Possible Land Take-Up 26

3.7 Land Capacity at BTC 27

3.8 Track Training Capacity 28

3.9 Other Benchmarks for Track Training Capacity 29

4.0 Land Use Audit and Capacity 31

4.1 Existing Land Uses: Dowling Forest Precinct 31

4.2 Existing Land Occupancy and Vacancy Status 32

4.3 Estimate of Land Capacity for Development 33

4.4 Possible Take-Up of Land 34

4.5 Take-Up Using the Alternative Capacity Estimate 35

5.0 Property Market Information 37

5.1 Permit Activity 37

5.2 Property Sales 40

5.3 Properties Currently for Sale 43

6.0 Case Studies 45

6.1 Pakenham Racing Club 45

6.2 Cranbourne Racecourse 46

7.0 Consultation 48

7.1 Consultation Program 48

7.2 Racing-Related Stakeholders 49

7.3 Real Estate Agents 51
7.4 Other/General Findings 52

8.0 Synthesis of Findings and Options 55

8.1 Findings 55
8.2 Options 57

Tables

Table 1: Purpose of SUZ13 10
Table 2: Summary of Relevant Documents 14
Table 3: Major Investment at Dowling Forest Racecourse, 2010-2018 22
Table 4: Animal Attendants and Trainers Jobs in City of Ballarat, 2011-2016 24
Table 5: Estimate of Jobs Supported by BTC, 2014-2018 (Indicative Only) 24
Table 6: Number of Race Starters by Thoroughbred Club, 2013/14-2017/18 25
Table 7: Land Demand Forecast Scenarios to 2028, Dowling Forest Racecourse 27
Table 8: Existing Land Uses, Dowling Forest Precinct, 2018 31
Table 9: Land Status, Dowling Forest Precinct, 2018 33
Table 10: Indicative Capacity Estimate, Dowling Forest Precinct, 2018 34
Table 11: Years' Land Supply, Dowling Forest Precinct 35
Table 12: Permit Application Activity, Dowling Forest Precinct and Racecourse, 2008-2018 37
Table 13: Properties sold within 4 km of Racecourse, 2013-May 2018 40
Table 14: Properties sold within SUZ13 Zone, 2013-May 2018 41
Table 15: Properties sold within 4 km of Racecourse, 2013-May 2018 42
Table 16: Properties for sale within 4 km of Racecourse, SUZ13 and FZ, July 2018 43
Table 17: Key Findings for Dowling Forest Precinct 55
Table 18: Options for Consideration: Dowling Forest Precinct 57

Figures

Figure 1: Study Area 11
Figure 2: Indicative Bridal Track Concept 18
Figure 3: Dowling Forest Racecourse and Surrounding Area 20
Figure 4: Proposed Ballarat Synthetic Track 23
Figure 5: Number of Starters, Trends and Projections, 2014-2028 26
Figure 6: Dowling Forest Oncourse Land Vacancy, 2018 (Indicative Only) 28
Figure 7: Existing Land Uses, Dowling Forest Precinct, 2018 32
Figure 8: Investment Activity, Dowling Forest Precinct and Beyond, 2011-2020 39
Figure 9: Recent Property Sales, Study Area and Immediate Surrounds, 2013-May 2018 41
Figure 10: Tynong Racecourse and Training Facility 45
Figure 11: Cranbourne Racecourse and Training Facility 46

EXECUTIVE SUMMARY

Project Purpose

The project reviews the property market in the Dowling Forest Precinct, in the context of thoroughbred industry sector activity in the vicinity of the Ballarat Turf Club (BTC), focusing on trends in the land zoned for Special Use Zone Schedule 13 (SUZ13) and Farming Zone (FZ).

The report includes:

- A stocktake of conditions and recent trends in the study area (exploring land use, property market and economic data);
- A summary of consultation with stakeholders and landholders to identify issues and potential opportunities to support development of the precinct; and
- An analysis of options and recommendations to support development of the precinct and address identified issues.

The information is provided to inform Council of future activities and policy options to support future development of the Dowling Forest Precinct, achieve the objectives of the Master Plan and address any issues identified.

Summary of Findings

1 - Investment trends have been positive

This report has found that investment trends for thoroughbred related activity has been positive in recent years.

The investment activity has mainly focused on land that has direct access to the Ballarat racetrack facilities including Ballarat Turf Club land and immediately adjacent private land holdings.

Limited recent thoroughbred related investment has occurred on private land to the south side of Kennedys Road and west side of Midas Road.

The Ballarat Turf Club has been successful in obtaining a range of funding sources from state government and Racing Victoria to upgrade on-track facilities and attract horse trainers.

One key to the success of attraction of some trainers has been the capacity of the Ballarat Turf Club to provide land and build facilities for trainers, who then lease the facilities. This provides a cost advantage over the option of purchasing land and building facilities. This cost advantage - along with direct access to the racetrack and uphill training track - has been key drawcards of the location.

Some trainers that have recently established in the area have purchased and developed private facilities. These trainers have established on land with direct access to the racetrack and uphill training track.

2 - Investment prospects are positive

A number of drivers exist to support ongoing investment activity in the precinct for the foreseeable future.

The investment drivers include the popularity of the uphill training tack, planned installation of synthetic track within approximately 12 months and possible consolidation of training facilities across Victoria into fewer nodes including Ballarat.

Indicative land take projections prepared for this report suggest that around 7 ha of land take may be required for thoroughbred activities over the next 10 year period.

Beyond this outlook period, the precinct may experience an acceleration of land take-up if other Victorian facilities (like Caulfield) close their training facilities and Ballarat continues to become a more successful location and 'magnet' for training.

3 - Supply of land in the precinct is significant

The Ballarat Turf Club and surrounding land zoned for thoroughbred activities has significant available land supply. The land is considered strategic in planning policy and economic development policy.

The available land supply is significant in relation to the estimate of potential future take-up of land for thoroughbred activities. A high level estimate of land being used to full capacity (estimated by the smallest possible lot subdivision per zone) suggests there may be approximately 220 ha of thoroughbred activity land supply. All land may not be taken up for many decades.

Land is rarely subdivided to its full potential so if 50% is assumed as a full capacity estimate, 110 ha of capacity could be deemed reasonably available.

At a short term take-up of 7 ha per 10 years (or 0.7 ha per year on average), the land supply may be sufficient to meet 158 years of demand. Assuming demand in the long term is double the short term estimate, supply may be sufficient to meet about 79 years of demand.

The above estimates assume the Ballarat Turf Club facilities can accommodate ongoing and unlimited demand on its tracks and via scheduling.

An alternative capacity estimate suggests up to 2,250 horses in the Precinct may be considered as the nominal capacity of the area (noting this is not necessarily the view of BTC). It was found that this may translate into a need for up to 36 ha of additional land in the area for training purposes. If so, this would leave 74 ha of effective land capacity not used for training purposes.

It is not possible to estimate supply and demand in this context with precision, however based on available information and estimates used, supply is likely to be available for thoroughbred activities in the precinct for the very long term.

4 - Land with direct access to the racetrack is most in demand

Most recent training facility investment has favoured land with direct horse access to the racetrack and uphill training track. Most of the recent investment has occurred in facilities leased from the Ballarat Turf Club on racetrack land and facilities constructed by private trainers with direct access to racetrack land.

Land located on the south side of Kennedys Road and the west side of Midas Road is considered less attractive to trainers because of the road barrier and relatively high car speed limits, which presents a risk to horses.

This is a key issue which limits the appeal of such land for future thoroughbred training investment unless direct horse access via grade separation can be provided (such as via tunnels).

5 - SUZ13 land performs an important land buffer

The SUZ13 land is strategic for not only land supply reasons but also for land use buffer reasons. Land use buffering is a primary strategic function of land fronting the south side of Kennedys Road, the west side of Midas Road and the eastern boundary of Turf Club land.

SUZ13 activities are unlikely to generate land uses that conflict with thoroughbred industry activities and be impacted by the racetrack activities.

The risk of land use conflicts is greater with other zones in these locations such as Farming Zone or a Rural Residential or similar zone.

6 - The vision for area is generally shared with some differences in detail

Stakeholders that were consulted for this research report generally share a view that the study area precinct is an important and strategic asset for equine related activities and should be supported for such uses.

Differences in opinion relate to the definition of equine activities and the manner in which a strategy to promote such activities should be implemented.

Planning Policy of Council and Ballarat Turf Club generally support the precinct being earmarked for thoroughbred horse racing activities as defined by the Australian Rules of Racing and controlled by the current SUZ13 Planning Scheme Provisions.

An alternative view is that the precinct, particularly and perhaps only limited to the area south of Kennedys Road, should have a more general focus on 'equine' related activities and application of less stringent planning controls should apply to such land.

Equine activities in the general sense could include non-thoroughbred uses such as saddlery, farrier, equine veterinary clinic, equine transport services and the like.

7 - SUZ13 controls are not well understood by all stakeholders

Consultation undertaken with selected stakeholders revealed that aspects of the SUZ13 are not well understood by all stakeholders and that the provisions are confusing for some stakeholders.

A key issue raised is a belief that existing houses within the zone that pre-date the zone can only be sold to persons with an Australian Rules of Racing licence (which is not the case).

8 - SUZ13 land has more stringent conditions on buildings and works compared to the previous Farming Zone

The SUZ13 allows for buildings and works of up to 50 square metres (sqm) to be undertaken without the need for a planning permit. The equivalent control for the Farming Zone is 100 sqm.

9 - Options for consideration: precinct-wide

The following options are identified for consideration for the precinct as a whole. Matters specific to the precinct south of Kennedys Road are considered in the next sub-section.

- 9a - Address misinformation regarding SUZ13 operation.
  - Greater clarity regarding the purpose and operation of the zone is required for land owners, real estate agents and potential property buyers.
- 9b - Change the buildings and works provisions in the SUZ13 to 100 sqm, to match the Farming Zone.
  - This technical change will minimise the differences between the SUZ13 and the Farming Zone.
- 9c - Undertake road and traffic management investigations with a view to slow traffic speeds on Kennedys and Midas Roads and improve access within the precinct generally.
  - Sites in the broader area outside of racetrack land would become more attractive to thoroughbred industry participants if improved horse access and safety is delivered via dedicated paths, tunnels and reduced road traffic speeds.

- 9d - Explore the demand for, and requirements of, a bridal track linking the Dowling Forest racecourse to the Ballarat Town Common.
  - It is possible the trail to the 88 ha parcel of Crown Land may provide additional variety of exercise options which can suit individual thoroughbreds.
  - Such a trail would need to consider matters of transport safety and the impact on the road network, among other management requirements.
- 9e - Should the Ballarat Turf Club acquire a significant land parcel in the area, the model adopted by the Pakenham Racing Club could be rolled out in the Precinct.
  - Explore BTC's willingness to purchase approximately 40 ha of land for ongoing development of the land for horse training purposes.
  - It is possible this quantum of land may meet training needs for the very long term.
  - Such land would need direct access to the racetrack to be considered as a viable location for many trainers. If such land is across a road, a tunnel would be required.

10 - Options for consideration: SUZ13 South of Kennedys Road

The SUZ13 land south of Kennedys Road has been identified as being the most contentious in this review.

- 10a - Activate the area south of Kennedys Road via construction of a horse tunnel and easement to the rear of lots.
  - It is the view here that unless a realistic and tangible plan to construct direct access to the racetrack from this precinct via a tunnel and easement network is established in the near term, the viability of the sub-area for significant thoroughbred uses will be limited over a long period of time.
- 10b - Rezone the area south of the midpoint of Sharpes Road and Kennedys Road to Farming Zone to support broader 'equine' investment and activity.
  - This option would retain the SUZ13 buffer along Kennedys Road and transition an area along Sharpes Road to a broader definition of equine uses.
  - The removal of this 41 ha area would reduce the effective capacity of the broader Precinct by 9 ha, which equates to 13 years' supply under the medium growth scenario.

INTRODUCTION

1.0 INTRODUCTION

1.1 Project Context

Dowling Forest, home of the Ballarat Turf Club, is located approximately 15 kilometres north-west from the Ballarat CBD. The racetrack is surrounded by undulating land and trails, providing an attractive location for thoroughbred trainers and racing related occupants. The racecourse is situated on Crown Land and has the benefit of being encircled by freehold rural land. The location is easily accessed from the Western Highway.

Overall, Dowling Forest is well-placed to encourage activities and practices associated with the thoroughbred industry and this is evidenced by the recent attraction of notable trainers including Matt Cumani and Archie Alexander to the course.

The Dowling Forest Precinct Master Plan was prepared and a final report was adopted by Council in February 2011. The Master Plan (and an accompanying Implementation Report) provides a long term framework to guide the future use, development and subdivision of land in the area adjoining the Dowling Forest Precinct. A Planning Scheme Amendment to the Ballarat Planning Scheme (Amendment C149) was undertaken to implement the Master Plan. An accompanying 'Implementation Report' considered the planning options arising from the Master Plan and among them was the rezoning of selected land areas to Special Use Zone Schedule 13 (SUZ13) and refinements to Farming Zone precincts which had an existing purpose to support horse training facilities. The intention is that land use, subdivision and housing development is directly associated with thoroughbred horse training facility. The Schedule to the zone is shown in **Error! Reference source not found.**.

Table 1: Purpose of SUZ13

Schedule 13 to the Special Use Zone
Thoroughbred Horse Training Facilities
To encourage the use and development of thoroughbred horse training facilities in association with the Dowling Forest Racecourse.
To provide for subdivision of land for use and development as thoroughbred horse training facilities.
To facilitate on-site accommodation for horse trainers and their employees in conjunction with the thoroughbred horse training facilities.
To ensure that thoroughbred horse training facilities are established in a manner which is consistent with surrounding land uses.

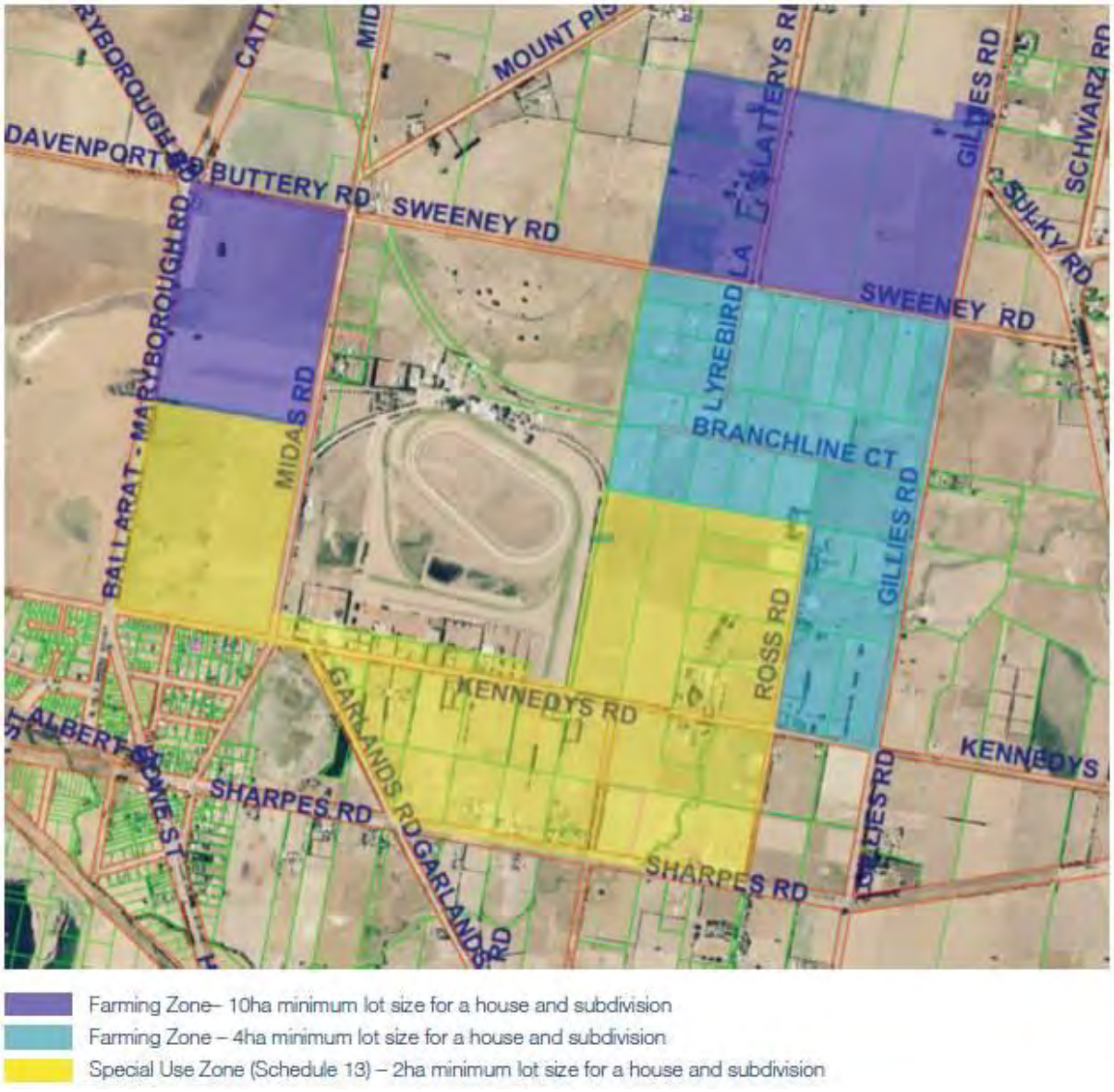
Source: Ballarat Planning Scheme

Whilst there has been growth in training activities at the racetrack, with several trainers locating in the area and others expanding their training facilities, the success of the SUZ13 zoning has been questioned by some members of the community.

This report was commissioned by Ballarat City Council to undertake an audit of the performance of the precinct in recent years and to assess likely future prospects of the precinct. This includes assessment of implications for SUZ13 land. A specific question relates to likely SUZ13 land take-up in the future.

The Study Area is shown in Figure 1.

Figure 1: Study Area



Farming Zone– 10ha minimum lot size for a house and subdivision
Farming Zone – 4ha minimum lot size for a house and subdivision
Special Use Zone (Schedule 13) – 2ha minimum lot size for a house and subdivision

Source: Ballarat City Council

1.2 Project Purpose

The project provides a review of the property market in the Dowling Forest Precinct, in the context of thoroughbred industry sector activity in the vicinity of the Ballarat Turf Club, focusing on trends in the land zoned for Special Use and Farming.

This has involved:

- Undertaking a stocktake of conditions and recent trends in the Study Area (exploring land use, property market and economic data);
- Consultation with stakeholders and landholders to identify issues and potential opportunities to support development of the precinct; and
- An analysis of options and recommendations to support development of the precinct and address identified issues.

The information will be used to inform Council of future activities and policy options to support future development of the Dowling Forest Precinct, achieve the objectives of the Master Plan and address any issues identified.

1.3 Report Structure

This report is structured as follows.

- Section 2 - This section provides a summary of policies, strategies and reports that are relevant to the Dowling Forest Precinct and Thoroughbred Industry sector.
- Section 3 - This section provides a snapshot of the Dowling Forest Racecourse, including recent trends in investment activity, racing activities, employment and an estimate of existing training and stabling capacity on-site.
- Section 4 - This section outlines the results of a land use audit of the Dowling Forest Precinct, and provides projections of future demand for thoroughbred land within the Precinct.
- Section 5 - This section provides information relating to a range of property market measures such as permit and sales activity.
- Section 6 - This section includes an overview of thoroughbred racing facilities at Pakenham and Cranbourne in Victoria.
- Section 7 - This section provides a summary of stakeholder consultation undertaken during the course of this project.
- Section 8 - This section presents overall findings and options based on the analysis and body of work undertaken.

POLICY CONTEXT

2.0 POLICY CONTEXT

2.1 Summary of Documents

This section provides a summary of policies, strategies and reports that are relevant to the Dowling Forest Precinct and the thoroughbred industry sector.

The documents are:

- Racing to 2020 (Racing Victoria Limited, 2008);
- Victorian Country Racecourse and Training Facilities Infrastructure Plan (Racing Victoria and Country Racing Victoria, 2015);
- Dowling Forest Precinct Master Plan (Coffey Commercial Advisory, 2011);
- City of Ballarat, Implementation of Dowling Forest Precinct Master Plan, Ballarat Planning Scheme (Keaney Planning and Research, 2011);
- Planning Panel Report, Amendment C149 to the Ballarat Planning Scheme, Implementation of the Dowling Forest Precinct Master Plan (Planning Panels Victoria, 2012);
- Central Highlands Regional Growth Plan (Victorian Government, 2014);
- Ballarat Planning Scheme Review 2017, Dowling Forest Precinct (Keaney Planning and Research, 2017); and
- Proposed Equine Access Arrangements & Tunnel - Preliminary Feasibility Study, Kennedys Road, Miners Rest (TGM, 2017).

Table 2: Summary of Relevant Documents

Document	Purpose and Findings
Racing to 2020 (Racing Victoria Limited, 2008)	Racing to 2020 has been developed to address and plan for the future of the Victorian thoroughbred racing's future and to ensure its continued vitality, growth and sustainability. The plan provides clear objectives and strategies for industry development over the next ten years and in partnership with clubs, government and businesses aims to support the development and renewal of infrastructure for industry, community and commercial benefit. In particular, the plan seeks to redevelop key country racecourses in partnership with business, government and the community to provide racing, training and community facilities that are environmentally positive. Moreover, the provision and upgrading of infrastructure should provide for integrated racing facilities, an enhanced racing customer experience, new green passive recreation areas and meeting, festival and exhibition spaces. With respect to the plan, future development in the Dowling Forest Racing precinct should be capable of providing for a range of complementary land uses and investment opportunities through the utilisation of appropriate planning controls. The plan also seeks to ensure that racetracks such as Ballarat are developed on a scale matched to demand.

Victorian Country Racecourse and Training Facilities Infrastructure Plan (Racing Victoria and Country Racing Victoria, 2015)	The plan aims to provide for efficient use of industry infrastructure and the need for the plan was identified in Racing Victoria's three-year Strategic Plan, released in 2013. The plan seeks to provide country racing clubs, owners, trainers and industry participants with a clearer understanding of the future direction across country Victoria and aims to deliver optimum facilities and financial strength for individual clubs and the broader industry. The report identifies that there are 40 tracks across Victoria which conduct training operations and 28 of these receive a share of $8.3 million which is invested across country tracks through the Training Track Maintenance Fund. While several tracks are identified as being transitioned out of this fund, Ballarat will be one of the venues likely to receive ongoing funding. Ballarat may also benefit from industry capital expenditure from Racing Victoria (RV) and Country Racing Victoria (CRV) which will be focused on racing and training infrastructure, as opposed to customer facilities which will be largely a club responsibility. It is highlighted that RV and CRV will continue to support a suitable geographic spread of funded training venues across Victoria and will work with clubs to investigate options to reduce operating costs for venues and users. The report specifies that the following activities will be undertaken: ■ Locations which have sufficient land to expand their facilities will be further developed; ■ All usage (racing, training and trialling) will be considered in venue-use planning; ■ Capacity will be built through new developments and better spread of use; and ■ Other solutions will be investigated for management and use of training facilities. It is noted that the earlier Victorian Racecourse and Training Facilities Infrastructure Plan (May 2009) reported that the 'Vision' for the Ballarat Turf Club was to accommodate a capacity of between 1,500 and 3,000 horses. The 2015 version is silent of such a vision.
Dowling Forest Precinct Master Plan (Coffey Commercial Advisory, 2011)	This report sets out how the Dowling Forest Precinct can develop and redevelop into the future. The master plan sets out key objectives and strategies to manage development and change over time. This report found that the Dowling Forest Precinct is of strategic significance to Ballarat and the thoroughbred industry in Victoria and should be developed for that purpose. The master plan notes that very few thoroughbred training centres are adjacent to large tracts of freehold land, which makes the training operations of Dowling Forest fairly unique and presents an opportunity to grow the thoroughbred training operations. The report presented a range of recommendations to that end including Planning Scheme changes to support the racing industry and recommendations to improve access and infrastructure around the racetrack to facilitate growth in the industry. The report states that Ballarat has a number of advantages over other training facilities around Victoria including availability of land around the Racecourse for trainers and has capacity and plans for growth. The straight uphill training track is a key advantage of the facility over others in the state.
City of Ballarat, Implementation of Dowling Forest Precinct Master Plan, Ballarat	This report considered the planning implementation options for the Master Plan. The report assessed that a number of developments in the area were of a rural residential nature and not related to the racing industry as intended by the Planning Scheme and

Planning Scheme (Keaney Planning and Research, 2011)	Master Plan. The report recommended the following changes to the Planning Scheme: ■ Rezoning of some parcels of Farming Zone to Special Use Zone Schedule 13; and ■ Modifications to the schedule to the Farming Zone. The intention of the SUZ13 is to link 'dwelling' and 'subdivision' around the racecourse to activity directly associated with the horse training or racing industry. A challenge in drafting this provision was to define horse training or racing industry. The provision adopted the test of the occupant of the proposed dwelling or subdivision to be a holder of an Australian Rules of Racing licence. This would be enforced via a Section 173 legal agreement upon proponents and land of dwelling construction and subdivision in the zone.
Planning Panel Report, Amendment C149 to the Ballarat Planning Scheme, Implementation of the Dowling Forest Precinct Master Plan (Planning Panels Victoria, 2012)	The Planning Panel endorsed proposed changes to the Ballarat Planning Scheme to: ■ Implement the Special Use Zone Schedule 13 to enable a smaller lot size (2 ha) specifically for thoroughbred horse training use subject to such properties being owned or occupied by registered racing industry persons. This would be controlled by use of a Section 173 legal agreement between Council and the subdivision proponent and subsequent land owners; and ■ The Farming Zone in the precinct, within the 4 ha and 10 ha areas, be refined to better achieve the intent of horse training related development but without the limitation to be used by registered racing industry persons. The Planning Panel considered a number of issues in relation to the proposed changes to planning provisions. Most objectors generally supported the outcome being pursued (i.e. development of an equine precinct) but argued that the proposed controls are unworkable, too restrictive and unfair. In particular, limiting development to thoroughbred industry participants was considered to be too limited and a broader definition of equine industry should be adopted. The Panel considered the issues of demand for horse training facilities based on information presented to it. The information was indicative and could not provide a definitive conclusion to possible future outcomes. The Panel concluded that there is enough information to suggest the industry could grow and as such the proposed zoning changes were supported.
Central Highlands Regional Growth Plan (Victorian Government, 2014)	The Central Highlands Regional Growth Plan provides a regional approach to land use planning in the Central Highlands. It covers the municipalities of Ararat, Ballarat, Golden Plains, Hepburn, Moorabool and Pyrenees and identifies opportunities to encourage and accommodate growth and manage change over the next 30 years. The plan acknowledges that Ballarat is the key regional service and employment centre for western Victoria and specifically nominates the development of Dowling Forest as a specialist horse training facility as a key employment growth opportunity for the region.
Ballarat Planning Scheme Review 2017, Dowling Forest Precinct (Keaney Planning and Research, 2017)	This report provides a statutory planning review of Farming Zone land within the Dowling Forest Precinct (and not the Special Use Zone Schedule 13). Selected land surrounding the Ballarat racecourse is zoned Farming Zone (FZ) along with a schedule that allows subdivision into either 4 ha (coloured blue in strategic planning maps) or 10 ha (coloured purple) where the land is used for the purpose of 'horse stables'. Where land is not used for horse stables, the default minimum lot size is 40 ha. Where land is used for horse stables and is greater than 4 ha and 10 ha, no permit is

	required for a dwelling. Otherwise, a permit for a dwelling is required. The review found that non-horse related rural residential developments have been developed in the area, against the intention of the zone. Examples include: ■ A 10-lot subdivision in Branchline Court; and ■ A 7-lot subdivision in Sweeneys Road where a legal agreement was made to ensure the land was used for horse stables; the new lots exceeded 10 ha provision thereby making a 'dwelling' a Section 1 (as of right) use.
Proposed Equine Access Arrangements & Tunnel - Preliminary Feasibility Study, Kennedys Road, Miners Rest (TGM, 2017)	The report is a preliminary desktop feasibility study on improving the safety of horses, staff and traffic along Kennedys Road, Miners Rest. An assessment of suitable access and egress arrangements is provided for the potential provision of an equine tunnel to the Ballarat Turf Club horse training facilities. The study provides a brief overview of the existing conditions, the provision of effective access and egress the potential geometry options and the most probable location for a tunnel and offers preliminary cost estimates for the major construction elements. The report finds that the location of the tunnel is best suited to either the Ballarat Turf Club frontage, immediately east of the Archie Alexander training operation at 274 Kennedys Road or further east on the alignment of Bones Lane to the north. With a usage of approximately 350-400 horses per day a single tunnel is recommended in the report, at Kennedys Road, providing for two-way horse traffic to the Ballarat Turf Club facilities. Preliminary cost analysis indicate that construction costs for such infrastructure could be in the order of $1.72-$1.83 million, including estimated land acquisition costs of around $175,000-$250,000.

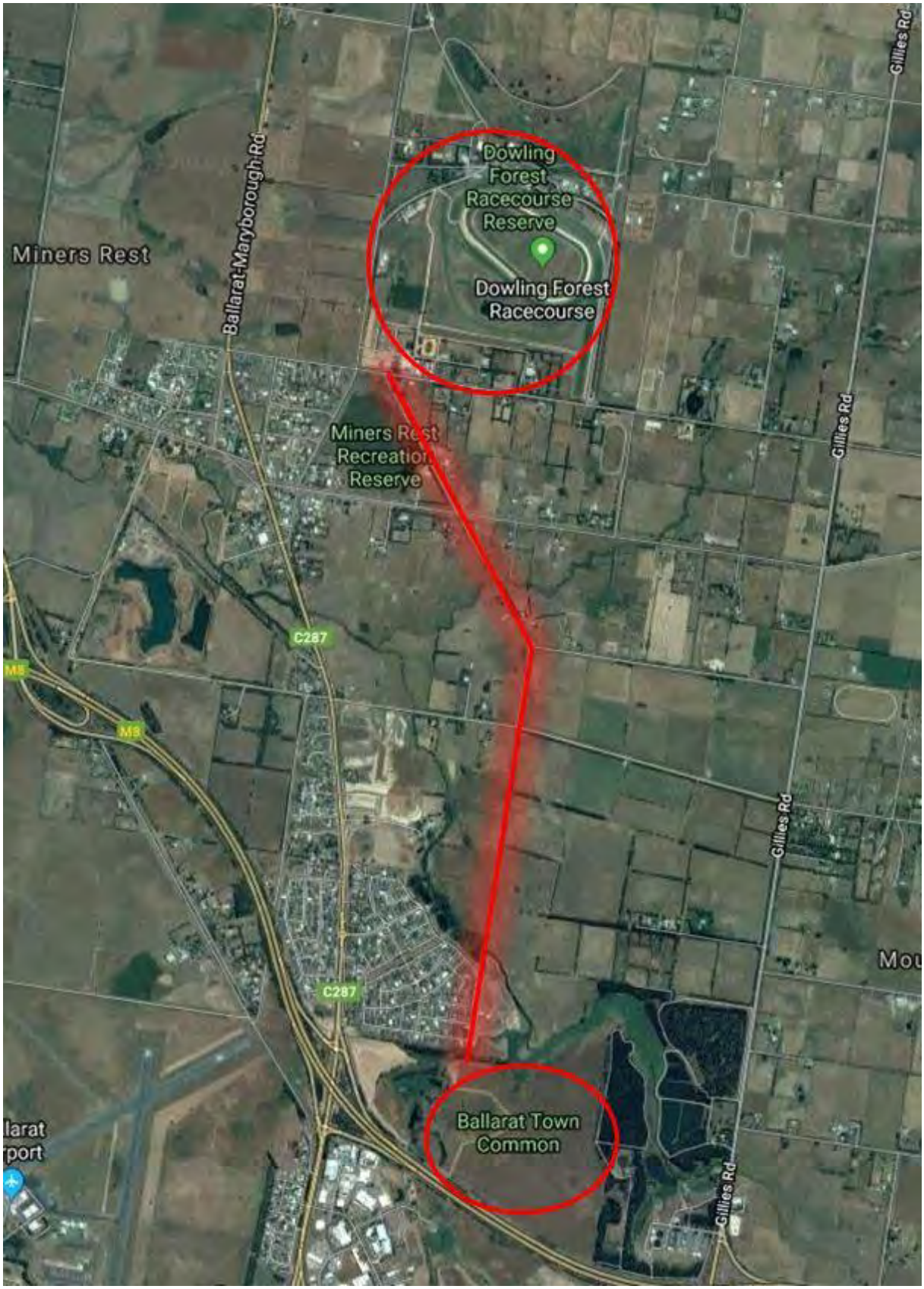
2.2 Bridal Track Concept

Suggestions have been made by racing industry stakeholders that the opportunity exists to enhance linkages between the Dowling Forest racecourse and the 88 ha area known as the "Ballarat Town Common". This Crown Land reserve abuts the Western Freeway to the south of the racetrack, near the Macarthur Park residential subdivision.

Ballarat City Council is the Committee of Management for the reserve, which is located approximately 3.5 km from the racecourse, and it is understood that the site has several significant impediments to future development including flooding, environmental significance and erosion susceptibility.

With limited alternative uses for the Ballarat Town Common, the Ballarat Turf Club, local racehorse trainers and Racing Victoria could potentially implement a network of horse exercise trails or routes which make use of existing road reserves that are integrated with the development pattern of the MacArthur Park township. The demand for establishing such trails would require further investigation, as would the impact on the road network and traffic management requirements.

Figure 2: Indicative Bridal Track Concept



DOWLING FOREST RACECOURSE

3.0 DOWLING FOREST RACECOURSE

3.1 Site Context

Ballarat Racecourse is situated on approximately 180 ha of land. The racecourse was established at the Dowling Forest site in 1972 and is now one of the premier provincial tracks in Victoria, with the track holding approximately 30 race days each season. The racecourse is operated by the Ballarat Turf Club (BTC), which was formed in 1854. Ballarat racecourse's main race day is the Ballarat Cup which is run in November each year. Land managed by BTC is shown in Figure 3.

Figure 3: Dowling Forest Racecourse and Surrounding Area

Source: Nearmap

Ballarat has fast become one of the largest training centres in Victoria, with around 530 horses in work, largely attributable to the ongoing growth of Darren Weir but aided by the recent attraction of trainers Archie Alexander, Matt Cumani and Mitch Freedman. Some of the recent training facility investment has occurred on private land between Kennedys Road and BTC land. The amount of horses trained at the complex has risen from 300 to 530 in the last four years, according to Ballarat Turf Club figures.

The key racing and training facilities that currently exist at BTC include:

- The racetrack;
- Grandstand and patron hospitality facilities;
- A sand track (1,600m x 7m);
- 1,400m uphill synthetic track;
- Inside grass track (1,550m x 18m);
- Viscoe track (1,620m);
- Jog track (1,400m);
- Jumps lane (500m laneway consisting of hurdle lane, steeple lane and logs);
- One undercover horse walker;
- Bull ring;
- Horse pool;
- Old Hill Track granite sand surface (1,200m); and
- On-site veterinary clinic.

3.2 On-Course Investment

Since 2010, Dowling Forest has continued to grow as both a renowned provincial racing and training venue and as a major employer in the City of Ballarat. Significant investment and been made to improve the racing surface and the on-course facilities. Major capital investments are summarised in Table 3 and include works funded from such bodies as State Government, Racing Victoria and the Ballarat Turf Club.

One of the key projects at Dowling Forest has been the installation of a 1,400m uphill all weather straight training track which was constructed in late 2010 and is a unique piece of training infrastructure at a Victoria public racecourse. The cost of the facility was $2.3 million. The uphill track is a key racing asset that features electronic sectional timing, trainer's box at the 1,000m mark, and pull off points at 1,200m, 1,300m and 1,400m points. The uphill training track has greatly improved Ballarat Turf Club's ability to deliver an optimum training surface for thoroughbred racing and is understood to have been a key attractor for new trainers to Ballarat.

In recent times, Dowling Forest has attracted trainers such as Matt Cumani with the $1.3 million development of a 40-horse stable and associated facilities, while Mitch Freedman now occupies new $1 million facility which include 35 stables, a 12-horse walker, treadmill, sand roll and day yards.

Table 3: Major Investment at Dowling Forest Racecourse, 2010-2018

Year	Project	Cost
2010	Uphill Synthetic Training Track	$2,300,000
2013	Darren Weir Training Complex Extension	$250,000
2013	Facilities Upgrade (including new viewing decks)	$200,000
2014	Installation of Big Screen	$220,000
2014	Course Proper Upgrade	$1,300,000
2014	Training Centre Upgrade (tracks, rails, schooling lane)	$220,000
2015	Raceday Horse Stalls Upgrade and Veterinary Facilities	$1,040,000
2016	Matt Cumani Stable Complex	$1,300,000
2017	Mitch Freedman Stable Complex	$1,000,000
2017/2018	Walkers/Treadmill project (4 Equine Walkers & 1 Treadmill)	$470,000
Total		**$8,300,000**

Source: Ballarat Turf Club

3.3 New Synthetic Track

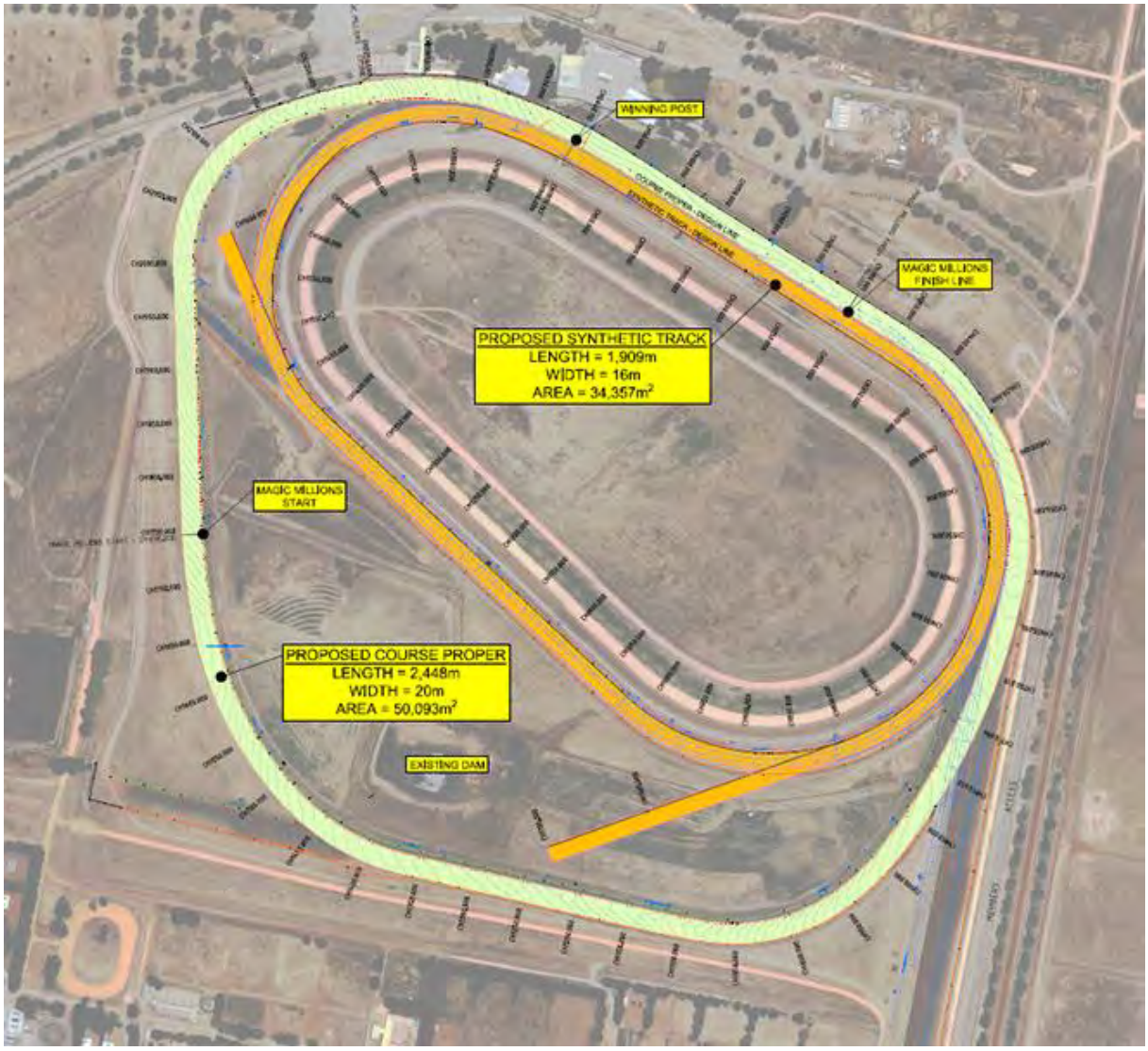
Ballarat Turf Club has recently been successful in its bid for Dowling Forest to become Victoria's newest synthetic racing venue, with work on a new $9 million track to commence after the Ballarat Cup meeting in November 2018 with a view for synthetic racing to be underway from May 2019. The new circuit will complement an existing grass racing surface.

Pakenham and Geelong are the current synthetic racing venues in Victoria, though Geelong's synthetic track will cease operation after September 2018. Ballarat has been scheduled to host 11 synthetic meetings in season 2018-19, and its allocation of race days is set to climb from around 30 to about 40 per season when Geelong's synthetic track is closed.

On top of race days, the facility (shown in Figure 4) would also be used extensively for training and would help increase the club's current resources and racetrack surface offering, which has been accommodating a significant increase in horse population over the past four years.

This major project planned for the racecourse is expected to encourage subsequent capital investment in the range of facilities at the track, and it is understood that a key part to the Ballarat Turf Club's push for the new track was its proximity to most major training centres in Victoria.

Figure 4: Proposed Ballarat Synthetic Track



Source: Ballarat Turf Club

3.4 Job Trends

A portion of the total employment provided at Dowling Forest racecourse is identified by the Australian Bureau of Statistics under their 4-digit occupation 'Animal Attendants and Trainers'. These participants are classified under the definition that they "train, feed, groom and care for animals." It is emphasised that significant additional employment is provided at the racecourse in jobs such as office-based employees, track maintenance staff, cleaners, and other such ancillary occupations. Nonetheless, the data shown in Table 4 provides a snapshot of trends in the 'core' racing jobs which are largely provided in the Dowling Forest precinct.

The number of jobs in City of Ballarat has increased by 3% per annum between 2011 and 2016, with around 45,800 jobs provided in the municipality. By comparison, Animal

Attendants and Trainers jobs have significantly exceeded this rate of growth, with total jobs increasing by 11% per annum from 58 jobs in 2011 to 98 jobs in 2016.

Table 4: Animal Attendants and Trainers Jobs in City of Ballarat, 2011-2016

Jobs in Ballarat (C)	2011	2016	Total Change	AAGR
Animal Attendants and Trainers Jobs	58	98	+40	+11%
Total Jobs in Ballarat (C)	39,010	45,790	+6,780	+3%

Source: ABS Census of Population and Housing, 2011 and 2016
Note: AAGR=Average Annual Growth Rate
Note: These 'core' racing jobs represent a share of total employment at the racecourse

Industry guides indicate that the following broad employment benchmarks may be appropriate to provide an overview of total employment at the Dowling Forest racecourse:

- One direct job per three horses in work; and
- One indirect job per 10 horses in work.

Applying these benchmarks, the Dowling Forest racecourse provides approximately 230 jobs at the current time, noting that approximately 530 horses are currently in work at the racecourse. Around 180 of these jobs would likely be provided at or near the racetrack, while a further 50 jobs would comprise indirect jobs provided in other locations. The total level of employment has increased sharply from the estimated 130 jobs that were provided in 2014 to around 230 jobs in 2018. See Table 5.

Table 5: Estimate of Jobs Supported by BTC, 2014-2018 (Indicative Only)

Estimate of Jobs and Horses in Work	2014	2018	Total Change	AAGR
Direct Jobs	100	180	+80	+16%
Indirect Jobs	30	50	+20	+14%
Total Jobs	130	230	+100	+15%
Horses in Work	300	530	+230	+15%

Source: Estimate using quoted benchmarks, HillPDA 2018
Note: AAGR=Average Annual Growth Rate

3.5 Recent Growth in Race Starters

The performance of racing can be measured in many ways, however the continual improvement at Ballarat in recent times is reflected in the total number of race starters.

The number of starters of Ballarat-trained racehorses has increased significantly over the past four years - approximately 1,900 more starters in 2017/18 compared with 2013/14 at an average annual growth rate of 15%. This rate of growth is the highest of any track in Victoria and significantly exceeds the State-wide average growth of +1% per annum.

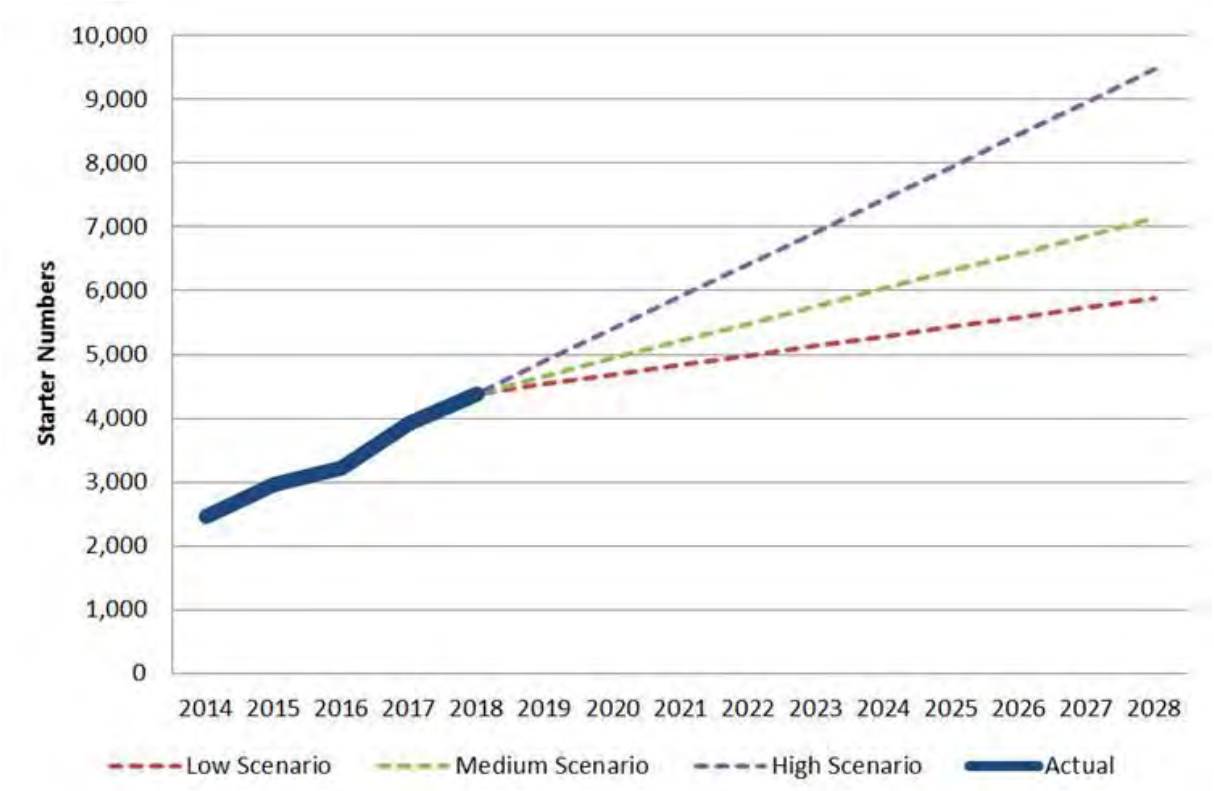
This information is shown in Table 6.

Table 6: Number of Race Starters by Thoroughbred Club, 2013/14-2017/18

Training Location	2013/14	2014/15	2015/16	2016/17	2017/18	AAGR 2014-2018
Cranbourne	7,230	7,156	6,547	6,673	6,900	-1%
Flemington	4,893	4,723	4,604	5,352	5,374	+2%
Ballarat	**2,468**	**2,965**	**3,232**	**3,928**	**4,386**	**+15%**
Caulfield	4,832	5,042	4,813	4,363	3,826	-6%
Mornington	4,176	4,354	4,221	4,205	3,807	-2%
Warrnambool	1,897	1,865	2,038	2,315	2,825	+10%
Bendigo	1,389	1,405	1,510	1,514	1,258	-2%
Kyneton	1,663	1,517	1,008	1,222	1,252	-7%
Wangaratta	770	916	907	1,011	1,174	+11%
Geelong	1,504	1,578	1,503	1,259	1,145	-7%
Pakenham	692	385	722	924	921	+7%
Seymour	1,205	1,261	1,315	1,126	831	-9%
Sale	688	804	790	759	800	+4%
Swan Hill	533	538	592	778	696	+7%
Moe	749	819	666	628	639	-4%
Wodonga	811	711	676	660	625	-6%
Echuca	616	565	595	583	520	-4%
Stawell	561	678	667	626	497	-3%
Benalla	665	779	736	566	494	-7%
Horsham	333	411	392	367	412	+5%
Kilmore	365	385	479	494	358	-1%
Tatura	409	295	347	259	335	-5%
Colac	157	164	163	209	217	+8%
Hamilton	335	343	163	140	161	-17%
Bairnsdale	227	271	216	164	112	-16%
Top 25 Sub Total	**39,168**	**39,930**	**38,902**	**40,125**	**39,564**	**+0%**
Balance	3,315	4,044	4,982	4,682	4,237	+6%
Total Starters	**42,483**	**43,974**	**43,884**	**44,807**	**43,801**	**+1%**

Source: Racing Victoria
Note: AAGR=Average Annual Growth Rate

Figure 5: Number of Starters, Trends and Projections, 2014-2028



3.6 Forecast Growth in Starters and Possible Land Take-Up

Growth is forecast to continue at Ballarat having regard for the upcoming development of the synthetic surface and also the increased pressures associated with metropolitan training venues especially Caulfield. In this context, if starters of Ballarat-trained thoroughbreds were to increase over the next decade at a more moderate annual rate of 5% (compared with the current 15%), this would result in around 7,150 starters and in the order of 860 horses in work at the track at 2028 – a +330 increase on the 530 horses which are currently trained at the track.

A forward growth rate of 5% has been selected for this purpose having regard to:

- An assessment that the 15% past trend was off a lower base and that future growth would be more modest in annual average change terms;
- The relativity of total starters at other training venues, noting that Cranbourne has the most starters in the state at a stable 6,900; and
- Noting that the assessed 5% growth rate for Ballarat could take it to position of number one in Victoria at 7,150 starters (using the 2018 benchmark).

The recent addition of the Cumani and Freedman facilities have been developed at an overall average land area per stable of 210 sqm per box (including ancillary facilities). Adopting this rate would result in a further 7 ha of land required to accommodate a

potential demand for an additional 330 horses to be trained at the track over the coming decade. This information is shown under the Medium Scenario in Table 7.

Table 7: Land Demand Forecast Scenarios to 2028, Dowling Forest Racecourse

Year	Low Scenario (3% AAGR)		Medium Scenario (5% AAGR)		High Scenario (8% AAGR)	
	Race Starters	Horses in Work	Race Starters	Horses in Work	Race Starters	Horses in Work
2014	2,468	300	2,468	300	2,468	300
2018	4,386	530	4,386	530	4,386	530
2028	5,890	710	7,140	860	9,470	1,140
Change 2018-2028	+1,504	+180	+2,754	+330	+5,084	+610
Av. Land Area per Stall*		210 sqm		210 sqm		210 sqm
Estimated Land Demand to 2028		3.78 ha		6.93 ha		12.81 ha

Source: HillPDA
Note: AAGR=Average Annual Growth Rate
* Ratio based on recent development of Mitch Freedman and Matt Cumani facilities

3.7 Land Capacity at BTC

According to Ballarat Turf Club, the existing onsite vacant land which is available for the development of further stables is 3 ha, as shown in Figure 6.

Indicatively, this represents enough land to accommodate a further 140 horses. Beyond this point, BTC would then be required to reconfigure or redevelop existing onsite facilities or areas to meet a share of future demand.

BTC has indicated that all existing stables at the course are full and in operable condition. Further, the Club has suggested that redevelopment of existing facilities would result in a *reduction* in capacity, as the trainers will not accept the smaller dimensions of stables that were considered standard in the past. For example, most of the old stables at the racecourse are 3.5m x 3.5m, however modern stable facilities have more generous dimensions of 6.5m x 4.5m.

In addition to the larger size requirements of stables, BTC advises that trainers now require extra space for other equine related infrastructure such as day yards, sand rolls, walkers, treadmills, and the like. The older-style stables do not have these items. Any redevelopment would need to provide for such, thereby reducing capacity even further.

The existing 3 ha supply of vacant land at the racecourse (as identified in Figure 6) is likely to satisfy demand for the coming five year period to 2023, after which time alternative options would be required.

The lack of infill options at the racetrack identified by BTC would mean that demand for stables over the upcoming five-year period could potentially be accommodated on racecourse land but beyond this period it is likely that off-site facilities would be required.

Figure 6: Dowling Forest Oncourse Land Vacancy, 2018 (Indicative Only)

Source: HillPDA (in consultation with Ballarat Turf Club)

3.8 Track Training Capacity

According to the Ballarat Turf Club, the ability for the various training surfaces at the racecourse to handle further significant increases in racehorses wishing to undertake trackwork is very limited. Part of the attraction of the facilities has been their capacity to handle horse traffic throughout the year, and this was boosted by the installation of the uphill track in 2011.

The upcoming installation of the synthetic track will significantly boost the capacity for the track to cater for morning track workers, with the new track estimated to allow for an increase of around 20 extra meetings to be run annually and increase the resilience of the current racing infrastructure to cater for an increase of 350 horses.

It is estimated by BTC that around 25% of the horses that use the tracks each day are not stabled either on course or with direct access to the course.

The development will aim to accommodate an increase in trainers seeking to relocate as metropolitan training facilities are rationalised. It is anticipated that, once there is increased capacity from the installation of the synthetic track, additional trainers and horses will be encouraged to locate at the site.

A forecast increase of +33 racehorses in work at the track each year (under the 'medium scenario' in Table 7) would mean that the development of the synthetic track will ensure that sufficient training capacity is provided at Ballarat racecourse for around eight years, noting the synthetic track can cater for an increase of around 350 horses and a quarter of these (i.e. approximately 88 horses) will likely be floated to the track from off course locations.

Beyond this eight year timeframe, additional trackwork options would need to be provided at the racecourse to cater for demand.

3.9 Other Benchmarks for Track Training Capacity

It was noted in the Planning Panel report that some stakeholders (Country Racing Victoria) consider BTC being capable of accommodating in the range of 1,500 to 3,000 horses in work in the long term. Some of these horses would be located in the Dowling Forest Precinct (estimated at 75%) and others would be floated into the BTC facility (estimated at 25%).

The following assessment provides a land take guide using this range of horses:

- 1,500 to 3,000 horses in work may equate to 1,125 to 2,250 horses in work located in the Precinct;
- Accounting for the 530 horses in work at 2018, this equates to net change of 595 to 1,720 horses in the Precinct; and
- At 210 sqm per horse, this equates to net change in additional land take of approximately **13 ha to 36 ha** in the Precinct.

This assumes the BTC facilities can handle this level of demand in terms of surface management and facility scheduling.

LAND USE AUDIT AND CAPACITY

4.0 LAND USE AUDIT AND CAPACITY

4.1 Existing Land Uses: Dowling Forest Precinct

A land audit was undertaken in May 2018 for parcels in the Dowling Forest Precinct. This classified land by main industry sector according to the nature of the occupying businesses/use or, in the case of the racecourse landholdings, the land available for future development as identified by representatives of the BTC.

Land used for thoroughbred-related purposes in the Precinct supports a wide range of activities, ranging from traditional horse training facilities, to agistment and stabling-related activities.

Approximately 24% of all land in the Precinct is occupied by businesses associated with traditional thoroughbred-related activities, with the largest lot being Lot 2 Ballarat-Maryborough Road, Miners Rest of approximately 51 ha of land. This amounts to approximately 44% of the thoroughbred-related occupied land (116.2 ha), and the land-holdings are strategically located on the western side of Midas Road, adjacent to the racecourse's main entrance.

Approximately 60% of the land is occupied by a range of businesses or uses not considered as 'core' thoroughbred-related activities, and these include predominantly rural residential accommodation, mixed farming and grazing, and a birds of prey conservation centre.

This information is summarised in in Table 8 and in Figure 7.

Table 8: Existing Land Uses, Dowling Forest Precinct, 2018

Precinct	Thoroughbred		Other		Vacant		Estimated Total	
	Lots	Area	Lots	Area	Lots	Area	Lots	Area
SUZ13 South of Kennedys Road	3	20.4 ha	15	58.5 ha	3	13.0 ha	21	91.9 ha
SUZ13 North of Kennedys Road	8	91.8 ha	5	32.4 ha			13	124.2 ha
Farming Zone (4 ha Min.)	1	4.0 ha	26	120.7 ha	1	4.4 ha	28	129.1ha
Farming Zone (10 ha Min.)			8	81.6 ha	6	60.5 ha	14	142.1 ha
Ballarat Turf Club Vacant Land					2	3.0 ha	2	3.0 ha
Total Estimate	**12**	**116.2 ha**	**54**	**293.2 ha**	**12**	**80.9 ha**	**78**	**490.3 ha**

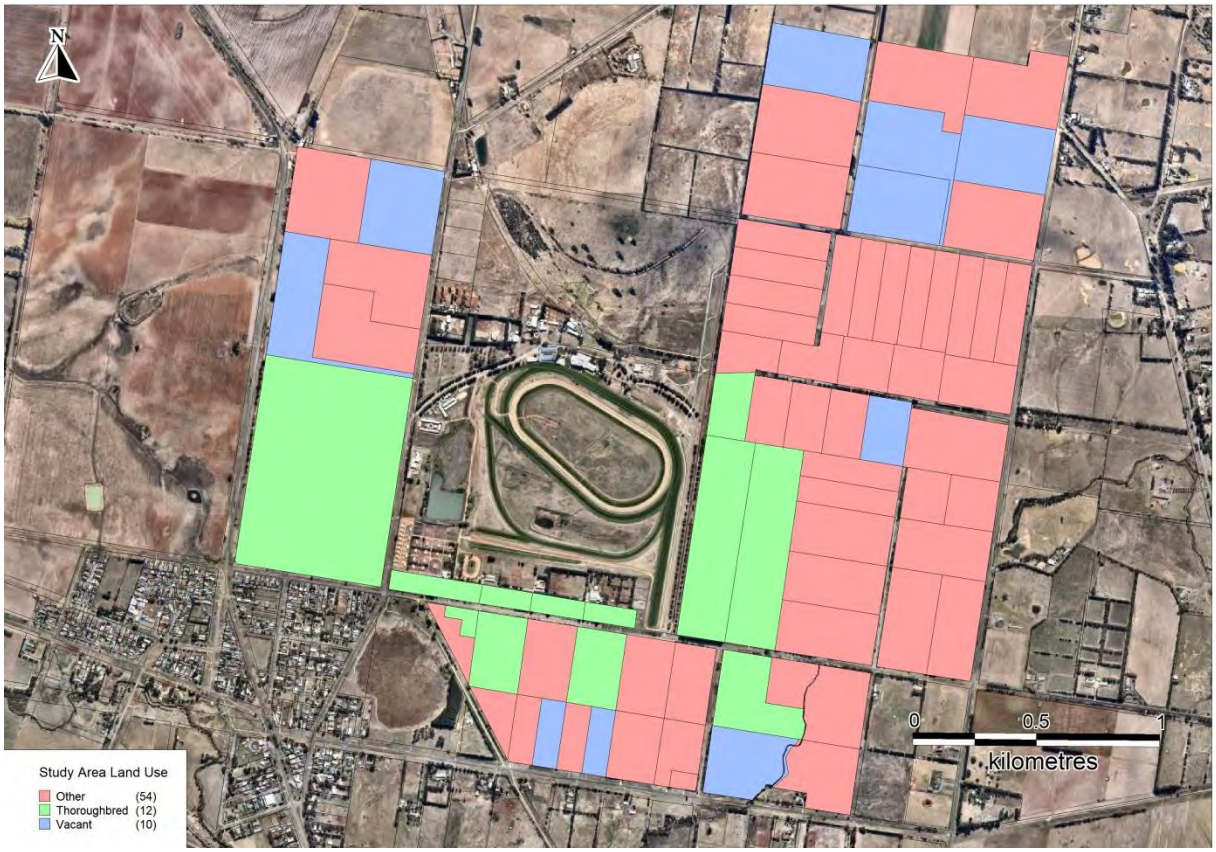
Source: HillPDA; Ballarat City Council

A broad pattern can be interpreted in Figure 7 in terms of how the precinct has developed over time and how the existing parcels may potentially be developed in the future.

Very few vacant parcels exist on racecourse land and land with immediate access to the racecourse or having the benefit of easy access without needing to float horses to the track via road.

Parcels which are located at the rear of the precinct, or in awkward land pockets, may require key road or tunnel infrastructure to be developed in order to activate the land, and these areas would most likely represent longer term opportunities.

Figure 7: Existing Land Uses, Dowling Forest Precinct, 2018



Source: HillPDA; Ballarat City Council

4.2 Existing Land Occupancy and Vacancy Status

In the raw data, a land parcel is counted as occupied if it has some form of activity on it, such as a house and stable or an agistment facility. Land is deemed vacant if there is no land use activity ascribed to it.

Vacant land of 81 ha accounts for 16% of the total land supply in the Dowling Forest Precinct, noting that this figure does not take into consideration constraints on existing vacant parcels, such as access, native vegetation (if any), ownership constraints, and the like. Underutilised land is also not reflected in these figures.

Approximately 61 ha of this vacant land exists in the Farming Zone precinct with a minimum subdivision of 10 ha. Having regard to the distance and logistics involved in accessing the track from these parcels, it is likely that these parcels represent long term development options compared with more conveniently located options which are closer to the track.

Nonetheless, the land zoned for thoroughbred activities in the Dowling Forest Precinct has significant available land supply. A summary of the total area by occupied and vacant land stocks for the Dowling Forest Precinct is shown in Table 9.

Table 9: Land Status, Dowling Forest Precinct, 2018

Precinct	Occupied		Vacant		Total	
	Lots	Area	Lots	Area	Lots	Area
SUZ13 South of Kennedys Road	18	79 ha	3	13 ha	21	92 ha
SUZ13 North of Kennedys Road	13	124 ha	0	0 ha	13	124 ha
Farming Zone (4 ha Min.)	27	125 ha	1	4 ha	28	129 ha
Farming Zone (10 ha Min.)	8	82 ha	6	61 ha	14	142 ha
Ballarat Turf Club Vacant Land	NA	NA	2	3 ha	2	3 ha
Total Estimate	**66**	**409 ha**	**12**	**81 ha**	**78**	**490 ha**

Source: HillPDA; Ballarat City Council
Note: Totals subject to rounding

4.3 Estimate of Land Capacity for Development

A preliminary assessment of 'full land capacity' is provided below. This is undertaken to recognise that infill development could potentially occur on both vacant land and underutilised occupied land within the Dowling Forest Precinct.

The theoretical exercise is intended to provide high level estimates of how many lots and the quantum of land that could be developed if the precinct was subdivided to its maximum capacity. The analysis does not take into account topography, drainage, access, non-visual encumbrances, land banking or decision-making process of individual landowners. The assessment is provided as a guide only.

The methodology for undertaking this analysis involved the application of the following equation to each of the 78 lots which currently comprise the Dowling Forest Precinct:

Individual lot area ÷ **Minimum lot size allowed under zoning (i.e. 2 ha, 4 ha or 10 ha)** - **1 (if occupied) or 0 (if vacant)**

The result for each lot was then rounded down to the nearest whole number to remove part-lot results.

For example, an occupied lot of 12 ha in an area which could be subdivided to a minimum lot size of 4 ha would be assessed as being capable of delivering an additional 2 lots of 4 ha each (or 8 ha in total). If vacant, that lot could be subdivided to 3 lots and 12 ha in total.

Using this approach, a high level estimate of land being used to full capacity (estimated by the smallest possible lot subdivision per zone) suggests there may be around 220 ha of thoroughbred activity land supply.

Land is rarely subdivided to its full potential. There are many reasons for this, such access limitations, native vegetation, flooding, topography, ownership constraints and land holder aspirations.

For the purpose of this assessment, it is assumed that 50% of potential land development capacity is unavailable for a range of reasons and as such it is assessed that a full capacity estimate for the precinct is a further 110 ha of land deemed reasonably available.

It is highlighted that the largest lot in the Dowling Forest Precinct is Lot 2 Ballarat-Maryborough Road, Miners Rest of approximately 51 ha of land and, given this lot is identified as currently being occupied, that parcel alone could potentially provide 24 lots and 48 ha of additional land for thoroughbred-related activity if subdivided at the allowable land area of 2 ha under the SUZ13.

Table 10: Indicative Capacity Estimate, Dowling Forest Precinct, 2018

Precinct	Potential Additional Lots (No)			Potential Additional Lot Area (ha)		
	Occupied Land	Vacant Land	Total	Occupied Land	Vacant Land	Total
SUZ13 South of Kennedys Road	18	5	23	36 ha	10 ha	46 ha
SUZ13 North of Kennedys Road	49	0	49	98 ha	0 ha	98 ha
Farming Zone (4 ha Min.)	2	1	3	8 ha	4 ha	12 ha
Farming Zone (10 ha Min.)	0	6	6	0 ha	60 ha	60 ha
Ballarat Turf Club Vacant Land	NA	4	4	NA	3 ha	3 ha
Total Estimate	**69**	**16**	**85**	**142 ha**	**77 ha**	**219 ha**
Effective Capacity (at 50%)			**42.5**			**109.5 ha**

Source: HillPDA; Ballarat City Council

4.4 Possible Take-Up of Land

At a short term take-up of 7 ha per 10 years (or 0.7 ha per year on average), the land supply in the broader Dowling Forest Precinct may be sufficient to meet approximately 158 years of demand (at the effective land capacity guide).

Assuming demand is doubled to 1.38 ha per annum, the effective land supply of the Dowling Forest Precinct could absorb 79 years of demand.

The various scenarios are shown in the table below.

It is not possible to estimate supply and demand in this context with precision, however based on available information and estimates used, supply is likely to be available for thoroughbred activities in the precinct for the very long term.

Table 11: Years' Land Supply, Dowling Forest Precinct

Scenario	Low Scenario	Medium Scenario	High Scenario	High Scenario II Doubling of Medium Scenario
Annual Land Take Up	**0.38 ha/pa**	**0.69 ha/pa**	**1.28 ha/pa**	**1.38 ha/pa**
Study Area				
Effective Capacity (109.5 ha)	290 years	158 years	85 years	79 years
SUZ13 Only				
Effective Capacity (72 ha)	190 years	104 years	56 years	52 years

Source: HillPDA

4.5 Take-Up Using the Alternative Capacity Estimate

The above estimates assume the BTC facilities can accommodate ongoing and unlimited demand on its tracks and via scheduling.

It was noted earlier that up to 2,250 horses in the Precinct may be considered by some stakeholders as the nominal capacity of the area (noting this is not necessarily the view of BTC). It was found that this may translate into a need for up to 36 ha of additional land in the area for training purposes.

If this is accepted, the training capacity may be reached as follows:

- Medium Scenario at 0.69 ha/pa: 52 years and leaving 74 ha of effective land capacity not used for training; and
- High Scenario II Doubling of Medium Scenario at 1.38 ha/pa: 26 years and leaving 74 ha of effective land capacity not used for training.

PROPERTY MARKET INFORMATION

5.0 PROPERTY MARKET INFORMATION

5.1 Permit Activity

A review of Council's permit register provides an overview of activity over the past decade. The information summarised in Table 12 indicates that planning and building permit activity has been reasonably evenly spread across the Racecourse, SUZ13, FZ (4 ha) and FZ (10 ha) areas over this time. Eight planning permits have been issued for activities on racecourse land, while seven permits have been approved for applications in the SUZ13 precinct.

Table 12: Permit Application Activity, Dowling Forest Precinct and Racecourse, 2008-2018

Application Type	Racecourse	SUZ13	FZ (4 ha)	FZ (10 ha)	Total
Planning Applications					
Completed		1	1		2
Permit Approved	8	7	6	7	28
Secondary Consent	1				1
Statement of Compliance				1	1
Vicsmart Permit Issued		1		1	2
Lodged	1				1
Awaiting Referral Responses				1	1
Application Refused		1			1
Application Withdrawn	3	2		1	6
Lapsed	1		1	1	3
Planning Applications Total	14	12	8	12	46
Building Permit Applications					
Completed		1		4	5
Occupancy Permit Issued	1	1	3	4	9
Final Certificate Issued	3	7	9	12	31
Approved	3	3		5	11
Cancelled			1		1
Lapsed	1	1			2
Building Permit Applications	8	13	13	25	59
Total	22	25	21	37	105

Source: Ballarat City Council

Approved planning applications granted on SUZ13 land between 2008 and 2018 are shown below:

- Development of a horse round yard;
- Construction of a garage associated with a use of the existing dwelling;
- Construction of garage;

- Extension of existing dwelling and construction of a shed;
- Construction of a hay shed;
- Skillion to existing shed;
- Alterations and addition to a dwelling; and
- Development of a veranda and decking in association with a dwelling.

Building permit details for applications on SUZ13 land between 2008 and 2018 are shown below:

Completed

- Horse stables to be erected on a vacant allotment.

Final Certificate Issued

- Construction of hay/storage shed;
- Detached garage;
- Detached sheds (animal shelter);
- Horse barn and feed shed;
- Non-habitable out building (animal shelter);
- Skillion attached to treadmill building; and
- Verandas attached to existing dwelling.

Occupancy Permit Issued

- Extension to existing dwelling including attached verandas, carport and free standing shed.

Approved

- Additions and alterations to a detached dwelling;
- Construction of shed; and
- Construction of veranda attached to an existing dwelling.

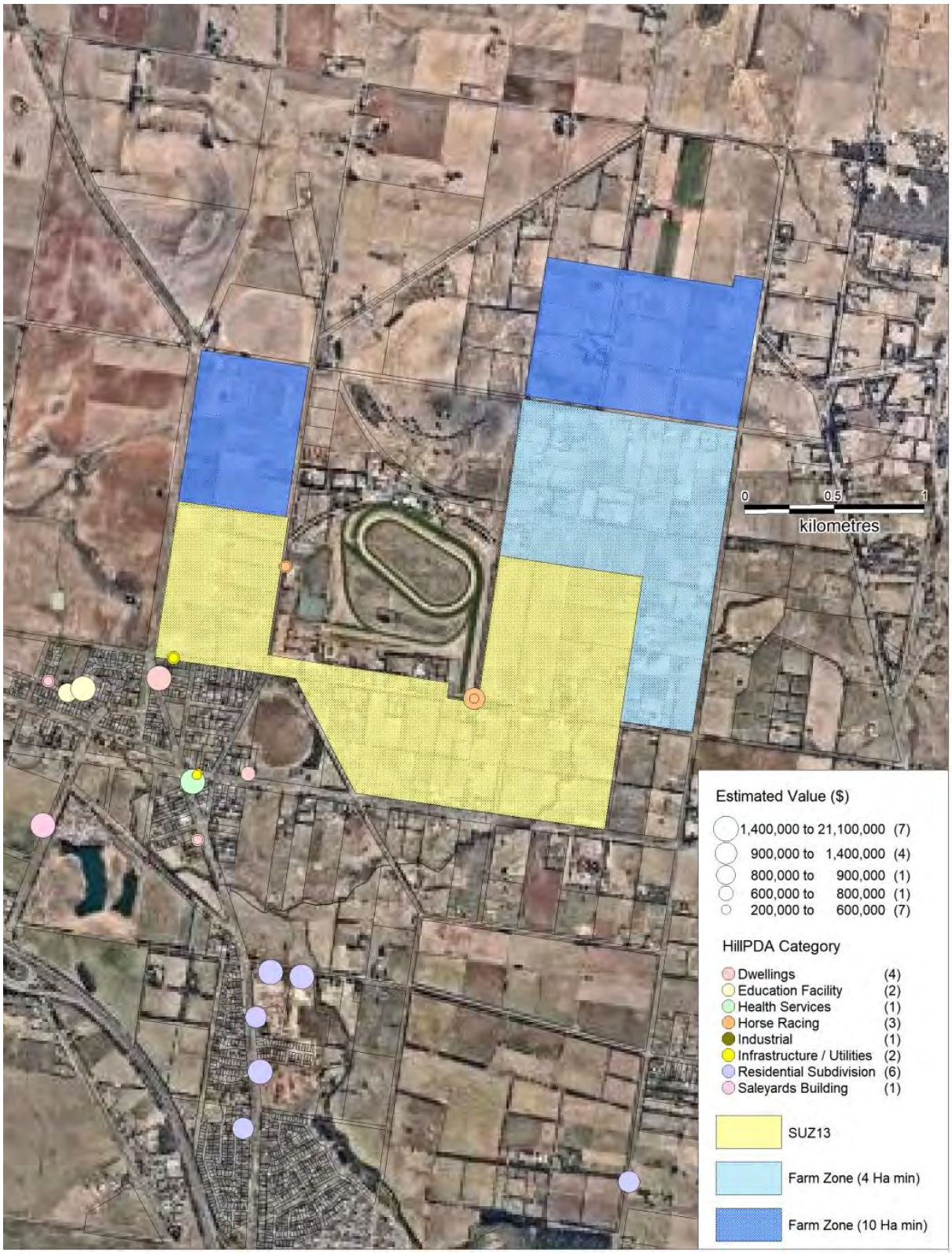
This information shows that limited permit application activity has been occurring off the racecourse site, in the SUZ13 area, over the past decade.

Further investigations into the level of investment and types of permits issued in the Dowling Forest Precinct and the broader Miners Rest area have been summarised in Figure 8.

Permit activity from 2011 onwards identifies that while limited investment activity has occurred in the precinct overall, horse racing-related investment has been focused on the racecourse site.

Several residential subdivisions have occurred beyond the precinct, approximately 1.7 km south of the racecourse.

Figure 8: Investment Activity, Dowling Forest Precinct and Beyond, 2011-2020



Source: Cordell Connect, May 2018

5.2 Property Sales

A total of 48 rural properties were sold within 4 km of the racecourse between January 2013 and May 2018, with a further 13 transactions occurring with undisclosed sales prices. These included sales in non-urban zonings such as the Farming Zone, Rural Living Zone, Special Use Zone Schedule 13 and Special Use Zone Schedule 15. At a high level, the overall average rates per sqm for these sales are shown in Table 13.

Sales of rural type properties around the racecourse have predominantly been on Farming Zone land, with around $17m invested across 37 sales. Since 2013, six disclosed sales have occurred in the SUZ13 precinct with this limited sample size showing an overall average rate of $10 per sqm.

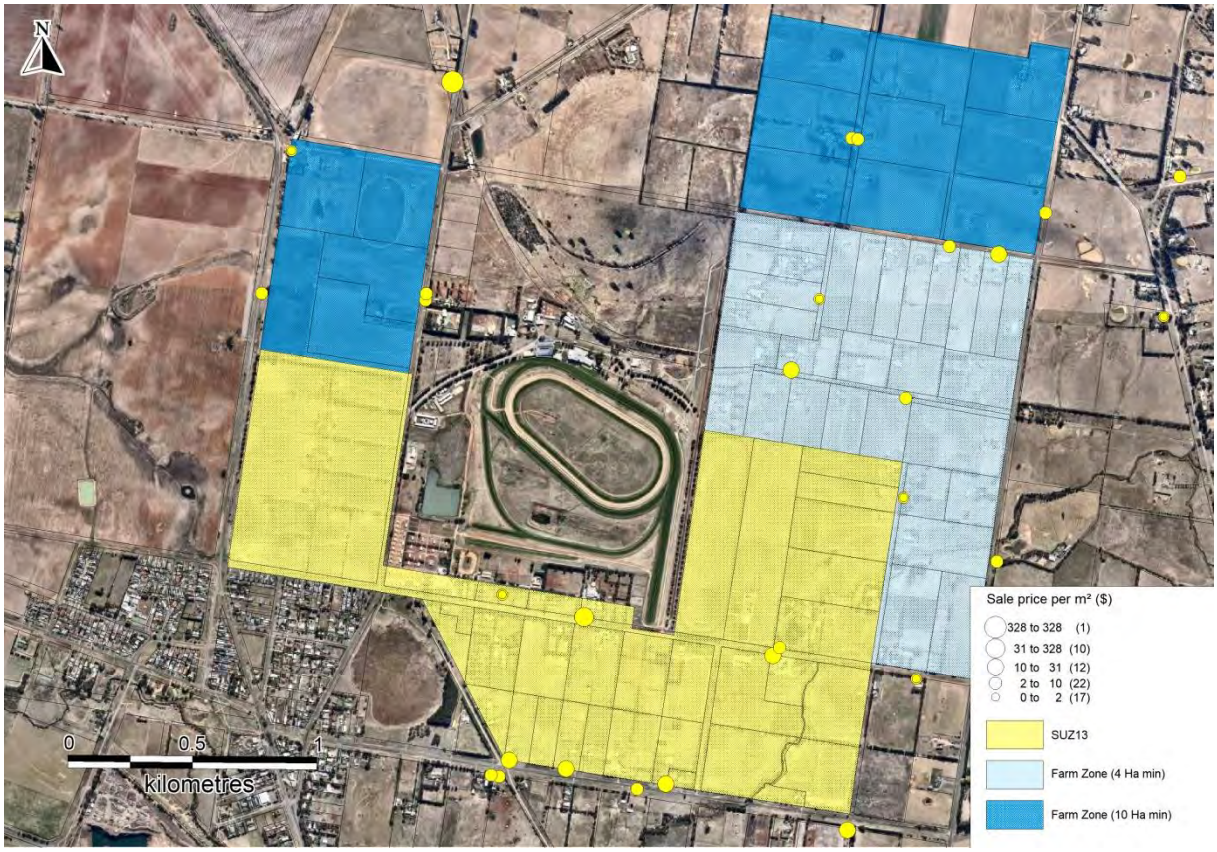
Table 13: Properties sold within 4 km of Racecourse, 2013-May 2018

Zone	Sales	Sum of Sale Price	Sum of Land Size	Av. $ / sqm
Farming Zone	37	$17,378,810	409.9 ha	$4
Rural Living Zone	4	$2,134,000	5.0 ha	$42
Special Use Zone - Schedule 13	6	$3,075,000	30.4 ha	$10
Special Use Zone - Schedule 15	1	$1,850,000	23.1 ha	$8
Total	**48**	**$24,437,810**	**468.5 ha**	**$5**

Source: RP Data, May 2018

The location of these sales is identified in Figure 9, though definitive conclusions are difficult to draw based on this sample size of somewhat differing property types (including undisclosed price sales) over a five-and-a-half year timeframe.

Figure 9: Recent Property Sales, Study Area and Immediate Surrounds, 2013-May 2018



Source: RP Data, May 2018

Limited SUZ13 sales activity has occurred in the local real estate market in recent years, and therefore little information exists regarding land prices. However, the seven sales in the SUZ13 precinct (including one sale of an undisclosed amount) are identified in the table below and show that prices ranged between $3 per sqm and $54 per sqm. The highest rate ($54 per sqm) was achieved for the site at 274 Kennedys Road, Miners Rest which significantly benefits from immediate access to the racecourse and the opportunity to lease an adjoining lot with training infrastructure from Ballarat Turf Club.

Table 14: Properties sold within SUZ13 Zone, 2013-May 2018

Street Address	Property Type/Category	Land Size (sqm)	Sale Price	$/SQM	Sale Date
143 Sharpes Road, Miners Rest	Farm	38,094	$387,500	$10	Sep-17
81 Sharpes Road, Miners Rest	Land	27,578	$420,500	$15	Oct-15
274 Kennedys Road, Miners Rest	House	15,599	$850,000	$54	Apr-15
318 Kennedys Road, Miners Rest	Farm	15,733	Undisclosed		Jan-15
195 Kennedys Road, Miners Rest	House	32,000	$500,000	$16	Jun-14
103 Sharpes Road, Miners Rest	House	28,238	$357,000	$13	Mar-14
208 Kennedys Road, Miners Rest	Land	163,425	$560,000	$3	Nov-13

Source: RP Data, May 2018

The sample of property sales within 4 km of the racecourse and which are sized between 1-5 ha indicate that prices are broadly comparable between SUZ13 and FZ land, while RLZ sales have achieved slightly higher rates per sqm by comparison.

Overall there is little evidence to identify any differences in prices achieved for similar sized properties in the SUZ13 and the FZ, indicating at face value that evidence to support claims that the zone has negatively impacting values is lacking; however, only seven sales have occurred in the SUZ13 precinct since 2013 and very small samples can undermine the validity of conclusions.

Table 15: Properties sold within 4 km of Racecourse, 2013-May 2018

Zone / Year	Land Size	Sale Price	Av. $ / sqm
Special Use Zone - Schedule 13			
2014	28,238sqm	$357,000	$13
2014	32,000sqm	$500,000	$16
2015	27,578sqm	$420,500	$15
2015	15,599sqm	$850,000	$54
2017	38,094sqm	$387,500	$10
Average			*$18*
Farming Zone			
2013	17,018sqm	$173,000	$10
2013	24,280sqm	$605,000	$25
2013	40,041sqm	$290,000	$7
2014	19,597sqm	$694,000	$35
2014	36,559sqm	$540,000	$15
2014	38,713sqm	$770,000	$20
2014	39,760sqm	$1,290,000	$32
2014	40,493sqm	$425,000	$10
2014	45,460sqm	$320,000	$7
2015	13,618sqm	$485,000	$36
2015	40,118sqm	$855,000	$21
2016	24,957sqm	$90,000	$4
2017	17,463sqm	$360,000	$21
2017	19,020sqm	$795,000	$42
2017	20,026sqm	$720,000	$36
2018	48,562sqm	$590,000	$12
Average			*$19*
Rural Living Zone			
2013	20,037sqm	$620,000	$31
2018	20,234sqm	$655,000	$32
Average			*$32*

Source: RP Data, May 2018

5.3 Properties Currently for Sale

Nine properties are currently for sale within 4 km of the racecourse in SUZ13 and FZ areas. The two properties which are currently for sale in the SUZ13 precinct and the current number of days which they have been listed for sale, or 'on the market', are:

- 299 Kennedys Road, Miners Rest: 975 days; and
- 81 Sharpes Road, Miners Rest: 430 days.

These two SUZ13 properties have been on the market for a significantly longer timeframe than the average FZ property (117 days). A transaction can be delayed by various issues such as state of the market, asking price, general desirability of an area, specific site conditions and the nearby social amenities. It is extremely difficult to attribute with confidence which factors are impacting the sale-ability of a property, however it is noted that the time taken to sell the two SUZ13 properties which are currently on the market is well in excess of a year each.

Table 16: Properties for sale within 4 km of Racecourse, SUZ13 and FZ, July 2018

Zone	No. of Properties	Average Land Size	Average Days on Market
SUZ13	2	4.5ha	703
FZ	7	8.6ha	117
Total	**9**	**7.7ha**	**247**

Source: RP Data, July 2018

CASE STUDIES

6.0 CASE STUDIES

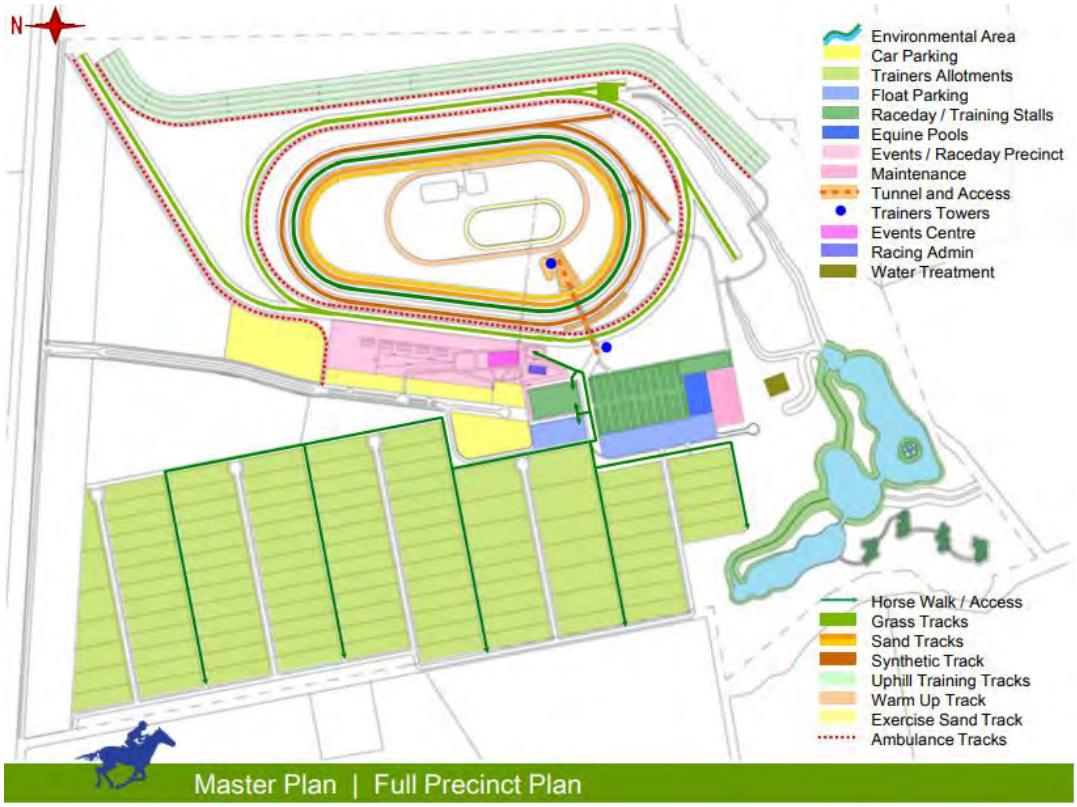
6.1 Pakenham Racing Club

Pakenham Racing Club relocated from facilities which were in Pakenham to Tynong in 2015 with a brand new course, now known as Racing.com Park. Tynong is approximately 70 km south-east of Melbourne. When fully developed, the new racecourse will have the potential to train up to 1,000 horses.

Pakenham Racing Club has a masterplan for the Pakenham Racecourse in order to guide the future land use, upgrades and development activities of the site. The racecourse, which is zoned Special Use Zone, aspires to be not just a racing and training centre, but a fully integrated employment, residential, and equine-related commercial and retail precinct that is complimentary to racing and training activities at the site.

A key component of the masterplan for the new Pakenham Racecourse, Racing.com Park, was the creation of the "Trainer Allotments" precinct. This zoning, spanning 60 ha, allows for lot purchasers (with ownership unrestricted) to build stabling infrastructure and a dwelling on a clear title, aimed at ensuring a functional investment for years to come. The trainer allotments range in size generally from 0.5-1.2 ha and aim to encourage trainers to locate in the precinct, representing a more cost effective and sustainable business model.

Figure 10: Tynong Racecourse and Training Facility



Source: Pakenham Racing Club

6.2 Cranbourne Racecourse

The Cranbourne Racecourse is located around 45 km south-east of Melbourne, accessible via the South Gippsland Highway and approximately 15 minutes from Dandenong and Frankston. By starter numbers, the Cranbourne Racecourse is the largest training complex in Victoria and boasts a synthetic training track which enables horses to train all year round.

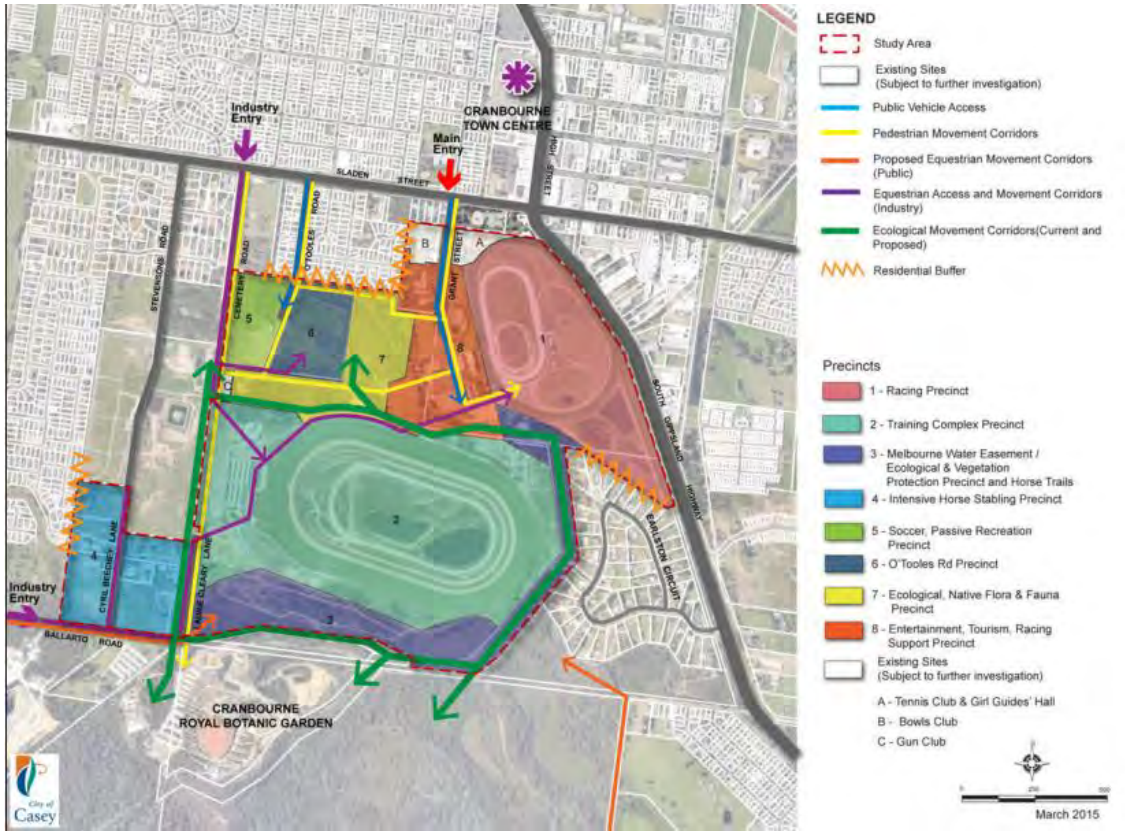
The course accommodates over 140 licensed trainers and over 1,400 horses in training. With such high usage of horses per day the Cranbourne training operation has two separate tunnels which allow for one-way access and egress arrangements to the facilities.

Cranbourne Racecourse comprises thoroughbred, harness and greyhound racetracks along with several other sports nearby, and one of the key considerations for the precinct is to ensure development considers the impact on the other racing codes' ability to expand.

Council are seeking to replace some nearby sporting facilities with racing related uses that are more compatible with the surrounding racing industry land uses. Other potential sources of land use conflict are the residential interface to the south-east of the racecourse precinct.

An Intensive Horse Stabling precinct is located at Cranbourne racecourse with uses not compatible with horse stabling being discouraged from establishing within the designated area. Development of this area must appropriately respond to the residential interface to the west of the precinct.

Figure 11: Cranbourne Racecourse and Training Facility



Source: Casey City Council (Cranbourne Racing Complex and Surrounds Investment and Development Plan)

CONSULTATION

7.0 CONSULTATION

7.1 Consultation Program

A series of one-to-one meetings were held with selected stakeholders in person and over the phone during the period 28-30 May 2018. This method enabled consultation with a diverse range of stakeholders who are representative of the cross-section of relevant stakeholders on detailed or specific issues; for example, to discuss the SUZ13 controls or discuss trends and emerging challenges which are currently or will in the future impact on thoroughbred activity at Dowling Forest.

Parties involved in the stakeholder consultation program are identified below:

- Racing-Related Stakeholders
  - Archie Alexander (trainer)
  - Darren Weir (trainer)
  - Matt Cumani (trainer)
  - Michelle Payne (trainer)
  - Ballarat Turf Club
  - Racing Victoria
  - Ballarat Veterinary Practice
  - OTI Racing
  - Wyndholm Park
- Real Estate Agents
  - Harcourts Ballarat
  - Blue Ribbon Ballarat
  - Petrie Real Estate
- Others
  - Ballarat City Council
  - SUZ13 Action Group
  - Keaney Planning and Research
  - Hansen Partnership
  - Lifestyle Rural Residential.

A total of 17 consultations were conducted with people from a variety of racing backgrounds and with several parties involved with the property market in the local area.

The consultations asked people about their specific experiences which may be of relevance to the Dowling Forest Precinct. The findings have informed the work of this report.

A summary of the findings from the consultation process is provided below:

7.2 Racing-Related Stakeholders

- The racing industry and Ballarat Turf Club (BTC) have worked very hard to develop significant assets at Ballarat racecourse. Very strong growth has been experienced in training activity and Ballarat is the fastest growing training centre in Australia, with about 78% growth in starter numbers experienced over the past four years or so.
- BTC is continuing to strengthen Ballarat racecourse's position as the premier training facility in western Victoria and is pursuing a range of improvements and projects which will further boost what is a state-of-the-art racing and training complex.
- The racecourse is a significant economic generator and increases the diversity of jobs in the Ballarat region. The industry requires a wide range of skill levels, from low-skilled manual tasks to highly specialised breeding and veterinary care. The racing industry often gives opportunity for those who may struggle to find meaningful long term employment in other industry sectors.
- Land with direct access to the racetrack is most in demand. Trainers who locate their operations on-site save in trucking and labour costs. Bigger trainers cannot practically cross Kennedys Road with their large team, so a tunnel would be required in order to attract a trainer of any significant size to that part of the precinct.
- Ballarat's key advantages are varied, however they include:
  - Affordability;
  - Proximity to Melbourne, Adelaide and many regional Victorian tracks;
  - Uphill/straight training track;
  - Upcoming installation of synthetic track;
  - Consolidated complex and network of trainers;
  - Spacious country-style environment;
  - Non-metropolitan location;
  - Training is allowed until 11.30am at the track compared with around 8.30am in metropolitan areas;
  - Presence of a natural hill adjoining the racetrack;
  - Opportunity to lease stables without a significant capital outlay;
  - Confidence that Darren Weir is having success from the location; and

  - Suitable climate is good for training horses (but perhaps a little cold for spelling).

- Potential conflicts which may arise if the horse/residential interface is not managed appropriately include:
  - Racecourse impacts on residential uses may include:
    - Smells (i.e. horse manure);
    - Treadmill noise (from machinery starting at 6am);
    - Dust caused by horse activity and/or dry tracks;
    - Car or truck movements, and deliveries to the site; and
    - All the risks associated with having a horse break loose.
  - Residential impacts on racecourse uses may include:
    - Increased traffic along Kennedys Rd (non-racing people tend to have little horse sense);
    - Spooking horses with car/motorbike noise and movement nearby; and
    - Road safety (i.e. kids with balls, horses could run across road).
- A range of views exist as to the capacity of the racetrack surface for training horses, however the installation of the synthetic track will significantly boost the capacity for the track to cater for morning track workers. The upcoming development of the synthetic track is estimated to allow an increase of around 20 extra meetings to be run annually and increase the resilience of the current racing infrastructure to cater for an increase of 350 horses, to accommodate an increase in trainers seeking to relocate as metropolitan training facilities are rationalised. It is anticipated that, once there is increased capacity from the installation of the synthetic track, additional trainers and horses will be encouraged to locate at the site.
- Upon closure of Caulfield as a training facility, approximately 3,800 starters will need to relocate somewhere. Ballarat will be well placed to attract those trainers and, while they will be given five years' notice before they have to move, Ballarat could support the relocation of trainers from Caulfield.
- Cranbourne is presently the largest training facility by starter numbers but is currently at capacity, so therefore Pakenham and Ballarat are likely to be the key options for Caulfield trainers.
- Access to the track from beyond the racecourse land is provided only via float (via Midas Road entrance) or via the east gate through the adjoining Payne property which fronts Kennedys Road. Providing safe access and egress to the track, and direct access without the need to float horses in for training will be a key consideration for racing participants seeking to establish themselves in Ballarat.

- A key issue for current trainers is the volume and speed of traffic moving along Kennedys Road and improvements to signage, particularly along that road, would be beneficial. An upgrade to the general appearance of major roads around the racecourse in order to promote the sense of an "entranceway" to the racing precinct would be appreciated.
- The uphill track was widely lauded as "the best thing that has happened to Ballarat racecourse", revolutionising the training methods and attracting numerous other trainers. The Pro-Ride training surface, the lack of turning, and the natural landscape on the incline are all great for horse's legs.
- For stable employees, work is generally from 4-10am and then 2-5pm, so they need to go home in between those times which could provide demand for smaller accommodation options in nearby Miners Rest township or on the periphery of the racecourse land.
- Opportunity could be explored for other industry participants, such as farriers, to buy land and set up business in the SUZ13 area also. Associated activity such as vets, feed merchants, floating companies, could be permitted in the SUZ13 area.

7.3 Real Estate Agents

- A diversity of opinion exists in terms of the impacts of the SUZ13 generally, with some agents viewing the zoning as a positive given it provides the opportunity to subdivide land, however the perceived lack of certainty has been leading to tentative decision making and this may have had a negative impact on values.
- Some of the advantages of the SUZ13 area from a real estate perspective are a lack of native vegetation which is present in other precincts; suitably sized allotments with real estate enquiry for hobby farms being generally for lots of 2-8 ha in size; and traffic flows to/from Miners Rest township are separate from Racecourse traffic (i.e. racecourse traffic generally travels along Kennedys Road, whereas Miners Rest traffic tend to use Howe Street).
- Disadvantages of the SUZ13 area from a real estate perspective are a common and widespread misunderstanding and lack of clarity regarding the controls; limitations on landowners in terms of their ability to extend existing dwellings; a perception of stigma with the zoning and some agents have been using a lack of SUZ13 zoning as positive 'marketing spin' for those allotments which they are selling beyond the SUZ13 area; and a lack of access across Kennedys Road decreases the appeal and marketability of the SUZ13 lots which are south of Kennedys Road.
- The thoroughbred industry includes diverse socio-economic participants. There are wealthy owners/trainers but there are a lot of trainers who are "on the brink".

- 'Equine' participants would outbid the 'thoroughbred' participants easily. If the controls were modified for 'equine' then it would be harder to define those participants and it would make it very hard for thoroughbred industry to acquire land. Equestrian uses generally want to go toward Smythesdale.
- It was suggested that banks have been asking for a higher deposit than usual for SUZ13 land. Comment from a finance broker indicated that deposit requirements for rural residential properties is 10%, but training facilities are treated as commercial lending and this requires a 30% deposit, irrespective of the specifics of the zone.
- Some potential buyers have considered purchasing land on the south side of Kennedys Road but a lack of access to the track was seen as a deal-breaker. Horses could previously have been ridden onto the track directly from the south side of Kennedys Road however the change in access arrangements to the track has significantly restricted the appeal of lots in the precinct. A solution such as a tunnel would boost the attractiveness of land on that side of the road. The tunnel across Kennedys Road would be the priority option as there are already a number of thoroughbred participants in that area. It is understood that 'ride on' access to the racecourse was stopped to address significant health and safety concerns for horses accessing the facilities across Kennedys Road.

7.4 Other/General Findings

- The vision for the area is generally shared among all stakeholders with some differences in the detail of how best to execute this vision.
- A general lack of clarity exists among stakeholders regarding permissible and non-permissible uses. Improved explanation and communication with all parties would alleviate many existing concerns.
- The SUZ13 controls have been based off the Pakenham racecourse model which is Crown Land, however by replicating the Pakenham model on privately owned land it has not factored in the benefits of control that are afforded to Crown Land.
- It was suggested that a Rural Residential zoning with a minimum lot size would provide appropriate lot sizes for equine uses and protection of racecourse interface. Several stakeholders suggested the size of lots would be best maintained at 6 ha in the SUZ13 area for buffer and encroachment purposes.
- Ballarat is a track that has room to expand and that is a rare and significant advantage compared with other clubs such as Geelong which is landlocked and cannot expand.
- It was suggested that Council could consider Garlands Road being used as a path to the Town Common, which could provide further training options for horses based in the Dowling Forest Precinct.

- The closure of Midas Road would improve access to what could potentially be additional training land to the west of the racecourse, while a tunnel across Kennedys Road was broadly acknowledged as the priority of all the tunnel options raised during consultation.