

Land Capability Assessment

2015 and 2187 Bruny Island Main Rd Great Bay



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1. Introduction

This report has been prepared in support of an application under S43A of the *Land Use Planning and Approvals Act 1995* (LUPAA) for a combined rezoning and subdivision in respect of two Rural Resource lots at 2015 and 2187 Bruny Island Main Road, Great Bay. The report has been prepared after a desktop assessment of available remote data, a site visit and consultation with the current landowners, Erhard Vinkman and Bob Elliston.

2. Background

2.1 Site description

The subject land lies on the southern side of the Bruny Island Main Rd near the northern end of the Bruny Island Neck. It is surrounded to the east, south and south-east by the Bruny Island Neck Game Reserve. The two parent titles are separated by a strip of road reserve that supports the walking track to Cape Queen Elizabeth.

Vinkman Property (CT 46800/1, 2015 Bruny Island Main Road; +/- 66.28ha)

The Vinkman property contains an existing dwelling in the northeast of the property, along with two relatively large dams in sequence at the terminus of Big Scrub Creek. The eastern third of the property is relatively steep forested land with a westerly aspect. The balance of the property is flat and contains a mix of exotic dryland pasture and scrub.

The property is currently managed as a large 'hobby farm', with a small number of pigs, goats, sheep and emu kept within fenced paddocks. The area of the proposed new lots is occupied by and surrounded by exotic dryland pasture on flat land in the north-west of the block.

Elliston property (CT 167611/2, 2187 Bruny Island Main Road; +/- 60.76ha)

The only built infrastructure on the Elliston property is a 'standing camp' at an elevated site in the south-west of the block overlooking Big Lagoon. The north-east of the property was cleared for dryland pasture in the recent past and is currently occupied by a mix of weedy exotic dryland pasture and regenerating cleared land. The eastern edge of the property adjoining the Bruny Island Airstrip contains healthy mature forest. The balance of the property contains a mix of coastal woodland, scrub, heath and wetlands.

The property is currently managed as a private reserve and used only for recreational purposes. The area of the proposed new lots on the Elliston property is occupied by and surrounded by weedy exotic dryland pasture and regenerating cleared land on gently undulating terrain in the north-west of the block.



Figure 1 – Site Location (Source: TheList 2020)

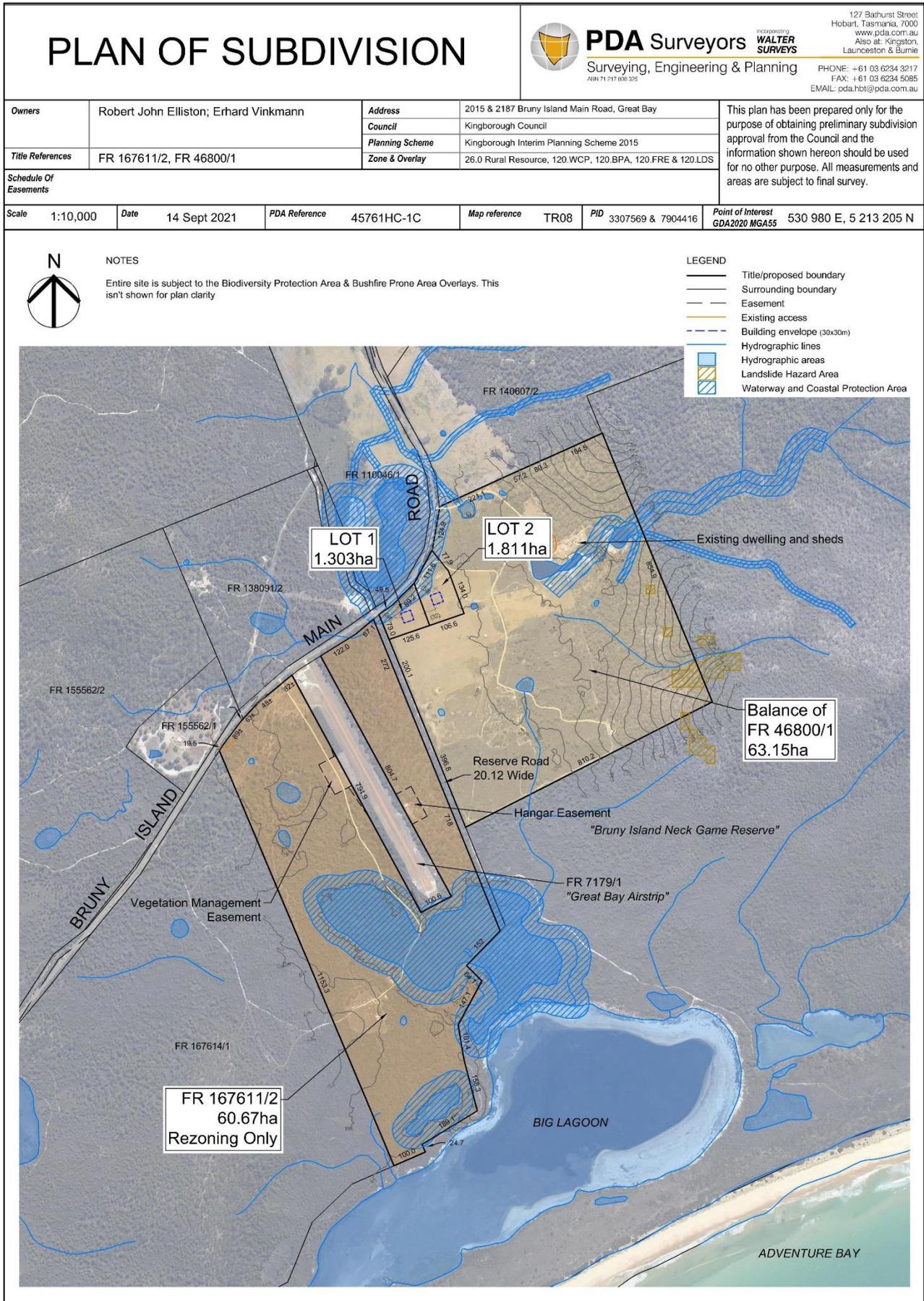


Figure 2 – Proposal Plan from PDA Surveyors

2.2 Development proposal

The proposed re-zoning is for both properties and is from Rural Resource to Environmental Living. The proposed three-lot subdivision is for the Vinkman property – two lots and balance from the parent title (see Figure 2).

3. Methodology

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

The Land Capability Assessment considers limitations to sustainable agricultural use of the land, including soil quality and depth, the risk of erosion or other hazards, water security, climate and topography. Generally, it is the most limiting attribute that determines the Land Capability class. If soils on their own do not constitute the most limiting attribute, then detailed soil profile analysis is not always warranted. In this case, given the obvious constraints to agricultural use evident from available remote data, owner interviews, the soils/substrate visible during the site visit and existing vegetation cover and condition, it was not considered necessary to take soil samples or conduct detailed analysis of soil profiles.

The following are the Land Capability classes defined by Grose (1999).

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 1 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 years out of ten in a rotation with pasture or equivalent during normal years.

- 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.
- 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.

4. Management history

The subject land lies at the junction of land traditionally used for pastoral purposes (land to the north extending around to Great Bay) and land with little productive potential around the Bruny Island Neck, most of which has been protected in a public reserve since 1979.

Based on owner interviews and historic aerial photos, it seems that no serious attempt was made to convert any of the subject land to improved dryland pasture until the early 1970s, although the flatter parts of the subject land were subject to disturbance prior to that, probably through regular burning to open up the vegetation and to create rough dryland pasture.

Historic aerial photography reveals that no areas of the land were converted to dryland pasture in 1964/65, although the sparse tree cover and predominance of scrub at that time does suggest some regular disturbance, which may have been frequent use of fire. By 1971/72 the flat land on the eastern half of the Vinkman property and at the northern end of the Elliston property had been converted to dryland pasture. Since then, there has been gradual regeneration of scrub across some of these cleared areas, with the current distribution of dryland pasture and regenerating cleared land/scrub largely established by 1999/2000. Previous attempts to farm the properties have proven unprofitable, hence the extent of land which has been allowed to regenerate to native vegetation.

Mr Elliston has not attempted to farm his land and manages it as a private reserve for conservation and recreational purposes.

Mr. Vinkman ran a tourism business on his property from 1991 to 2004 based on camel rides ('Camel-tracks'). At this time, he kept 16 camels on about 11ha of land and had to import 90% of their feed. Since then, he has utilised the property as a large 'hobby farm', keeping small numbers of pigs, goats, sheep and emu. He currently runs 20 sheep and goats and 2 emu on approximately 11ha of dryland pasture, as well as keeping half a dozen pigs in smaller enclosures. He imports about 80% of the feed required by his stock.

Excluding current areas of dryland pasture, the flatter areas of the subject land are currently occupied by a mosaic of woodland, scrub, heathland, regenerating cleared land and wetlands. Regenerating cleared land typically takes the form of scrub dominated by manuka (*Leptospermum scoparium*) and scented paperbark (*Melaleuca squarrosa*). The slow rate of recovery after clearing provides an indication of the generally poor growing conditions - several decades recovery in the south of the Vinkman property has resulted in a scrub community 1-2m high with only occasional emergent eucalypts.

5. Resources and Constraints

5.1 Land Area

On the face of it, both lots are large enough to support commercial agricultural activities (60ha+). However, due to a range of constraints, there are only relatively limited areas on each property that could be developed, especially on the Elliston property. Although there is some doubt about the detail of the incoming State Planning Provisions in the context of the Kingborough municipality, the likely constraints on clearing established native vegetation probably limit the available land to less than 6ha on the Elliston property and to around 20ha on the Vinkman property.

5.2 Topography

The steep forested slopes at the eastern end of the Vinkman property provide a fundamental constraint to development that is reinforced by the underlying substrate and the conservation values in this area.

5.3 Geology and Soils

The substrate over most of the subject land is mapped as Cenozoic cover sequences of 'undifferentiated quaternary sediments', with areas of Jurassic dolerite and marine sediments mapped at the eastern end of the Vinkman property (TheList, 2021, 1:250,000 Geology mapping; see Figure 3). No detailed soil mapping is available for the site. It is evident from the site visit that the marine sediments in the south-east of the Vinkman property are mudstone and that the undifferentiated quaternary sediments generally take the form of wind-blown sand deposits.

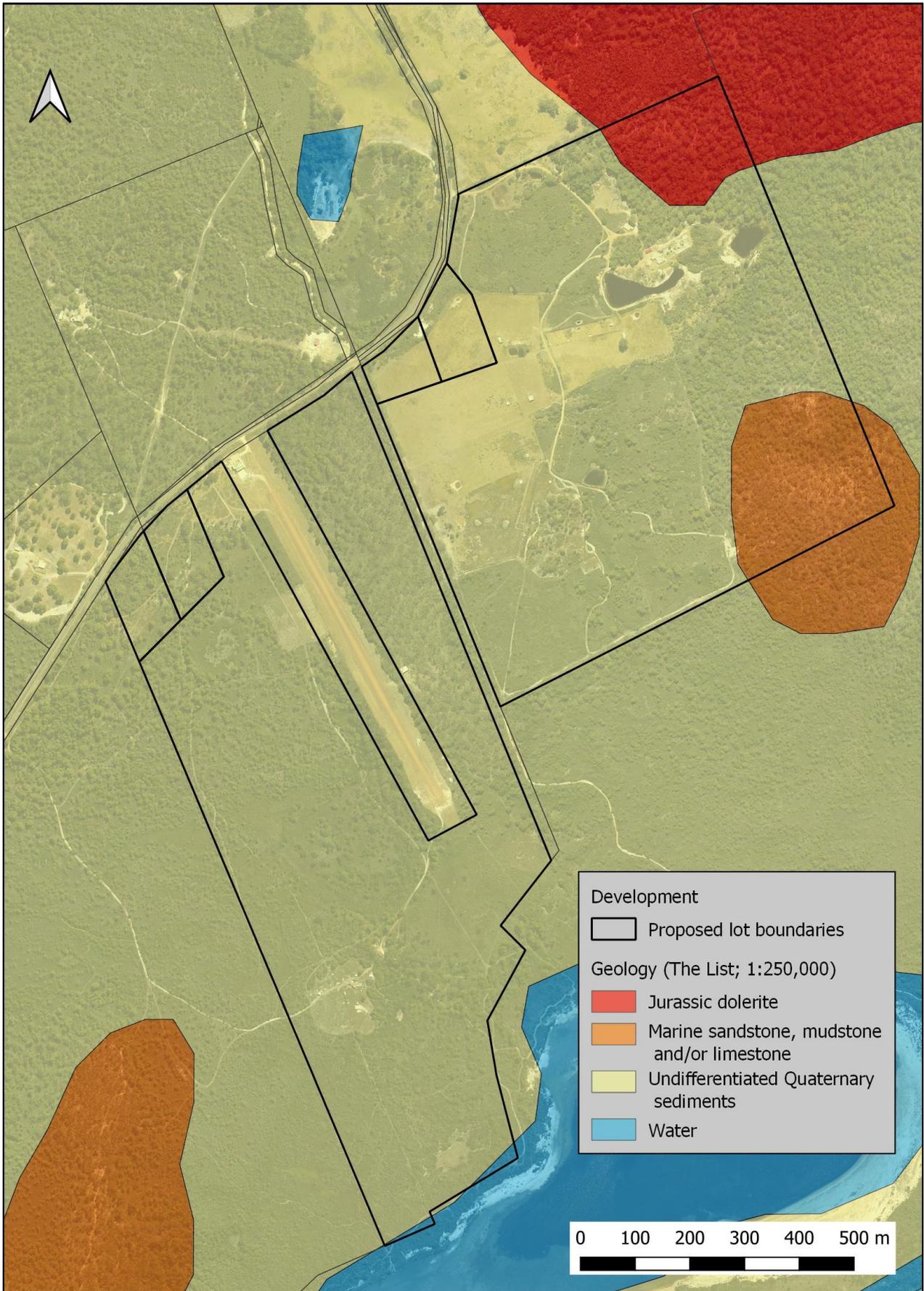


Figure 3 – Geology on the subject land (TheList, 2021)

Most of the Elliston property has a sandy soil profile derived from wind-blown sands, with only small areas of more productive soil resulting from accumulation of organic matter in topographic depressions (which are in turn constrained by poor drainage). The geology and surface soils on the Vinkman property are more diverse, but the flatter land is still heavily influenced by wind-blown sand, as well as containing some areas of clay substrate (owner pers. comm.). Mr Vinkman also identifies soil pH as a limiting factor on some of his existing dryland pasture.

The soil vulnerability layer on TheList identifies a range of potential soil-related constraints:

- a high or moderate salinity hazard is identified for most low-lying parts of the subject land, including over 80% of the existing dryland pasture on the Vinkman property,
- a high waterlogging hazard is identified for the low-lying parts of the subject land, including all the existing dryland pasture on both properties and
- a high or moderate wind erosion hazard is identified for the whole of the subject land, with a moderate hazard identified for all the existing dryland pasture on the Vinkman property.

Given the obvious constraints to agricultural use evident from owner interviews, available remote data, the soils/substrate visible during the site visit and existing vegetation cover and condition, it was not considered necessary to take soil samples or conduct detailed analysis of soil profiles for the purposes of this report.

5.4 Water

Seasonal conditions, particularly low, unpredictable and variable rainfall, are identified by the owners as a significant constraint to commercial agricultural use of the properties.

The closest weather station to the site providing long-term averages is at a nearby property approximately 1km to the north ('Robeville'), where records were kept between 1984 and 2012. Average annual rainfall recorded at this station was 686mm, with a median of 700mm (Bureau of Meteorology, 2021). In terms of current weather stations, the closest weather station to the site is at another nearby property approximately 1km to the north ('Cheverton'), where records have been kept since 2012. Average annual rainfall recorded during this period was 619mm (Bureau of Meteorology, 2021).

There are currently two relatively large dams on the Vinkman property in sequence at the terminus of Big Scrub Creek. The exact size of these dams is not known, but total capacity is probably around 10MI. There is an undeveloped irrigation potential associated with these existing water storages, but the dams themselves are ultimately subject to rainfall constraints as there is no alternate means of filling them.

6. Planning, Conservation & related issues

The potential for land clearing to expand agricultural activities is currently significantly constrained by the provisions of the *Kingborough Interim Planning Scheme 2015*, with the Biodiversity Protection Area overlay applying to the whole site. As a result, dryland pasture or cropping potential is effectively limited to existing cleared land and any other areas that can meet the

definition of ‘previously cleared and converted land’. This amounts to less than 6ha on the Elliston property and to around 20ha on the Vinkman property.

While potential to clear vegetation under the incoming State Planning Provisions is uncertain at this stage in the context of the Kingborough municipality, a strong commitment by the Council to preserve native vegetation and landscape values on Bruny Island is likely to remain. This could result in identification of most of the vegetation on the subject land as ‘priority vegetation’ under the Natural Assets overlay, which would result in similar constraints to further land clearing to those existing under the current scheme.

There are areas of vegetation and habitat on the subject land that are considered High Priority Biodiversity Values pursuant to Table E10.1 of the current Scheme, including threatened black gum (*Eucalyptus ovata*) forest and woodland (DOV), silver peppermint (*E. tenuiramis*) forest on mudstone and wetland communities. These areas will be identified and protected as priority vegetation under the State Planning Provisions.

7. Land Capability Assessment

The current owners recognise that the subject land is poorly suited to agricultural pursuits and that past attempts at farming have yielded poor economic returns and resulted in degraded environmental and landscape values. As a result, one of the blocks is currently managed as an informal private reserve and the other could be characterised as a large ‘hobby farm’.

The land is mapped under the Land Capability layer on TheList (DPIPWE, 2021) as Class 6 – ‘land marginally suited to grazing due to severe limitations.’ The combination of constraints evident at the site, including the limited scale of land available for development, substrate and soils, water security and potential hazards, all support this classification:

- given the very small area of land available for development on the Elliston property and the range of constraints identified, this property clearly has very little agricultural potential,
- in the case of the Vinkman property, productivity improvements on existing areas of dryland pasture may be possible through irrigation from available water storages, soil enrichment, application of fertiliser and/or improved drainage, but it is unlikely the necessary investment could be justified for such a small area (~11ha), particularly given the relative lack of water security at the site, and
- given potential salinity and wind erosion risks, any short-term gains through more intensive farming efforts may also have longer term costs.

Table 1 outlines broad constraints to various commercial agricultural activities in Tasmania and highlights the unsuitability of the subject properties to a commercial farming operation.

Table 1. *Biophysical resource constraints for some commercial agricultural land uses*

Constraint	Livestock			Cereals	Vegetables	Berries	Orchard fruits & vines	Plantation forestry
	Sheep (wool)	Beef Cattle	Dairy Cattle					
Land capability class	3-6	3-5/6	3-5	1-4	1-4	1-4/5	1-4/5	4-6
Scale for viable commercial enterprise (ALMP)*	333ha	333ha	40ha	133ha	25ha	10ha	10ha	-
Irrigation water	Not required	Not required	Often required (4-6Ml/ha)	Not required	Required (2-6Ml/ha)	Required (1-3Ml/ha)	Required (2-3Ml/ha)	Not required
Rainfall	Lower rainfall areas	-	High rainfall (or irrigation)	-	-	High rainfall (or irrigation)	-	Above 700-800mm
Comments relative to subject land	Inadequate land area for commercial viability	Inadequate land area for commercial viability	Inadequate water resources	Inadequate land area & unsuitable land class	Inadequate water resources & unsuitable land class	Inadequate water resources & unsuitable land class	Inadequate water resources & unsuitable land class	Inadequate land area and rainfall

*The Agricultural Land Mapping Project (Tas. Dept. of Justice, 2017)

8. Future Agricultural/Horticultural opportunities

Agriculture is an innovative space, and it is difficult to second guess future commercial opportunities, particular where boutique production may be combined with complementary land uses. In terms of preserving any agricultural potential on the subject land that may emerge from future innovation or from boutique production associated with other uses such as tourism or visitor accommodation, the maintenance of large balance lots under this proposal preserves nearly all of the latent agricultural potential in the parent lots.

9. Conclusion

The subject land meets the definition of Class 6 land pursuant to the land capability classification system of Grose (1999). The scale of land available for development and other site constraints dictate that the land is probably only suitable for ‘hobby-scale’ agricultural activities.

10. References

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