

**Farm Management Plan (Version 2, April 2021)**

**Address:** LOT 3 MT BATTERY ROAD, MANSFIELD

**Lot and Plan Number:** LOT 3 654263E, VOLUME 10214 FOLIO 702

**Local Government (Council):** MANSFIELD

**Council Property Number:** A5779

**Directory Reference:** VicRoads 63 D2

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**LOT 3 MT BATTERY ROAD, MANSFIELD**



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## 1. Introduction

This Farm Management Plan has been requested to address the requirements of Mansfield Shire Council in respect to a Planning Permit to construct a dwelling to support a cattle farming operation on a ~27.9ha property on Mt Battery road, 3.5km from Mansfield.

The property will be part of the Purcell family, five generation cattle farming business in the Shire. Mansfield Shire recognises agriculture as being one of the key economic drivers for the Shire and that cattle grazing is one of the Shire's major agricultural industries.<sup>1</sup>

Travis and Caitlin Purcell will calve down a spring and autumn draft of Angus cattle and will also produce fodder on the property as part of this proposal. This will ensure critical animal welfare management and careful supervision of calving. There will also be a fruit and vegetable enterprise which will supply Harvest Wholefood and Yarrowood Café under agreements that are already in place.

They also plan to improve the biodiversity and environmental health of the property and Ford creek, which makes up the southern boundary of the property.

The Farming Zone is the zone that is strongly focused on protecting and promoting farming and agriculture.

The Mansfield Shire Council in their Economic Development Strategy (2020-2025) recognise the continued importance of environmental sustainability and farming industries in the Shire's economic development, as it manages continued population growth, largely driven by the lifestyle and tree-change residential market.

This development proposal represents an appropriately sited cattle business that will be adaptable to climate change and support compatible value adding activities to existing agricultural uses, with outcomes that lead to an improvement in biodiversity, riparian zone and soil and land health.

This Farm Management Plan includes:

1. A site plan showing:
  - Proposed buildings;
  - Recreation zone;
  - All paddocks and internal fencing;
  - Water storage;
  - Areas set aside for regeneration/revegetation;
  - Water supply for domestic purposes and firefighting;
  - Remnant patches of vegetation;
  - The allotment numbered in zones, e.g. conservation zone, recreation zone, agricultural zone;
  - Location of revegetation;
  - An indigenous species list including scientific and common names;
  - Ongoing weed management.
2. A written summary for each zone in accordance with the site plan which includes the zone type/number and ecological vegetation community types. The summary also

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<sup>1</sup> <https://www.mansfield.vic.gov.au/my-council/about-mansfield-shire#:~:text=Cattle%20and%20sheep%20grazing%2C%20along,industry%20output%20of%20%24823m>.

includes a list of specific management requirements to be undertaken in each zone, which corresponds with action tables. All recommended plant species lists for revegetation are sourced from the ecological vegetation community type that originally occurred on the property.

3. Weed management strategies include the following:
  - A weed list including species by common name and scientific names;
  - Methods of control for significant weed species;
  - Timing of control;
  - Frequency of control;
  - Monitoring;
  - Weed management table for a 5-year period and recommendations for post five years;
  - Any current weed control on site.
4. Pest animal control and treatment measures particularly for foxes and rabbits includes:
  - Evidence found on site of pest animals such as burrow/dens, scats, diggings, etc;
  - Approaches to integrated pest animal management;
  - Monitoring techniques;
  - Timing of treatment/control.
5. A table of actions is incorporated in the farm management plan that includes works in the identified zones. A prioritised list of actions is incorporated for a five-year period. After this a list of recommendations for post a five-year period is included. This includes native vegetation revegetation and management, pest and animal maintenance and fence maintenance.

A site inspection was carried out on September 4<sup>th</sup>, 2020 and the site conditions and vegetation condition were recorded.

### 1.1 Background on the Property Owners and their Plans for the Property

The property owners, Travis and Caitlin Purcell have significant experience in land management. Travis is a fifth generation cattleman from the family farm at Merrijig which this property will be managed in conjunction with.

Caitlin grew up at a native plant nursery and is very experienced in the propagation and establishment of native plants. She has a Science Degree, is a qualified Permaculture Practitioner and is completing a Level 3 Advanced PDC in Orchard Management.

They have established Purcell Constructions in Mansfield, whilst still being active in the operation of the family farm on a daily basis. They are active members of two local Landcare groups.

The purchase of this property will enable the family farming business to run an additional 20 to 30 breeders, with appropriate on farm supervision, with the progeny being finished on the Merrijig farm.

### 1.2 Property Land Use History and Zoning

The property is located within the Mansfield Shire. The following Planning scheme overlays pertain to this allotment:

- Farming Zone (FZ) and Schedule to the Farming Zone

- Land Subject to Inundation Overlay (LSIO) and Schedule to the Land Subject to Inundation Overlay
- Significant Landscape Overlay (SLO) and Significant Landscape Overlay Schedule 1 (SLO1)

The property has been used for cattle grazing.

The area has a strong indigenous association. It was inhabited by the Taungurung people and local indigenous communities that are still active today.

European colonisation commenced in 1839 when Scottish livestock company, Watson and Hunter sent Andrew Ewing (Evan) to scout the area for a potential sheep station. Wappan Run was established as a result in 1840 with the overseer's hut being built near where the town now stands. The Run extended from Bonnie Doon to Merrijig and this property would have been part of it.

The Run was then divided up into four properties with Mt Battery being the one that included this property. All four met at the point where the roundabout in the centre of Mansfield now stands.

The town of Mt Battery was surveyed in 1851 with the town having a name change to Mansfield in 1856; the year gold was also first discovered in the district. Mansfield then became a transport route and source of provisions for a rapidly increased population servicing the gold rush.

The initial sheep runs increased and were split up into smaller properties and the district also developed into dairying, growing of oats, vegetables and fruit. The district has also been an important source of timber and timber milling.

It has always been an important area for holidaying and recreation and Mount Buller commenced development in 1920 as a ski field. Mansfield is the key service centre for the resort.

### 1.3 Development Objective

To provide for a cattle and breeding and finishing business and a fruit and vegetable production enterprise.

The property is ~95% cleared. The proposed development includes native revegetation, weed control and pasture renovation works; to improve biodiversity, fauna habitat, contribute to improved productivity and land degradation prevention and remediation, see Figure 1.

The proposal is to have five paddocks to give a total grazing area of ~23ha. The proposed stock yards are centrally located on a rise with good access for transport, midway down the proposed driveway.

This will support 20 to 30 cows (depending upon seasonal conditions) that will calve down in two supervised drafts, spring and autumn. With progeny being finished on another family property.



Two dams are proposed for stock and reticulated troughs are also proposed that will be fed by tanks located at the proposed shedding, see Figure 1. Domestic water will be provided by tanks off the dwelling.

Caitlin is a qualified permaculture practitioner and a permaculture area is proposed that will supply produce to Harvest Wholefoods and Yarrowood Café via agreements that are already in place. A 20m x 10m fully enclosed fruit orchard with 35 heirloom varieties grown using biodynamic principles will be established, along with two 15m x 1.2m permaculture vegetable beds. These will be located to the west of the house, between the house and the paddocks and away from the disposal field.

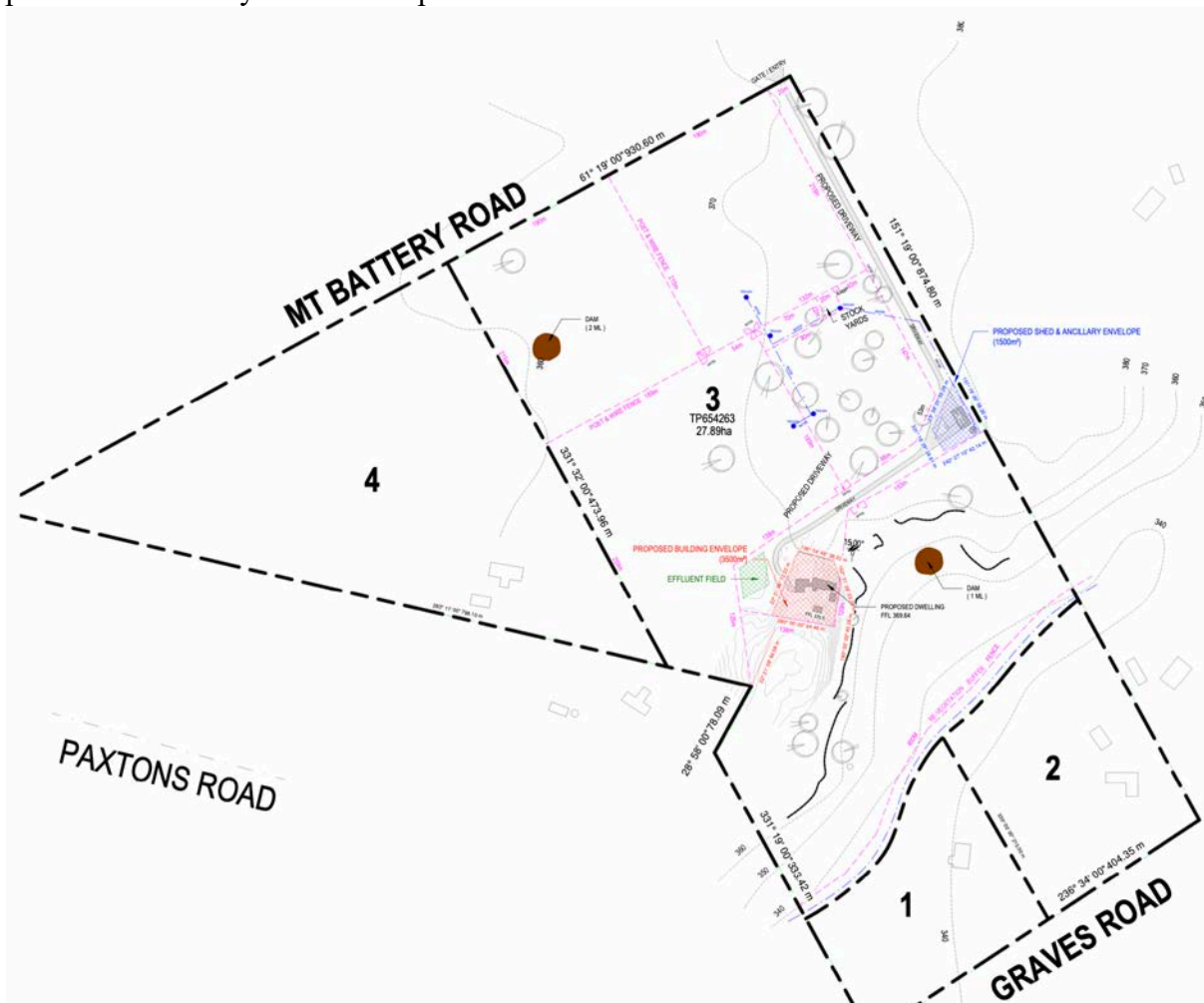


Figure 1 – Site Proposed Development

## 2. Method

### 2.1 Data and Literature Review

The following resources and databases were reviewed as part of a desktop assessment:

- NatureKit previously the Biodiversity Interactive Maps (DEPI 2013/DELWP 2018) for the extent of historic and current EVCs, and the location of sites of biological significance within the region;
- Native Vegetation Information Management System (DEPI 2013/DELWP 2018);
- Planning Schemes Online Maps (DELWP 2018) for current zoning and planning overlays applicable to the study area;
- Aerial photography of the study area;

- Relevant state legislation, policies and guidelines;
- Victoria resources online (landform, geology and soils), (Department of Economic Development, Jobs, Transport & Resources 2017);
- Agriculture Victoria, Livestock Farm Monitor Project Report, Victoria, 2018-19;
- Bureau of Meteorology Data and Climate Services;
- A Study of the land in the catchment of Lake Eildon (1977);
- Land Systems of Victoria (2020);
- Mansfield Shire Plan 2017-2021.

## 2.2 Field Survey

A site assessment was undertaken on the 4<sup>th</sup> of September 2020; to identify current land use, adjacent land use, agricultural potential, flora and fauna values, landform, geology, soil types, land capability, infrastructure, equipment, environmental features and risks within the study area and immediate surrounds. The study area was traversed by vehicle and on foot and land condition and vascular plants were recorded. An aerial photo was used. The land use (on site and adjacent), geology, landform, agricultural potential and overall condition of the soils and vegetation were noted.

## 2.3 Background in Land Management

Please see Appendix 2, Curriculum Vitae, which provides background on the expertise of the author – Mr Gavin Beaver.

## 3. Property Characteristics

This ~27.9ha property is 95% cleared of the original native vegetation. It is located 3.5km west from the centre of Mansfield and 1.15km south of the summit of Mt Battery.

There is limited native vegetation along Ford Creek on the property's southern boundary and scattered large old trees (Red Gum) on the property, see Figure 1. Otherwise, the pastures are significantly modified with introduced species, see Figure 2.



Figure 2 – Aerial view of the property

The property is in the Central Victorian Uplands Bioregion and is mapped as Ecological Vegetation Class (EVC) 55, Plains Grassy Woodland, see Figure 3 and Appendix 1. This EVC is listed as endangered EVC within the Central Victorian Uplands Bioregion (DSE 2012).

This property is dominated by pasture and weed species and is not representative of the EVC.

The creek is incised in the landscape of the property on the southern boundary, see Figure 4. 80% of the property is gently sloping as part of the foothills of Mt Battery. Then there is a scarp and alluvial flat above Ford Creek, see Figure 8.

The elevations vary from 395m to 340m and it is gently sloping, east to west on the upper portion of the property, until the steep scarp above the alluvial flat, see Figure 4.

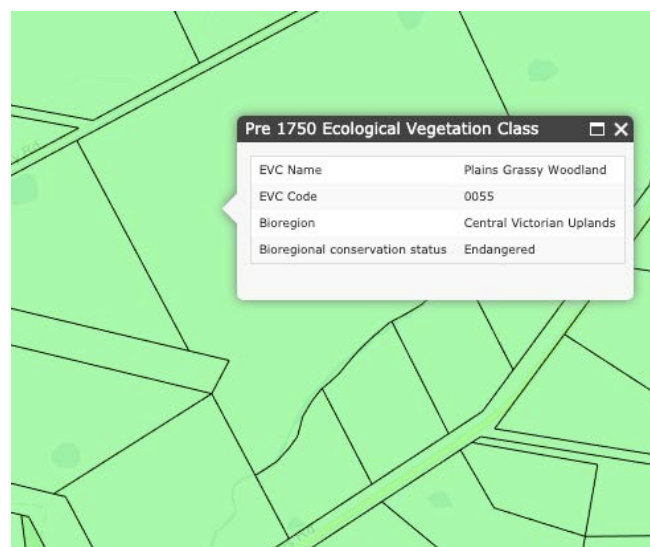


Figure 3 – Ecological Vegetation Class Map

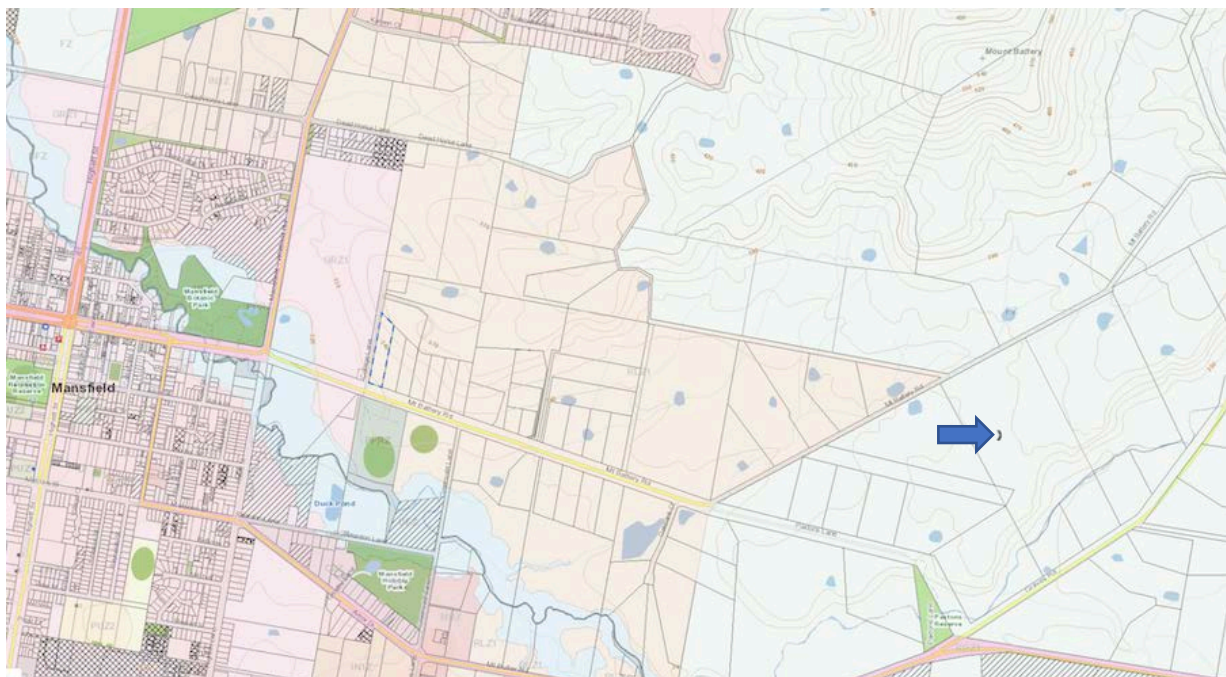


Figure 4 – Property location and contour map



The land is relatively stable from a land degradation perspective, see Figure 5. Other than having a very small amount of gully instability, see Figure 6 which will be repaired and stabilised with the addition of a gully dam. There is some weed infestation. There is some streambank instability and weed infestations along Ford Creek on the southern boundary, see Figure 7.



Figure 5 – Stable, gentle upper slopes



Figure 6 – Small amount of gully instability





Figure 7 – Ford Creek on the southern boundary



Figure 8 – Scarp and alluvial flat above Ford Creek

## 4.1 Climate

This property is located on the northern slopes of the Great Dividing Range. The range has a great influence on rainfall pattern for this property. This property is located in the Goulburn-Broken River Catchment. The average rainfall for the district is 722mm, see Figure 9 and Table 1.

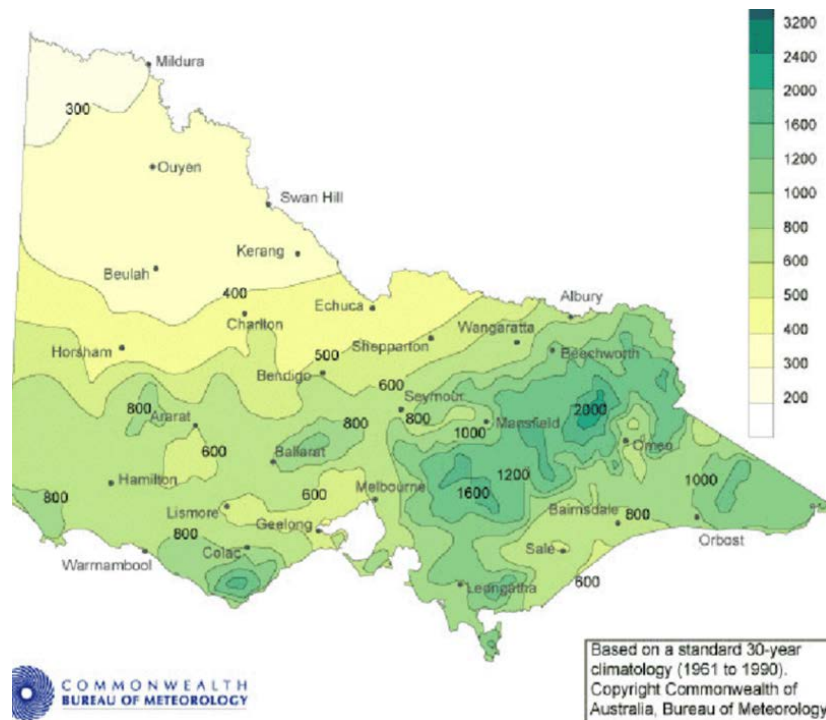


Figure 9 - Victorian average rainfall zones

The growing season is on average from April to October (7 months). These are the months when rainfall reliably exceeds the rate of evapotranspiration (>50% of the time), this is also referred to as months of effective rainfall.

Effective rainfall is when there is enough to enable plant germination and to sustain plant growth. Evapotranspiration is an estimate of moisture lost from a fully vegetated area, where soil moisture is not limiting, (Source VRO Agriculture Victoria).

Victoria is divided up into eight climatic zones: Climate zone 1 - High humidity summer, warm winter. Climate zone 2 - Warm humid summer, mild winter. Climate zone 3 - Hot dry summer, warm winter. Climate zone 4 - Hot dry summer, cool winter. Climate zone 5 - Warm temperate. Climate zone 6 - Mild temperate. Climate zone 7 - Cool temperate. Climate zone 8 - Alpine. This property is in climatic zone 7 – Cool temperate, see Figure 10.



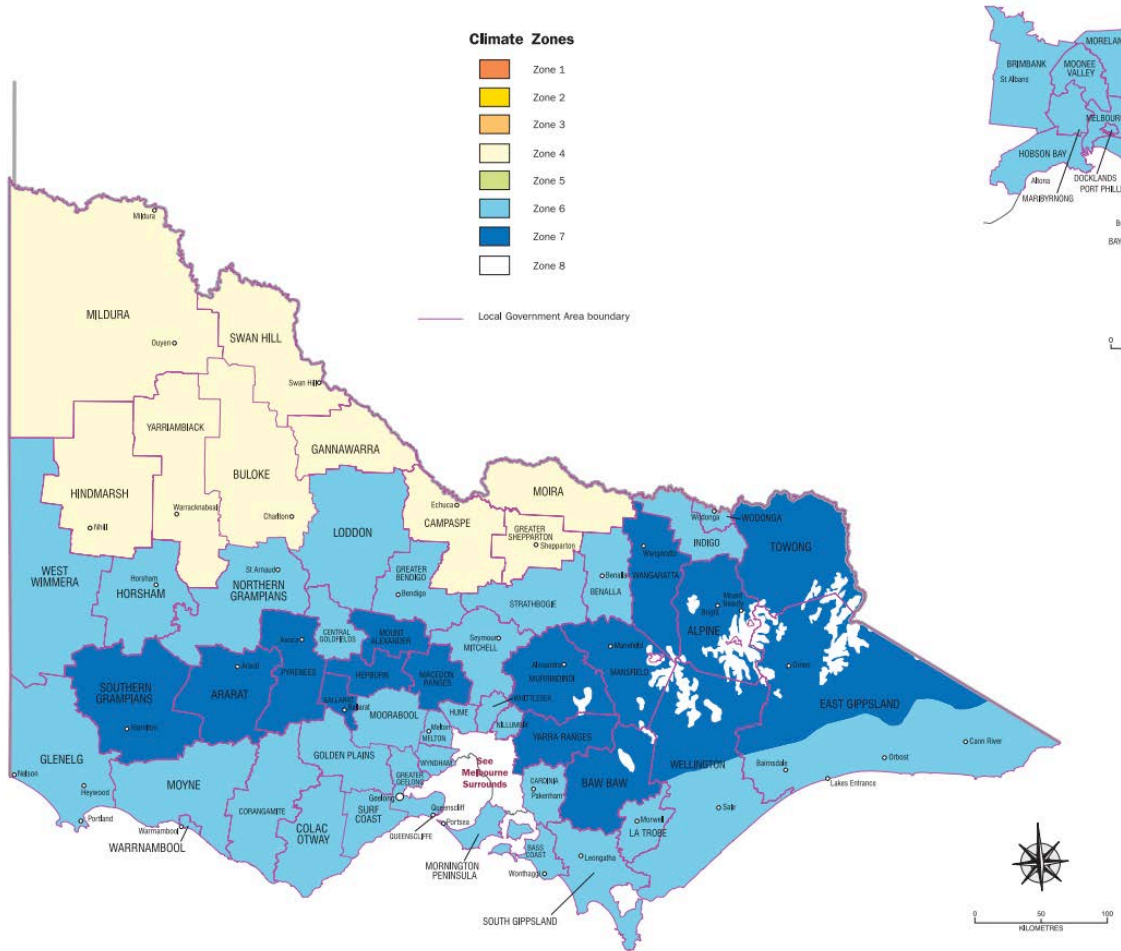


Figure 10 - Victorian Climatic Zones (Source Australian Bureau of Meteorology)

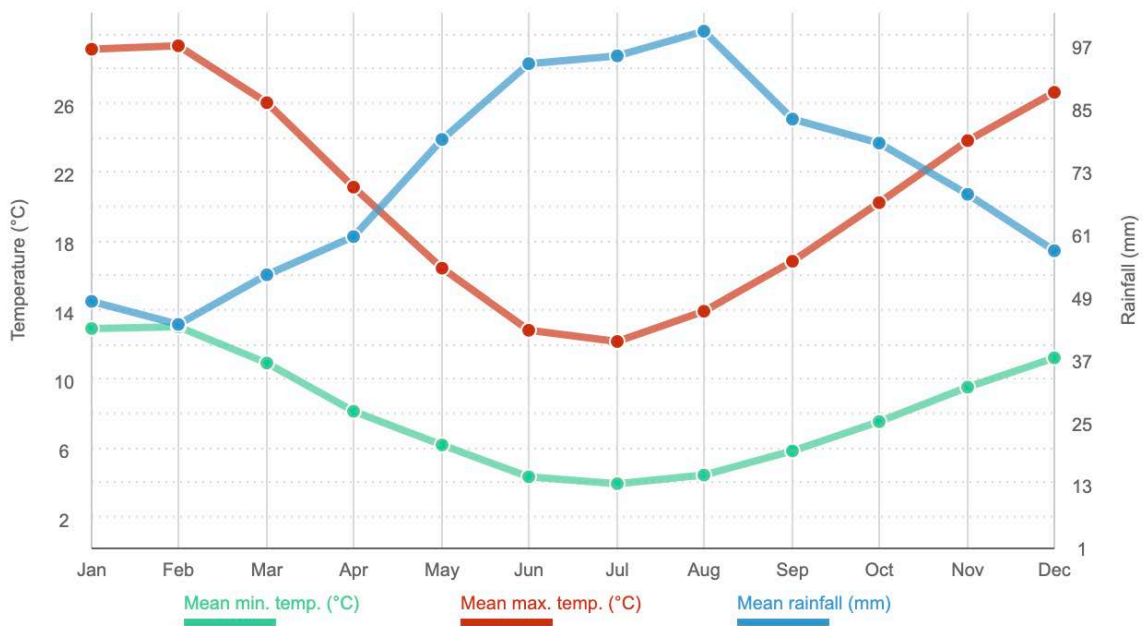


Figure 11 - Mean Rainfall and Temperature Mansfield<sup>2</sup>

<sup>2</sup> <http://www.meteorology.com.au/local-climate-history/vic/mansfield>



**Table 1: Rainfall Data for Mansfield (Records kept since 1901)<sup>3</sup>**

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	46.2	39.5	50.7	51.1	61.7	64.7	70.4	74.7	66.6	67.6	57.5	51.9	701.0
Lowest	0.0	0.0	1.0	0.0	0.0	3.8	16.0	4.9	10.3	0.8	4.3	0.5	318.4
5th %ile	3.4	1.8	6.4	7.3	15.7	23.0	31.4	21.7	21.7	15.6	12.1	9.0	450.2
10th %ile	6.8	4.4	8.8	11.3	21.1	25.2	35.4	31.0	29.3	22.8	21.0	11.1	491.9
Median	37.4	28.0	39.2	42.0	55.8	61.8	66.8	72.3	65.5	66.9	50.4	41.2	722.4
90th %ile	95.7	90.9	114.7	100.0	107.8	104.1	105.8	117.3	106.0	115.2	106.9	107.6	896.7
95th %ile	109.6	106.4	134.1	133.4	124.2	124.5	123.7	131.7	121.8	133.5	113.6	126.4	989.3
Highest	190.6	212.6	193.8	227.4	178.7	158.4	156.8	174.9	163.0	169.2	173.3	263.3	1093.2

The area is prone to frosts, with January and February being the only months that are reliably frost free. Frost is very prevalent in May to September. Black ice can occur, usually above 500m.

Frost causes the plant's cells to shrink, forcing water into spaces between the cells, where it can freeze and form ice crystals. As temperatures rise and thawing begins, the water is absorbed back into the cells by osmosis. If this occurs quickly there is no damage to the tissue, but if thawing is slow, the cells are deprived of water and become dehydrated resulting in 'frost burn' and even plant death. Frost tolerant plants are those that can survive temperatures down to -5C and several frosts in a row.

Frost tolerant pasture species would be a key to have in the months of June to August in particular.

The length of growing season is determined by combining temperature, rainfall and evapotranspiration information. As temperature drops below 10 C plant growth is restricted (Trumble 1939) and ceases when below 6 C (Martin and Leonard, 1967).

During summer months from November to March on average evapotranspiration exceeds rainfall, while in winter months from April to October rainfall exceeds evapotranspiration and is considered as the typical growing season for this district, (Source Agriculture Victoria).

The proposed expanded cattle breeding enterprise is well suited to the climate of this district.

### 3.2 Landform, Geology, Soils and Topographic Features

Understanding the land resource, its condition and inherent capability, provides the basis for sustainable land use. A collection of information to support land management and land use planning programs has been based on a Land Systems Approach. Land Systems are derived by integrating environmental features; including geology, landform, climate, soils and native vegetation, using an ecological approach (Christian & Stewart 1946, Rowe 1984).

The property was mapped as part of A Study of the Land in the Catchment of Lake Eildon (1964) as being part of the Mansfield Land System, see Figure 12.

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<sup>3</sup> Australian Government Bureau of Meteorology, Mansfield Post Office, 3.5km west of this property  
[http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p\\_nccObsCode=139&p\\_display\\_type=dataFile&p\\_startYear=&p\\_c=&p\\_stn\\_num=083019](http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=083019)

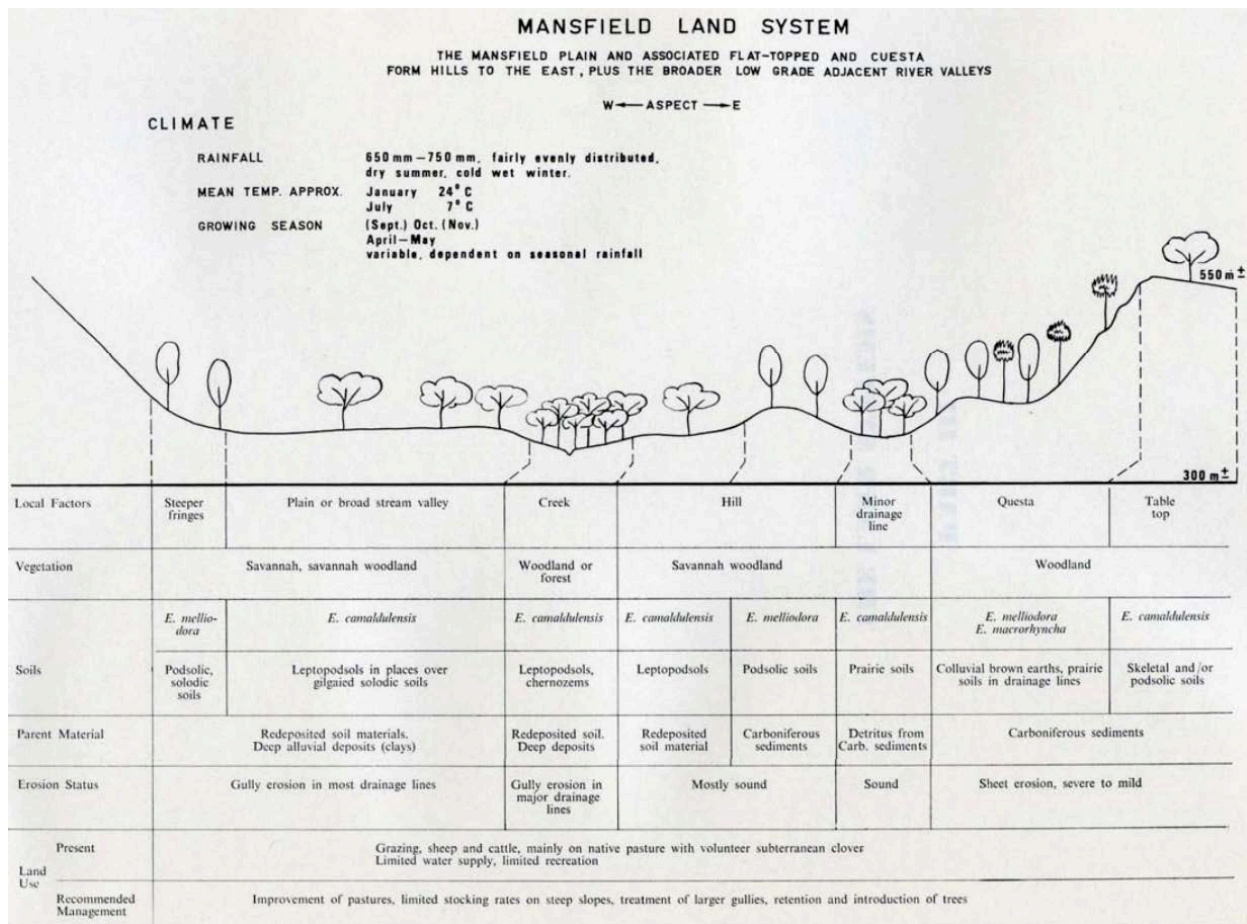


Figure 12 – Mansfield Land System

The property is in the hill and creek zone of this Land System where *Eucalyptus camaldulensis* (Red gum) predominates.

### Landform

The landform of the site is low hill, low elevation terrace, fan and floodplain (along Ford creek). On the north side of the property is Mount Battery (~1.15km away), whose summit is approximately 540m (150m higher than this property), see Figure 13.



Figure 13 – Terrace of the property showing Mt Battery to the north



The property is part of the Goulburn Broken Catchment Management Authority. In the Catchment Management Strategy, the property is identified being in the sub catchment called the Upland Slopes. This sub catchment is made up of the slopes and valleys to the south of the Catchment.

The Goulburn River is a major perennial river that is part of the Murray-Darling Basin, it flows north to join the Murray river, near Echuca.

Lake Eildon is located on the Goulburn River in its upper catchment, immediately below the junction with the Delatite River. The closest arm of the lake is only 5km from Mansfield and this property is part of the catchment, as Ford creek flows into that arm. Lake Eildon is large and can hold 6 times more water than Sydney Harbour. It is a critical supplier of irrigation water for Victoria as well as being an important recreation area. It also has a power station that runs during the irrigation season.

The risks identified for the landforms of this property are sheet and rill erosion, wind erosion, gully erosion, nutrient decline and minor land slip (on the scarp). The alluvial flat along Ford creek, also has the risk of flooding.

#### *Geology*

The geology of the property is mapped as being Dmd and a small amount of Qrt along Ford Creek, see Figure 14.

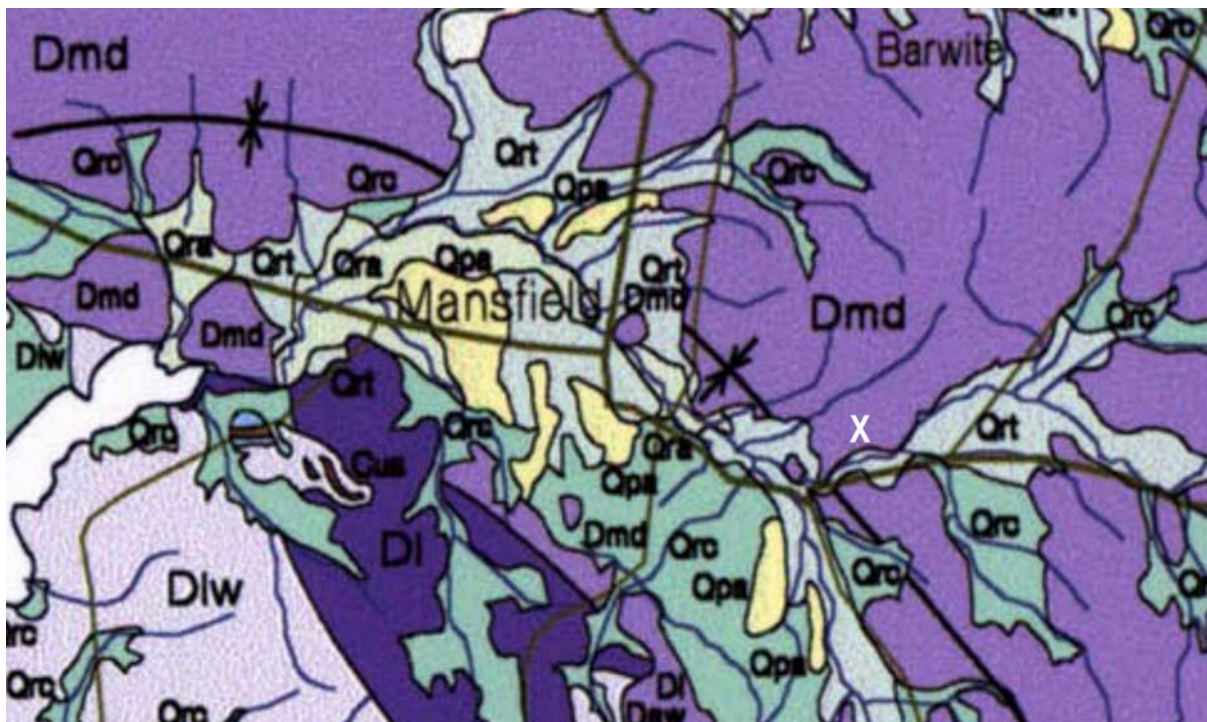


Figure 14 – Geology map of the area<sup>4</sup>

Dmd – Mansfield Group which is fluvial in origin (made by river processes): Red mudstone, micaceous sandstone, minor braccia, conglomerate, see Figures 8 and 15.

<sup>4</sup> <http://earthresources.efirst.com.au/product.asp?pID=134&cID=32>

Qrt – More recent geology of the Quaternary period, mostly Holocene, again fluvial: Alluvial terraces, gravel, sand and silt.



Figure 15 – Red mudstone outcropping on the property

#### *Soils*

The soils on the upper part of the property are weakly structured reddish brown gradational soils (Red Dermosol), see Figure 16 and 21. They are loamy, apedal or weak structure and gravelly and transition to a higher clay contact with depth. They are upon fractured rock and have rock floaters.

They have moderate permeability, are acidic and drain well. They are usually friable when moist. When well managed they can be productive soils.





Figure 16 – Soil on the upper portion of the property





Figure 17 – Soil at the top of the scarp

The soils are suited to a range of agricultural uses and can be very productive, when not limited by slope and poor drainage, caused by areas of rock or compaction and high rainfall.

The soils on the flat along Ford Creek are alluvial, see Figure 18.



Figure 18 – Alluvial soil on the creek flat



Dark brown to reddish brown uniform loams to light clay loam soils. They have a weak polyhedral structure. They are typically acidic. They are very productive when not limited by flooding or waterlogging.



Figure 19 – Alluvial flat

**Table 2: Majority Limiting Features of Soils on the Block**

Erosion	Sheet, rill and gully erosion if left bare by cultivation or over grazing. (There is good cover on this property).
Fertility	They can suffer from nutrient decline and increasing acidity over time.
Compaction	Prone to compaction, when they are above plastic limit and have high vehicle and stock trafficking.

### 3.3 Agricultural Potential and Land Capability Classification

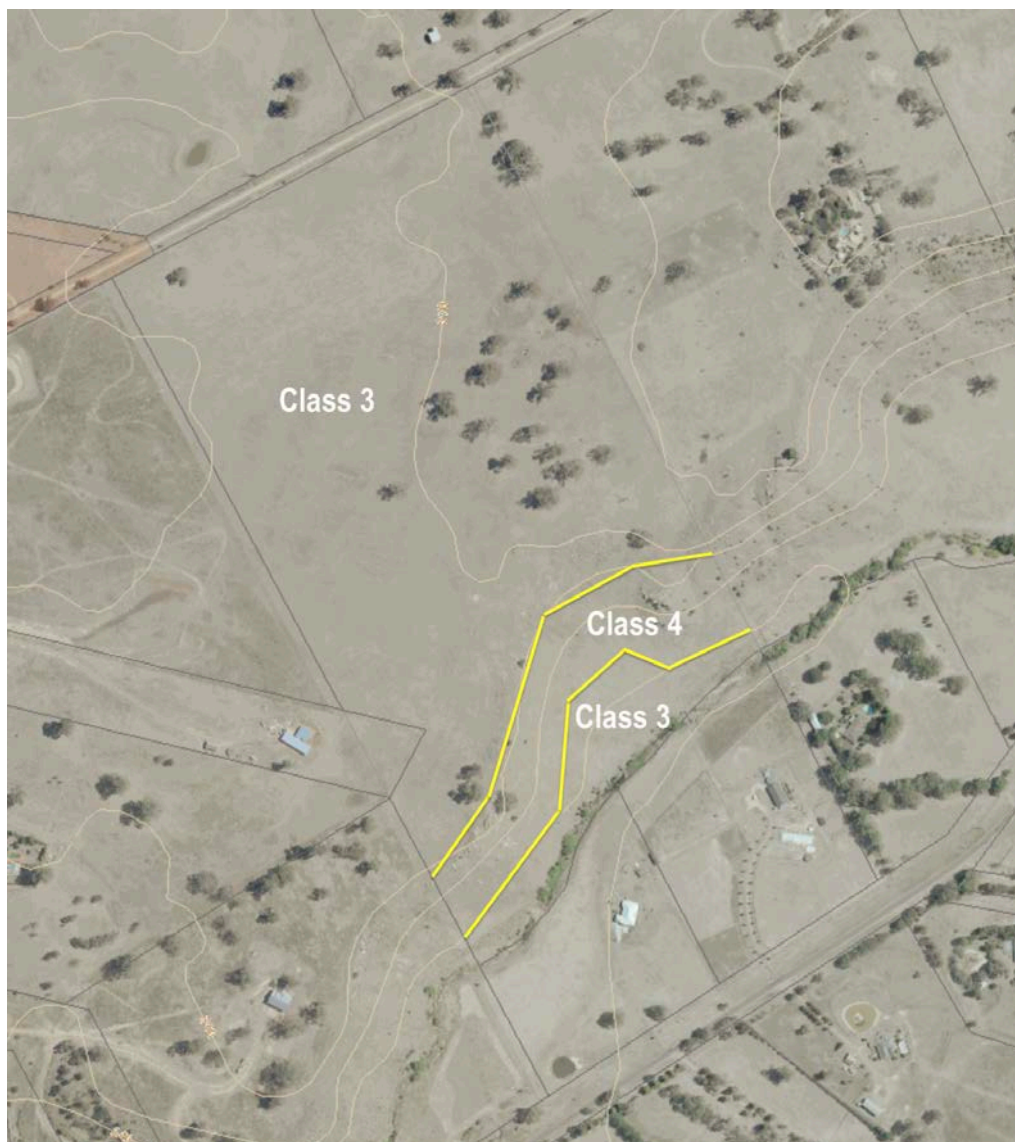


Figure 19 – Land Capability Assessment

In the Class 3 areas of the property, the property can sustain agricultural uses with low to moderate levels of land disturbance, such as cultivation for crops and hay in rotation with improved pastures.

Moderate to high levels of production are possible, with specialist management practices such as minimum tillage.

The major limiting features and land management risks are the area of moderate to steep slope with rocky outcrops, which are rated as Class 4 – Poor, best suited to low disturbance agriculture such as grazing. Table 4 explains the Land Capability Classes.

At the property's scale, the sustainable land-use of the block is suited to the proposed cattle breeding enterprise.



This enterprise will see sustainable land management; where ground cover is maintained, weeds are controlled and vermin are kept to a minimum. The site is best suited to strategic minimum tillage and lower disturbance agriculture, involving improved pasture establishment, which will be undertaken by the owners.

Table 5 shows a calculation of the carrying capacity for the property that shows it being well suited to the proposed cattle venture.

**Table 4: Land Capability Classes Explained**

CLASS	CAPABILITY	DEGREE OF LIMITATION
Class 1	Very good	Can sustain a wide range of uses including an intensive cropping regime. Very high levels of production possible with standard management levels.
Class 2	Good	Moderate limitations to agricultural productivity, overcome by readily available management practices.
Class 3	Fair	Can sustain agricultural uses with low to moderate levels of land disturbance such as broad acre cultivation in rotation with improved pastures. Moderate to high levels of production possible with specialist management practices such as minimum tillage.
Class 4	Poor	Low capacity to resist land disturbance such as cultivation. Moderate production levels possible with specialist management such as improved pasture establishment with minimum tillage techniques. Recommended for low disturbance agriculture such as grazing or perennial horticulture.
Class 5	Very poor	Very low capability to resist disturbance. Areas of low productive capacity. Minimal grazing levels or non-agricultural uses recommended.

**Note:** Land is assessed for agricultural production on the basis of climate, topography, and the inherent characteristics of the soil. Climate differs from topography and soil features in that it is a regional parameter rather than site specific. The capability table identifies the versatility and potential productivity of an area for a range of agricultural uses, and highlights the necessary level of management required to sustain the land use. E. Jones, G. Boyle, N. Baxter and M. Bluml (1996)



Figure 21 – Upper portion of the property

Animal and plant growth needs change throughout the year and season to season.

Planning for flexibility in grazing management is a must, it requires a constant balancing act between meeting stocks nutritional need and maintaining a healthy pasture. Different pasture species will have different growth rates and requirements. Paddock sizes have been set to best balance these requirements and will allow for a five paddock rotational grazing pasture management program.

The major cause of pasture deterioration is overgrazing, a five paddock rotation works well, the five proposed paddocks will enable this type of pasture management.

Paddock locations have been set to allow for shelter, drainage and easy access, the grazing zones have been selected accordingly. The selected areas can be all weather paddocks, that is, they can handle stock in wet and dry conditions. The paddocks are relatively even; i.e. do not have soil types or landforms that vary significantly.

The paddock are large enough to allow for a consistent grazing and maintenance schedule for the number of livestock proposed.

The cattle enterprises are a good option for a property of 27.9ha in this locality and an effective grazing area of 23ha, run in conjunction with the other family farming operation at Merrijig.

Under this proposal, the agricultural enterprise will run two drafts of 20 to 30 breeders (depending on the season) each autumn and spring, which will calve down under supervision on this property, with the progeny being finished on the family Merrijig property.

Carrying Capacity Example, if 23ha of the 27.9ha is available to the cattle, a rough rule of thumb is 1 Dry Sheep Equivalent (DSE) per hectare per 25 mm of rain above 250mm rainfall, (Source Agriculture Victoria).

The 250mm is to account for evaporation losses. The Bureau of Meteorology average annual rainfall for Mansfield is 720mm.

$$720\text{mm} - 250\text{mm} = 470\text{mm}$$

$$470/25 = 18.8 \text{ DSE/ha}$$

$$\text{For 23 ha, } 18.8\text{DSE/ha} \times 23\text{ha} = \text{DSE total}$$

From the table below, the average annual DSE for a 500kg Cow with calf at foot is 15.6 DSE (again, another area of contention is DSE values for stock. There is a lot of variation between sources)

$$376/15.6 \text{ DSE (table 15)} = 24 \text{ cow and calf units for the property (in an average year)}$$

At the 23ha scale of this property, on average it is likely to support 432 DSE, depending on seasonal conditions it could support up to 600 DSE in better seasons; whilst being managed to preserve ground cover.

From Table 5 on page 23, the average annual DSE for a 500kg Cow with calf at foot is 15.6 DSE.  $432 \text{ DSE}/15.6 \text{ DSE} = 28$  cow and calf units for the property (in an average year).

**Table 5: DSE values for different classes of cattle (Figures from Prograze manual and adjusted for 1 DSE = 8.3 MJ ME (Meat and Livestock Australia and NSW Department Primary Industries)**

Livestock class	Body Weight (kg)		
	400	500	600
<b>Cows</b>			
Pregnant (last 3 mths)	8.2	10.1	11.9
Lactating (0–3 mths)	12.8	16.5	20.1
Lactating (150 kg calf)	16.5	20.1	23.8
Cow/calf average/year	12.5	15.6	18.6
<b>Steers</b>	<b>200</b>	<b>300</b>	<b>400</b>
Maintenance	3	4.2	5.4
0.5 kg/day	5.1	6.7	8.6
1.0 kg/day	6.6	8.8	11.3

### 3.4 Drainage, Swamps, Wetlands and Riparian Zone

The property drains in a westerly direction, via Ford creek which runs along the southern boundary.

Ford creek joins Lake Eildon ~9km west of the property. Lake Eildon empties into the Goulburn river which flows north to reach the Murray river near Echuca.

### 3.5 Stock and domestic water

Tank water will service the property.

### 3.6 Adjoining and District Land use

There are grazing enterprises, wineries, equine properties, and rural living blocks.

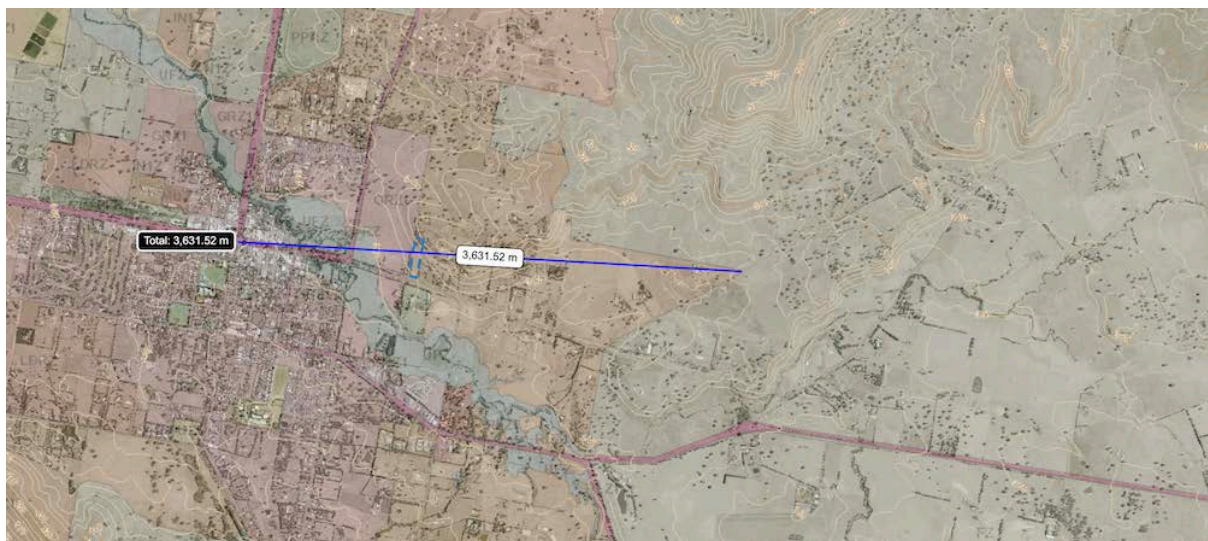


Figure 20 - District View (Source VicPlan)



## 4. Vegetation Assessment

The NVIM NatureKit<sup>5</sup> have mapped the property as having low quality vegetation, upon inspection it is all close to 0.00 to 0.02 native vegetation quality and low biodiversity value, 0.21 to 0.40, see Figures 20 and 21.

Sustainable land management involves managing land without damaging natural processes or reducing the diversity of indigenous species. Sustainable land management is the aim of the property owners, improving the property from the baseline provided by this vegetation assessment.

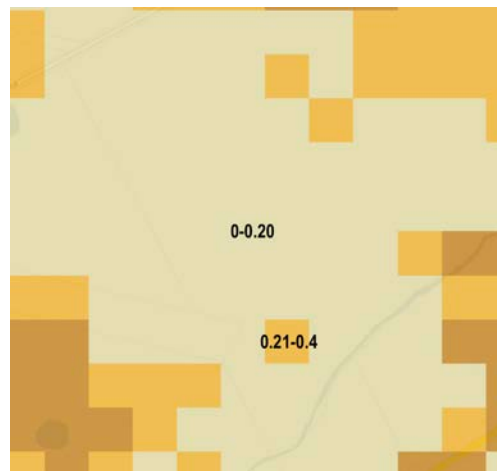


Figure 21 – Native vegetation quality map from NatureKit

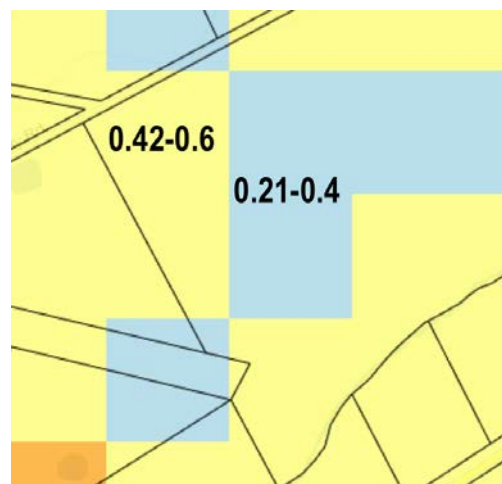


Figure 22 – Strategic biodiversity value as mapped by NatureKit

The property has no areas that are representative of its original Ecological Vegetation Classes, see Figures 22 and 24. It will benefit from the native vegetation establishment and protection that is proposed as part of the development and ongoing weed control. The most significant environmental features are the 21 scattered large old trees which the owners plan to avoid with their development, protect and regenerate, see Figure 25. A limited number of native species were observed on site, see Table 7.

<sup>5</sup> <http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit>



Figure 23 – Looking down onto Ford creek (the western boundary)



Figure 24 – The property is 95% cleared





Figure 25 – Scattered large old trees on the property

**Table 7. Indigenous species observed on site**

<b>Species</b>	<b>Common Name</b>
<i>Eucalyptus camaldulensis</i>	Red Gum
<i>Danthonia sp.</i>	Wallaby
<i>Stipa sp.</i>	Spear grass
<i>Juncaceae sp.</i>	Rush
<i>Drosera sp.</i>	Sundew
<i>Juncus bufonius</i>	Toad Rush

#### 4.1 Weeds

A number of non-indigenous species were identified on the site inspection, see Table 8.

There are introduced tree species along the creek. Care will need to be taken with the removal of the non-indigenous species from a maintenance of stream bank stability perspective.

**Table 8. Pasture/Weed Species Observed on the Property**

<i>Hypochoeris radicata</i>	Cat's ear
<i>Arctotheca calendula</i>	Cape weed
<i>Malva parviflora</i>	Marshmallow
<i>Romulea rosea</i>	Onion grass
<i>Oxalis pes-caprae</i>	Sour sob
<i>Phalaris spp.</i>	Phalaris grass
<i>Hordeum spp.</i>	Barley grass
<i>Crataegus monogyna</i>	Hawthorn
<i>Salix spp</i>	Willow
<i>Plantago ccoronopus L.</i>	Buck's-horn plantain
<i>Cynodon spp.</i>	Couch grass
<i>Holcus lanatus</i>	Yorkshire fog grass
<i>Trifolium spp.</i>	Clover
<i>Lolium spp.</i>	Ryegrass
<i>Juncus bufonis</i>	Toad rush
<i>Cirsium vulgare</i>	Scotch/spear thistle

#### 4.1.1 Hawthorn

In this Shire it is regionally controlled. Such weeds are widespread in a region and landowners have the responsibility to take all reasonable steps to prevent the growth and spread of these weeds.

Hawthorn is a tall, densely growing deciduous shrub or small tree. It grows to 7 metres high and wide and forms dense thickets that seriously impede movement. Hawthorn produces white, cream or pink flowers in spring, which form into small, red, apple shaped berries.

Hawthorn was historically grown as a hedge and so it is often associated with fence lines. There are scattered plants along the scarp and Ford creek, see Figure 26.

The recommended control option is manual removal where possible (including roots). Cut and paint is preferred where access is difficult or where physically removal may cause streambank or hillside disturbance and instability.

Large old plants are best controlled using drill (or frill) and fill method, undertaken during the spring-summer growing season. Drill holes 25–35 mm deep, 5 cm apart in the trunk close to the ground and fill holes with an appropriate registered herbicide. There are a number of herbicides registered for the control of Hawthorn.

The best time for manual control is during the optimum growing season (summer to autumn), before fruits ripen. For chemical control, this is best after the formation of new growth.





Figure 26 – Scattered Hawthorn plants

#### 4.1.2 Weed Management Plan

- 1 Remove the isolated Hawthorn plants.
- 2 Maintain a 50m weed free buffer zone around the property boundary, to prevent any further weed incursions.
- 3 As a priority monitor and remove any scattered woody weed plants from within pasture areas and along Ford creek.
- 4 Moving inwards from the buffer zone, remove the current weed cover each year for three years.
- 5 As a priority remove scattered woody weed plants from within healthy pasture areas.
- 6 Monitor and remove seedlings from any controlled areas.
- 7 Weeds will be monitored and controlled on an ongoing basis with spot spraying, mechanical removal and slashing occurring, if new weeds are detected.

## 5. DEVELOPMENT PLAN

The property owners wish to develop and consolidate a farm business that compliments a fifth generation family farming business at Merrijig. They will construct a house and farm buildings to enable onsite management of the breeding herd, see Figure 1.

The will require onsite management:

1. Cattle Breeding - A 20 - 30 cow breeding operation, calving down two drafts, one in spring and one in autumn, with their progeny being finished on the Merrijig property.
2. The drafts will calve down on this property under the supervision of the owners.

## 5.1 Business Vision

1. The Angus herd is set up to be a pure bred, self-replacing herd, which attracts premium prices with feedlots, finishing enterprises and over the hook buyers. The herd on this property will be part of the Certified Australian Angus Beef Breeding Program.

Bulls will be selected who have a full set of BREEDPLAN EBVs and selection index information and who have a Veterinary Bull Breeding Soundness Evaluation (VBBSE).

The herd will be bred using the Angus BREEDPLAN EBVs Domestic Index:

- Self-replacing herd.
  - Daughters are retained for breeding.
  - Steer progeny finished on pasture.
  - Steer progeny slaughtered at a carcass weight of 270kg at 16 months of age.
  - Eating quality traits important to suit the MSA program.
2. The property will be managed in a sustainable and environmentally responsible manner. Seed will be collected and propagated from locally occurring native species. A revegetation program will take place along the creek line.
  3. House and shedding will be placed in the least productive areas of the site with a suitable located all-weather driveway, see Figures 1, 27 and 28.



Figure 27 – Proposed driveway location on the eastern boundary





Figure 28 – Proposed house site

## 5.2 Angus Cattle Breeding Enterprise

The Angus breed is a good option for this land type and climate zone. They originated in Scotland from groups of closely related cattle breeds native to the shires of Aberdeen, Kincardine and Angus. The existence of these breeds goes back over 1000 years.

First Australian imports were into Tasmania in the early 1820s and to the Darling Downs in Queensland in 1840.

Angus are popular throughout Australia and do particularly well in the higher rainfall areas of New South Wales, Victoria (such as this property), Tasmania and Western Australia. Their numbers are also increasing in northern Australia, and in other lower rainfall areas.

Angus and Angus cross cattle receive price premiums due to consistent performance in a range of markets. Angus beef is widely used for the domestic retail and quality food service markets and is preferred by many export markets.

Angus females are strongly sought after by re-stockers, producers entering the industry and live export orders for breeding cattle.

Angus weaners (steers and heifers) are also in high demand by producers for pasture and feedlot finishing programs, targeting a wide range of markets from domestic steers to heavy grass-fed export bullocks.

Angus are well known for their tremendous market versatility. They have the ability to grow to heavy market weights quickly without becoming over fat. They also have the ability to finish at lighter weights, if desired.

Angus have excellent carcase quality, high muscling and moderate maturity patterns providing maximum market versatility.

#### *5.2.1 Potential Returns Angus Enterprise*

There are approximately 23ha that can contribute to this enterprise. The soils and land types are well suited to supporting cattle enterprises and it is a proven industry for the district.

This scenario gives an appreciation of the potential of the proposed allotment land area. This example discusses calving down 20 breeders in two drafts (spring and autumn).

The feed requirements of the breeding herd would need to be continually matched to the nutritional requirements of the different classes of cattle.

Beef cattle enterprise returns fluctuate due to their reliance on rainfall, to drive a grass-fed operation and fluctuations in input costs and sale prices. Cattle prices are currently (2021) at an all-time high. I have used 2017/18 figures which more equates to the five year average price for this area and also shows what can happen in a drier season. The lowest prices in the five year period were for the 2018/19 financial year, which preceded the current peaks.

For example, the Victorian Farm Monitor project indicates the following for season 2017/18:

- Farm profits were down 37% compared to season 2016/17 due to the impact of a dry season and beef prices being down 17%.
- Average overhead costs for a beef operation of between \$100 to \$250 per hectare, for properties in similar rainfall zones.
- Variable costs of \$100 to \$250 per hectare.
- Net farm income of between \$100 to \$400 per hectare.
- Labour efficiency is around 120 head per labour unit.
- Average long-term return on equity is 5.5%.

See Table 9 for an indicative gross margin (before overhead costs) for each draft.

Benchmark figures that can be used as a guide on current top 20% of producer figures (as monitored by the Victorian Monitor Project):

- 2016/17 Gross Margin \$96/ha/100mm of rainfall
- 2017/18 Gross Margin \$143/ha/100mm of rainfall (much drier season)
- 2016/17 Gross Margin per DSE \$58
- 2017/18 Gross Margin per DSE \$80
- DSE managed per labour unit by top 20% producers 6,000 - 8500

The gross margin is produced as a guide and is based on:

A self-replacing herd - Calves sold at 19-21 months

23 hectares

20 Cows (plus progeny)



**Table 9. Beef breeding gross margin**

	Total	Per ha	Per dse
Livestock trading	\$	\$	\$
Sale	55,300		
less Purchases	<u>-5,000</u>		
	50,300		
Total income	50,300	1,440	123
Animal health	600		
Livestock freight	900		
Livestock selling	3,800		
Variable costs before feed costs			
	5,300	155	13
Margin before feed costs	45,000	1,290	110
Pasture & feed costs	7,400	215	18
Gross margin after feed costs	37,600	1,075	92
Interest on stock investment	<u>4,700</u>	<u>134</u>	<u>12</u>
Gross margin net of interest on stock	32,900	941	81

The concept of using stock purposely produced on the property to markets that value quality livestock would be important.

The gross margin is deliberately conservative. The experience of the owners in having run cattle farming business for five generations, gives confidence in the enterprise being well thought through and managed.

The concept of using stock purposely produced on the Merrijig property and expanded using this property as a calving base, maintains a reputation with buyers for quality stock. The complimentary nature of the cattle enterprise from this property with the farm at Merrijig; allows for optimum pasture utilisation, land management and creates efficiencies for and adds productive value to both properties.

The careful on site management will ensure all animal welfare requirements are carried out and calving is carefully managed.

This enterprise is planned to on average, utilise half of the available pasture on an annual basis.

Fodder will be conserved and better utilised by hay making on the creek flats.

## 6. Management Zones

The property will be managed in zones, see Figure 29:

1. Conservation
2. Agricultural
3. Recreation

### 6.1 Conservation Zone

The primary objective of the Conservation Zones is to improve the native vegetation and biodiversity of the property and prevent land degradation. The property is currently 95% cleared of vegetation. The proposed Conservation Zone is along the creek, see Figure 1.

The objective of the owners and documented in this plan, is to maintain soil stability, to continue to maintain and improve biodiversity, provide fauna habitat, ensure regeneration of native vegetation over time, provide shade and shelter, provide visual amenity, maintain surface water quality and keep surface flow rates at acceptable levels, have cattle enterprises in an Agricultural Zone and a Recreation Zone (integrated with the enterprise), that are stable from a land degradation risk perspective and have all zones well managed.

Part of the proposal is to revegetate, protect and provide ongoing weed and pest management within all Zones.

The Conservation Zone1 will be revegetated with indigenous vegetation selected from Table 10.

**Table 10. Indigenous species list**

<b>MANSFIELD (UPPER CATCHMENTS) – Valleys and Low Hills - Protected Slopes - Rivers and Streams</b>						
LANDFORM	Valleys and Low Hills		Protected Upper Slopes, Steep Gullies, Moist Valleys		Swift-flowing Streams and Rivers	
EVC	Grassy Woodland/Valley Grassy Forest		Herb-rich Foothill Forest		Riparian Forest	
GEOLOGY & SOILS	Fertile, well drained, reasonable water availability		Variety of geology - moist, fertile soils.		Rocky river beds - variety of soils /geology - sands, silts, loams	
DESCRIPTION	Mixed species shrubby-grassy woodland		Blue Gum - Peppermint shrubby, moist, tall forest		Taller riparian forests in higher rainfall areas	
LOCATION EXAMPLE	Merton Ancona Rd; The Paps Bushland Reserve (north side, lower slopes); Three Chain Rd, c 3 km south of Booroolite		Old Tolmie Rd, north of Melba Rd (9.7 km north of Long Lane); The Paps Bushland Reserve (south side, upper slopes)		Delatite River, c 6 km east of Merrigg on the Mansfield – Buller Rd	
TREES >8m	<ul style="list-style-type: none"> <li>● <i>Acacia dealbata</i></li> <li><i>A. implexa</i></li> <li>● <i>A. melanoxylon</i></li> <li><i>Eucalyptus dives</i></li> <li><i>E. gonicalyx</i></li> <li><i>E. macrohyncha</i></li> <li>● <i>E. melliodora</i></li> <li><i>E. polyanthemos</i></li> <li><i>E. rubida</i></li> </ul>	<ul style="list-style-type: none"> <li>● Silver Wattle</li> <li>Lightwood</li> <li>● Blackwood</li> <li>Broad-leaved Peppermint</li> <li>Long-leaf Box</li> <li>Red Stringybark</li> <li>● Yellow Box</li> <li>Red Box</li> <li>Candlebark</li> </ul>	<ul style="list-style-type: none"> <li><i>Acacia dealbata</i></li> <li><i>A. melanoxylon</i></li> <li><i>Eucalyptus dives</i></li> <li><i>E. globulus</i> ssp. <i>bicostata</i></li> <li><i>E. melliodora</i></li> <li><i>E. obliqua</i></li> <li><i>E. radiata</i></li> <li><i>E. rubida</i></li> <li><i>Exocarpos cupressiformis</i></li> </ul>	<ul style="list-style-type: none"> <li>Silver Wattle</li> <li>Blackwood</li> <li>Broad-leaved Peppermint</li> <li>Blue Gum (Eurabbie)</li> <li>Yellow Box</li> <li>Messmate</li> <li>Narrow-leaf Peppermint</li> <li>Candlebark</li> <li>Cherry Ballart</li> </ul>	<ul style="list-style-type: none"> <li><i>Acacia dealbata</i></li> <li><i>A. melanoxylon</i></li> <li><i>Eucalyptus camphora</i> subsp. <i>humeana</i></li> <li><i>E. globulus</i> subsp. <i>bicostata</i></li> <li><i>E. ovata</i></li> <li><i>E. radiata</i></li> <li><i>E. viminalis</i></li> <li>♯ <i>Pittosporum bicolor</i></li> <li>♯ <i>Pomaderris aspera</i></li> </ul>	<ul style="list-style-type: none"> <li>Silver Wattle</li> <li>Blackwood</li> <li>Mountain Swamp Gum</li> <li>Eurabbie</li> <li>Swamp Gum</li> <li>Narrow-leaf Peppermint</li> <li>Manna Gum</li> <li>♯ Banyalla</li> <li>♯ Hazel Pomaderris</li> </ul>
Wetter sites ♯ Upper elevations						
SHRUBS 1-8m	<ul style="list-style-type: none"> <li><i>Acacia rubida</i></li> <li><i>A. verniciflua</i></li> <li><i>Bursaria spinosa</i></li> <li><i>Cassinia aculeata</i></li> <li><i>Daviesia leptophylla</i></li> <li><i>Hymenanthera dentata</i></li> </ul>	<ul style="list-style-type: none"> <li>Red-stem Wattle</li> <li>Varnish Wattle</li> <li>Sweet Bursaria</li> <li>Common Cassinia</li> <li>Narrow-leaf Bitter-pea</li> <li>Tree Violet</li> </ul>	<ul style="list-style-type: none"> <li>♯ <i>Acacia rubida</i></li> <li>♯ <i>Coprosma hirtella</i></li> <li>♯ <i>C. quadrifida</i></li> <li><i>Dodonaea viscosa</i> subsp. <i>angustissima</i></li> <li><i>Epacris impressa</i></li> <li>♯ <i>Leptospermum continentale</i></li> <li><i>Mirbella oxylobodes</i></li> <li><i>Spyridium parvifolium</i></li> </ul>	<ul style="list-style-type: none"> <li>♯ Red-stem Wattle</li> <li>♯ Rough Coprosma</li> <li>♯ Prickly Currant-bush</li> <li>Slender Hop-bush</li> <li>Common Heath</li> <li>♯ Prickly Tea-tree</li> <li>Mountain Mirbella</li> <li>Dusty Miller</li> </ul>	<ul style="list-style-type: none"> <li><i>Bursaria spinosa</i></li> <li>♯ <i>Coprosma quadrifida</i></li> <li><i>Dodonaea viscosa</i> subsp. <i>angustissima</i></li> <li><i>Leptospermum continentale</i></li> <li>♯ <i>Lomatia fraseri</i></li> <li><i>Pimelea axillora</i></li> <li><i>Prostanthera lasianthos</i></li> </ul>	<ul style="list-style-type: none"> <li>Sweet Bursaria</li> <li>♯ Prickly Currant-bush</li> <li>Slender Hop-bush</li> <li>Prickly Tea-tree</li> <li>♯ Tree Lomatia</li> <li>Boottace Bush</li> <li>Victorian Christmas-bush</li> </ul>
Lower elevations ♯ Upper elevations						
SMALL SHRUBS <1m	<ul style="list-style-type: none"> <li><i>Acacia aculeatissima</i></li> <li><i>Hibbertia obtusifolia</i></li> <li><i>Hovea linearis</i></li> </ul>	<ul style="list-style-type: none"> <li>Thin-leaf Wattle</li> <li>Grey Guinea-flower</li> <li>Common Hovea</li> </ul>	<ul style="list-style-type: none"> <li><i>Hibbertia obtusifolia</i></li> <li><i>Leucopogon hookeri</i></li> <li><i>Tetradlea ciliata</i></li> </ul>	<ul style="list-style-type: none"> <li>Grey Guinea-flower</li> <li>Mountain Beard-heath</li> <li>Pink-bells</li> </ul>	<ul style="list-style-type: none"> <li><i>Leucopogon hookeri</i></li> </ul>	<ul style="list-style-type: none"> <li>Mountain Beard-heath</li> </ul>
GROUND COVERS	<ul style="list-style-type: none"> <li><i>Acaena novae-zelandiae</i></li> <li><i>Asperula conferta</i></li> <li><i>Austrodanthonia caespitosa</i></li> <li><i>Dianella longifolia</i></li> <li><i>Elymus scaber</i></li> <li><i>Microlaena stipoides</i></li> <li><i>Poa sieberiana</i> var. <i>sieberiana</i></li> <li><i>Themeda triandra</i></li> </ul>	<ul style="list-style-type: none"> <li>Bidgee-widgee</li> <li>Common Woodruff</li> <li>Common Wallaby Grass</li> <li>Pale Flax-lily</li> <li>Common Wheat-grass</li> <li>Weeping Grass</li> <li>Grey Tussock-grass</li> <li>Kangaroo Grass</li> </ul>	<ul style="list-style-type: none"> <li><i>Billardiera scandens</i></li> <li><i>Clematis aristata</i></li> <li><i>Dianella tasmanica</i></li> <li><i>Echinopogon ovatus</i></li> <li><i>Microlaena stipoides</i></li> <li><i>Platylobium formosum</i></li> <li><i>Poa ensiformis</i></li> </ul>	<ul style="list-style-type: none"> <li>Common Apple-berry</li> <li>Mountain Clematis</li> <li><i>Dianella tasmanica</i></li> <li>Common Hedgehog-grass</li> <li>Weeping Grass</li> <li>Handsome Flat-pea</li> <li>Sword Tussock-grass</li> </ul>	<ul style="list-style-type: none"> <li><i>Blechnum nudum</i></li> <li><i>Carex appressa</i></li> <li><i>C. fascicularis</i></li> <li><i>Cyperus lucidus</i></li> <li><i>Echinopogon ovatus</i></li> <li><i>Lythrum salicaria</i></li> <li><i>Mentha laxiflora</i></li> <li><i>Microlaena stipoides</i></li> <li><i>Poa ensiformis</i></li> </ul>	<ul style="list-style-type: none"> <li>Fishbone Water-fern</li> <li>Tall Sedge</li> <li>Tassel Sedge</li> <li>Leafy Flat-sedge</li> <li>Common Hedgehog-grass</li> <li>Purple Loosestrife</li> <li>Forest Mint</li> <li>Weeping Grass</li> <li>Sword Tussock-grass</li> </ul>



### 6.1.1 Conservation Zone Management

- 1 Photo points will be pegged at the north, west, mid, south and east parts of the zone and baseline photographs taken. Photographs will be taken each year at the same points and at the same date per year.
- 2 Stock will be permanently fenced out of the Conservation Zone and contained to the five paddocks of the Agricultural Zone, see Figure 1.
- 3 Native vegetation will be established within the Conservation Zone, to encourage species densities as outlined for EVC 55, see Appendix 1 and Table 10.
- 4 Weed cover will be kept low, checked against the base line photographs each year.
- 5 Any rabbit incursions will be controlled.
- 6 Weeds will be monitored on an ongoing basis (after the autumn break and in spring) with spot spraying, mechanical removal and slashing occurring, if new weeds are detected.

### 6.1.2 Conservation Zone Native Vegetation Establishment

One-metre diameter circles will be cleared of grasses and weeds, away from the canopy of existing trees. Weed control is the most important factor in successful tree establishment from tube stock planting. It is also important to get them planted in the right soil conditions and then guarded so that they are not eaten.

Weather conditions and when to plant: Planting in this location, is best in March to April, so that the plants are ready to benefit from good growing conditions.

Planting: Ensure the 1m area from the tree centre is weed free. Ensure you plant when the soils are moist.

An excavator bucket will be used to pick up and loosen the soil without damaging the soil structure. Don't pull the tree from the tube, but rather squeeze the tube, tap the bottom and slide it out. Place the tree in the hole and fill with friable soil. Press in firmly and ensure the tree is standing straight. Water deeply (if required) to ensure roots go deep rather than just become surface roots, i.e. if the soil profile is not wet. Plant overstorey Eucalypts at 10 metre spacings, mid-storey trees at 7.5 metre spacings and small shrubs at 5 metre spacings. Have four metres between rows.

Protection: Place tree guards around each tree. Keep 1m circles weed free for at least the first 6 months and ideally for the first 18 months. Mulching and laying of weed mat is beneficial and altogether, this should result in a 90% plus survival rate. If your trees are showing the results of lack of water (stress, drooping leaves) in the first few weeks after planting. Water them deeply, so the subsoil wets up, this can be helped by placing some pipe or plastic bottles into the ground and filling those. Insect damage on young trees can be sometimes be extensive, especially during late summer when the trees might suffer moisture stress or insect populations are high. If trees are repeatedly attacked or losing many leaves, treatment may be warranted.

Manage weeds on an ongoing basis with spot spraying, mechanical removal and slashing.

Caitlin has started propagating a few trays of eucalypt species from locally collected seed, *E. radiata*, *E. polyanthemos*, *E. pauciflora*, *E. globulus*, *E. crenulata*, *E. cinerea* and *E. meliodora*. She has also got a few local Silver Banksia going from seed (*Banksia marginata*)

## 6.2 Agricultural Zones

The land has been used for grazing and hay making. The paddocks will be re-pastured with perennial pastures.

### 6.2.1 Perennial Pasture Establishment

The soils on farm benefit from deep rooted perennial pasture establishment to improve productivity, maintain groundcover to prevent erosion and to ensure the quality of any overland flows and to utilise the stored moisture, so that it doesn't get past the root zone and cause localised seepage and salinity problems.

Perennial pastures will also increase the soil carbon, improve the soil structure and improve the soil biota.

The pasture to be selected will extend the active pasture growing season (thereby decreasing feed gaps periods), outcompete weed species and will respond to summer rainfall events.

The paddocks will be rotated and rested between grazing, with a minimum of a four week spell, to ensure pasture recovery and health, management of worm burdens and manure and maintenance of ground cover. The sward height will be kept between 12.5cm and 3.5cm to keep the pasture between the equivalent of 3,500 kg of dry matter per hectare and no less than 1,000 kg of green dry matter per hectare. This will maintain ground cover, provide good cattle feed and also provide organic matter for soil organisms.

### 6.2.2 Grazing Management

Cattle and plant growth needs change throughout the year and season to season.

Flexibility is a must, requiring a constant balancing act between meeting livestock's nutritional needs and maintaining a healthy pasture and land. Different pasture species will have different growth rates and requirements. Paddock sizes are set to best balance these requirements.

Allowing for a consistent grazing and maintenance schedule is key. For example, in a five-paddock rotation start with a pasture height of 12.5cm and remove stock at 3.5cm. In drought conditions, maintain rotational grazing so paddocks are not grubbed out, or use holding (sacrifice) paddocks/yards and hand feed, so that pastures are preserved.

### 6.2.3 Agricultural Zone Management

1. Fence out the Agricultural Zone to a minimum standard of cattle proof fencing.
2. In the year of pasture establishment, paddocks are not grazed until after seed set (November/December).
3. Establish paddocks that can be rotationally grazed/spelled (for a minimum of four weeks) spelling. Stock grazing will not occur in the Conservation Zone.
4. The paddocks on the slope is larger and will eliminate the risk of fence walking on steeper slopes.
5. The proposed gates will be wide enough and are positioned to allow machinery through, see Figure 1.
6. The aim with grazing management will be to start with a pasture height of 12.5cm and remove cattle at 3.5cm.



7. In drought conditions, maintenance of rotational grazing/pasture spelling ensures that paddocks are not grubbed out; stock will be supplementary fed if the paddocks grass gets too low and there is not enough to meet the needs of stock. That way pastures will be preserved and paddocks will not be bared out or pugged up in wet conditions and left prone to erosion.
8. Monitoring for and control of rabbits and foxes will occur.
9. The owners are very experienced cattle producers. The cattle will be well monitored and managed, particularly during calving. Supplementary feeding and particular care in extreme weather events or seasonal conditions is expected and will be provided. The facilities being constructed will be of an excellent, best practice standard and will provide an exceptional environment for appropriate cattle care.

## 7. Pest Animals

None were observed and no burrows were found. The aim is to maintain the property as rabbit free.

Foxes (*Vulpes vulpes*) are opportunistic predators and scavengers and have few natural predators in Australia. Red foxes pose a threat to livestock, as they prey on poultry and lambs. They can also transmit distemper, parvo virus and mange to domestic dogs.

Evidence suggests red foxes are a primary cause in the decline and extinction of many small and medium-sized rodent and marsupial species in Australia. They also prey on many bird species.

### 7.1 Rabbit Management

1. Nighttime spotlight counts will be conducted, focusing on likely rabbit harbour: Wood heaps, sheds, weed thickets, watercourses and buildings.
2. Rabbit control will be focused on the most cost-effective period of late summer and early autumn, when breeding has generally ceased in the rabbit population.
3. Biological control and natural mortality will be allowed to continue.
4. Any rabbit harbour will be removed and warrens destroyed (i.e. ripped).
5. Fumigation and further warren destruction will be carried out if numbers ever build up.

### 7.2 Fox Management

1. Foxes will be monitored for by monitoring for scats and by nighttime spotlight counts (as for the rabbits).
2. Control options, should they be required will be shooting and fumigation of dens.

## 8. Action Table – Five Years

**Table 13: Five year land management action plan**

Month Completed	Action	Year 1	Year 2	Year 3	Year 4	Year 5
December	Peg the boundary of the different zones	X				
December	Establish photo points at the north, west, mid, south and east points of each zone and take baseline photographs.	X				
December	Ensure woody weeds are controlled	X	X	X	X	X
December	Complete perennial pasture establishment	X	X	X		
January	Photo points will be pegged at the north, west, mid, south and east parts of the Conservation Zones and baseline photographs taken. Photographs will be taken each year at the same points and at the same date per year (Sept 15 <sup>th</sup> ).	X	X	X	X	X
January	Night-time spotlight check for rabbits and foxes.	X	X	X	X	X
February	Check for any woody weeds.	X	X	X	X	X
March	Night-time spotlight check for rabbits and foxes.	X	X	X	X	X
May	Night-time spotlight check for rabbits and foxes.	X	X	X	X	X
May	Have completed the permanent fencing of the grazing paddocks, staged over a five year period. With paddock sizes at all times to be large enough for the stock on hand to be excluded from the conservation zones.	X	X	X	X	X
June	Check for woody weed seedlings and remove any found.	X	X	X	X	X
September	Check for woody weed seedlings and remove any found.	X	X	X	X	X
September	Take photos at the established points for each zone and compare to the previous years (September 15 <sup>th</sup> ).	X	X	X	X	X
December	Check for woody weed seedlings and remove any found.	X	X	X	X	X
Monthly	Check and maintain boundary and internal fences and also check after storms.	X	X	X	X	X

### 8.1 Recommended Actions Post Five Years

1. September 15<sup>th</sup> each year take photos at the established points for each zone and compare to the previous years.
2. June, September and December each year, check for woody weed seedlings and remove any found.
3. May, January and March each year, nighttime spotlight check for rabbits and foxes.
4. Check and maintain boundary and internal fences, monthly and after storms.



## 8.2 Farm Operational Tasks

<b>Operational Tasks</b>
Cattle health inspections
Pasture establishment
Weed control
Fence inspection and management
Pasture maintenance with fertiliser and weed control
Manage plant and equipment
Inspect and maintain water troughs
Vaccinations
Bull joining
Pregnancy testing
Drenching
Calving down
Calf marking
Condition scoring
Feeding out and any supplementation
Rotational grazing
Cattle sales
Fence and facility maintenance
Hay making

## 9. Landscape Plan

The owners plan to retain all native vegetation, allow it to regenerate and to also establish a conservation zone.

All cleared areas will maintain a grass cover at a minimum height of 35mm. This will ensure the water quality of surface water flows will be maintained at a high quality, throughout the property.

### 9.1 Access, Services and View Lines

Mt Battery road provides access to the property. A well-constructed all weather driveway will give access to the shedding and proposed new facilities, see Figure 27.

Services in terms of supporting the new development are onsite and effluent disposal, power and drainage can all be catered for.

### 9.2 Environmental Risk Features

Weeds are the key environmental risk, along with the stability of Ford creek.

The new perennial pastures will make weed establishment more difficult and the planned monitoring will keep the property weed free.

The establishment of the conservation zone around Ford creek, with protective fencing and native vegetation establishment, will prevent erosion in this area and the perennial pasture will protect the pasture area (agricultural zone).

## 10. Comments on the Vic Planning Provision's Decision Guidelines

### 10.1 Purpose of the Farming Zone (FZ) Planning Scheme

This planning scheme implements state and local planning policy. It provides for the use of land for agricultural purposes, encourages the retention of productive agricultural land and ensures that non-agricultural uses including dwellings, do not adversely affect the use of land for agricultural. This scheme also encourages the retention of employment and population to support rural communities and encourages the use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.

According to the FZ a permit is required for the use of land for a dwelling 35.07-2.

### 10.2 Subdivision

According to the FZ a permit is required to subdivide land 35.07.3. There is no proposal to subdivide this land.

### 10.3 Council Decision Guidelines FZ

Before deciding on an application to use or subdivide land, construct a building or construct or carry out works, in addition to the decision guidelines in Clause 65, the responsible authority must consider, as appropriate:

#### General issues

*The Municipal Planning Strategy and the Planning Policy Framework.*

The Farming Zone is the zone that is strongly focused on protecting and promoting farming and agriculture.

The Mansfield Shire Council Plan (2017-2021) recognises the key role agriculture plays in the Shire's history and current day economy.

The Mansfield Planning Scheme recognises the need to encourage economic activity and business synergy, the proposal provides for that by supporting the expansion of a family farming business.

Furthermore, Mansfield Shire Council states that land in the Farming Zone is primarily for farming and agricultural activities, including sustainable land management practices as is aimed for under this proposal.

**Comment:** The proposed cattle business is appropriately sited, the perennial pastures, property layout and land use will be adaptable to climate change. The property will enable the Purcell family to scale up and increase the business resilience of a fully commercial family farming business. It will utilise the owner's skill in cattle farm management and native plant propagation, planting and management.

*Any Regional Catchment Strategy and associated plan applying to the land.*

**Comment:** This property is within the Goulburn Broken Catchment Management Authority (GBCMA) and is addressed by the GBCMA Strategy 2013, in particular in relation to the control of erosion and the maintenance of healthy eco-systems, the native flora and fauna within them and the control of pest plants and animals that affect them. The management practices, i.e. perennial pasture establishment and management, native vegetation protection



and establishment and weed control, have particular alignment with the objectives of the GBCMA Strategy 2013 and this site.

*The capability of the land to accommodate the proposed use or development, including the disposal of effluent.*

**Comment:** The proposed property layout and scale can sustainably and viably accommodate the proposed infrastructure, agricultural activities, nature conservation and regenerative land management; all with the aim of meeting the values outlined in the planning schedules. See the Land Capability Assessment in respect to effluent disposal that accompanies the application.

The enterprise proposed for the property is the breeding of Angus cattle. The size of this property is 27.9 ha and will accommodate the proposal to have 20 to 30 breeders in two drafts, being managed to suit seasonal conditions, with their progeny being finished on the family's Merrijig property. This is well within the potential carry capacity of the property and supplementary feeding is expected for the production of high value livestock.

This enables the running of a professional agricultural business of significant scale for this district within the Mansfield Shire.

*How the use or development relates to sustainable land management.*

**Comment:** This development will enhance and protect land and environmental values through an appropriate layout, plan and onsite management of native vegetation, native plant revegetation and regeneration, grazing management, vegetative cover, erosion prevention, pest animal and weed control.

*Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses.*

**Comment:** The proposed development and land use will be entirely consistent and compatible with adjoining land uses and will see land management principles and values better implemented and enhanced, by having onsite management.

The property is bounded by rural living and farming properties of various scales, some with equine, grazing and viticulture agricultural enterprises.

The size of the property and enterprise is in keeping with the scale of adjoining properties and larger than many. The land use is compatible with the main use of the area, which is rural living, grazing and vineyards.

*How the use and development make use of existing infrastructure and services.*

**Comment:** The further development of the agricultural enterprise (high value livestock grazing) is in keeping with the district. The infrastructure will accommodate the people required to manage the enterprise.

The property is 3.5km from the centre of Mansfield, is accessed by the all-weather Mt Battery road.

## **Agricultural Issues and the impacts from non-agricultural uses.**

*Whether the use or development will support and enhance agricultural production.*

**Comment:** The property will support and critically enhance the ongoing development of the Purcell family cattle business.

This proposal will support the agricultural use of the land with the potential for creating significantly more onsite income from the natural resource than is currently the case. The further development of a high value cattle breeding operation requires onsite management.

The agricultural use of a specialised cattle breeding enterprise, is well within the capacity of the property and the agricultural qualities of the land, such as soil quality, access to water and access to services, all support the ability to establish and run such an enterprise.

The implementation of the proposed rotational grazing plan will ensure ground cover is maintained, pasture utilisation is optimised and parasite burdens are minimised.

*Whether the use or development will adversely affect soil quality or permanently remove land from agricultural production.*

**Comment:** Grazing management will continue, with ground cover maintained to at least 35mm of pasture height, to protect the soil from raindrop impact and to slow and maintain the water quality of surface flows.

Land will not be permanently removed from agricultural production, but rather productivity will be increased from this property and it will enhance the viability and resilience of the greater Purcell family farming business.

*The potential for the use or development to limit the operation and expansion of adjoining and nearby agricultural uses.*

**Comment:** The proposed enterprises will not limit the operation or expansion of adjoining and nearby agricultural uses. The proposed enterprise is compatible with other district land uses and will facilitate the expansion of a viable, fully commercial, family farming business.

*The capacity of the site to sustain the agricultural use.*

**Comment:** The property has a fair capability to sustain agriculture use, it is limited by slope in one area of the property and some areas of surface rock. It is well suited to supporting a cattle breeding business.

*The agricultural qualities of the land, such as soil quality, access to water and access to rural infrastructure.*

**Comment:** From an agricultural productivity perspective, the land use capability for the property is Class 3 Fair, in the parts of the property that will have peak agricultural use, it can sustain agricultural uses with low to moderate levels of land disturbance, such as cultivation in rotation with improved pastures. Moderate to high levels of production are possible with specialist management practices, such as minimum tillage.

The major limiting features are the moderate to steep slopes in the southern portion of the property, the loam topsoils that are prone to water and wind erosion (if left bare), the risk of weed infestations, the areas of surface rock and seeps.



At the property's scale the sustainable land-use of the block is suited to the proposed cattle operation. This operation will see sustainable land management; where ground cover is maintained, weeds are controlled and vermin are kept to a minimum. The site is best suited to minimal cultivation and low disturbance agriculture, involving improved pasture establishment; such as that proposed under this development.

The property is 3.5km from the centre of Mansfield and is accessed by the all-weather Mt Battery road.

*Any integrated land management plan prepared for the site.*

**Comment:** This document meets this requirement.

### ***Dwelling Issues***

*Whether the dwelling will result in the loss or fragmentation of productive agricultural land.*

**Comment:** The accommodation is needed for the intensive management required for the cattle breeding operation of this businesses scale and will not result in the fragmentation of productive agricultural land; but rather lead to an increase in productivity from land with moderate agricultural productivity potential that will form part of the larger family farming operation.

*Whether the dwelling will be adversely affected by agricultural activities on adjacent and nearby land due to dust, noise, odour, use of chemicals and farm machinery, traffic and hours of operation.*

**Comment:** The land uses are compatible and there will be no adverse impacts.

*Whether the dwelling will adversely affect the operation and expansion of adjoining and nearby agricultural uses.*

**Comment:** The proposed development and land use will be entirely consistent and compatible with adjoining land uses and will see land management principles and values better implemented and enhanced by having onsite management.

The property is bounded on all sides by properties of various scales, some with equine, grazing and viticulture agricultural enterprises, with a number being smaller than this property. Others are being used for rural living.

*The potential for the proposal to lead to a concentration or proliferation of dwellings in the area and the impact of this on the use of the land for agriculture.*

**Comment:** The complex the accommodation will be in, will meet the agricultural management requirements of the property, the scale is consistent with that of other properties in the district (and larger than many) and this development will not lead to a concentration or proliferation of dwellings in the district but will be consistent with the existing character.

### ***Environmental Issues***

*An assessment of the likely environmental impact on the biodiversity and in particular the flora and fauna of the area and water quality.*

**Comment:** The biodiversity and quantity of flora will be maintained and improved, existing vegetation will be protected and a significant native vegetation revegetation and regeneration project undertaken.

The proposed grazing regimes, will not create adverse pressure on the natural physical features of the property. Water can be provided for stock troughs. The number of cattle proposed on this property should not result in soil loss or compaction.

The property has ~5% of its area covered with native vegetation and this occurs mainly on the eastern portion of the property. This area will be protected and will not be adversely impacted.

Grazing management will ensure ground cover is maintained to at least 35mm of pasture height, to protect the soil from raindrop impact and to slow and maintain the water quality of surface flows.

There is no proposal to remove native vegetation. There is no saline discharge on this property. This property is unlikely to be a significant contributor to recharge due to its scale and position in the landscape.

*The impact of the use or development on the flora and fauna on the site and its surrounds.*

**Comment:** This development will enhance and protect land and environmental values, through an appropriate layout and onsite management of native vegetation, native revegetation, vegetative cover, erosion prevention, pest animal and weed control.

*The need to protect and enhance the biodiversity of the area, including the retention of vegetation and faunal habitat and the need to revegetate land including riparian buffers along waterways, gullies, ridgelines, property boundaries and saline discharge and recharge area.*

**Comment:** All native vegetation is to be retained. The riparian areas are to be fenced off and revegetated, the boundaries are to be revegetated and all native vegetation protected and allowed to regenerate. The owners are already active members of two local Landcare Groups.

*The location of on-site effluent disposal areas to minimise the impact of nutrient loads on waterways and native vegetation.*

**Comment:** See the Land Capability report that accompanies the application.

### ***Design and Siting Issues***

*The need to locate buildings in one area to avoid any adverse impacts on surrounding agricultural uses and to minimise the loss of productive agricultural land.*

**Comment:** The buildings have been placed so as to avoid the best of the agricultural zone and better soils and is on the area of the property with the lowest agricultural potential.

*The impact of the siting, design, height, bulk, colours and materials to be used, on the natural environment, major roads, vistas and water features and the measures to be undertaken to minimise any adverse impacts.*

**Comment:** The siting of the building envelope has taken into account landscape features, vistas, access and road location.

*The impact on the character and appearance of the area or features of architectural, historic or scientific significance or of natural scenic beauty or importance.*



**Comment:** No native vegetation will be impacted by this development. Weeds will be managed and the paddocks are relatively weed free.

Rabbits, hares and foxes will continue to be managed and are at very low numbers.

Grazing management will ensure ground cover is maintained to at least 35mm of pasture height, to protect the soil from raindrop impact and to slow and maintain the water quality of surface flows.

*The location and design of existing and proposed infrastructure including roads, gas, water, drainage, telecommunications and sewerage facilities.*

**Comment:** Power is easily accessed and tracks, fences and driveways have very minimal impact on any landscape values.

*Whether the use and development will require traffic management measures.*

**Comment:** The use and development will not require traffic management measures.

#### 10.4 Land Subject to Inundation Overlay

A small portion of this property, along Fords creek which makes up the southern boundary, has this overlay upon it, see Figure 30.



Figure 30 – Land subject to inundation overlay area

No development is proposed for this area. Ground cover will be maintained and weeds managed in this zone, to ensure optimal water quality and to protect downstream land. The area will remain an area of pasture where water can pass over easily and with minimal impact. Ground cover will be kept to a minimum height of 3.5cm. Stock can be kept out of this area during floods or periods of waterlogging.

#### 10.4 Significant Landscape Overlay (SLO)

##### Purposes

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To identify significant landscapes.
- To conserve and enhance the character of significant landscapes.

##### Decision Guidelines

- The Municipal Planning Strategy and the Planning Policy Framework.
- The statement of the nature and key elements of the landscape and the landscape character objective contained in a schedule to this overlay.

Statement of the nature and key elements of the landscape: *The alpine approach is characterised by a strong valley bordered by the alpine areas to the north, south and east.*

*The views from the Mansfield - Mt Buller Road to surrounding mountains and ranges are impressive especially in the winter when there is spectacular snowy backdrop. The valley has a relatively flat floor with undulating pasture, ribbons of vegetation along roads, fences, the upper Delatite River (a Proclaimed Water Supply Catchment Area), creek lines and in scattered patches. The Crown Land boundary is an abrupt interface with the dense woodland, which visually helps define the unit. All these elements create an area that is a major asset for the Shire.*

**Comment:** The property is only 3.5km from the centre of Mansfield and is in an area that has a rural living character. The Mt Buller road is 650m to the south and four homes and Graves road is between the proposed house site and Mt Buller road. The propose house site is at 370m and Mt Battery behind which makes up the majority of the vista, is at 600m. The site is not on the view lines to Mt Buller and surrounding ranges from Mt Buller road. The house site is being placed in a depression to as best as possible set the buildings into the landscape, see Figure 1 and the building plans that this plan accompanies in the application.

- *The conservation and enhancement of the landscape values of the area.*

**Comment:** The revegetation proposed and protection and regeneration of the large red gum paddock trees will lead to a conservation and enhancement of the landscape values.

- *The need to remove, destroy or lop vegetation to create a defensible space to reduce the risk of bushfire to life and property.*

**Comment:** All native vegetation on the property is to be protected and there is no need to remove, destroy or lop vegetation to create a defensible space.

- *The impact of the proposed buildings and works on the landscape due to height, bulk, colour, general appearance or the need to remove vegetation.*

**Comment:** There is no need to remove vegetation and the building is designed to blend in and make use of the topographical features of the landscape.

- *The extent to which the buildings and works are designed to enhance or promote the landscape character objectives of the area.*

**Comment:** The buildings are designed to suit the topography and character of the landscape.

- *The impact of buildings and works on significant views.*

**Comment:** The buildings will be well below the skyline of the vista from Mt Buller road and are being placed in a manner consistent with adjoining and nearby dwellings along Mt Battery Road. It is designed to make use of the topography and be positioned to suit it.

- Any other matters specified in a schedule to this overlay.

**Comment:** A landscape plan will be developed for the Recreation Zone

## 11. Conclusion

The planning proposal and farm plan is well considered. The proposed agricultural enterprise of a well-managed cattle enterprise, small orchard and permaculture vegetable beds fits well with the principles of effective land management and the outcomes sought within the Farming Zone.

The property owners have had a lifetime of experience in the cattle industry and also with plant propagation and management.

The development of this property will produce onsite income and compliment and assist with the further development of the Purcell family farming business. Which is a fully commercial business that has been running for five generations.

The topography and proposed property layout does not impinge on natural features and is well suited to the enterprises and the development will see a significant improvement in land protection and the biodiversity and environmental values of the property.

Given the nature of the land resource, the characteristics of the district, the scale of the business, the agricultural potential of the property, it's potential for sustainable land management practices and considering the Farming Zone planning overlay; there will be no negative impact to the natural resource and agricultural viability of the land. To the contrary it will see a suitable agricultural enterprise fully set up on the property.

Also, the proposed development will not impact the agriculture integrity of this area, other than to improve it and it will add further productivity to this area of the Shire and the Purcell family farming business.

Your sincerely,



**Director Cumbre Consultants**



## APPENDIX 1 – ECOLOGICAL VEGETATION CLASS

# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Central Victorian Uplands bioregion

### EVC 55: Plains Grassy Woodland

#### Description:

An open, eucalypt woodland to 15m tall occurring on a number of geologies and soil types. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	80 cm	15 / ha

#### Tree Canopy Cover:

%cover	Character Species	Common Name
15%	<i>Eucalyptus viminalis</i>	Manna Gum
	<i>Eucalyptus ovata</i>	Swamp Gum

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	3	10%	T
Medium Shrub	3	5%	MS
Small Shrub	4	10%	SS
Prostrate Shrub	2	5%	PS
Medium Herb	9	20%	MH
Small or Prostrate Herb	4	5%	SH
Large Tufted Graminoid	2	10%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	6	25%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Ground Fern	1	1%	GF
Bryophytes/Lichens	na	10%	BL

## EVC 55: Plains Grassy Woodland - Central Victorian Uplands bioregion

LF Code	Species typical of at least part of EVC range	Common Name
T	<i>Acacia melanoxylon</i>	Blackwood
T	<i>Exocarpos cupressiformis</i>	Cherry Ballart
MS	<i>Acacia pycnantha</i>	Golden Wattle
MS	<i>Acacia paradoxa</i>	Hedge Wattle
SS	<i>Pimelea humilis</i>	Common Rice-flower
SS	<i>Lissanthe strigosa ssp. subulata</i>	Peach Heath
SS	<i>Hibbertia stricta s.l.</i>	Upright Guinea-flower
SS	<i>Tetralochea ciliata</i>	Pink-bells
PS	<i>Acrotriche serrulata</i>	Honey-pots
PS	<i>Astroloma humifusum</i>	Cranberry Heath
MH	<i>Gonocarpus tetragynus</i>	Common Raspwort
MH	<i>Poranthera microphylla</i>	Small Poranthera
MH	<i>Hypericum gramineum</i>	Small St John's Wort
SH	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort
SH	<i>Drosera whittakeri ssp. aberrans</i>	Scented Sundew
SH	<i>Solenogyne dominii</i>	Smooth Solenogyne
SH	<i>Opercularia ovata</i>	Broad-leaf Stinkweed
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
LTG	<i>Austrostipa rudis ssp. nervosa</i>	Veined Spear-grass
LNG	<i>Lepidosperma longitudinale</i>	Pithy Sword-sedge
MTG	<i>Lomandra filiformis</i>	Wattle Mat-rush
MTG	<i>Schoenus apogon</i>	Common Bog-sedge
MTG	<i>Themeda triandra</i>	Kangaroo Grass
MTG	<i>Dianella revoluta s.l.</i>	Black-anther Flax-lily
MNG	<i>Microlaena stipoides var. stipoides</i>	Weeping Grass
GF	<i>Pteridium esculentum</i>	Austral Bracken

### Recruitment:

Continuous

### Organic Litter:

10 % cover

### Logs:

10 m/0.1 ha.

### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Leontodon taraxacoides ssp. taraxacoides</i>	Hairy Hawkbit	high	low
MH	<i>Centaurium erythraea</i>	Common Centaury	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
LNG	<i>Holcus lanatus</i>	Yorkshire Fog	high	high
MTG	<i>Briza maxima</i>	Large Quaking-grass	high	low
MTG	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	high	high
MTG	<i>Romulea rosea</i>	Onion Grass	high	low
MTG	<i>Briza minor</i>	Lesser Quaking-grass	high	low
MNG	<i>Aira elegantissima</i>	Delicate Hair-grass	high	low

## Appendix 2 – Biography of the Author



### **Gavin Beever**

*Consultant/Director – Cumbre Consulting*

**Gavin has extensive experience in Land Use Planning, Rural Land Management, Farming, Animal Husbandry, Strategic Planning, Business Planning, Group Facilitation, Adult Education and Horse Management.**

He has 29 years' experience in Land and Business Management. During that period, he has consulted and provided technical advice on a broad range of land and business management issues to hundreds of individual property owners, consultants, cooperatives, companies, corporations and government departments, both locally and nationally. Initially as a Departmental Advisory Officer (1989 to 1997) and then as a Private Consultant (1997- ). For 10 years, he was Vice Chairman of the 1,000-member farmer Coop CEPA, which is the largest independent supplier of stockfeed in Victoria.

He has extensive practical experience in farming and land management. With his wife, he has developed and run a 25,000DSE sheep and cattle family farming business. He has established and continues to manage Cumbre Stud, a Horse Breeding and Training Stud on their family farm in Central Victoria.

He has been a caretaker of farms in New South Wales (Cropping and Livestock) and leased other farms in Victoria.

For five years, he was a referral officer for State Planning Schemes for what is now the Department of Sustainability and Environment in Victoria.

He has also prepared Farm, Environmental and Land Management Plans for Planning Permit Applications in the State of Victoria for 20 years. He has been called as an expert witness at VCAT for matters relating to environmental, farm and land management issues.

He has presented at numerous local, state, national and international conferences.

He has developed and delivered numerous workshops for land and business managers and owners.



## **Fields of Competence**

- Land Capability Assessment
- Land Management Planning
- Strategic Planning
- Business Planning
- Animal Husbandry
- Pasture and Crop (Broad acre) establishment and management
- Native Vegetation establishment and management
- Pest Plan and Animal Control
- Soil Conservation
- Soil Salinity
- Catchment and Waterway Management
- Fire Protection
- Wool Classing
- Adult Learning and Workshop Development and Delivery
- Benchmarking
- Horse and working dog, training and management

## **Publications**

- Hill and Rising Country Management in the Avon-Richardson Catchment (1991)
- Saline Agriculture Program, Wimmera Catchment Salinity Management Plan (1992)
- The Wimmera River Catchment Salinity Plan – Tree Program (1992)
- Saline Agriculture Program. Wimmera River Catchment Salinity Management Plan (1992)
- Pasture Program for the Wimmera River Catchment Salinity Management Plan (1992)
- Whole Farm Planning Workshop Series. Department of Natural Resources and Environment (1993)
- Property Management Planning Workshop Series. Department of Primary Industries Queensland (1996)
- Technical Coordinator and Editor. Meat and Livestock Australia. Business Skills and Best Practice Workshop Series. (1998-2002)
- Business Health Indicators for Professional Farmers. FM500. (2004)

## **Education**

BSc (Botany/Zoology) 1987 Grad Cert Appl Sc 1997 Diploma Racing 2006, Innoven – Effective Company Directors Graduate 2004