

Landscape Assessment Plan



FOR
Proposed Subdivision
1 WILLS STREET, MALMSBURY, VIC

Prepared by:
Hamish MacCallum
Phoenix Wildfire Management
www.phoenixwildfire.com.au



Introduction

In May 2021 a site assessment was requested by the property owners to evaluate the land use and potential, for the support of a rezoning and planning application to subdivide the land into 14 separate lots for residential development.

As a result of this application the potential use of the site for farming enterprise will be assessed to support the appropriate land use in keeping with the proposed Malmsbury Township Framework Plan. The Lot sits within the Township Framework Plan's urban boundary.

Objective

The objective of this report is to support the rezoning of 1 Will st, Malmsbury, a small parcel of land within Malmsbury township that is currently Farming Zone. It is proposed to rezone this land to reflect the sustainable development of Malmsbury township while ensuring the proposed rezoning and subdivision remains consistent with the requirements of the Township Framework Plan.

The potential for the site to support farming on a commercial scale is to be assessed and will aim to justify the proposed rezoning as an appropriate land use.

Site Overview

The proposed subdivision is currently 1.9 Ha Farming Zone with a single dwelling. The property is bordered by residential development to the west and north, with the southern sector currently open paddocks zoned as Rural Living Zone. The neighbouring property to the east (and a portion to the north) is currently Farming Zone.



Fig.1 Zone Plan for the site

Tenure Details

Municipality:	Macedon Ranges
Title description:	1-24A\PP5495
Overlays:	ESO, ESO4, HO, HO148, BPA
Zoning:	Farming Zone

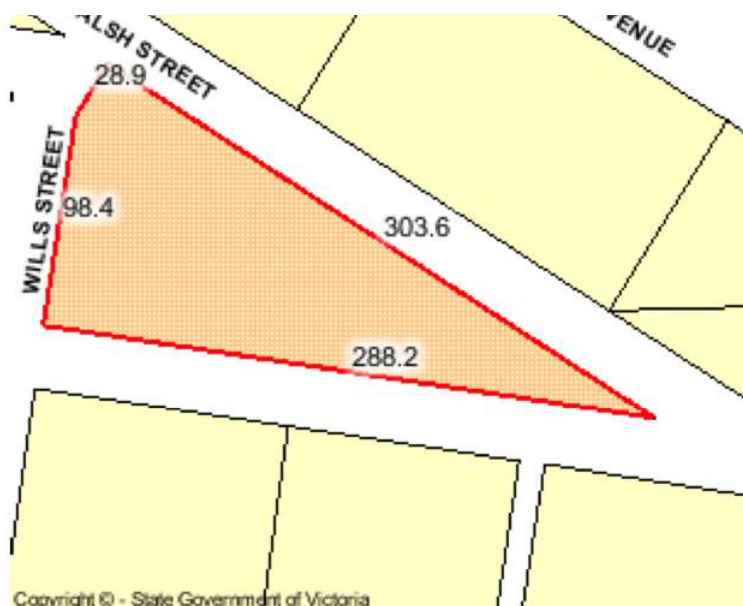


Fig.2 Site dimensions

Area: 18564 sq. m
(1.9 ha)

Perimeter: 719 m

For this property:

- Site boundaries
- Road frontages



Fig.3 View of the site, looking towards Malmsbury township

Site Analysis

Assessment of the property has been undertaken by viewing the assets held in the land itself along with other available resources as markers for possible future developments and constraints. The primary assets to be assessed include climate, soil and existing vegetation. Although climate is not specific to the site, it indicates the potential for production.

Climate

The climatic factors for the site will determine its production potential. Rainfall, temperature and wind define the limitations for selecting crop varieties or appropriate animal species for agricultural production.

The cool temperate climate of Malmsbury has a relatively high rainfall pattern with an average annual rainfall of 843.2, making horticulture a viable enterprise for home production but more limited for commercial production. Perhaps the most limiting factor for commercial production here is the relatively short growing season and amount of days with cloud cover. Choosing varieties with faster ripening times and more tolerance to cold and shade will allow more productivity with these limitations. Dependency on local rainfall patterns in the absence of reliable on-site water storage severely limits the capacity for consistent horticultural production.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1997	28.6	1.8	10.6	14.2	113.4	38.3	26.0	100.4	101.4	27.8	84.4	3.8	550.7
1998	32.2	26.0	3.8	85.6	35.8	49.2	109.8	43.2	62.2	63.0	71.2	27.6	609.6
1999	20.0	19.8	58.6	4.8	98.2	78.4	62.0	112.6	59.8	63.4	43.6	139.0	760.2
2000	30.8	89.2	14.8	47.2	87.6	45.0	88.2	67.8	120.2	146.8	64.2	34.6	836.4
2001	28.6	10.0	67.2	25.2	12.6	70.0	37.8	106.6	51.2	101.8	39.2	23.6	573.8
2002	29.0	50.4	17.6	43.0	40.0	78.8	47.8	50.4	40.6	72.2	69.2	30.8	569.8
2003	24.4	39.0	8.8	52.0	43.8	64.2	92.2	133.6	67.9	62.4	17.4	64.4	670.1
2004	29.0	4.8	15.6	14.6	50.8	128.2	84.6	73.2	78.0	24.0	116.2	55.4	674.4
2005	55.2	68.0	8.0	16.2	21.0	111.6	52.2	96.6	58.2	93.2	46.8	41.4	668.4
2006	30.2	29.0	21.2	51.3	39.2	15.8	75.6	31.8	48.4	6.2	23.0	16.6	388.3
2007	73.4	13.8	41.6	49.2	118.2	36.4	87.0	34.2	53.0	13.8	74.0	78.6	673.2
2008	23.0	14.2	23.6	20.8	42.4	48.8	125.2	59.8	24.8	13.4	69.8	69.4	535.2
2009	0.0	0.4	27.2	34.4	26.8	63.4	80.0	93.4	86.0	35.6	74.6	39.8	561.6
2010	32.8	78.6	81.6	55.6	56.2	93.0	71.2	118.8	115.8	142.4	172.4	68.4	1086.8
2011	240.6	105.0	41.4	45.6	49.6	54.8	82.4	64.0	73.2	43.4	54.4	40.6	895.0
2012	31.6	75.6	88.2	25.2	45.2	87.2	88.2	81.6	59.6	15.4	23.4	19.8	641.0
2013	0.0	45.0	28.6	16.2	45.0	81.4	101.2	131.2	94.6	51.6	35.6	28.6	659.0
2014	18.4	13.0	54.2	57.4	40.4	114.8	79.0	29.4	50.0	27.6	41.4	19.6	545.2
2015	59.4	33.4	21.6	21.6	60.2	28.0	69.4	32.4	35.8	9.0	46.4	26.8	444.0
2016			48.4	30.4	102.0	97.0	117.8	74.8	178.0	114.6	47.8	44.4	
2017	25.2	23.0	34.4	188.0	45.4	9.0	63.2	86.8	52.0	52.2	32.0	49.4	660.6
2018	59.0	12.8	39.6	19.0	87.2	64.4	75.2	87.4	26.8	42.6	51.4	68.0	633.4
2019	14.8	18.6	10.6	7.2	129.4	117.6	55.0	71.0	43.4	21.8	57.0	13.8	560.2
2020	41.0	61.6	46.2	130.2	80.6	64.2	36.8	102.2	62.8	96.0	30.6	34.4	786.6
2021	77.0	16.0	76.8	13.4									

Fig.4 Climate statistics for Kyneton (nearest station with historic stats.)

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Temperature														
Mean maximum temperature (°C)	28.3	28.3	24.7	20.1	15.7	12.7	11.8	13.2	15.7	19.4	22.9	25.6	19.9	1966 2021
Mean minimum temperature (°C)	13.2	13.5	11.0	7.7	5.4	3.5	3.0	3.6	5.1	6.7	9.3	11.0	7.8	1966 2021
Rainfall														
Mean rainfall (mm)	41.0	36.3	35.0	41.0	57.8	56.1	59.9	66.0	60.0	56.1	47.6	40.3	587.5	1966 2021
Decile 5 (median) rainfall (mm)	33.3	23.4	27.1	33.2	46.3	51.2	58.4	66.7	50.5	48.0	41.4	33.4	600.5	1966 2021
Mean number of days of rain ≥ 1 mm	4.3	3.6	4.4	5.6	8.1	9.3	11.5	11.2	9.3	7.9	6.4	5.2	86.8	1966 2021
Other daily elements														
Mean daily sunshine (hours)														
Mean number of clear days	11.2	11.1	10.4	9.0	5.3	3.8	4.0	4.5	4.5	6.5	6.7	8.5	85.5	1966 2010
Mean number of cloudy days	8.2	6.0	8.7	10.5	14.5	16.1	18.0	16.3	15.1	13.3	11.4	10.6	148.7	1966 2010
9 am conditions														
Mean 9am temperature (°C)	18.3	18.2	16.0	12.7	9.1	6.3	5.6	7.1	9.8	13.0	14.9	16.8	12.3	1966 2010
Mean 9am relative humidity (%)	64	67	71	74	85	89	89	84	77	69	66	63	75	1986 2010
Mean 9am wind speed (km/h)	9.8	9.0	8.3	6.9	5.6	5.0	5.4	6.7	8.4	9.4	9.7	10.1	7.9	1966 2010
9am wind speed vs direction plot														
3 pm conditions														
Mean 3pm temperature (°C)	26.1	26.7	23.4	19.1	14.8	11.8	10.9	12.3	14.5	17.9	21.2	23.7	18.5	1966 2010
Mean 3pm relative humidity (%)	39	39	42	49	62	69	69	63	58	51	45	41	52	1986 2010
Mean 3pm wind speed (km/h)	13.5	13.0	12.2	11.2	10.0	9.3	10.1	11.3	12.4	12.2	13.0	13.4	11.8	1966 2010

Fig.5 Temperature statistics for Malmsbury Reservoir.

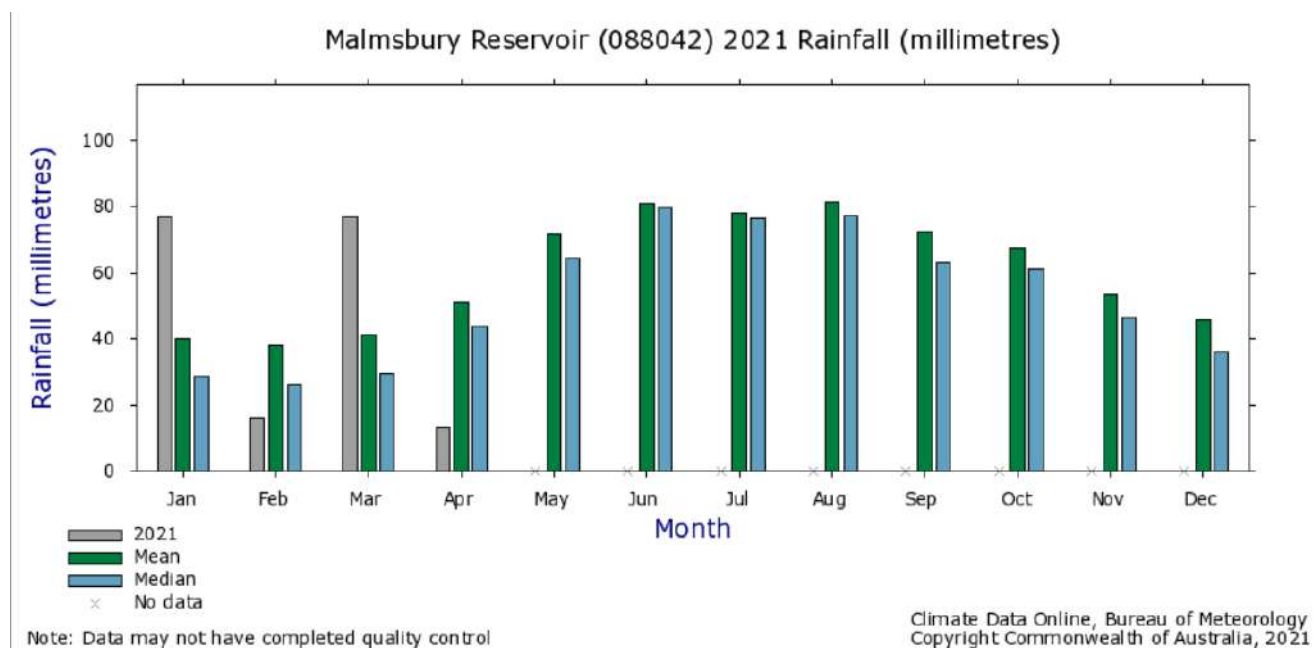


Fig.6 Rainfall statistics for Malmsbury Reservoir

Hydrology

Despite overall reasonable rainfall patterns water supply is one of the limiting factors for farming potential. Due to the deep and highly porous soil, water storage in dams is not feasible, therefore water storage is dependent on expensive infrastructure to provide consistent supply. The rainfall and soil type would suggest tree cropping (high value timber production) as a more appropriate enterprise, with the deep free-draining soil ideal for unirrigated tree production. Combining grazing in an agroforestry system is a huge potential in this type of landscape, however available space for tree cropping is severely limited (less than 1 Ha.).

Geology

The underlying soil and geological profile of the site is a significant factor when considering the overall productive potential of the site.

The soil on the site is typical of the Quaternary Igneous Basalt. It is dominantly tholeiite to mildly alkalic olivine basalt with the youngest flows having stony surfaces. It is a deep, fine clay loam structure likely to be leached of water soluble minerals such as Calcium due to the well-drained nature of the deep basalt flows (the large yellow area on the map below covers the site and is up to 50m deep in places). The pH is acidic (approximately <5 over the site).



Fig.7 Soil sample typical of the site



Fig.8 Ribbon test to determine basic soil structure

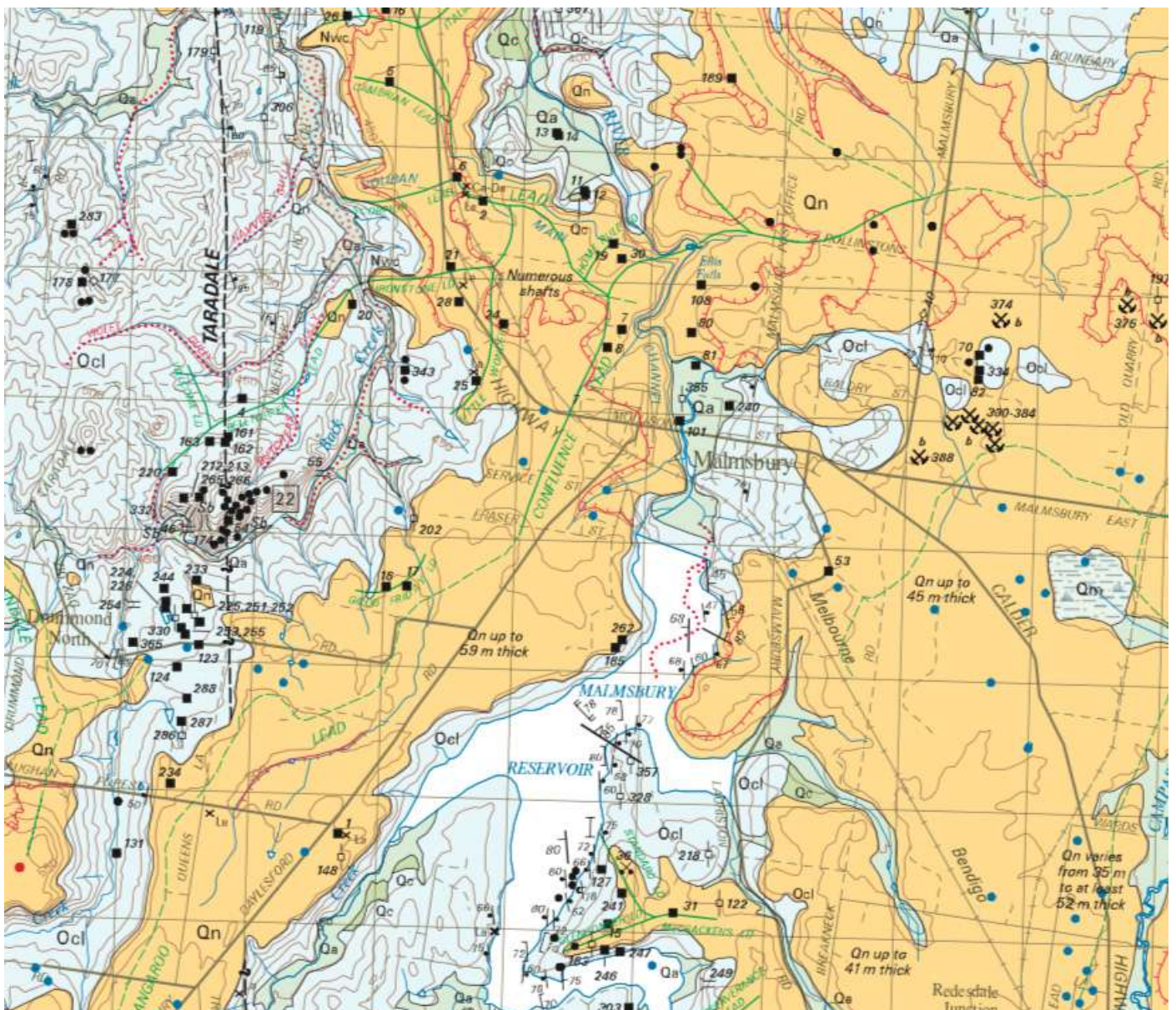


Fig.9 Geological map of the Malmsbury area.



Fig.10 The Basalt boulders covering the site, many are just below the surface.

Existing Flora and Fauna

Flora

The site is currently comprised of managed grassland pasture species. The majority of the species are introduced pasture grasses and some herbaceous weeds. A small amount of Kangaroo Grass (*Themeda triandra*) is remnant on the site but is limited to a small stand on the road reserve and a handful of remnant tufts amongst the basalt rocky outcrops.

Species present:

Common Name

Botanical Name

Bentgrass	<i>Agrostis spp.</i>
Fog Grass	<i>Holcus mollis</i>
Phalaris	<i>Phalaris aquatica</i>
Cat's-ear	<i>Hypochaeris radicata</i>
Onion Grass	<i>Nothoscordum spp.</i>
Dock	<i>Rumex spp.</i>
Plantain	<i>Plantago officinalis</i>
Ryegrass (perennial)	<i>Lolium perenne</i>
Scotch Thistle	<i>Onopordum acanthium</i>
Capeweed	<i>Arctotheca calendula</i>
Briar Rose	<i>Rosa rubiginosa</i>
Hawthorn	<i>Crataegus monogyna</i>
Gorse	<i>Ulex europaeus</i>
Kangaroo Grass*	<i>Themeda triandra</i>
Wallaby Grass**	<i>Rytidosperma spp.</i>

* Primarily found in the road reserve of Walsh St, to the east as remnant stands amongst the Gorse.

** Solely found as remnant stands in the Walsh St road reserve amongst the Gorse.



Fig.11 aerial view of the road reserve where some native grasses remain



Fig.12 Bentgrass is the predominant groundcover



Fig.13 A Small stand of remnant Kangaroo Grass



Fig.14 The road reserve contains remnant native grasses and have survived regular mowing.

Fauna

There was no native fauna present on the site.

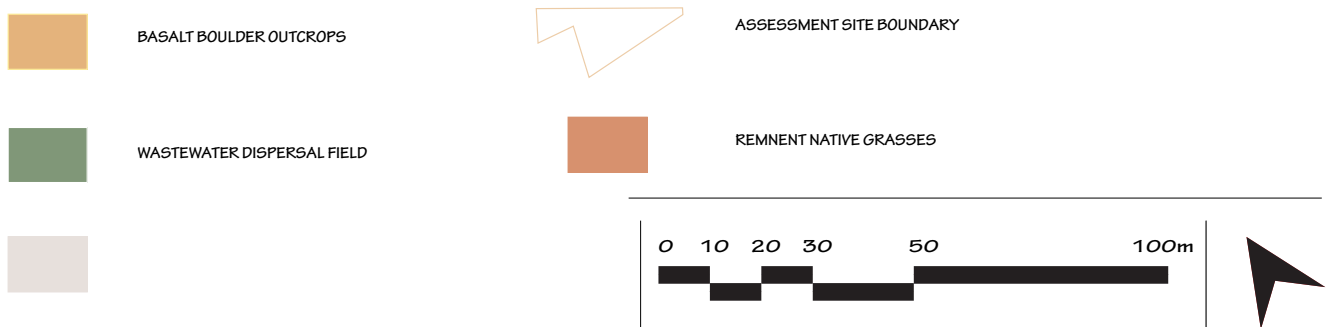


Fig.15 Existing features plan for 1 Wills St, Malmsbury.

Recommendations

There are significant limiting factors to the site for any commercial farming enterprise, despite some positive features. The predominant limitations are summarised below:

Geology

The soil on the site has reasonable structure and would be an excellent substrate to a market garden, tree crops or sustaining perennial pasture for grazing. However the presence of the igneous rock throughout the soil profile is a significant limiting factor to the successful cultivation of the site. The rocks and boulders sit throughout the soil profile and are a major obstacle to mechanical cultivation or manageable grazing. As mentioned previously, the site is ideal for high-value timber production mixed with grazing but is limited by size for commercial production.

Lot Size

The land deemed most suitable for productive cultivation is limited to 0.7Ha. The primary limitation is due to the Basalt rocks present throughout the soil profile. It is likely that these exist throughout the cleared area below the surface. Some evidence was noted of the wider area (than that indicated on the plan) having rock throughout the subsurface profile.

The total area of <1Ha. Available for horticultural or agricultural enterprise is not considered commercially viable. At a stretch, a small market garden could be profitable if there was considerable expense in removal of the basalt rocks. However the other limiting factor for a market garden enterprise would be water.

Water

The site has no water storage other than a small stock dam. Due to the porous nature of the soil profile, the dam has very limited capacity to hold any useful volume for commercial enterprise. It is evident from the vegetation in the dam that water is not retained to any extent.



Fig.16 Aerial view of the existing dam.



Fig.17 The existing dam is empty despite significant rainfall. The vegetation indicates it does not hold water.

Conclusion

There is extremely limited potential for commercial farming enterprise on the site. This is demonstrated by:

- Limitations with soil cultivation, reliable catchment for water and the small size irregular shape of the lot make it unsuitable for farming.
- The lack of native species and overall biodiversity would suggest the site is very suitable for residential development without impacting on local flora nad fauna.
- The proximity of the site to the Malmsbury township and the fact that it sits within the urban boundary of the Malmsbury Township Framework Plan combined with the limited farming potential of the site support the proposal for rezoning for residential development.