RMCG

OCTOBER 2023

Agricultural Report – 325 Watery Plains Rd

Report for: Fred Malahoff

Property Location: 325 Watery Plains Rd, White Hills

Prepared by: Michael Tempest

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SUMMARY	
Client:	Fred Malahoff
Property identification:	325 Watery Plains Rd, White Hills Zoning: Agriculture, *Tasmanian Planning Scheme - Launceston*. PID 7871028, CT 208625/1 (258.1ha) & CT 232243/1 (183.4ha) PID 1999741, CT 106554/1 (78.6ha)
Proposal:	Rezoning of titles from Agriculture to Rural.
Land Capability	Published Land Capability (at 1:100,000 scale) maps the Land Capability of the site as; Class 5 (56.4ha), Class 6 (378.9ha), Class 7 (82.9ha), with 1.9ha unmapped. A Land Capability Assessment (at 1:10,000 scale) was conducted that focused on the pasture areas. The onsite assessment confirmed that the published mapping is accurate for the assessed area.
Assessment comments:	An initial desktop feasibility assessment was undertaken followed by a field inspection on the 29th of June 2023, to confirm or otherwise the desktop study findings of the agricultural assessment. This report summarises the findings of the desktop and field assessment.
Conclusion:	The subject property is limited for existing and potential agricultural use by Land Capability and lack of existing or potential irrigation water resources. There is no Prime Agricultural Land associated with the subject land. Land with these sort of characteristics is more consistent with the application guidelines for the 'Rural' zone rather than the 'Agriculture' zone (Tasmanian Planning Commission 2018). Rezoning the land to 'Rural' will not have any impacts on adjacent agricultural activities.
Assessment by:	 Michael Tempest Senior Consultant

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1 Introduction

The three titles (combined area of 520ha) are located at 325 Watery Plains Rd, White Hills. Current zoning for the land is 'Agriculture' under the *Tasmanian Planning Scheme – Launceston* (the Planning Scheme).

The proponent seeks to gain discretionary approval for the titles to be rezoned from the current zoning to 'Rural'. This is to better reflect the characteristics and capacity of the land.

2 Method

This assessment considers:

- The physical characteristics of the subject title and surrounding land including an onsite Land Capability assessment on the subject land[1]
- Existing and potential agricultural and primary industry use of the subject title and surrounding land
- The potential for irrigation development
- Existing non-agricultural use on the subject title, the holding and surrounding land.

This assessment utilises publicly available datasets including Land Capability, water resources, soils, vegetation as well imagery (including historic Google Earth imagery).

Information about the activities on the subject title and holding has been ascertained through discussion with the owner.

A site assessment was conducted on the 29th June 2023, to confirm or otherwise desktop information. The onsite Land Capability Assessment (as per Grose 1999) was conducted on the title at a scale of 1:10,000 (see Appendix 3 for RMCG's Land Capability Assessment Protocol).

In addition to the on-site Land Capability assessment, published Land Capability for the subject land is available:

- Published Land Capability by Tas Government at a Scale of 1:100,000 (see Figure A1-5)
  - Pipers Report, 1991.

[1] An on-site Land Capability assessment was undertaken for the pasture areas. Visual confirmation of Land Capability was adopted for the balance of the property for the purposes of this report.

3 Description

3.1 LANDSCAPE CONTEXT

There are three titles associated with property that are proposed to be rezoned:

- CT 208625/1 – 258.1ha
- CT 232243/1 – 183.4ha
- CT 106554/1 – 78.6ha.

The combined area of the titles is approximately 520ha. There is an existing dwelling located on CT 232243/1. The majority of the land is covered in native vegetation, with 241ha of the native vegetation covered by a conservation covenant. The property is accessed via a Right of Way from Watery Plains Rd to the south across two properties to the south; 34 Water Plains Rd & 74 Watery Plains Rd (see Figure A1-7). The property is moderately to steeply sloped, with a generally westerly aspect. The highest point of the site is in the north eastern corner at 490m Above Sea Level (ASL), with the lowest point along the south eastern boundary, adjacent to the North Esk River at 210m ASL.

The property is situated at the confluence of the St Patricks River and the North Esk River. The St Patricks River forms the western boundary of the most northern title (CT 208625/1), with the North Esk wrapping around the eastern, northern and western boundary of the most southern title (CT 106554/1) and splitting this title from the northern two titles. The St Patricks river joins the North Esk River at the most north western point of CT 106554/1 and from there the North Esk River flows to the south. The titles are linked across the North Esk by an existing bridge (see Figure A4-5).

The prevailing wind is from the northwest. Mean annual rainfall is 627mm[2].

3.2 SOILS AND GEOLOGY

The soils on the site are unmapped. The majority of the underlying geology is mapped as Jd - Jurassic igneous rocks (dolerite). Portions of the land along the riverbanks are mapped as a mix of alluvium derived geological types, as well as mudstones, siltstone and sandstone. Some areas along the riverbanks show signs of previous erosion from flood events. Dolerite outcrops were identified across the site and generally correlated with vegetated areas.

The nearest mining lease is 11.5km to the west.

3.3 VEGETATION

Tas Veg 4.0 maps 10 different vegetation communities, see Table 3-1 and Figure A1-3.

Table 3-1: Assessed Vegetation and Other Land Use Categories

TAS VEG COMMUNITIES	AREA (HA)
Eucalyptus amygdalina forest and woodland on dolerite (DAD)	406.7
Lowland grassland complex (GCL)	40.4

[2] Launceston Airport BoM Weather Station. http://www.bom.gov.au/climate/averages/tables/cw_091311.shtml

TAS VEG COMMUNITIES	AREA (HA)
Eucalyptus viminalis grassy forest and woodland (DVG)	22.1
Allocasuarina verticillate forest (NAV)	18.6
Eastern riparian scrub (SRE)	14.1
Agricultural Land (FAG)	12.2
Leptospremum scoparium heathland and scrub (SLS)	4
Acacia dealbata forest (NAD)	1
Water, sea (OAQ)	0.7
Weed infestations (FWU)	0.3

The mapped forest and woodland communities align with physical landscape features, with vegetation predominantly occurring across the site, apart from the areas that are mapped as FAG and GCL. The FAG area aligns with the identified modified land on the site.

SRE is listed as a threatened community under the Nature Conservation Act 2002. Vegetation associated with riparian areas on the site are mapped within the waterway and coastal protection areas of the Natural Assets Code (NAC). No other vegetation is covered by the NAC because the 'Agriculture' zone is generally exempt from needing to apply the NAC. Based on the application of the NAC on adjacent land that is not zoned 'Agriculture' it is considered likely that the majority of the land associated with the subject title would have the NAC placed over it if the land is successfully rezoned to 'Rural'.

Approximately 241ha of vegetation on the site is within a conservation covenant (ID 20533). The vegetation covered includes the majority of SRE vegetation with the balance generally being DAD.

3.4 LAND CAPABILITY

The Published Land Capability for the land shows the land to be the following Classes:

- Class 5 – 56.4ha
- Class 6 – 378.9ha
- Class 7 – 82.9ha
- Unmapped – 1.9ha.

Class 5 land is described as Land unsuited to cropping and with slight to moderate limitations to pastoral use. Class 6 land is described as land that is marginally suitable for grazing due to severe limitations. Class 7 land is described as having very severe to extreme limitations that make it unsuitable for agricultural use. Full Land Capability Class descriptions are available in Appendix 2.

When onsite a Land Capability Assessment was conducted that focused on areas mapped as FAG and GCL. The key limiting factors that were identified were surface stone and cobbles/gravel in the profile, drainage limitations, and potential water erosion risks. The assessment concluded that for the assessed areas the published Land Capability is generally consistent and no areas were assessed that were less limited for agricultural use than Class 5. Abundant dolerite boulders were also identified under vegetation, which aligns with areas that are mapped as Class 6 or 7. See Appendix 3 for Land Capability Assessment.

None of the land is classed as Prime Agricultural Land under the Protection of Agricultural Land Policy 2009.

3.5 LAND USE ON SUBJECT TITLES

No agricultural or primary industries are undertaken on the property by the current owners, beyond the occasional collection of firewood for domestic use. It is the owners understanding that the previous owners ran a small number of sheep in bush runs, but this was a very low stocking rate. The main use on the site is as a weekend getaway and private recreational activities, such as motorbike riding.

If the property is rezoned to 'Rural' it is the owner's intention to continue to use the site for the same activities.

3.6 EXISTING AND POTENTIAL IRRIGATION ON THE TITLE

The property is partially located within the middle and low sub-catchments of the North Esk River, as well as the lower St Patricks sub-catchment. The entirety of the land is within the North Esk catchment. The property has frontage onto both the North Esk and St Patricks Rivers. There are also unnamed tributaries (one for the St Patricks and two for the North Esk) which have their head waters originate on the property and flow into their respective river. According to DNREs Water Assessment Tool the catchment is over allocated, which means the only irrigation water available would be through trading. Based on the 10m contours there are no attractive dam sites on the property. The property is also outside any active irrigation schemes, although it is noted that the North Esk Irrigation Scheme covers the property to the south and the Scheme offtake for pump filling the Scheme dam (Dam ID 9871 - Rocklands Lake) is approximately 1km upstream from the south eastern corner of the southern title on the North Esk River.

The likelihood and feasibility for developing an irrigation water resource on the subject land is very low due to the lack of available irrigation water and the lack of land suitable to receive irrigation water.

The existing drainage lines are mapped as 'waterway and coastal protected areas' under the Natural Assets Code of the Planning Scheme.

3.7 SURROUNDING LAND USE

The subject title is surrounded by five adjacent titles. These titles range in size from 193ha to 1103ha and are a mix of 'Rural', 'Agriculture' & 'Environmental Management' zoning under the Planning Scheme. Adjacent to the north is CT 181851/3, which 193ha in area and is zoned 'Rural'. This title is individually owned and is entirely covered in native vegetation. Adjacent to the east is the Weavers Creek Regional Reserve. This title is 776ha in area, is entirely vegetated, zoned 'Environmental Management' and is owned by the Crown. There does not appear to be any agricultural or primary industry occurring on land to the north or the east.

To the south is CT 184629/1 (74 Watery Plains Rd), the subject property is accessed via a Right of Way across 74 Watery Plains Rd. The title is 215ha in area, has an existing dwelling and is zoned 'Agriculture'. This title is utilised for dryland grazing of both sheep and cattle. When considering the area available for grazing, the farming enterprise would best be described as a 'small-scale producer'[3]. Based on Tasmanian Irrigation's water register it does not appear that there are any water rights from the North Esk Irrigation Scheme (NEIS) associated with this property. However, it is noted that the property is located within the NEIS district and there is a scheme pump station located adjacent to this property's eastern boundary, with a scheme pipeline crossing

[3] See Appendix 5 for Enterprise Scale definition. These definitions are from E*nterprise Scale – For primary production in Tasmania. Report prepared to further the concept of the Rural Enterprise Concept for Flinders Local Provisions Schedule.* The report prepared for Town Planning Solutions on behalf of Flinders Council, by RMCG (2022).

the property from east to west. Hence there may be scope for this property to access irrigation water from the NEIS in the future.

Adjacent to the west, on the western side of the St Patricks River is CT 148670/4. This title is 1103ha in area, zoned 'Agriculture' and appears to be farmed in conjunction with more land to the west and north as part of a 'commercial scale' grazing enterprise (RMCG 2022). The land on this title that is adjacent to the subject property is very steep (around 20º/37%), with frequent rock outcrops and existing vegetation. It is considered unlikely that this area is utilised for any agricultural or primary industry activities. However, some areas further to west (approximately 450m from the subject property) where the land flattens off may be included as part of large bush runs for stock.

4 Discussion

4.1 PRODUCTIVE CAPACITY OF THE SUBJECT LAND

The subject title is limited for existing and potential agricultural use by Land Capability and lack of existing or potential irrigation water resources. If this land was farmed on its own, it would not have sufficient suitable land and water resources to support a 'viable'[4] enterprise. There may be some scope to undertake native forest harvesting within the vegetated areas that are not covered by the conservation covenant, however changing the zoning from 'Agriculture' to 'Rural' would not impact on this occurring.

Land with these sort of characteristics is best farmed in conjunction with other land. There may be some scope to farm the land in conjunction with the property to the south, and utilise areas of the subject property as a bush run. However, stock would only be able to be run at a low stocking rate and it therefore does not provide a significant amount of land resources to contribute to a 'viable' commercial scale enterprise. Again, rezoning the land to 'Rural' does not affect the property's ability to be farmed in conjunction with adjacent land in the future.

4.2 CONSIDERATION OF APPROPRIATE ZONE WITHIN THE AGRICULTURAL ESTATE

Rezoning the subject property from 'Agriculture' to 'Rural' means that the property will remain in Tasmania's agricultural estate. The zone purpose statements for the 'Rural' and 'Agriculture' zones are list below in Table 4-1.

[4] In our opinion a viable farm is one producing sufficient income to provide for a family and provide full time employment for one person. On this basis the long-term viability of farms producing less than $300,000 Gross Income is questionable.

Table 4-1: Zone Purpose Statements

ZONE	ZONE PURPOSE
Rural Zone	The purpose of the Rural zone is: To provide for a range of use or development in a rural location: a) Where agricultural use is limited or marginal due to topographical, environmental or other site or regional characteristics b) That requires a rural location for operational reasons c) Is compatible with agricultural use if occurring on agricultural land d) Minimise adverse impacts on surrounding land uses. To minimise conversion of agricultural land for non-agricultural uses. To ensure that use or development is of a scale and intensity that is appropriate for a rural location and does not compromise the function of surrounding settlements.
Agricultural Zone	The purpose of the Agriculture zone is: To provide for the use or development of land for agricultural use. To protect land for the use or development of agricultural use by minimising: a) Conflict with or interference from non-agricultural uses b) Non-agricultural use or development that precludes the return of the land to agricultural use; and c) Use of land for non-agricultural use in irrigation districts. To provide for use or development that supports the use of the land for agricultural use.

As described in the above zone purpose statements, the 'Rural' zone is identified for land with limited or marginal agricultural potential (such as the subject land), to facilitate a range of uses that may not be linked to an agricultural use, but are better suited in a rural location. Whereas the purpose of the 'Agriculture' Zone is to facilitate the ongoing development of agricultural activities and supporting uses. Hence, based on the characteristics of the subject property, it is better suited to the 'Rural' zone. With land already in the 'Rural' zone to the north, zoning the three titles associated with the subject title will also not result in any spot zoning occurring.

4.3 POTENTIAL FOR CONSTRAINING ADJACENT AGRICULTURAL LAND USE

The rezoning of the land to 'Rural' will not place constraints on any of the adjacent agricultural activities. If future uses are proposed on the site that are discretionary in the 'Rural' zone, but are not permitted in the 'Agriculture' zone then the impact on adjacent land of any potential proposed uses would need to be considered on a case by case basis.

5 Conclusion

The subject property is limited for existing and potential agricultural use by Land Capability and lack of existing or potential irrigation water resources. There is no Prime Agricultural Land associated with the subject land. Land with these sort of characteristics is more consistent with the application guidelines for the 'Rural' zone rather than the 'Agriculture' zone (Tasmanian Planning Commission 2018).

Rezoning the land to 'Rural' will not have any impacts on adjacent agricultural activities.

References

City of Launceston (2021). Tasmanian Planning Scheme – Launceston

DPIPWE. (2023). Cadastral Parcels Dataset. TASMAP Department of Primary Industries, Parks, Water and Environment

DPIPWE. (2007, November). Land Capability of Tasmania Dataset. Department of Primary Industries, Parks, Water and Environment

DPIPWE. (2020). Tasmanian Vegetation Monitoring and Mapping Program TASVEG 4.0. Department of Primary Industries, Parks, Water and Environment

Grose, C. J. (1999). Land Capability Handbook. Guidelines for the Classification of Agricultural Land in Tasmania. (Second Edition ed.). Tasmania, Australia: Department of Primary Industries, Water and Environment

Learmonth, R., Whitehead, R., Boyd, B., & Fletcher, S. (2007). Living and Working in Rural Areas. A handbook for managing land use conflict issues on the NSW North Coast. Centre for Coastal Agricultural Landscapes in Partnership with the Northern Rivers Catchment Management Authority

RMCG (2022). Enterprise Scale – For primary production in Tasmania. Report prepared to further the concept of the Rural Enterprise Concept for Flinders Local Provisions Schedule. Report prepared for Town Planning Solutions on behalf of Flinders Council

Tasmanian Planning Commission (2018) Guideline No. 1 Local Provisions Schedule (LPS): zone and code application.

Appendix 1: Maps

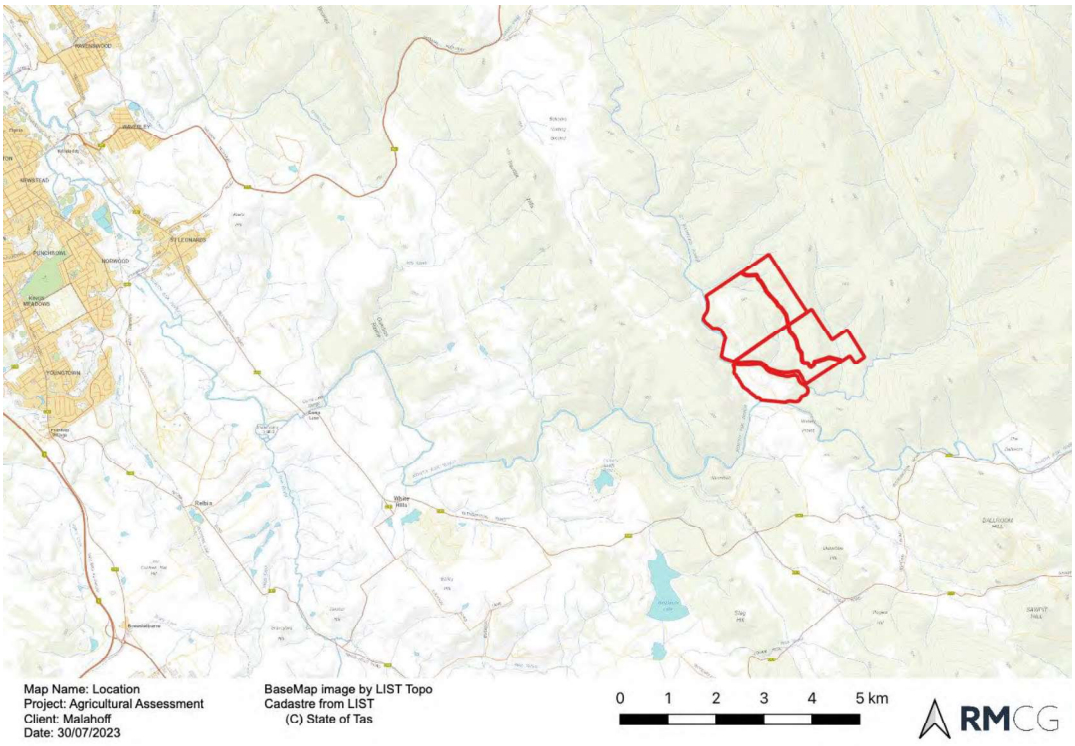


Figure A1-1: Location Map

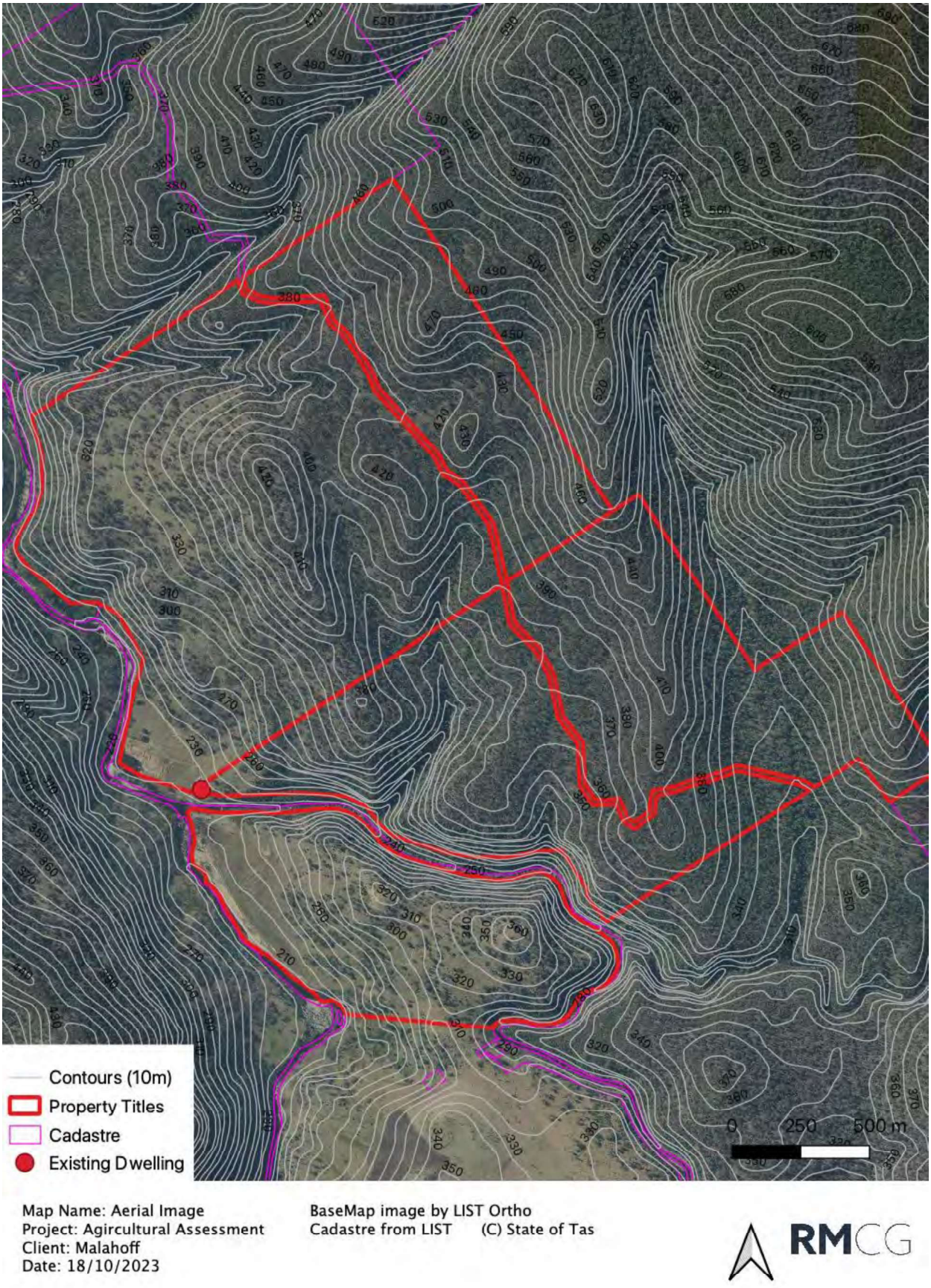
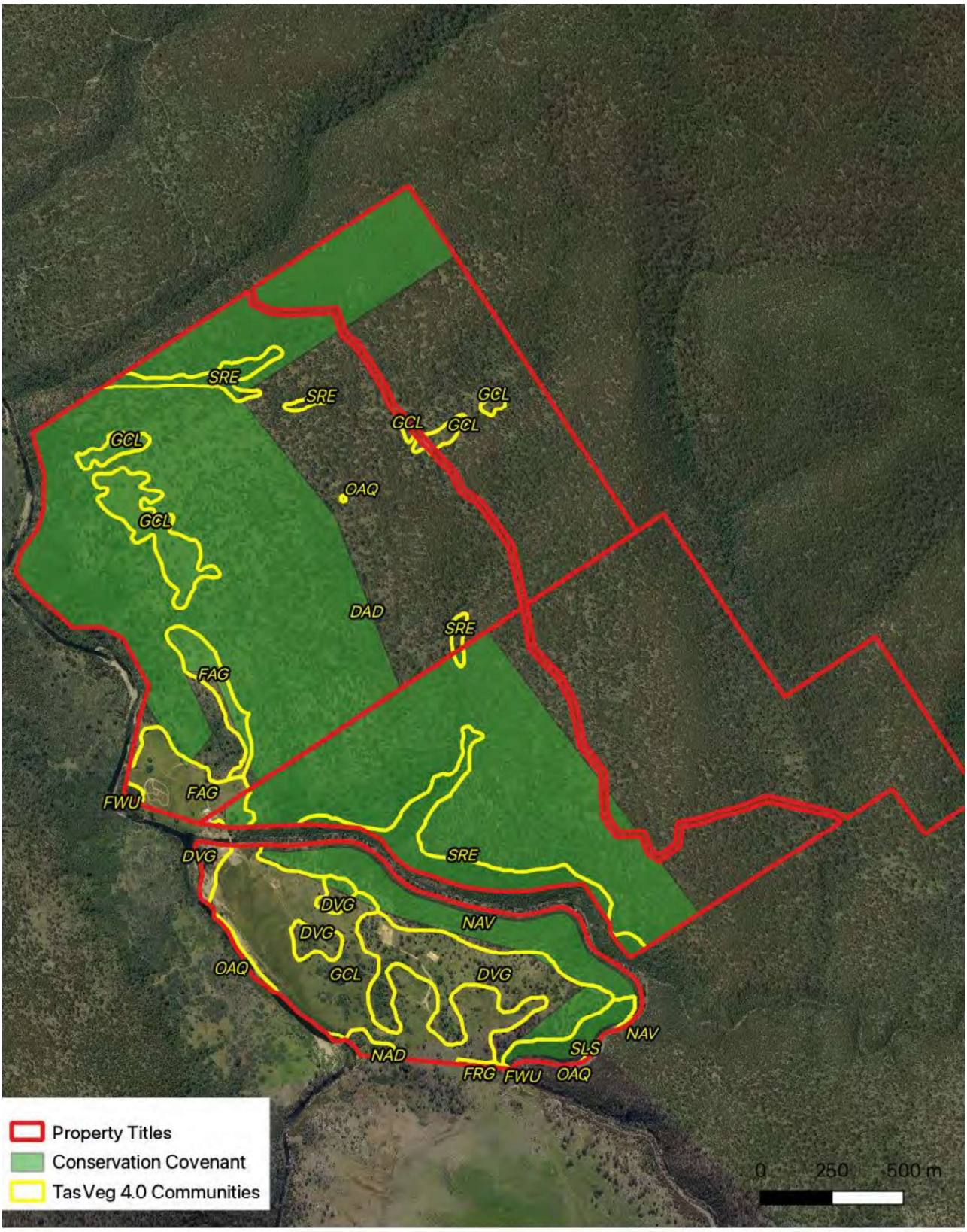


Figure A1-2: Aerial Image



Map Name: Reserve & Vegetation Communities
Project: Agricultural Assessment
Client: Malahoff
Date: 30/07/2023

BaseMap image by LIST Ortho
TasVeg 4.0 by DPIPWE
Cadastre from LIST (C) State of Tas

RMCG

Figure A1-3: Conservation Covenant and published vegetation communities

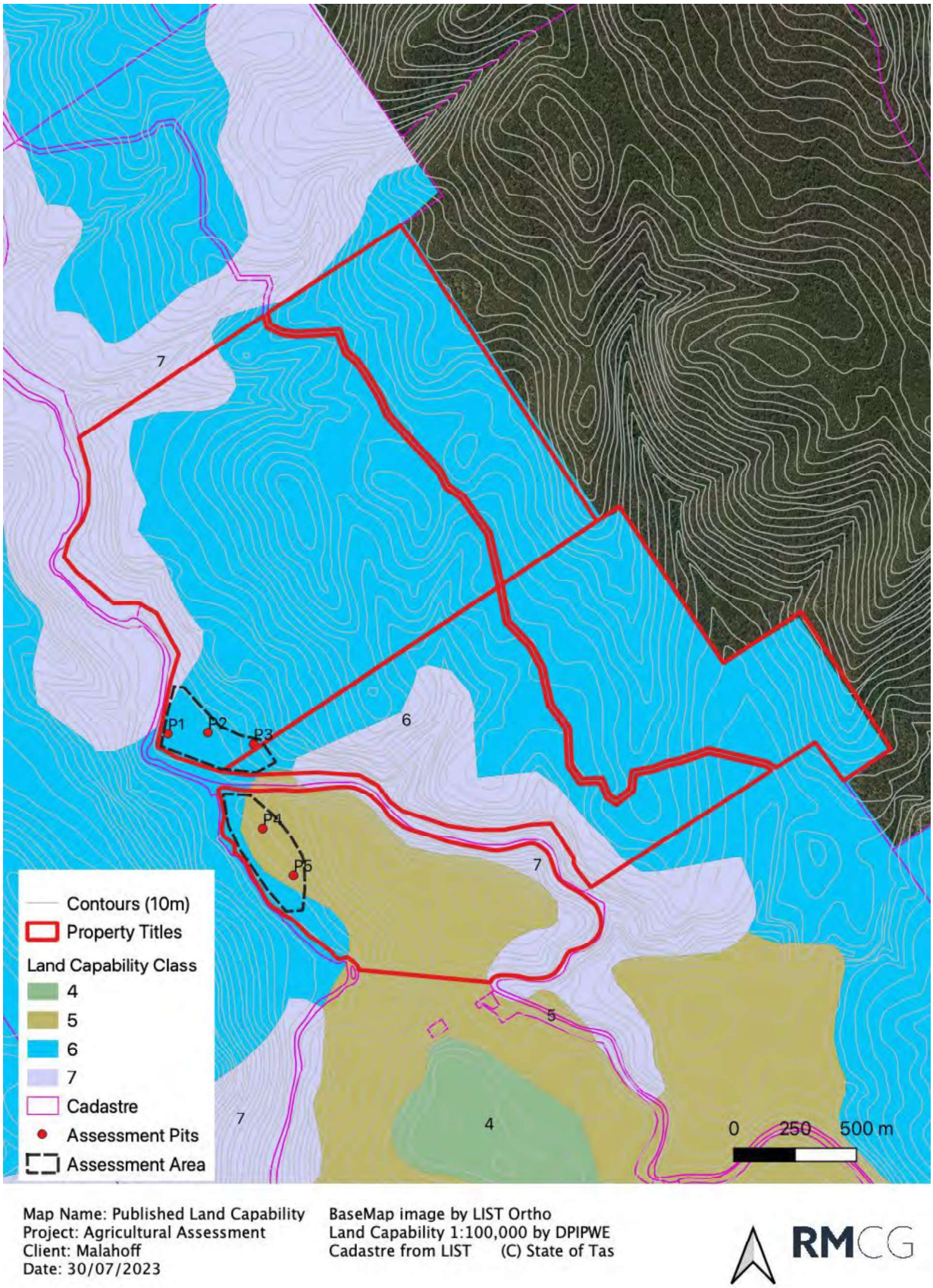


Figure A1-4: Published Land Capability (1:100,000), with on site assessment pits shown. The onsite assessment determined that published mapping was generally accurate.

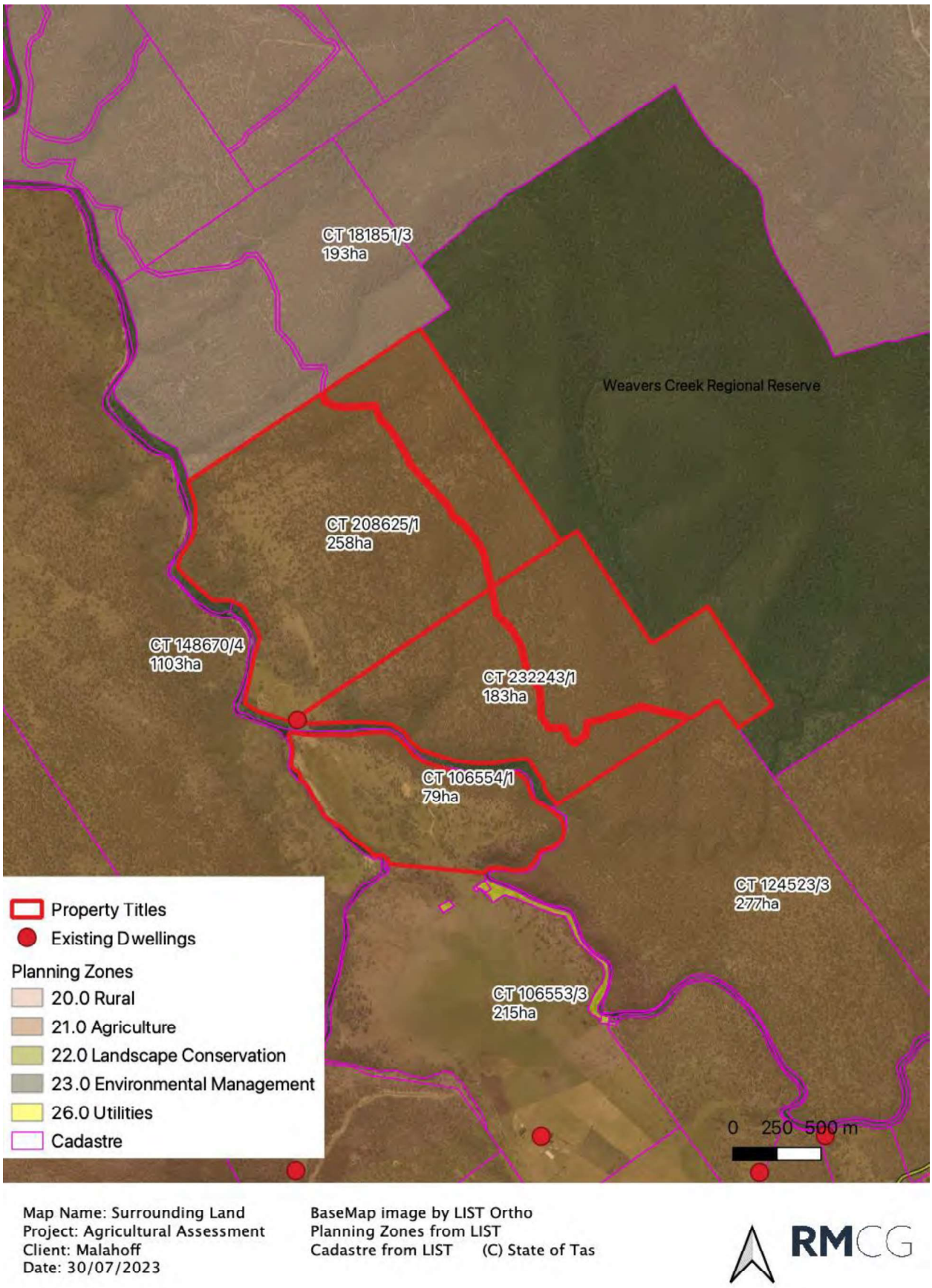


Figure A1-5: Zoning of Subject Land and Surrounding Titles

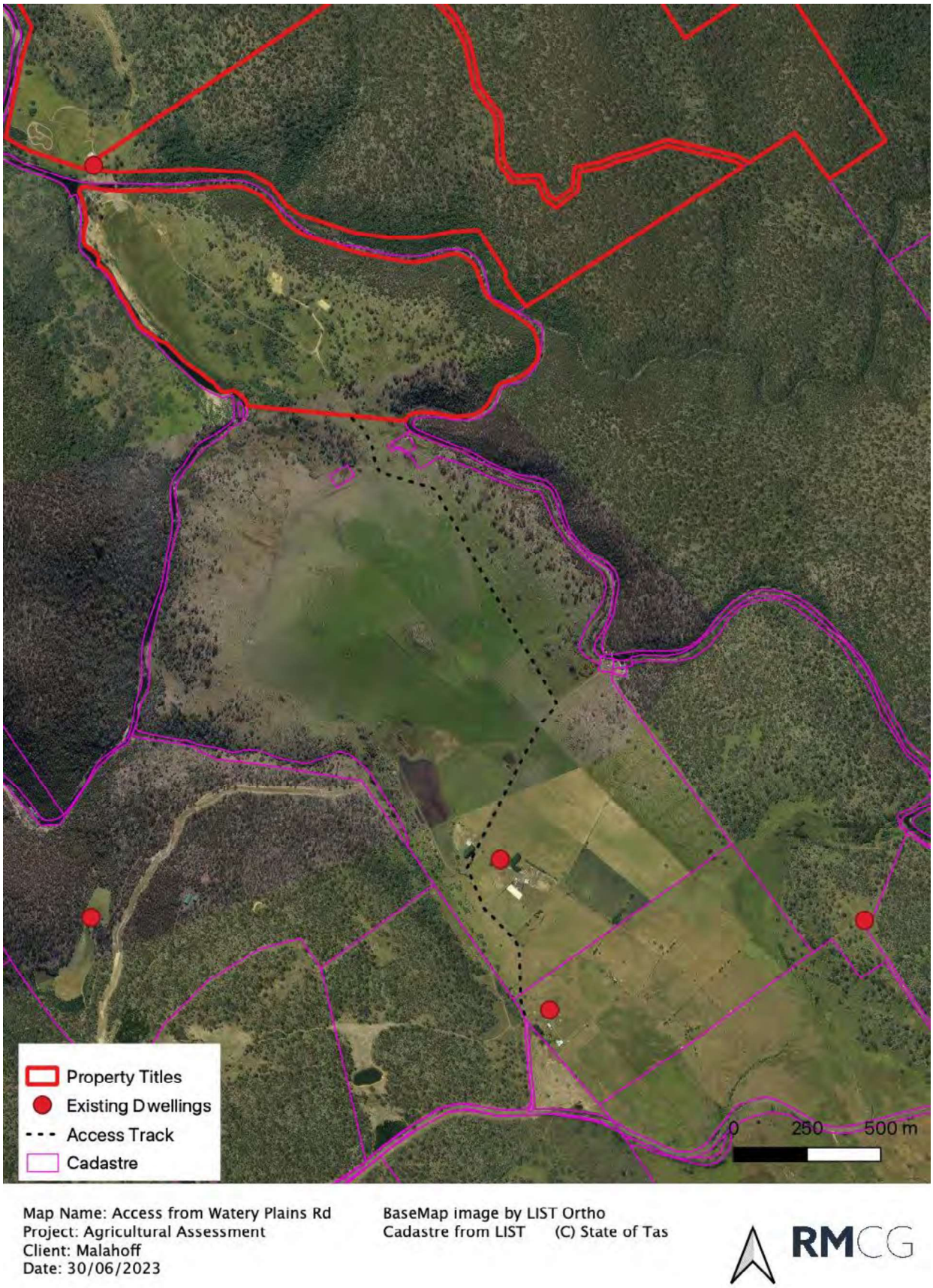


Figure A1-6: Access track from Watery Plains Rd

Appendix 2: Land Capability Definitions from Grose (1999)

Prime agricultural land as described in the protection of agricultural land 2009:

CLASS 1: Land well suited to a wide range of intensive cropping and grazing activities. It occurs on flat land with deep, well drained soils, and in a climate that favours a wide variety of crops. While there are virtually no limitations to agricultural usage, reasonable management inputs need to be maintained to prevent degradation of the resource. Such inputs might include very minor soil conservation treatments, fertiliser inputs or occasional pasture phases. Class 1 land is highly productive and capable of being cropped eight to nine years out of ten in a rotation with pasture or equivalent without risk of damage to the soil resource or loss of production, during periods of average climatic conditions.

CLASS 2: Land suitable for a wide range of intensive cropping and grazing activities. Limitations to use are slight, and these can be readily overcome by management and minor conservation practices. However, the level of inputs is greater, and the variety and/or number of crops that can be grown is marginally more restricted, than for Class 1 land. This land is highly productive but there is an increased risk of damage to the soil resource or of yield loss. The land can be cropped five to eight years out of ten in a rotation with pasture or equivalent during 'normal' years, if reasonable management inputs are maintained.

CLASS 3: Land suitable for cropping and intensive grazing. Moderate levels of limitation restrict the choice of crops or reduce productivity in relation to Class 1 or Class 2 land. Soil conservation practices and sound management are needed to overcome the moderate limitations to cropping use. Land is moderately productive, requiring a higher level of inputs than Classes I and 2. Limitations either restrict the range of crops that can be grown or the risk of damage to the soil resource is such that cropping should be confined to three to five yens out of ten in a rotation with pasture or equivalent during normal years.

Non-prime agricultural land as described in the protection of agricultural land 2009:

CLASS 4: Land primarily suitable for grazing but which may be used for occasional cropping. Severe limitations restrict the length of cropping phase and/or severely restrict the range of crops that could be grown. Major conservation treatments and/or careful management is required to minimise degradation. Cropping rotations should be restricted to one to two years out of ten in a rotation with pasture or equivalent, during 'normal' years to avoid damage to the soil resource. In some areas longer cropping phases may be possible but the versatility of the land is very limited. (NB some parts of Tasmania are currently able to crop more frequently on Class 4 land than suggested above. This is due to the climate being drier than 'normal'. However, there is a high risk of crop or soil damage if 'normal' conditions return.).

CLASS 5: This land is unsuitable for cropping, although some areas on easier slopes may be cultivated for pasture establishment or renewal and occasional fodder crops may be possible. The land may have slight to moderate limitations for pastoral use. The effects of limitations on the grazing potential may be reduced by applying appropriate soil conservation measures and land management practices.

CLASS 6: Land marginally suitable for grazing because of severe limitations. This land has low productivity, high risk of erosion, low natural fertility or other limitations that severely restrict agricultural use. This land should be retained under its natural vegetation cover.

CLASS 7: Land with very severe to extreme limitations which make it unsuitable for agricultural use.

Appendix 3: Protocol for Land Capability Assessment used by RMCG

This protocol outlines the standards and methodology that RMCG uses to assess Land Capability.

In general, we follow the guidelines outlined in the Land Capability Handbook (Grose 1999) and use the survey standards outlined in the Australian Soil and Land Survey Handbooks to describe (McDonald, et al. 1998), survey (Gunn, et al. 1988) and classify (Isbell 2002) soils and landscapes.

Commonly we are requested to assess Land Capability in relation to local government planning schemes. As such the level of intensity of the investigation is usually high and equivalent to a scale of 1:25 000 or better. The choice of scale or intensity of investigation depends on the purpose of the assessment. As the scale increases (becomes more detailed and the scale is a smaller number), the number of observations increases.

An observation can be as much as a detailed soil pit description or as little as measuring the gradient of an area using a clinometer or the published contours in a Geographical Information System and includes soil profile descriptions, auger hole descriptions, and observations confirming soil characteristics, land attributes or vegetation. The table below shows the relationship between scale, observations, minimum distances and areas that can be depicted on a map given the scale and suggested purpose of mapping.

Table A3-1: Land Capability Assessment Scales

SCALE	AREA (HA) PER OBSERVATION	MINIMUM WIDTH OF MAP UNIT ON GROUND	MINIMUM AREA OF MAP UNIT ON GROUND	RECOMMENDED USE
1:100 000	400ha	300m	20ha	Confirmation of published land capability mapping
1:25 000	25ha	75m	1.25ha	Assessments of farms, fettering or alienation of Prime Agricultural Land
1:10 000	4ha	30m	2 000m²	Area assessments of less than 15ha
1:5 000	1ha	15m	500m²	Site specific assessments for houses and areas less than 4ha
1:1 000	0.04ha	3m	20m²	Shown for comparison purposes

Based on 0.25 observations per square cm of map, minimum width of mapping units is 3mm on map as per (Gunn, et al. 1988).

Assessment methodology

With all assessments we examine a minimum of three observations per site or mapping unit and determine Land Capability on an average of these observations.

Land Capability is based on limitations to sustainable use of the land, including the risk of erosion, soil, wetness, climate and topography. The most limiting attribute determines the Land Capability class. This is not always a soil limitation and thus soil profile descriptions are not always required for each mapping unit. For example, land with slopes greater than 28%, areas that flood annually and areas greater than 600m in elevation override other soil related limitations.

The availability of irrigation water can affect the Land Capability in some areas. An assessment of the likelihood of irrigation water and quality is made where it is not currently available.

As a minimum all assessment reports include a map showing the subject land boundaries, observation locations, published contours and Land Capability.

Definitions

Land Capability

A ranking of the ability of land to sustain a range of agricultural land uses without degradation of the land resource (Grose 1999).

Protocol references

Grose, C J. Land capability Handbook. Guidelines for the Classification of Agricultural Land in Tasmania. Second Edition. Tasmania: Department of Primary Industries, Water and Environment, 1999.

Gunn, R H, J A Beattie, R E Reid, and R H.M van de Graaff. Australian Soil and Land Survey Handbook: Guidelines for Conducting Surveys. Melbourne: Inkata Press, 1988.

Isbell, R F. The Australian soil classification. Revised Edition. Melbourne: CSIRO Publishing, 2002.

McDonald, R C, R F Isbell, J G Speight, J Walker, and M S Hopkins. Australian Soil and Land Survey Field Handbook. Second Edition. Canberra: Australian Collaborative Land Evaluation Program, CSIRO Land and Water, 1998.

On site land capability assessment

Published Land Capability (LIST at 1:100,000) maps the subject title as a mix of Class 5 (56.4ha), Class 6 (378.9ha), Class 7 (82.9ha) with 1.9ha unmapped.

At the site inspection, five assessment pits were augured across the proposed development area and nearby land, as well as the area mapped as GCL on CT 106554/1. See Table A3-2 for assessment pit characteristic, with an example pit (Pit 1) described in greater detail below.

For the areas where assessment pits were augered there were three key characteristics that determined Land Capability:

- Gravel (g) – gravel was identified in at least one layer of all assessment pits. For Pits 1-3, cobbles were also felt when auguring the profile and were also identified in cuts near the assessment pits (see Figure A4-2).
- Drainage (d) – all profiles showed poor drainage characteristics through mottling (common & distinct, to many & abundant). One pit also had a bleached layer, which suggests that the soil sits wet for long periods of time over an impermeable subsoil.
- Surface Rock (r) – surface rock was identified across the site.

The above characteristics are reflective of Class 5 and Class 6 characteristics. Hence it was determined that the Published Land Capability mapping is reflective of the onsite characteristics.

Table A3-2: Land Capability Assessment Summary Table for Assessment Pits

PIT NO	SOIL DEPTH (CM)	COMMENTS	TEXTURE	COLOUR	STRUCTURE (E)	COARSE FRAGMENT SIZE (G) TYPE, MM	COARSE FRAGMENT SIZE (G) %	SOIL DRAINAGE (D) MOTTLE SEVERITY	SURFACE STONE (R) PRESENCE	SLOPE (E) %	EROSION RISK WATER	EROSION RISK WIND	FLOOD RISK	LAND CAPABILITY
1	0-10	Evidence of cobbles throughout profile	Fine sandy clay loam	Very dark greyish brown	Moderate	2-60	20-35		Present	0-5	Moderate	Low	High	6rfgd
	10-30		Light clay	Brown	Moderate	2-60	70-90	Common / distinct						
	30-60		Heavy clay	Yellowish brown	Massive			Common / distinct						
2	0-10	Evidence of cobbles throughout profile	Fine sandy clay loam	Very dark greyish brown	Moderate	2-60	20-35		Present	5-12	Moderate	Low	Low	6rd
	10-30		Light clay	Brown	Moderate	2-60	70-90	Common / distinct						
	30-60		Heavy clay	Yellowish brown	Massive			Common / distinct						
3	0-20	Evidence of cobbles throughout profile	Clay loam	Very dark brown	Moderate				Abundant	18-28	Moderate	Low	Low	5r
	20-40		Light clay	Light olive brown	Moderate	2-60	50-70							
	40-60		Medium clay	Yellowish brown										
4	0-20	Subsoil is two toned	Silty loam	Dark brown	Moderate	2-60	50-70		None	0-5	Low	Low	Moderate	6dg
	20-60		Light clay	Yellowish brown	Strong	2-60	70-90	Many / prominent						
5	0-10	Profile was saturated. Was difficult to identify exact layer depths	Silty loam	Very dark greyish brown	Moderate	2-60	2-20			5-12	Low	Low	Low	5d
	10-40		Light clay	Greyish brown (bleached)	Moderate	2-60	2-20							
	40-60		Medium clay	Dark greyish brown	Massive			Common / distinct						

Site: 325 Watery Plains Rd

Date: 29th June 2023

Pit: 1

Flood Risk: High

Slope: 0-5%

Morphology: On River flats near St Patricks River

Surface condition: Unimproved Pasture.

Figure A3-1: Pit 2

Table A3-3: Profile description

DEPTH (CM)		MUNSELL COLOUR		STRUCTURE	TEXTURE	GRAVEL	MOTTLE	COMMENTS
0	10	10YR	3/2	M	FSCL	g, 20-35%	-	Cobbles felt throughout profile
10	30	10YR	5/3	M	LC	g, 20-35%	5	
30	60	10YR	5/8	V	HC		5	

Duplex profile with moderately-structured soils with fine sandy clay loam at the surface and Heavy Clay at depth. Gravel increased with depth through the first two soil layers. Cobbles were also felt throughout the profile. There were also cobbles present on the surface nearby. Common and distinct mottling occurred in the subsoils. The mottling indicates the soils are poorly drained. The presence of rock, poorly drained soils and proximity to the St Patricks River and potential for regular flooding dictate a Land Capability Class of 6. Pit 2 displayed the same characteristics, but with differing horizon depths.

Appendix 4: Photos

Figure A4-1: Existing private motocross track on subject property. Also note steep vegetated area in the distance, which is located on CT 148670/4 to the west. It is considered unlikely this area on CT 148670/4 is utilised for agricultural activities beyond potentially having parts included in a large bush run.

Figure A4-2: Example of stone (cobbles and gravel) in the profile of a cut away area near the location of assessment pit 1.

Figure A4-3: Example of surface stone within the area mapped as FAG by TasVeg 4.0.

Figure A4-4: Example of dolerite outcrops under the vegetated areas

Figure A4-5: Existing bridge over the North Esk River that connects the property titles.

Figure A4-6: Confluence of the North Esk and St Patricks rivers.

Figure A4-7: Evidence of previous water erosion from past flood events along the banks of the North Esk.

Figure 4-8: Water ponding within the published Land Capability Class 5 area.

Appendix 5: Farm Business Scale Characteristics

Table A5-1 summarises a number of key characteristics associated with each scale. No single characteristics is considered definitive and there will be overlap and anomalies. Table A5-1 can be used to determine the scale of the existing farm business and/or the potential scale based on the characteristics.

Table A5-1: Farm Business Scale Characteristics

INDICATIVE CHARACTERISTICS	COMMERCIAL SCALE	SMALL SCALE PRODUCER	HOBBY SCALE	LIFESTYLE SCALE
Relevance for primary production	Dominant activity associated with the farm business is primary production. Likely to be viable. Capacity to produce sufficient profit for a family and full-time employment of one person.	Dominant activity associated with the farm business is primary production. Likely to be viable in time, potentially through cooperative arrangements, higher value products, downstream processing, complementary food, recreation, hospitality, tourism or value adding. If running livestock, then current carrying capacity is at least average DSE/ha for their area.	Land used for some primary production. Occupant/family needs to be supported by non-primary production income and/or off-farm income.	Little or no relevance for primary production.
Producer aspirations	Shows commercial intent in primary production. Have a marketing strategy. Business focused with production decisions made on economic principles.	Shows commercial intent in primary production. Have a marketing strategy. Business focused with production decisions made on economic principles. Work with other small scale producers to share marketing and resources.	Profitability is not a high priority in primary production decisions and viability cannot be demonstrated.	Profitability has very low relevance. Lifestyle is the dominant motivation for any primary production activity.
Labour (FTE) for the primary production	At least 1 FTE	Likely to be at least 0.5 FTE	Likely to be less than 0.5 FTE	
Indicative Gross Income from Primary Production	Greater than $300 000 from the farm business with additional income derived from value adding or off-farm generally comprising less than 50% of total household income.	Generally, between $40 000 and $300 000 from the farm business. Total household income is generally derived from several income streams of which primary production is one. Primary production income often comprises less than 50% of total household income.	Generally, between $10 000 - $40 000 from the farm business with additional household income comprising more than 50% of total household income.	<$10 000 from the farm business.
Land and Water resources (general characteristics)	Total land area for mixed farming is likely to be 200ha-500ha or more, depending on Land Capability, water resources and farm business activity mix. Land area for vineyards, orchards or berries is likely to be at least 10ha-20ha and likely more. Land area generally comprising of a number of titles farmed together.	For livestock producers generally 40-80ha in one or two titles. Generally, 8-40 ha in area and a single title for other ventures. Water for irrigation likely, but it depends on the farm business activity. The land and/or water resources associated with the farm business may have the capacity to contribute to a	Generally, 8-40 ha in area and a single title. Water for irrigation less likely, but possible, depending on location and cost of supply. The land and/or water resources associated with the title may have the capacity to contribute to a 'commercial	Generally, 1-8 ha in area. Land Capability variable. Water for irrigation highly unlikely. No capacity to contribute to a commercial scale farm business due to constraining factors.

INDICATIVE CHARACTERISTICS	COMMERCIAL SCALE	SMALL SCALE PRODUCER	HOBBY SCALE	LIFESTYLE SCALE
	Irrigation is generally necessary for smaller land areas to be viable and/or for higher value products.	'commercial scale' farm business depending on the degree of constraint.	scale' farm business depending on the degree of constraint.	
Connectivity	Few constraints likely. Likely to be well connected to other unconstrained titles, Expansion and/or intensification feasible.	Some constraints likely. Residences on majority of adjacent titles. Low connectivity to unconstrained titles.	Some constraints likely. Residences on majority of adjacent titles. Low connectivity to unconstrained titles.	Moderate to significant constraints likely. Residences on majority of adjacent titles. Little or no connectivity to unconstrained titles.
Registrations	Are recognised by ATO as Primary Producer. Livestock producers will have a PIC and be registered for NLIS and LPA. All producers are likely to be registered for GST. Would be part of QA schemes, depending on products and markets.	Are recognised by ATO as a Primary Producer. Livestock producers will have a PIC and be registered for NLIS and LPA. All producers are likely to be registered for GST. Would be part of QA schemes, depending on products and markets.	May or may not be recognised by ATO as primary producer. Livestock producers will have a PIC and be registered for NLIS and LPA; may be registered for GST and may be part of any QA schemes.	Are not recognised by ATO as primary producer. May not have a PIC or be registered for NLIS; are not registered for GST and unlikely to be part of any QA schemes.
Role of a dwelling	Dwelling is subservient to the primary production.	Dwelling is convenient/preferred to facilitate improved productivity. Dwelling assists with security.	Dwelling is convenient/preferred for lifestyle reasons.	Dwelling is the dominant activity on the title.

Appendix 6: Characteristics of a Commercial Scale Farm Business Activity

It is very difficult to provide an assessment of the commercial viability of a single farm business activity as generally more than one farm business activity contributes to a farming business. Table A6-1 is designed to describe the general characteristics of a commercial scale farm business activity in Tasmania. Table A6-1 can be used to characterise land and water resources to determine whether they have the capacity to contribute to a commercial scale farm business activity. For example, a farming business with less than 4ha of cherries is likely to need additional farming activities to be viable.

Table A6-1: Resource Requirements for Various Land Uses

RESOURCE	LIVESTOCK			BROAD ACRE CROPS		VEGETABLES		BERRIES	ORCHARD FRUITS & VINES	NURSERIES & CUT FLOWERS	FORESTRY PLANTATIONS
	SHEEP	CATTLE	DAIRY	CEREALS	OTHERS	PROCESSED	FRESH MARKET				
Land Capability	LC generally 3–6.	LC generally 3–5/6.	LC generally 3–5.	LC 1–4.	LC 1–4.	LC 1–4.	LC 1–4.	LC 1–4/5.	LC 1–4/5.	LC 1–4 or N/A	LC 4–6
Minimum paddock sizes	No minimum	No minimum	To suit grazing system.	10–15ha min	5–10ha min.	10ha min.	10ha min.	2–4ha.	2–5ha.	2–4ha min.	10–20ha min.
Size for a 'viable' business if conducted as single farm business activity (1)	Generally 3,000–10,000 dse -area depends on rainfall). (2)		Capacity for at least 350 milkers.(3)	Broadacre cropping will be a mix of crops in rotation with pasture and livestock. The area required for viability is highly variable.				4–10ha.	10–30ha.	5–10ha.	TBC
Irrigation water	Not essential	Not essential	Preferable 4–6ML/ha.	Not necessary.	Mostly necessary, 2–3 ML/ha.	Necessary, 2–6ML/ha.	Necessary, 2–6ML/ha.	Necessary, 1–3ML/ha.	Necessary, 2–3ML/ha.	Necessary, small quantity.	Not required.
Climate specifications	Lower rainfall preferred for wool.	No preferences.	High rainfall (or irrigation).	Susceptible to spring frosts. Difficult to harvest in humid coastal conditions.	Susceptible to spring frosts.	Susceptible to spring frosts.	Susceptible to spring frosts.	High rainfall (or irrigation).	Susceptible to spring frosts for vines. Susceptible to summer rains for cherries. Susceptible to disease in high humidity in	Preferably low frost risk area.	Rainfall above 700–800 mm.

RESOURCE	LIVESTOCK			BROAD ACRE CROPS		VEGETABLES		BERRIES	ORCHARD FRUITS & VINES	NURSERIES & CUT FLOWERS	FORESTRY PLANTATIONS
	SHEEP	CATTLE	DAIRY	CEREALS	OTHERS	PROCESSED	FRESH MARKET				
									March for vines.		
Infrastructure	Yards & shearing shed.	Yards, crush, loading ramp.	Dairy shed, yards, crush, loading ramp.	Minimal.	Irrig facilities.	Irrig facilities.	Irrig facilities. Possibly a packing shed unless using a contract packer or growing on contract	Irrig facilities. Packing shed	Irrig facilities. Packing shed	Plastic/glass houses.	Firefighting dams. Access roads
Plant & equipment	Minimal.	Minimal; hay feeding plant.	General purpose tractor, hay/silage feeding.	Tractors & implements.	Tractors & implements.	Tractors & implements.	Tractors & implements.	Tractors & implements.	Tractors & implements.	Small plant.	Contract services.
Market contracts	Not required.	Not required.	Necessary.	Not required.	Generally required.	Necessary.	Highly preferred.	Desired.	Desired.	Contracts preferable.	Varies.
Labour	Medium.	Low.	High.	Low.	Low.	Low.	Variable/medium.	High at times.	High at times.	High at times.	Low.
Local services	Shearers.	Vet.	Vet, dairy shed technician.	Agronomist, contractors.	Agronomist, contractors.	Agronomist, contractors.	Agronomist, contractors.	Pickers.	Pickers.	Pickers.	Contractors.
Regional suitability	Dryer areas good for wool. All areas suitable; larger farm sizes needed for viability.	All areas suitable.	Economics dictate large area necessary. Needs high rainfall or large water resource for irrigation.	Generally large areas, so need larger paddocks and larger farms.	Generally large areas, so need larger paddocks and larger farms.	Medium sized paddocks & farms; area for crop rotations and irrigation.	Medium sized paddocks & farms; area for crop rotations and irrigation.	Specific site requirements; proximity to markets and transport/carriers.	Specific site requirements; potentially available in most municipalities.	Proximity to markets is important.	Low rainfall areas less preferred.

Table notes:

1. The Agricultural Land Mapping Project (ALMP) (Dept of Justice, 2017) defined minimum threshold titles sizes that could potentially sustain a standalone agricultural farm business activity. The ALMP have 333ha for a livestock farm business activity, 40ha for dairy, 133ha for cereals and other broadacre crops, 25ha for processed and fresh market vegetable, 10ha for berries, other fruits & vines and nurseries and cut flowers and no specified minimum area for plantation forestry.
2. Kynetec (March 2021) Farm Intel Information brochure uses 100ha as the minimum farm area for livestock
3. Kynetec (March 2021) Farm Intel Information brochure uses 75ha as the minimum farm area for dairy.

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