(19)

Gary Kingston
Bream Creek.

SORELL COUNCIL

13 AUG 2021

RECEIVED

To the Sorell Council,

9th August, 2021

Re Sorell Council Draft Local Provisions Schedule

We are submitting a representation regarding the proposed zoning of the properties: Derford Pty Ltd, B W Kingston & G W Kingston in the Sorell Council Draft Local Provisions Schedule (LPS). The draft LPS is proposing that the property be rezoned from Rural Resource to Agricultural.

This proposed zoning has significant inconsistencies with the land's agricultural capability and with our strategic planning for continued viability, it also doesn't take into consideration the current alternative existing uses on this and other surrounding properties. The attached reports give analysed evidence that the proposed Agricultural zoning of our property, is inconsistent with the guidelines set out by the Tasmanian Planning Commission. The attached reports give details which support a Rural zoning over most, if not the entire, property.

We are of the view that the draft LPS be amended to include Derford Pty Ltd, B W Kingston & G W Kingston in the Rural Zone.

The attached professional and scientific report gives a recent and detailed analysis and mapping of the farm's agricultural capabilities and constraints.

We hope the council will consider this report and we look forward to liaising with council's recommendation to the commission after full consideration of the region's council endorsed, land use capabilities and potentials.

Yours Sincerely
Gary Kingston

Overview of Existing and long-term use of Properties

Successive land holding

This property started as an original land grant in the 1840's and has been managed by the Kingston family since then. The agricultural viability, historically on this property, was based on multiple and flexible land usages. It operated with a sawmill from the 1950's to the late 1980's also a timber dressing wood working shed which is still in operation on a small scale. It also operated the Bream Creek youth hostel. In the early years the local general store and blacksmith shop operated on the property and the blacksmiths forge is still operational.

Property characteristics

Derford property (which includes B W Kingston & G Kingston) is a 380ha property comprising 24 individual titles of which 290ha is located on the Ragged Tier with Bream Creek on the eastern side and Copping to the south. The remaining 90ha is to the west at Kellevie.

These four properties are not connected, they are split by other landholders. The property at Copping has the Arthur Highway as one boundary and the Kellevie Road as the other. The property at Kellevie has the Kellevie Road as one boundary and Woods Road on the northern boundary with Stokes Road running through the centre.

The property at Bream Creek has the Bream Creek Road dissecting parts of the property also splitting titles leaving small unusable pieces of land. The Ragged Tier is a steep rocky tier with elevation ranging from forty metres to three hundred metres dissected by steep gullies at close, random intervals.

Please refer to the attached map:

Existing Uses

These properties have multiple existing uses. These include a well-established free camping ground and farm stay, a walking track for tourism, substantial private timber plantations, 25 years established eucalyptus Nitens seed orchard, small timber mill, and firewood operation. There is also a small sheep and beef grazing enterprise with a combined DSE of 4000 which only sustainable on normal rainfall years.

There are also established Landcare projects totalling around 12ha on the properties. These projects were to revegetate some of the badly eroded landslides and steep gullies.

Surrounding use

The property borders the Falls Festival, Cape Bernier Vineyard and wine tasting facility, Rochford Hall Wedding events and the Marchwiel developments. There are also private timber reserves on southern the southern boundaries and northern boundaries of the property on the Raggered Tier. There are 17 residential houses on both internal and external boundaries.

CONSTRAINTS

Water

- Small water holes for livestock only, regularly run out in dry years.
- The slope of this land is too steep to construct dams.
- Dispersive soils not suitable for dam construction (see overlay).
- Poor water quality. Salinity 3000ppm+ at Kellevie, suitable for livestock only.
- No irrigation.

Topography

- There are numerous landslips and erosion.
- Too steep and rocky to cultivate. Large areas are unsafe for machinery use.
- Dispersive soils (view overlay).
- Over 10km of public roads either border or run through the main farming practice.
- South facing slopes on property result in poor growth and poor drainage. Also infested with blackberry and gorse.

Other

- Fragmented property.
- Many small and surrounding titles creating issues to conform with setbacks and buffer zones.
- Evaluation. Majority of the existing titles are already valued over the $50,000 threshold.

Rural Use Validation Report

Derford Pty Ltd

285 Bream Creek Road

Bream Creek

Tas 7175

The current range of use of this property is:

1. Beef and sheep grazing
2. Farm Stay accommodation
3. Eucalyptus Nitens seed production
4. Timber production
5. Firewood processing
6. Tourist campsite and accommodation
7. Wood working workshop
8. Eucalyptus seed cleaning and drying facility for plantation forestry

Viability for this property has been dependent upon diversifying from agricultural use.

Rural Zoning Criteria

20.1.1 (a)	Constrained agricultural use: Topographical and environmental characteristics: as detailed in the Nicolbrook Consulting agricultural report. Other characteristics: High scenic and tourism value as defined by scenic overlay in the LPS Potential protection of specific environmental values Landcare projects established on property
20.1.1 (b)	A range of use and development is currently in operation which requires a rural location to operate: Farm Stay accommodation Eucalyptus Nitens seed production Timber production Firewood processing Tourist campsite Eucalyptus seed cleaning and drying facility for plantation forestry

	The use and operation are compatible with agricultural use as demonstrated by its type.
20.1.1 (d)	The use and operation minimize adverse impacts on the surrounding agricultural, residential and tourism uses. Management practices are highly considerate of all the surrounding uses in its strategic layout and internal business operations.
20.1.2	The current use operates on the constrained areas of the property which are unsuitable for viable grazing minimalizing the conversion of agricultural land for non-agricultural use.
20.1.3	The scale and intensity are appropriate for a rural location and does not compromise the surrounding settlements.

RZ 1	The land is situated in a non-urban area with highly constrained agricultural use due to topography, environment, regional development, and scenic characteristics.
RZ 2	The request for zoning this property for Rural (currently drafted for the Agricultural Use Zone), be zoned as Rural as it is more relevant to the Zone purpose as per the Guideline No.1 Local Provisions Schedule: zone and code application.
RZ 3 (a)	The agricultural report clearly demonstrates the lack of potential for agricultural use and the lot is not an integral part of a larger farm holding.
RZ 3 (b)	Significant constraints are demonstrated by the agricultural report from Nicolbrook Consulting.
RZ 3 (c)	The land utilises pockets of farmland in a scenic setting as per the LPS scenic overlay. The scenic setting is crucial to the property's whole farm diversification plan.
RZ 3 (d)	Due to the constraints for agricultural use on this property and the need for significant diversification strategies for viability on this scenic overlaid property, it requires rural zoning to continue operations.
RZ 3 (e)	Due to the constraints for agricultural use. Refer agricultural report. There needs to be a more detailed strategic analysis of the property and surrounding area as identified by the LPS scenic overlay already in place.

Agricultural Report

Garry Kingston, Bream Creek

August 2021

Nicholbrook
Horticultural Consulting

Nicholbrook
Horticultural Consulting

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Document status:

Date	Status	Issue Number	Reviewed by	Transmission method
9/8/21	Draft	1	L Peterson	Email
11/8/21	Final	2	L Peterson	Email

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Executive Summary

This report examines the land capability and classification of property in the Bream Creek owned by G. Kingston in respect to the proposed rezoning of the property from Rural Resource under the Tasmanian Interim Planning Scheme 2015, Sorell to zoning of Agriculture under the proposed statewide Tasmanian Planning Scheme, Local Provisions Schedule (LPS) Sorell. T

he property PID 5960043 consists of 2 titles reference 103575/1 and 103575/2 at Bream Creek.

The land capability and soils assessment has demonstrated that the property at Bream Creek has constraints for agricultural use.

This is predominantly due to the assessment criteria has deemed the Bream Creek region to have irrigation potential, a key factor in undertaking the criteria analysis to determine suitability for Agriculture Zone.

Based on the Constraints Analysis Criteria Assessment whilst one property has been correctly assessed as Agricultural Zone, others have been incorrectly assessed and these do not meet the requirements to be zoned Agriculture under the proposed LPS and consideration should be made for reviewing the methodology applied to these titles.

Introduction

This report, by Dr Lee Peterson, Principal Consultant, Nicholbrook Pty Ltd, has been prepared to provide an expert agricultural assessment of the property owned by G. Kingston.

This report reviews the current agricultural usage of the present land titles and the surrounding region in relation to the Land Capability and Land Classification. This includes soils, aspect, topography, water resource, and impact in relation to agricultural activities.

Qualifications and Experience

Dr Lee Peterson is an agricultural science graduate from the University of Tasmania with 35 years of experience in primary industry production, research and consulting. Dr Peterson has worked with a variety of farming enterprises throughout Tasmania and other mainland states. A detailed outline of experience and qualifications is attached in Appendix A.

Location

G. Kingston currently owns the property PID 5960043 consists of 2 titles reference 103575/1 and 103575/2 at 285 Bream Creek Road, Bream Creek. The property resides on the eastern side of the Ragged Tier over an elevation rise of 190 metres.

Land Classification

Land capability of the property was assessed according to the Tasmanian Land Capability Classification System (Grose, 1999). Land is ranked according to its ability to sustain a range of agricultural activities without degradation of the land resource. Class 1 land is the best land and Class 7 land is the poorest. A wide range of limitations are considered and the most significant limitation determines its final classification, or ranking. Limitations in relation to soils include stoniness, topsoil depth, drainage and erosion hazard. Limitations to topography include slope and associated erosion hazard. Limitations relating to climate include low rainfall and frost.

A full explanation of the Land Capability System is available in the *DPIPWE Tasmanian Land Capability Handbook*.

The classification system assumes an average standard of land management and that production will be sustainable if the land is managed according to the guidelines of its Class. The system does not take into account the economics of production, distance from markets, social or political factors, all of which can change over time.

Class 4 land is described as follows:

> 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 minimize 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 land is described as follows:

> Land with slight to moderate limitations to pastoral use but which 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 effects of limitations on the grazing potential may be reduced by applying appropriate soil conservation measures and land management practices.

Class 6 land is described as follows:

> 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.

A detailed, site specific assessment of land classification of the property was undertaken by the author on during the week of the 19th July 2021.

The attached map (Appendix B) illustrates the extent of each land capability class within the properties.

Table1 provides a detailed description of each land capability class of the Bream Creek property.

Table 1: Land Capability Summary – Bream Creek property PID 5960043

Land Capability Class[1]	Area (ha)	Limitation	Soil Description	Cropping Suitability Rating [2]	Land Use Types [3]	Cropping Frequency [4]
5e	13.4	Mass movement (landslip)	Ferrosol, red soil on basalt high slopes >30%	Not suitable	DP	Annual but low stocking rates due to erosion risk
5x	7.4	Topography, complex	Ferrosols on Basalt transitioning to Podzols on Dolerite (10->30%).	Not suitable	DP/F	Annual
6	2.8	Native vegetation, high slopes > 30%	Ferrosols on higher slopes transitioning to Podzols on Dolerite with rock outcrops and steep slopes	Not suitable	DP/F	Annual

[1] *Land Capability Class*

Land capability was assessed according to the Tasmanian Land Capability Classification System (Grose, 1999). Land is ranked according to its ability to sustain a range of agricultural activities without degradation of the land resource. Class 1 land is the best land and Class 7 land is the poorest. A wide range of limitations are considered and the most significant limitation determines its final classification, or ranking. The classification system assumes an average standard of land management and that production will be sustainable if the land is managed according to the guidelines of its Class. The system does not take into account the economics of production, distance from markets, social or political factors, all of which can change over time.

Cropping Suitability Rating

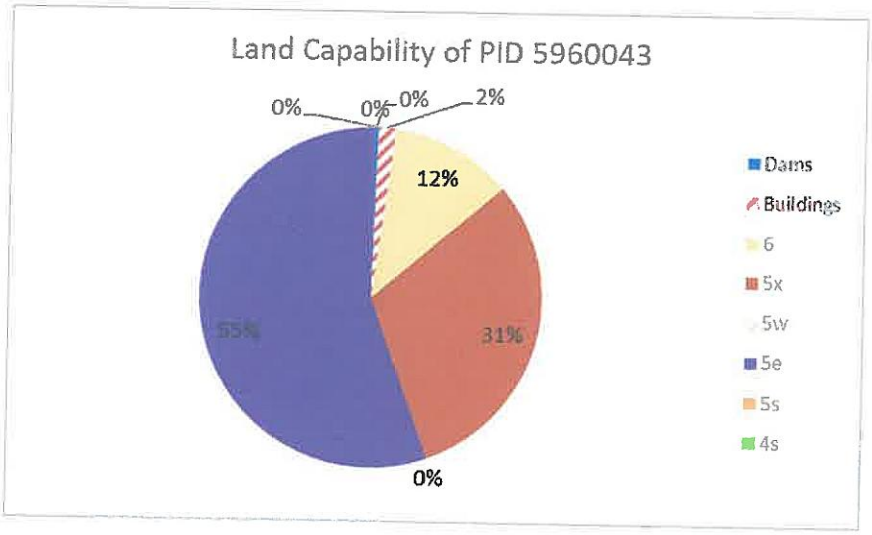
- *High - Soils with no or only slight limitations to use. Can support a wide range of intensive cropping and grazing activities. Cropping can occur almost continuously with only occasional pasture breaks.*
- *Moderate - Soils with moderate limitations to use. Conservation practices and sound management are needed to overcome limitations. Regular short-term pasture breaks are also required.*
- *Low - Soils suited to occasional cropping through severe limitations. Major conservation treatments and/or careful management required to minimise degradation.*
- *Very low - Very limited cropping with long pasture breaks (greater than 8 years).*
- *Unsuitable - No cropping should be undertaken.*

[3] *Land Use Types*

- *DP (Dryland pasture)*
- *IP (Irrigated pasture)*
- *DS (Dryland surface cropping; i.e. cereals and poppies)*
- *ISD (Irrigated surface cropping – dry harvest; i.e. cereals, poppies, carrot seed and grass seed)*
- *ISW (Irrigated surface cropping – wet harvest; i.e. peas, beans and broccoli)*
- *IRC (Irrigated root cropping; i.e. potatoes and carrots)*
- *H (Horticulture; i.e. grapes, olives and fruit)*
- *F (Forestry)*

[4] *Cropping frequency is given as an approximate range only. It assumes that best practices are being implemented in relation to soil management, sustainable crop rotations undertaken, and that seasonal and long term climatic conditions are favourable for cropping activities. Best practice soil management includes cultivation at an appropriate soil moisture level so as to maintain soil structure, management of cropping residues to assist in maintaining soil structure, and implementation of the most appropriate cultivation techniques. The lower range pertains to a more intensive cropping rotation (i.e. typically including irrigated root cropping) and/or less favourable seasonal/growing conditions. The upper range pertains to non-intensive cropping rotations (i.e. cereals and poppies) and/or more favourable seasonal/growing conditions (see Appendix 1). Cropping frequency does not include irrigated pasture which can be irrigated annually.*

Charts of assessments are presented in charts below:



The Bream Creek property on the eastern side of the Ragged Tier and is predominantly Class 5e, erosion risk due to landslip. The balance is Class 5x and Class6. There are large changes in elevation and transected by gullies that preclude all enterprises other than dryland pasture and forestry.

Soils

The Bream Creek property resides on the eastern side of the Ragged Tier, a Basalt outcrop that lays over Dolerite so that the soils transition as they progress eastward down the slope. The Ferrosols derived from Basalt are general very fertile but theses are on high slopes and not significant proportion of the property area. These are unsuitable for cropping and are prone to mass movement as observed on this property. The Podzols on Dolerite are less fertile, imperfectly drained texture contrast soils developed on Jurassic dolerite bedrock and colluvium on rolling to steep slopes. These soils regularly have rocky outcrops on the steep slopes and hilltops.

Climate

The climate of the region is described by Musk and Derose (2000) as temperate climate moderated by the proximity to sea. As a result frost risk is assessed as low. Nearest temperature data is available for Dunnalley, station number 94254, which is some 10 kms away. The lowest temperature recorded is 0.7 degrees in the month of July.

According to the rainfall information supplied by the Bureau of Meteorology, the weather station (Number 92005) at Bream Creek has recorded a mean annual rainfall of 762 mm. The highest annual rainfall recorded is 1195mm and the lowest recorded is 394mm demonstrating that the rainfall in this region is highly variable.

The Bream Creek property proximity to the Tasman Sea and elevation makes it highly exposed to winds which significantly limits opportunity for cropping or horticulture. Viticulture is undertaken nearby the properties but they are at lower elevations in gullies with tree protection, none has been attempted on slopes.

Water Resources

There are no dams with irrigation potential on the property.

The Bream Creek property has a number of small livestock watering dams utilizing surface water runoff collection. No dams of sufficient size for irrigation are present and no further permits for dams are allowed within the region. The elevations and topography further limit any irrigation potential.

No irrigation scheme is present in the region. Tasmanian Irrigation have no long-term plans for irrigation feasibility in the region as the area potentially available for irrigation is small and supply and distribution will be expensive, therefore not meeting the business case requirements. In addition, the closest resource is the Carlton River which is ephemeral in nature and has poor water quality due to the catchment geology that is unsuitable for sustainable production of horticultural crops. Extension of the South East Irrigation Scheme to this region would be cost prohibitive and therefore not meeting the business case requirements.

Current Land Use

Current land use is grazing.

Tasmanian Planning Scheme Assessment

The following are assessments in relation to the Zone Application Guidelines of the proposed Tasmanian Planning Scheme – Agriculture.

AZ1	The properties are identified in the 'Land Potentially Suitable for Agriculture Zone" but titles do not comply with the criteria assessment (see later section)
AZ2	Not applicable – The properties are not within the Significant Agriculture Zone in the interim planning scheme
AZ3	Titles have not been correctly assessed in relation to Potentially Constrained Criteria.
AZ4	The 'Potential Agricultural Land Initial Analysis' layer encompasses the property titles but has been incorrectly assessed as indicated above
AZ5	The titles are not appropriate for split zoning
AZ6	Some titles may be considered for alternate zoning, in this case Rural, as not integral to management of a larger farm holding and there are significant constraints to agricultural use that have been incorrectly assessed.
AZ7	Not applicable as land currently assessed as "Land Potentially Suitable for Agriculture Zone'

Constraints Analysis

Land within the region has been initially assessed for zoning Agriculture based on a range of criteria under the "Agricultural Land Mapping Project" 2017 (ALMP) and then further assessed for the Southern Group of Councils.

Below is a summary of the criteria assessment for the titles reported here:

					Constraints Criteria						
Entity	volume	folio	pid	Ha	ES1 - 10ha	ES2 - 25ha	ES3 - 40ha	ES4 - 133ha	ES5 - 333ha	Comment	Constraint
G Kingston	103575	1	5960043	7.987	No	No	No	No	No	No criteria met	2B
G Kingston	103575	2	5960043	16.360	No	No	No	No	No	No criteria met	2B

Note: Criteria ES1, ES2 and ES3 all require irrigation. Under the initial ALMP the region was deemed to have irrigation potential. Given this is not the case these criteria are not valid. In addition, the Enterprise Suitability Analysis data utilised, especially areas suitable for viticulture are inaccurate and not reflected in the on-site survey.

Recommendation

Based on the Constraints Analysis Criteria Assessment, Bream Creek property has been incorrectly assessed and does not meet the requirements to be zoned Agriculture under the proposed LPS and consideration should be made for reviewing the methodology applied to these titles.

References

Grose C.J. (1999) Land Capability Handbook: Guidelines for the Classification of Agricultural Land in Tasmania. 2nd Edition, DPIWE, Tasmania

Musk R.A. and DeRose R.C. (2000) Land Capability Survey of Tasmania. Derwent Report, Land Capability Study, DPIWE, Tasmania

Agricultural Land Mapping Project - Identifying land suitable for inclusion within the Tasmanian Planning Scheme's Agriculture Zone (2017), Department of Justice, Planning Policy Unit

Declaration

I declare that I have made all the enquiries which I consider desirable or appropriate, and no matters of significance which I regard as relevant have, to my knowledge, been withheld.

Dr Lee Peterson B. Agri. Sci (Hons), ISHS, MAICD, CPag
Principal Consultant
Nicholbrook Horticultural Consulting
August 2021

Nicholbrook
Horticultural Consulting

Lee Peterson

Principal Consultant

Qualifications:

B Ag Sc (Hons) University of Tasmania

PhD (Ag Science) Horticultural Research Group University of Tasmania

Professional Associations:

Certified Practicing Agriculturalist (CPAg)

Company Directors Graduate Diploma 2007

Member of the International Society of Horticultural Science

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Dowsing Point TAS 7010

Introduction

Dr Lee Peterson is an agricultural professional with extensive expertise in many aspects of agricultural production gained over a period of 35 years in industry, consulting and research. Lee has considerable experience in the areas of new crop development, horticultural production systems, plant extracts and waste stream management in agricultural.

Professional Experience

2020-present	Director Nicholbrook Horticultural Consulting
2018-2020:	National Technical Manager BerryWorld
2011–2018:	Principal Consultant Macquarie Franklin
2005-2011:	Executive Director – Agribusiness Agricultural Resource Management (AGRM Pty Ltd)
2000- 2004:	Agricultural Resource Management Group
1998- 1999:	Serve-Ag Senior Project Agronomist
1996-1997:	Private agricultural consultancy and contract research provider
1993- 1995:	General Manager of Essential Oils of Tasmania
1989- 1993:	Production Manager of Essential Oils of Tasmania
1985- 1989:	Post-Graduate at the University of Tasmania
1984- 1985:	Agricultural Officer with the Tasmanian Department of Agriculture, Pasture and Field Crops Branch

Recent Projects

- Technical advisor to Houston's Farm roles include production system development, variety assessment, market research, crop scheduling, pesticide strategies, IPM program and representation of the company in respect to technical issues such as biosecurity and IPM
- Tasmanian contractor for the CSIRO land use and management information system estimating changes in soil carbon from changes in land use, an Australian Greenhouse Organisation project
- Project manager for the agricultural component of 8 wastewater reuse developments including Tasmania's two largest schemes, Brighton and Clarence.

- Agricultural advisor to United Utilities bid to develop effluent reuse for Ballarat North waste water treatment plant.
- Independent advisor and author to the "Environmental Guidelines for Recycled Water Use in Tasmania, 2002".
- Development of annual soil monitoring programs for Clarence, Brighton and Collinsvale reuse schemes.
- Project Manager for the land capability assessment for the Meander Dam Development Proposal
- Agricultural potential study for the Jordan Dam Feasibility Study
- Review of the Australian Lavender industry for RIRDC
- Project manager for Rekuna Pty Ltd, a Panax ginseng production company supported by an AusIndustry Commercial Ready Grant
- Climatic and resource suitability assessment for salad vegetable production on Australia's east coast, including risk assessment
- Technical advisor to Raspberry Fresh, out of season glasshouse raspberry production company
- Study tour and technical review of latest developments in hydroponic production of salad vegetables, Canada, Belgium, Holland and Italy
- Project manager for field services operation establishment for Tasmanian Poppy Enterprises
- Technical advisor to South Pacific Oils, essential oil production and extraction company, Vanuatu – Sandalwood production and research
- Technical resource to Southern Water for the coordinate and manage Tasmania's largest agricultural recycled water irrigation scheme, the Clarence Recycled Water (CRW)
- Technical advisor to Heydon Park Olives, Talmalmo, Victoria
- Production system economic assessment and inputs for TIDB feasibility studies – Musselrow, Great Forester and South East irrigation scheme developments
- Land capability assessments for numerous properties throughout rural Tasmania to support agricultural development, subdivision of non-agricultural land and expert witness reporting for legal representation
- Review of Industrial Hemp as a commercial cropping opportunity in Tasmania
- Review of pyrethrum industry strategic plan and industry development officer program
- Economic and socio analysis of the impact of blueberry rust incursion to the Tasmanian blueberry industry

Areas of Expertise

- New crop development including essential oils, culinary herbs, medicinals and leafy vegetables
- Design of innovative harvest systems for new crops
- Waste water and effluent reuse
- Agricultural research and development
- Sustainable agricultural system design and implementation
- Environmental monitoring
- Plant physiology
- Land capability assessment
- Group training
- Agribusiness and financial management
- Socio and economic impact assessment

Nicholbrook Expertise

- Economic studies
- Business and farm management
- Feasibility studies
- State and regional development
- Irrigation and water development
- Land capability and mapping
- Natural resource management
- Training and extension
- Technical agricultural consulting

- Site assessment, property liaison and development of Irrigation and Ground Water Management Plans for effluent management of Tassal hatchery expansion at Ranelagh and waste processing plant at Triabunna including representation to EPA.
- Quinoa trial coordination for commercialisation of an emerging "super food" in Australia
- Review of pyrethrum industry strategic plan and industry development officer program
- Market, production and feasibility study of medicinal cannabis production for Tasmanian Alkaloids
- Importation of new varieties and coordination and production system development for BerryWorld Australia in Tasmania and Queensland

Land Capability Assessment B. Kingston PID 5960043

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Horticultural Consulting

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Agricultural Report

Derford Properties Kellevie and Bream Creek

August 2021

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Executive Summary

This report examines the land capability and classification of properties in the Bream Creek and Kellevie regions owned by Derford Pty Ltd in respect to the proposed rezoning of the property from Rural Resource under the Tasmanian Interim Planning Scheme 2015, Sorell to zoning of Agriculture under the proposed statewide Tasmanian Planning Scheme, Local Provisions Schedule (LPS) Sorell.

The properties examined are PID 3265354 title 166787/1 at Kellevie and PID 5960094 that comprises 5 titles 150735/1, 150735/2, 180395/1, 59/1334, 180395/2 and property PID 5960203 consisting of two titles, 227943/1 and 59/1334 all at Bream Creek.

The land capability and soils assessment has demonstrated that whilst the Kellevie property is suitable for zoning as Agriculture due to greater than 40 hectares of irrigable pasture and irrigation available, the properties at Bream Creek have constraints.

This is predominantly due to the assessment criteria has deemed the Bream Creek region to have irrigation potential, a key factor in undertaking the criteria analysis to determine suitability for Agriculture Zone.

Based on the Constraints Analysis Criteria Assessment whilst one title has been correctly assessed as Agricultural Zone, others have been incorrectly assessed and these do not meet the requirements to be zoned Agriculture under the proposed LPS and consideration should be made for reviewing the methodology applied to these titles.

Introduction

This report, by Dr Lee Peterson, Principal Consultant, Nicholbrook Pty Ltd, has been prepared to provide an expert agricultural assessment of the properties owned by Derford Pty Ltd..

This report reviews the current agricultural usage of the present land titles and the surrounding region in relation to the Land Capability and Land Classification. This includes soils, aspect, topography, water resource, and impact in relation to agricultural activities.

Qualifications and Experience

Dr Lee Peterson is an agricultural science graduate from the University of Tasmania with 35 years of experience in primary industry production, research and consulting. Dr Peterson has worked with a variety of farming enterprises throughout Tasmania and other mainland states. A detailed outline of experience and qualifications is attached in Appendix A.

Location

Derford currently owns three properties in the Sorell Council region. One property at Kellevie, PID 3265354 title 166787/1 is located at the northwestern side of the junction of Kellevie Road and Stokes Road. This property totals 51 hectares and is predominantly grazing and flat, only varying 20 metres in elevation. Annual cropping has been attempted previously with below average yield results. The property is bordered by Kellevie Road to the east, Stokes Road to the south that isolates a small parcel of the title in the road junction, grazing land to the west and north. There are 5 residences bordering the property, all which have been identified as potentially constrained in the information on TheList, "Land Potential Suitable for Agriculture.

One Bream Creek property PID 5960094 comprises 5 titles 150735/1 (21.55 hectares), 150735/2 (18 hectares), 180395/1 (20.2 hectares), 59/1334 (21.8 hectares), 180395/2 (1.0 hectare) is located at 280 Bream Creek Road. These titles total 82.5 hectares rising from 60 metres elevation in the eastern side to 290 metres. Bream Creek Road transects the southern area of the property dividing one title. There are 6 titles identified as potentially constrained in the information on TheList, "Land Potential Suitable for Agriculture adjacent to the property.

A second Bream Creek property, PID 5960203 consisting of two titles, 227943/1 and 59/1334 that total 46.6 hectares is approximately 1km to the north. This property is also transected by Bream Creek Road splitting one title into a very irregular shape. This title borders land proposed zoned Rural.

Land Classification

Land capability of the property was assessed according to the Tasmanian Land Capability Classification System (Grose, 1999). Land is ranked according to its ability to

sustain a range of agricultural activities without degradation of the land resource. Class 1 land is the best land and Class 7 land is the poorest. A wide range of limitations are considered and the most significant limitation determines its final classification, or ranking. Limitations in relation to soils include stoniness, topsoil depth, drainage and erosion hazard. Limitations to topography include slope and associated erosion hazard. Limitations relating to climate include low rainfall and frost.

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Class 4 land is described as follows:

> 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 minimize 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 land is described as follows:

> Land with slight to moderate limitations to pastoral use but which 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 effects of limitations on the grazing potential may be reduced by applying appropriate soil conservation measures and land management practices.

Class 6 land is described as follows:

> 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.

A detailed, site specific assessment of land classification of the property was undertaken by the author on during the week of the 19th July 2021.

The attached map (Appendix B) illustrates the extent of each land capability class within the properties.

Table , 2 and 3 provide a detailed description of each land capability class of the Bream Creek and Kellevie properties.

Table 1: Land Capability Summary – Bream Creek property PID 5960094

Land Capability Class[1]	Area (ha)	Limitation	Soil Description	Cropping Suitability Rating [2]	Land Use Types [3]	Cropping Frequency [4]
5w	1.9	Gullies and low lying, prone to wet areas	Ferrosol, red soil on basalt transitioning to podzols on dolerite	Not suitable	DP	Annual
5e	15.5	Mass movement (lanslip)	Ferrosol, red soil on basalt high slopes >30%	Not suitable	DP	Annual but low stocking rates due to erosion risk
5x	42.4	Topography, complex	Ferrosols on Basalt transitioning to Podzols on Dolerite (10->30%).	Not suitable	DP/F	Annual
6	17.7	Native vegetation, high slopes > 30%	Ferrosols on higher slopes transitioning to Podzols on Dolerite with rock outcrops and steep slopes	Not suitable	DP/F	Annual

Table 2: Land Capability Summary – Bream Creek property PID 5960203

Land Capability Class[1]	Area (ha)	Limitation	Soil Description	Cropping Suitability Rating [2]	Land Use Types [3]	Cropping Frequency [4]
5s	1.2	Soil depth and imperfect subsoil drainage	Podzols on Dolerite 10-15%)	Not suitable	H/DP	Annual
5w	4.6	Gullies and low lying, prone to wet areas	Ferrosol, red soil on basalt transitioning to podzols on dolerite	Not suitable	DP	Annual
5x	28.6	Topography, complex	Ferrosols on Basalt transitioning to Podzols on Dolerite (10->30%).	Not suitable	DP/F	Annual
6	9.8	Native vegetation and rock outcrops, high slopes > 30%	Ferrosols on higher slopes transitioning to Podzols on Dolerite with rock outcrops and steep slopes	Not suitable	DP/F	Annual

Table 3: Land Capability Summary – Kellevie Property

Land Capability Class[1]	Area (ha)	Limitation	Soil Description	Cropping Suitability Rating [2]	Land Use Types [3]	Cropping Frequency [4]
4s	44.8	Soil type, imperfectly drained sub soils	Podzols on mudstone (5-10%)	Very low	ISD/IP/DP	Annual
5w	1.4	Low lying, prone to wet areas	Podzols on mudstone (0-5%)	Not suitable	DP	Annual
5x	.6	Topography, complex	Podzols on mudstone (5-10%)	Not suitable	DP/F	Annual

[1] Land Capability Class

Land capability was assessed according to the Tasmanian Land Capability Classification System (Grose, 1999). Land is ranked according to its ability to sustain a range of agricultural activities without degradation of the land resource. Class 1 land is the best land and Class 7 land is the poorest. A wide range of limitations are considered and the most significant limitation determines its final classification, or ranking. The classification system assumes an average standard of land management and that production will be sustainable if the land is managed according to the guidelines of its Class. The system does not take into account the economics of production, distance from markets, social or political factors, all of which can change over time.

Cropping Suitability Rating

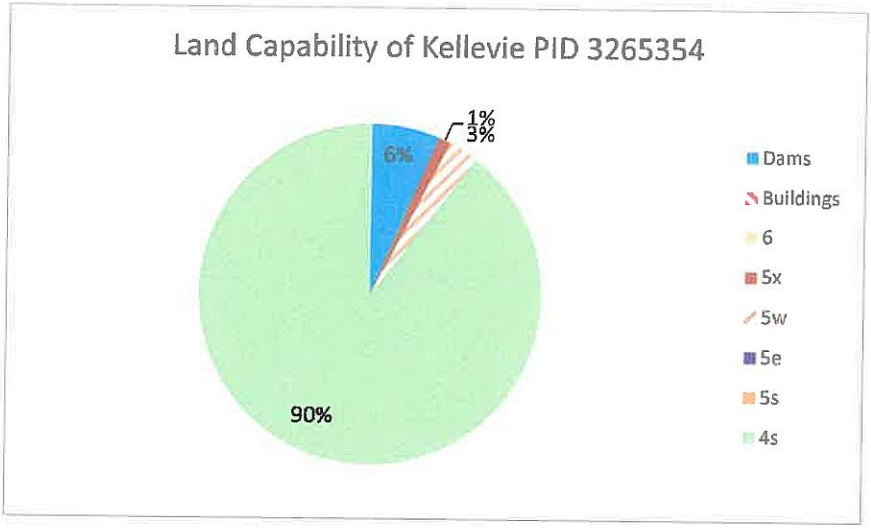
- *High - Soils with no or only slight limitations to use. Can support a wide range of intensive cropping and grazing activities. Cropping can occur almost continuously with only occasional pasture breaks.*
- *Moderate - Soils with moderate limitations to use. Conservation practices and sound management are needed to overcome limitations. Regular short-term pasture breaks are also required.*
- *Low - Soils suited to occasional cropping through severe limitations. Major conservation treatments and/or careful management required to minimise degradation.*
- *Very low - Very limited cropping with long pasture breaks (greater than 8 years).*
- *Unsuitable - No cropping should be undertaken.*

[3] Land Use Types

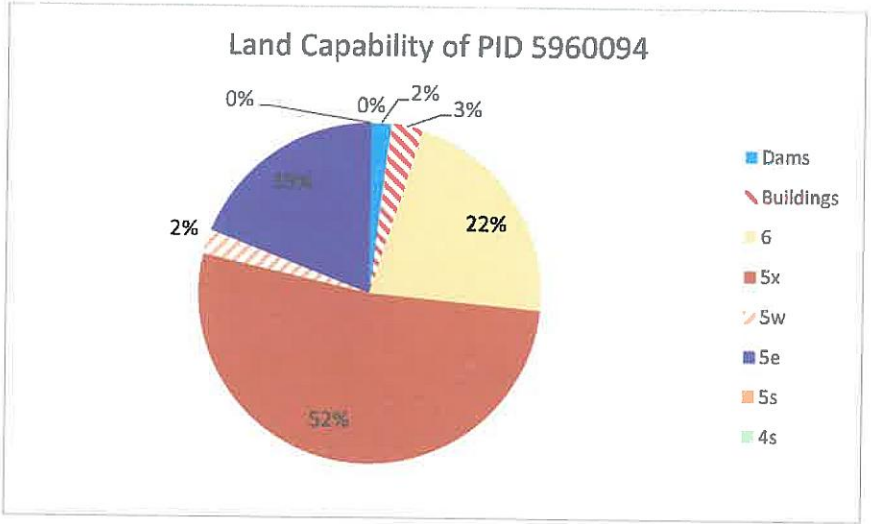
- DP (Dryland pasture)
- IP (Irrigated pasture)
- DS (Dryland surface cropping; i.e. cereals and poppies)
- ISD (Irrigated surface cropping – dry harvest; i.e. cereals, poppies, carrot seed and grass seed)
- ISW (Irrigated surface cropping – wet harvest; i.e. peas, beans and broccoli)
- IRC (Irrigated root cropping; i.e. potatoes and carrots)
- H (Horticulture; i.e. grapes, olives and fruit)
- F (Forestry)

[4] Cropping Frequency is given as an approximate range only. It assumes that best practices are being implemented in relation to soil management, sustainable crop rotations undertaken, and that seasonal and long term climatic conditions are favourable for cropping activities. Best practice soil management includes cultivation at an appropriate soil moisture level so as to maintain soil structure, management of cropping residues to assist in maintaining soil structure, and implementation of the most appropriate cultivation techniques. The lower range pertains to a more intensive cropping rotation (i.e. typically including irrigated root cropping) and/or less favourable seasonal/growing conditions. The upper range pertains to non-intensive cropping rotations (i.e. cereals and poppies) and/or more favourable seasonal/growing conditions (see Appendix 1). Cropping frequency does not include irrigated pasture which can be irrigated annually.

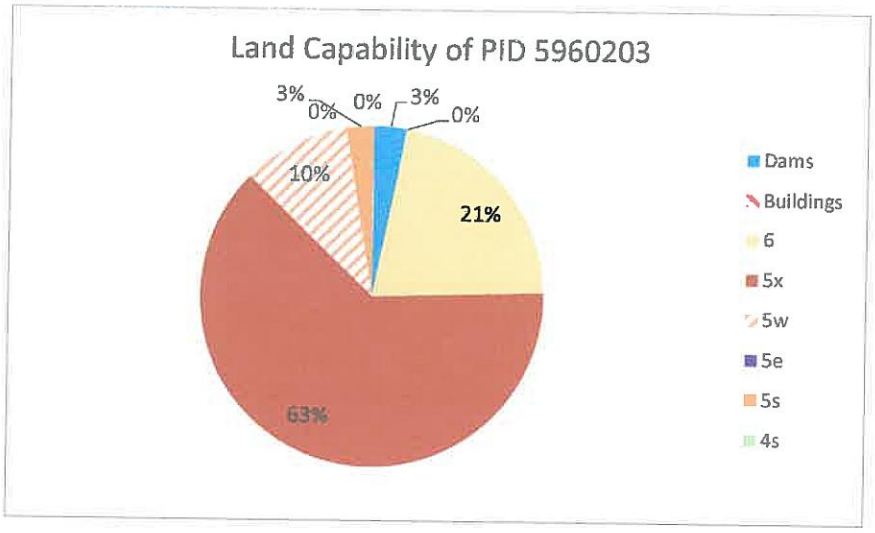
Charts of assessments are presented in charts below:



The Kellevie property is predominantly Class 4s and has irrigation available through existing dam and extraction right from the Carlton River. The soil type is the main limiting factor and has a low suitability for cropping but is suitable for irrigated pasture.



The southern Bream Creek property is predominantly Class 5x, complex topography and Class 6 with a significant percentage as landslip risk 5e. There are currently a number of active landslips in this region. There is no land suitable for cropping or horticulture predominantly due to the high slopes and topography.



The northern Bream Creek property is similar to the southern property in landform as a continuation of the Ragged Tier being predominantly Class 5x and Class 6. There is larger proportion of wetter areas and only a small area of lower slopes but more rock outcrops.

Soils

The Kellevie property is predominantly Podzols on Mudstone which are imperfectly drained, low suitability for irrigated surface cropping, not suitable for root crops but suitable for irrigated pasture.

The Bream Creek properties reside on the eastern side of the Ragged Tier, a Basalt outcrop that lays over Dolerite so that the soils transition as they progress eastward down the slope. The Ferrosols derived from Basalt are general very fertile but these are on high slopes and therefore unsuitable for cropping and are prone to mass movement. The Podzols on Dolerite are less fertile, imperfectly drained texture contrast soils developed on Jurassic dolerite bedrock and colluvium on rolling to steep slopes. These soils regularly have rocky outcrops on the steep slopes and hilltops. The steep slopes are prone to erosion if ground cover is removed, these areas are only suited to regeneration of native bushland and occasional grazing once vegetation is established.

Climate

The climate of the region is described by Musk and Derose (2000) as temperate climate moderated by the proximity to sea. As a result frost risk is assessed as low. Nearest temperature data is available for Dunnalley, station number 94254, which is some 10 kms away. The lowest temperature recorded is 0.7 degrees in the month of July.

According to the rainfall information supplied by the Bureau of Meteorology, the weather station (Number 92005) at Bream Creek has recorded a mean annual rainfall of 762 mm. The highest annual rainfall recorded is 1195mm and the lowest recorded is 394mm demonstrating that the rainfall in this region is highly variable.

The Bream Creek properties proximity to the Tasman Sea and elevation make them highly exposed to winds which significantly limits opportunity for cropping or horticulture. Viticulture is undertaken nearby the properties, but they are at lower elevations in gullies with tree protection, none has been attempted on slopes.

The Kellevie property resides on the western side of the Ragged Tier and is more sheltered from prevailing winds.

Water Resources

There is a 20ML dam present on the Kellevie property and a permit has been submitted for an additional dam to provide for future irrigation potential.

The Bream Creek properties have a number of small livestock watering dams utilizing surface water runoff collection. No dams of sufficient size for irrigation are present and no further permits for dams are allowed within the region. The topography and large variance in elevation also preclude irrigation.

No irrigation scheme is present in the region. Tasmanian Irrigation have no long-term plans for irrigation feasibility in the region as the area potentially available for irrigation is small and supply and distribution will be expensive, therefore not meeting the business case requirements. In addition, the closest resource is the Carlton River

which is ephemeral in nature and has poor water quality due to the catchment geology that is unsuitable for sustainable production of horticultural crops. Extension of the South East Irrigation Scheme to this region would be cost prohibitive and therefore not meeting the business case requirements.

Current Land Use

The properties current land use for all properties is predominantly grazing for livestock with an area of eucalypt seed orchard.

Tasmanian Planning Scheme Assessment

The property at Kellevie is potential agricultural land due to the area available for irrigated pasture.

In respect to the Bream Creek properties, the following are assessments in relation to the Zone Application Guidelines of the proposed Tasmanian Planning Scheme – Agriculture

AZ1	The properties are identified in the 'Land Potentially Suitable for Agriculture Zone" but titles do not comply with the criteria assessment (see later section)
AZ2	Not applicable – The properties are not within the Significant Agriculture Zone in the interim planning scheme
AZ3	Titles have not been correctly assessed in relation to Potentially Constrained Criteria.
AZ4	The 'Potential Agricultural Land Initial Analysis' layer encompasses the property titles but has been incorrectly assessed as indicated above
AZ5	The titles are not appropriate for split zoning
AZ6	Some titles may be considered for alternate zoning, in this case Rural, as not integral to management of a larger farm holding and there are significant constraints to agricultural use that have been incorrectly assessed.
AZ7	Not applicable as land currently assessed as "Land Potentially Suitable for Agriculture Zone'

Constraints Analysis

Land within the region has been initially assessed for zoning Agriculture based on a range of criteria under the "Agricultural Land Mapping Project "2017 (ALMP) and then further assessed for the Southern Group of Councils.

Below is a summary of the criteria assessment for the titles reported here:

					Constraints Criteria						
Entity	volume	folio	pid	Ha	ES1 - 10ha	ES2 - 25ha	ES3 - 40ha	ES4 - 133ha	ES5 - 333ha	Comment	Constraint
Derford	166787	1	3265354	50.5	No	No	Yes	No	No	Area suitable for ES3 - irrigated pasture and irrigation potential	None - fits criteria for Agriculture Zone
Derford	150735	1	5960094	21.6	No	No	No	No	No	No criteria met	2B
Derford	150735	2	5960094	18.0	No	No	No	No	No	No criteria met	2B
Derford	180395	1	5960094	20.2	No	No	No	No	No	No criteria met	2B
Derford	59	1334	5960094	21.8	No	No	No	No	No	No criteria met	2B
Derford	180395	2	5960094	1.0	No	No	No	No	No	No criteria met, greater than 50K/ha	2A
Derford	227943	1	5960203	4.4	No	No	No	No	No	No criteria met, greater than 50K/ha	2A
Derford	59	1334	5960203	42.2	No	No	No	No	No	No criteria met	2B

Note: Criteria ES1, ES2 and ES3 all require irrigation. Under the initial ALMP the region was deemed to have irrigation potential. Given this is not the case these criteria are not valid. In addition, the Enterprise Suitability Analysis data utilised, especially areas suitable for viticulture are inaccurate and not reflected in the on-site survey.

Recommendation

Based on the Constraints Analysis Criteria Assessment, the Kellevie property has been zoned correctly but the Bream Creek properties have been incorrectly assessed and these do not meet the requirements to be zoned Agriculture under the proposed LPS and consideration should be made for reviewing the methodology applied to these titles.

References

Grose C.J. (1999) Land Capability Handbook: Guidelines for the Classification of Agricultural Land in Tasmania. 2nd Edition, DPIWE, Tasmania

Musk R.A. and DeRose R.C. (2000) Land Capability Survey of Tasmania. Derwent Report, Land Capability Study, DPIWE, Tasmania

Agricultural Land Mapping Project - Identifying land suitable for inclusion within the Tasmanian Planning Scheme's Agriculture Zone (2017), Department of Justice, Planning Policy Unit

Declaration

I declare that I have made all the enquiries which I consider desirable or appropriate, and no matters of significance which I regard as relevant have, to my knowledge, been withheld.

Dr Lee Peterson B. Agri. Sci (Hons), ISHS, MAICD, CPag
Principal Consultant
Nicholbrook Horticultural Consulting
August 2021

Nicholbrook
Horticultural Consulting

Lee Peterson

Principal Consultant

Qualifications:

B Ag Sc (Hons) University of Tasmania

PhD (Ag Science) Horticultural Research Group University of Tasmania

Professional Associations:

Certified Practicing Agriculturalist (CPAg)

Company Directors Graduate Diploma 2007

Member of the International Society of Horticultural Science

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Dowsing Point TAS 7010

Introduction

Dr Lee Peterson is an agricultural professional with extensive expertise in many aspects of agricultural production gained over a period of 35 years in industry, consulting and research. Lee has considerable experience in the areas of new crop development, horticultural production systems, plant extracts and waste stream management in agricultural.

Professional Experience

2020-present	Director Nicholbrook Horticultural Consulting
2018-2020:	National Technical Manager BerryWorld
2011–2018:	Principal Consultant Macquarie Franklin
2005-2011:	Executive Director – Agribusiness Agricultural Resource Management (AGRM Pty Ltd)
2000- 2004:	Agricultural Resource Management Group
1998- 1999:	Serve-Ag Senior Project Agronomist
1996-1997:	Private agricultural consultancy and contract research provider
1993- 1995:	General Manager of Essential Oils of Tasmania
1989- 1993:	Production Manager of Essential Oils of Tasmania
1985- 1989:	Post-Graduate at the University of Tasmania
1984- 1985:	Agricultural Officer with the Tasmanian Department of Agriculture, Pasture and Field Crops Branch

Recent Projects

- Technical advisor to Houston's Farm roles include production system development, variety assessment, market research, crop scheduling, pesticide strategies, IPM program and representation of the company in respect to technical issues such as biosecurity and IPM
- Tasmanian contractor for the CSIRO land use and management information system estimating changes in soil carbon from changes in land use, an Australian Greenhouse Organisation project
- Project manager for the agricultural component of 8 wastewater reuse developments including Tasmania's two largest schemes, Brighton and Clarence.

- Agricultural advisor to United Utilities bid to develop effluent reuse for Ballarat North waste water treatment plant.
- Independent advisor and author to the "Environmental Guidelines for Recycled Water Use in Tasmania, 2002".
- Development of annual soil monitoring programs for Clarence, Brighton and Collinsvale reuse schemes.
- Project Manager for the land capability assessment for the Meander Dam Development Proposal
- Agricultural potential study for the Jordan Dam Feasibility Study
- Review of the Australian Lavender industry for RIRDC
- Project manager for Rekuna Pty Ltd, a Panax ginseng production company supported by an AusIndustry Commercial Ready Grant
- Climatic and resource suitability assessment for salad vegetable production on Australia's east coast, including risk assessment
- Technical advisor to Raspberry Fresh, out of season glasshouse raspberry production company
- Study tour and technical review of latest developments in hydroponic production of salad vegetables, Canada, Belgium, Holland and Italy
- Project manager for field services operation establishment for Tasmanian Poppy Enterprises
- Technical advisor to South Pacific Oils, essential oil production and extraction company, Vanuatu – Sandalwood production and research
- Technical resource to Southern Water for the coordinate and manage Tasmania's largest agricultural recycled water irrigation scheme, the Clarence Recycled Water (CRW)
- Technical advisor to Heydon Park Olives, Talmalmo, Victoria
- Production system economic assessment and inputs for TIDB feasibility studies – Musselrow, Great Forester and South East irrigation scheme developments
- Land capability assessments for numerous properties throughout rural Tasmania to support agricultural development, subdivision of non-agricultural land and expert witness reporting for legal representation
- Review of Industrial Hemp as a commercial cropping opportunity in Tasmania
- Review of pyrethrum industry strategic plan and industry development officer program
- Economic and socio analysis of the impact of blueberry rust incursion to the Tasmanian blueberry industry

Areas of Expertise

- New crop development including essential oils, culinary herbs, medicinals and leafy vegetables
- Design of innovative harvest systems for new crops
- Waste water and effluent reuse
- Agricultural research and development
- Sustainable agricultural system design and implementation
- Environmental monitoring
- Plant physiology
- Land capability assessment
- Group training
- Agribusiness and financial management
- Socio and economic impact assessment

Nicholbrook Expertise

- Economic studies
- Business and farm management
- Feasibility studies
- State and regional development
- Irrigation and water development
- Land capability and mapping
- Natural resource management
- Training and extension
- Technical agricultural consulting

- Site assessment, property liaison and development of Irrigation and Ground Water Management Plans for effluent management of Tassal hatchery expansion at Ranelagh and waste processing plant at Triabunna including representation to EPA.
- Quinoa trial coordination for commercialisation of an emerging "super food" in Australia
- Review of pyrethrum industry strategic plan and industry development officer program
- Market, production and feasibility study of medicinal cannabis production for Tasmanian Alkaloids
- Importation of new varieties and coordination and production system development for BerryWorld Australia in Tasmania and Queensland

Land Capability Assessment Derford Pty Ltd PID 3265354

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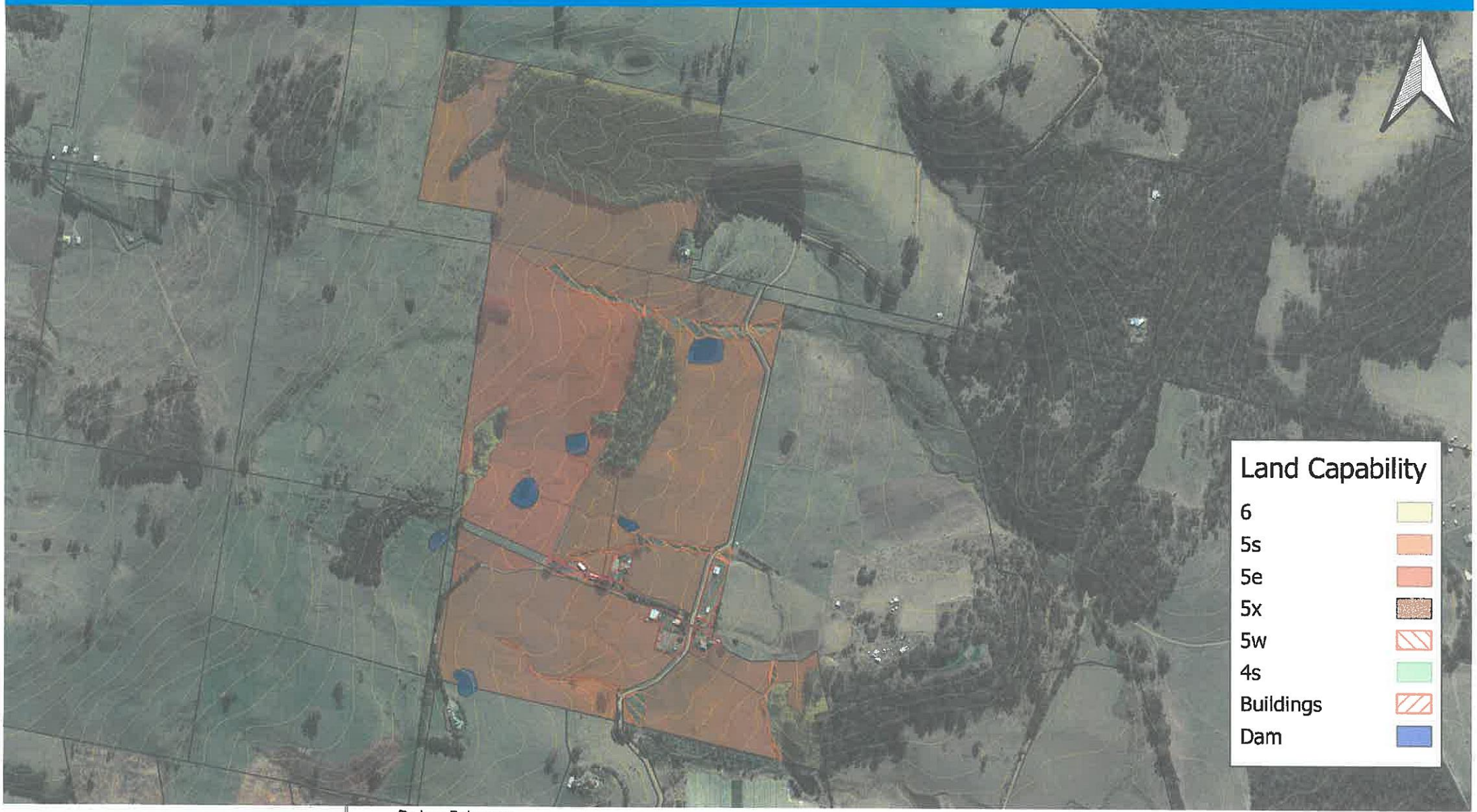

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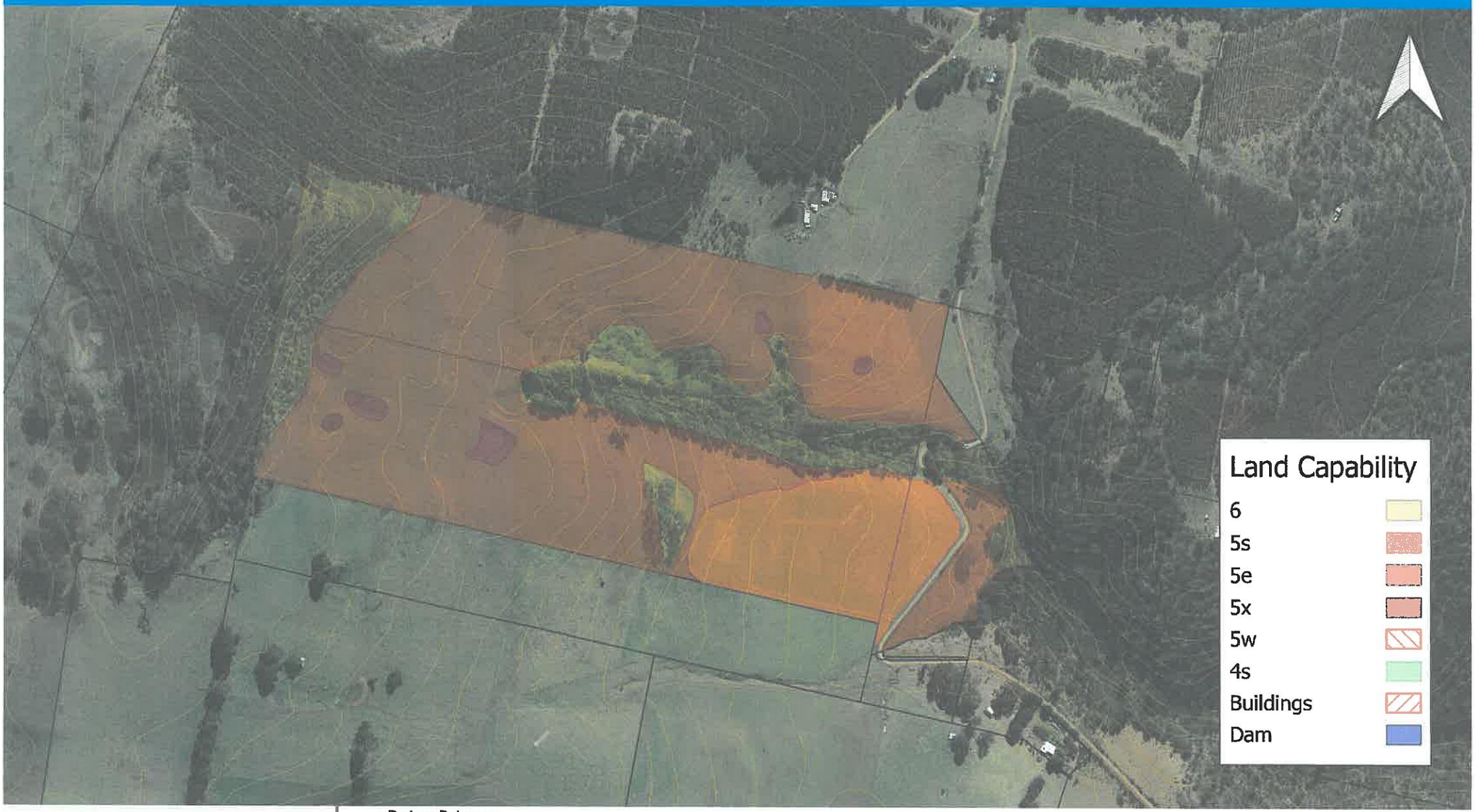

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Agricultural Report

BARRY KINGSTON, KELLEVIE AND BREAM CREEK PROPERTIES

AUGUST 2021

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Document status:

Date	Status	Issue Number	Reviewed by	Transmission method
9/8/21	Draft	1	L Peterson	Email
11/8/21	Final	2	L Peterson	Email

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Executive Summary

This report examines the land capability and classification of properties in the Bream Creek and Kellevie regions owned by B. Kingston in respect to the proposed rezoning of the property from Rural Resource under the Tasmanian Interim Planning Scheme 2015, Sorell to zoning of Agriculture under the proposed statewide Tasmanian Planning Scheme, Local Provisions Schedule (LPS) Sorell.

The properties examined are PID 5960123 comprising 2 titles, 38/27 and 203040/1 at Bream Creek, PID 7839837 comprising 8 titles, 241073/1, 238308/1, 42/5514, 13/6898, 65/9355, 238310/1, 201932/1 at Copping and PID 7772994 comprising 2 titles 51125/3 and 51125/4 at Kellevie.

The land capability and soils assessment has demonstrated that whilst the Kellevie property is suitable for zoning as Agriculture if amalgamated with adjacent land to achieve greater than 40 hectares of irrigable pasture and irrigation available, the properties at Bream Creek and Copping have constraints for agricultural use.

This is predominantly due to the assessment criteria has deemed the Bream Creek region to have irrigation potential, a key factor in undertaking the criteria analysis to determine suitability for Agriculture Zone.

Based on the Constraints Analysis Criteria Assessment whilst one property has been correctly assessed as Agricultural Zone, others have been incorrectly assessed and these do not meet the requirements to be zoned Agriculture under the proposed LPS and consideration should be made for reviewing the methodology applied to these titles.

Introduction

This report, by Dr Lee Peterson, Principal Consultant, Nicholbrook Pty Ltd, has been prepared to provide an expert agricultural assessment of the properties owned by B. Kingston.

This report reviews the current agricultural usage of the present land titles and the surrounding region in relation to the Land Capability and Land Classification. This includes soils, aspect, topography, water resource, and impact in relation to agricultural activities.

Qualifications and Experience

Dr Lee Peterson is an agricultural science graduate from the University of Tasmania with 35 years of experience in primary industry production, research and consulting. Dr Peterson has worked with a variety of farming enterprises throughout Tasmania and other mainland states. A detailed outline of experience and qualifications is attached in Appendix A.

Location

B. Kingston currently owns three properties in the Sorell Council region. One property at Bream Creek , PID 5960123 comprising 2 titles, 38/27 and 203040/1 that are transected by Bream Creek Road and a road access to a residence. The property rises as a gully from 80 metres elevation to 210 metres in the northwest.

PID 7839837 comprising 8 titles, 241073/1, 238308/1, 42/5514, 13/6898, 65/9355, 238310/1, 201932/1 at Copping. The property borders the village of Copping to the south, Kellevie Road to the west and agricultural land to the north and part of the eastern boundary. The remainder is adjacent to proposed Rural Zone. The property rises from an elevation of 80 metres in the south to 290 metres in the north.

PID 7772994 comprising 2 titles 51125/3 and 51125/4 at Kellevie. This property is located on the southwestern side of the junction of Kellevie Road and Stokes Road. To the west is proposed zoned Rural and plantation forestry to the south. The property is generally undulating over 20 metres in variation and adjacent to 3 residences.

Land Classification

Land capability of the property was assessed according to the Tasmanian Land Capability Classification System (Grose, 1999). Land is ranked according to its ability to sustain a range of agricultural activities without degradation of the land resource. Class 1 land is the best land and Class 7 land is the poorest. A wide range of limitations are considered, and the most significant limitation determines its final classification, or ranking. Limitations in relation to soils include stoniness, topsoil depth, drainage and erosion hazard. Limitations to topography include slope and associated erosion hazard. Limitations relating to climate include low rainfall and frost.

A full explanation of the Land Capability System is available in the *DPIPWE Tasmanian Land Capability Handbook*.

The classification system assumes an average standard of land management and that production will be sustainable if the land is managed according to the guidelines of its Class. The system does not take into account the economics of production, distance from markets, social or political factors, all of which can change over time.

Class 4 land is described as follows:

> 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 minimize 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 land is described as follows:

> Land with slight to moderate limitations to pastoral use but which 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 effects of limitations on the grazing potential may be reduced by applying appropriate soil conservation measures and land management practices.

Class 6 land is described as follows:

> 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.

A detailed, site specific assessment of land classification of the property was undertaken by the author on during the week of the 19th July 2021.

The attached maps illustrates the extent of each land capability class within the properties.

Table1 and 2 and 3 provide a detailed description of each land capability class of the Bream Creek, Copping and Kellevie properties.

Table 1: Land Capability Summary – Bream Creek property PID 5960123

Land Capability Class[1]	Area (ha)	Limitation	Soil Description	Cropping Suitability Rating [2]	Land Use Types [3]	Cropping Frequency [4]
5w	0.4	Gullies and low lying, prone to wet areas	Ferrosol, red soil on basalt transitioning to podzols on dolerite	Not suitable	DP	Annual
5e	0.5	Mass movement (lanslip)	Ferrosol, red soil on basalt high slopes >30%	Not suitable	DP	Annual but low stocking rates due to erosion risk
5x	16.5	Topography, complex	Ferrosols on Basalt transitioning to Podzols on Dolerite (10->30%).	Not suitable	DP/F	Annual
6	2.5	Native vegetation, high slopes > 30%	Ferrosols on higher slopes transitioning to Podzols on Dolerite with rock outcrops and steep slopes	Not suitable	DP/F	Annual

Table 2: Land Capability Summary – Copping property PID 7839837

Land Capability Class[1]	Area (ha)	Limitation	Soil Description	Cropping Suitability Rating [2]	Land Use Types [3]	Cropping Frequency [4]
4s	1.4	Soil structure	Podzol on Sandstone, moderate to low fertility	Low suitability	H/IP/DP	Annual
5s	1.2	Soil depth and imperfect subsoil drainage	Podzols on Dolerite 10-15%)	Not suitable	DP	Annual
5x	28.6	Complex topography	Ferrosol, red soil on Basalt in the north transitioning to podzols on Dolerite in the south	Not suitable	DP/F	Annual
5w	4.6	Gullies and low lying, prone to wet areas	Podzols on Dolerite (10->30%).	Not suitable	DP	Annual
6	9.8	Native vegetation and rock outcrops, high slopes > 30%	Podzols on Dolerite with rock outcrops and steep slopes	Not suitable	DP	Annual

Table 3: Land Capability Summary – Kellevie Property PID 7772994

Land Capability Class[1]	Area (ha)	Limitation	Soil Description	Cropping Suitability Rating [2]	Land Use Types [3]	Cropping Frequency [4]
4s	36.2	Soil type, imperfectly drained sub soils	Podzols on mudstone transition to podzols on sandstone (0-5%)	Very low	ISD/IP/DP	Annual
5s	8.6	Low lying, prone to wet areas	Podzols on sandstone (5-10%)	Not suitable	DP	Annual

[1] Land Capability Class

Land capability was assessed according to the Tasmanian Land Capability Classification System (Grose, 1999). Land is ranked according to its ability to sustain a range of agricultural activities without degradation of the land resource. Class 1 land is the best land and Class 7 land is the poorest. A wide range of limitations are considered and the most significant limitation determines its final classification, or ranking. The classification system assumes an average standard of land management and that production will be sustainable if the land is managed according to the guidelines of its Class. The system does not take into account the economics of production, distance from markets, social or political factors, all of which can change over time.

Cropping Suitability Rating

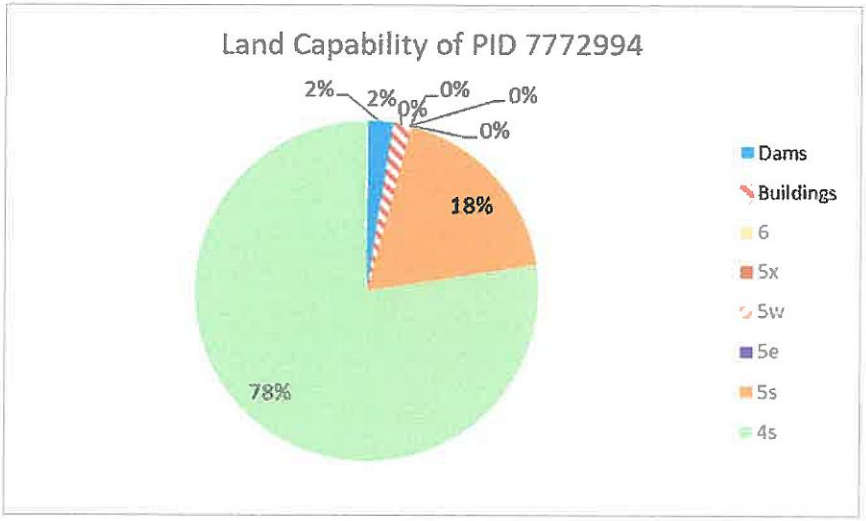
- *High - Soils with no or only slight limitations to use. Can support a wide range of intensive cropping and grazing activities. Cropping can occur almost continuously with only occasional pasture breaks.*
- *Moderate - Soils with moderate limitations to use. Conservation practices and sound management are needed to overcome limitations. Regular short-term pasture breaks are also required.*
- *Low - Soils suited to occasional cropping through severe limitations. Major conservation treatments and/or careful management required to minimise degradation.*
- *Very low - Very limited cropping with long pasture breaks (greater than 8 years).*
- *Unsuitable - No cropping should be undertaken.*

[3] Land Use Types

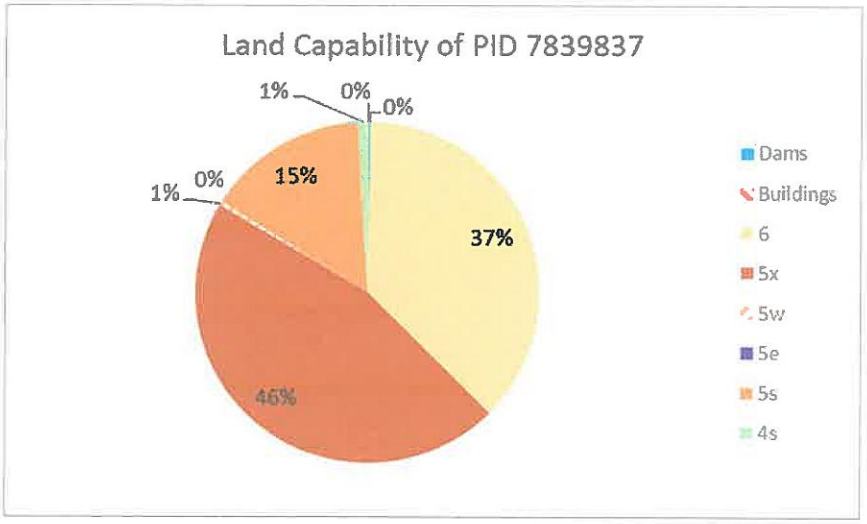
- *DP (Dryland pasture)*
- *IP (Irrigated pasture)*
- *DS (Dryland surface cropping; i.e. cereals and poppies)*
- *ISD (Irrigated surface cropping – dry harvest; i.e. cereals, poppies, carrot seed and grass seed)*
- *ISW (Irrigated surface cropping – wet harvest; i.e. peas, beans and broccoli)*
- *IRC (Irrigated root cropping; i.e. potatoes and carrots)*
- *H (Horticulture; i.e. grapes, olives and fruit)*
- *F (Forestry)*

[4] *Cropping Frequency is given as an approximate range only. It assumes that best practices are being implemented in relation to soil management, sustainable crop rotations undertaken, and that seasonal and long term climatic conditions are favourable for cropping activities. Best practice soil management includes cultivation at an appropriate soil moisture level so as to maintain soil structure, management of cropping residues to assist in maintaining soil structure, and implementation of the most appropriate cultivation techniques. The lower range pertains to a more intensive cropping rotation (i.e. typically including irrigated root cropping) and/or less favourable seasonal/growing conditions. The upper range pertains to non-intensive cropping rotations (i.e. cereals and poppies) and/or more favourable seasonal/growing conditions (see Appendix 1). Cropping frequency does not include irrigated pasture which can be irrigated annually.*

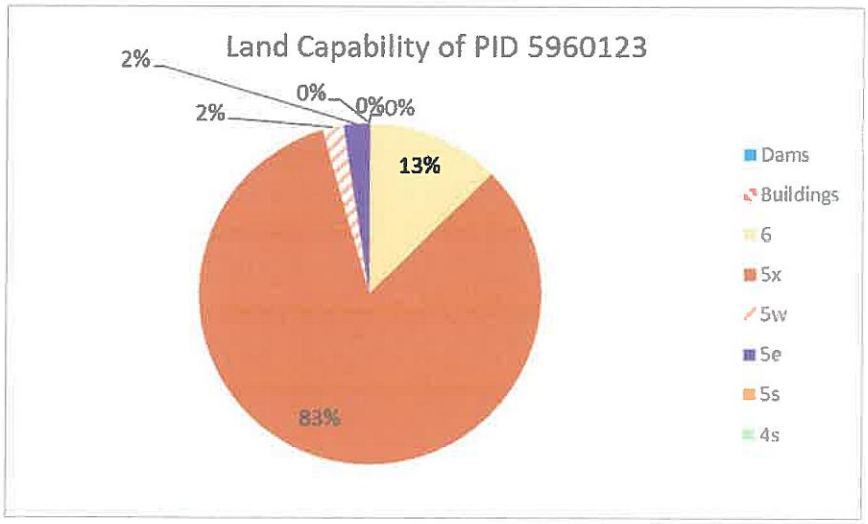
Charts of assessments are presented in charts below:



The Kellevie property is predominantly Class 4s but does not have irrigation available. The soil type is the main limiting factor and has a low suitability for cropping but is suitable for irrigated pasture, however it is managed in conjunction with Derford property on the north side of Stokes Road.



The Copping property is predominantly Class 5x, complex topography and Class 6. There is no land suitable for cropping or horticulture predominantly due to the high slopes and topography.



The Bream Creek property on the eastern side of the Ragged Tier and is predominantly Class 5x and the remainder Class 6. There are large changes in elevation and transected by gullies that preclude all enterprises other than dryland pasture and forestry.

Soils

The Kellevie property transitions from a Podzol on Mudstone in the north to Podzol on Sandstone in the majority. These soils are imperfectly drained, low fertility, low suitability for irrigated surface cropping, not suitable for root crops but suitable for irrigated pasture.

The Bream Creek properties reside on the eastern side of the Ragged Tier, a Basalt outcrop that lays over Dolerite so that the soils transition as they progress eastward down the slope. The Ferrosols derived from Basalt are general very fertile, but these are on high slopes and not significant proportion of the property area. These are unsuitable for cropping and are potentially prone to mass movement as observed on land to the south. The Podzols on Dolerite are less fertile, imperfectly drained texture contrast soils developed on Jurassic dolerite bedrock and colluvium on rolling to steep slopes. These soils regularly have rocky outcrops on the steep slopes and hilltops.

The Copping property transitions from a Ferrosol on Basalt in the north on the high elevations through Podzols on Dolerite to a small area of texture contrast soil on Sandstone on the boundaries of Copping village. In general, there are many areas too steep and also prone to wet areas even on slopes where underlying Dolerite rock channels groundwater to or close to the surface that preclude cropping and horticulture.

Climate

The climate of the region is described by Musk and Derose (2000) as temperate climate moderated by the proximity to sea. As a result frost risk is assessed as low. Nearest temperature data is available for Dunnalley, station number 94254, which is some 10 kms away. The lowest temperature recorded is 0.7 degrees in the month of July.

According to the rainfall information supplied by the Bureau of Meteorology, the weather station (Number 92005) at Bream Creek has recorded a mean annual rainfall of 762 mm. The highest annual rainfall recorded is 1195mm and the lowest recorded is 394mm demonstrating that the rainfall in this region is highly variable.

The Bream Creek property proximity to the Tasman Sea and elevation makes it highly exposed to winds which significantly limits opportunity for cropping or horticulture. Viticulture is undertaken nearby the properties, but they are at lower elevations in gullies with tree protection, none has been attempted on slopes.

The Copping property resides on the southern side of the Ragged Tier, the high elevations are susceptible to prevailing winds, the lower elevations are more sheltered but shaded and have poor aspect in regard to viticulture.

Water Resources

There are no dams with irrigation potential on any of the properties. The Kellevie property has potential for irrigation as it is managed in conjunction with adjacent property owned by Derford. There is amalgamation potential thereby meeting criteria for zoning Agriculture

The Bream Creek and Copping properties have a number of small livestock watering dams utilizing surface water runoff collection. No dams of sufficient size for irrigation are present and no further permits for dams are allowed within the region. The elevations and topography further limit any irrigation potential.

No irrigation scheme is present in the region. Tasmanian Irrigation have no long-term plans for irrigation feasibility in the region as the area potentially available for irrigation is small and supply and distribution will be expensive, therefore not meeting the business case requirements. In addition, the closest resource is the Carlton River which is ephemeral in nature and has poor water quality due to the catchment geology that is unsuitable for sustainable production of horticultural crops. Extension of the South East Irrigation Scheme to this region would be cost prohibitive and therefore not meeting the business case requirements.

Current Land Use

Current land use for all properties is grazing.

Tasmanian Planning Scheme Assessment

The property at Kellevie is potential agricultural land due to the area available for irrigated pasture as amalgamated with adjacent land.

In respect to the Bream Creek and Copping properties, the following are assessments in relation to the Zone Application Guidelines of the proposed Tasmanian Planning Scheme – Agriculture.

AZ1	The properties are identified in the 'Land Potentially Suitable for Agriculture Zone" but titles do not comply with the criteria assessment (see later section)
AZ2	Not applicable – The properties are not within the Significant Agriculture Zone in the interim planning scheme
AZ3	Titles have not been correctly assessed in relation to Potentially Constrained Criteria.
AZ4	The 'Potential Agricultural Land Initial Analysis' layer encompasses the property titles but has been incorrectly assessed as indicated above
AZ5	The titles are not appropriate for split zoning
AZ6	Some titles may be considered for alternate zoning, in this case Rural, as not integral to management of a larger farm holding and there are significant constraints to agricultural use that have been incorrectly assessed.
AZ7	Not applicable as land currently assessed as "Land Potentially Suitable for Agriculture Zone'

Constraints Analysis

Land within the region has been initially assessed for zoning Agriculture based on a range of criteria under the "Agricultural Land Mapping Project" 2017 (ALMP) and then further assessed for the Southern Group of Councils.

Below is a summary of the criteria assessment for the titles reported here:

					Constraints Criteria						
Entity	volume	folio	pid	Ha	ES1 - 10ha	ES2 - 25ha	ES3 - 40ha	ES4 - 133ha	ES5 - 333ha	Comment	Constraint
B Kingston	38	27	5960123	19.870	No	No	No	No	No	No criteria met	2B
B Kingston	203040	1	5960123	1.680	No	No	No	No	No	No criteria met, greater than 50K/ha	2A
B Kingston	241073	1	7839837	0.721	No	No	No	No	No	No criteria met, greater than 50K/ha	2A
B Kingston	238308	1	7839837	0.822	No	No	No	No	No	No criteria met, greater than 50K/ha	2A
B Kingston	42	5514	7839837	19.147	No	No	No	No	No	No criteria met	2B
B Kingston	13	6898	7839837	18.473	No	No	No	No	No	No criteria met	2B
B Kingston	65	9355	7839837	14.480	No	No	No	No	No	No criteria met	2B
B Kingston	42	5514	7839837	24.201	No	No	No	No	No	No criteria met	2B
B Kingston	238310	1	7839837	46.845	No	No	No	No	No	No criteria met	2B
B Kingston	201932	1	7839837	18.275	No	No	No	No	No	No criteria met	2B

Entity	volume	folio	pid	Ha	ES1 - 10ha	ES2 - 25ha	ES3 - 40ha	ES4 - 133ha	ES5 - 333ha	Comment	Constraint
B Kingston	51125	3	7772994	26.2	No	No	No	No	No	Area for ES 3 not met but available through amalgamation	None - fits criteria for Agriculture Zone
B Kingston	51125	4	7772994	19.76	No	No	No	No	No	Area for ES 3 not met but available through amalgamation	None - fits criteria for Agriculture Zone

Note: Criteria ES1, ES2 and ES3 all require irrigation. Under the initial ALMP the region was deemed to have irrigation potential. Given this is not the case these criteria are not valid. In addition, the Enterprise Suitability Analysis data utilised, especially areas suitable for viticulture are inaccurate and not reflected in the on-site survey.

Recommendation

Based on the Constraints Analysis Criteria Assessment, the Kellevie property has been zoned correctly but the Bream Creek and Copping properties have been incorrectly assessed and these do not meet the requirements to be zoned Agriculture under the proposed LPS and consideration should be made for reviewing the methodology applied to these titles.

References

Grose C.J. (1999) Land Capability Handbook: Guidelines for the Classification of Agricultural Land in Tasmania. 2nd Edition, DPIWE, Tasmania

Musk R.A. and DeRose R.C. (2000) Land Capability Survey of Tasmania. Derwent Report, Land Capability Study, DPIWE, Tasmania

Agricultural Land Mapping Project - Identifying land suitable for inclusion within the Tasmanian Planning Scheme's Agriculture Zone (2017), Department of Justice, Planning Policy Unit

Declaration

I declare that I have made all the enquiries which I consider desirable or appropriate, and no matters of significance which I regard as relevant have, to my knowledge, been withheld.

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Introduction

Dr Lee Peterson is an agricultural professional with extensive expertise in many aspects of agricultural production gained over a period of 35 years in industry, consulting and research. Lee has considerable experience in the areas of new crop development, horticultural production systems, plant extracts and waste stream management in agricultural.

Professional Experience

2020-present	Director Nicholbrook Horticultural Consulting
2018-2020:	National Technical Manager BerryWorld
2011–2018:	Principal Consultant Macquarie Franklin
2005-2011:	Executive Director – Agribusiness Agricultural Resource Management (AGRM Pty Ltd)
2000- 2004:	Agricultural Resource Management Group
1998- 1999:	Serve-Ag Senior Project Agronomist
1996-1997:	Private agricultural consultancy and contract research provider
1993- 1995:	General Manager of Essential Oils of Tasmania
1989- 1993:	Production Manager of Essential Oils of Tasmania
1985- 1989:	Post-Graduate at the University of Tasmania
1984- 1985:	Agricultural Officer with the Tasmanian Department of Agriculture, Pasture and Field Crops Branch

Recent Projects

- Technical advisor to Houston's Farm roles include production system development, variety assessment, market research, crop scheduling, pesticide strategies, IPM program and representation of the company in respect to technical issues such as biosecurity and IPM
- Tasmanian contractor for the CSIRO land use and management information system estimating changes in soil carbon from changes in land use, an Australian Greenhouse Organisation project
- Project manager for the agricultural component of 8 wastewater reuse developments including Tasmania's two largest schemes, Brighton and Clarence.

- Agricultural advisor to United Utilities bid to develop effluent reuse for Ballarat North waste water treatment plant.
- Independent advisor and author to the "Environmental Guidelines for Recycled Water Use in Tasmania, 2002".
- Development of annual soil monitoring programs for Clarence, Brighton and Collinsvale reuse schemes.
- Project Manager for the land capability assessment for the Meander Dam Development Proposal
- Agricultural potential study for the Jordan Dam Feasibility Study
- Review of the Australian Lavender industry for RIRDC
- Project manager for Rekuna Pty Ltd, a Panax ginseng production company supported by an AusIndustry Commercial Ready Grant
- Climatic and resource suitability assessment for salad vegetable production on Australia's east coast, including risk assessment
- Technical advisor to Raspberry Fresh, out of season glasshouse raspberry production company
- Study tour and technical review of latest developments in hydroponic production of salad vegetables, Canada, Belgium, Holland and Italy
- Project manager for field services operation establishment for Tasmanian Poppy Enterprises
- Technical advisor to South Pacific Oils, essential oil production and extraction company, Vanuatu – Sandalwood production and research
- Technical resource to Southern Water for the coordinate and manage Tasmania's largest agricultural recycled water irrigation scheme, the Clarence Recycled Water (CRW)
- Technical advisor to Heydon Park Olives, Talmalmo, Victoria
- Production system economic assessment and inputs for TIDB feasibility studies – Musselrow, Great Forester and South East irrigation scheme developments
- Land capability assessments for numerous properties throughout rural Tasmania to support agricultural development, subdivision of non-agricultural land and expert witness reporting for legal representation
- Review of Industrial Hemp as a commercial cropping opportunity in Tasmania
- Review of pyrethrum industry strategic plan and industry development officer program
- Economic and socio analysis of the impact of blueberry rust incursion to the Tasmanian blueberry industry

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Horticultural Consulting

Areas of Expertise

- New crop development including essential oils, culinary herbs, medicinals and leafy vegetables
- Design of innovative harvest systems for new crops
- Waste water and effluent reuse
- Agricultural research and development
- Sustainable agricultural system design and implementation
- Environmental monitoring
- Plant physiology
- Land capability assessment
- Group training
- Agribusiness and financial management
- Socio and economic impact assessment

Nicholbrook Expertise

- Economic studies
- Business and farm management
- Feasibility studies
- State and regional development
- Irrigation and water development
- Land capability and mapping
- Natural resource management
- Training and extension
- Technical agricultural consulting

- Site assessment, property liaison and development of Irrigation and Ground Water Management Plans for effluent management of Tassal hatchery expansion at Ranelagh and waste processing plant at Triabunna including representation to EPA.
- Quinoa trial coordination for commercialisation of an emerging "super food" in Australia
- Review of pyrethrum industry strategic plan and industry development officer program
- Market, production and feasibility study of medicinal cannabis production for Tasmanian Alkaloids
- Importation of new varieties and coordination and production system development for BerryWorld Australia in Tasmania and Queensland

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