
AGRICULTURAL PROFILE

REGIONAL SUMMARY OF THE NORTHERN TASMANIAN MUNICIPALITIES

**Prepared by: AK Consultants
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Disclaimer: This document has been compiled using a range of source materials and while all reasonable care has been taken in the compilation, AK Consultants does not accept responsibility for the accuracy or completeness of the information contained in this document or for any adverse affects as a result of any decisions made or actions taken based on the contents of this document. The methods of calculating various statistics contained within this document result in slight variations in values for the same parameters.

GLOSSARY OF TERMS

Agricultural use from the State Policy on the *Protection of Agricultural Land 2009*; means use of land for propagating, cultivating or harvesting plants or the keeping and breeding of animals, excluding domestic animals and pets. It includes the handling, packing or storing of produce for dispatch to processors. It includes controlled environment agriculture and plantation forestry.

Establishment from *Value of Agricultural Commodities Produced Overview* (ABS, n.d.); An establishment is the smallest accounting unit of business within a state or territory, controlling its productive activities and maintaining a specified range of detailed data enabling value added to be calculated. In the agriculture sector, an establishment covers all operations at a physical location, but may consist of a group of locations provided they are within the same shire. The majority of establishments operate at one location only. In most cases an establishment is the same as a farm.

Holding from Website Glossary (ABS). A holding is defined as land located within one shire used for the production of agricultural and livestock produce. Each holding usually corresponds to an individual farm business, and can consist of a number of separate parcels of land, providing they are all in the one shire. In some cases, where a land holder has land in more than one shire and cannot provide data separately relating to each shire, and prior agreement has been reached between the land holder and the ABS, the definition of a holding can be extended to include land in more than one shire. The area of a holding includes all occupied and maintained land owned, leased or rented, land worked by sharefarmers and all road permits. Excludes land leased or rented to others.

Estimated Value of Agricultural Operations (EVAO) from *Value of Agricultural Commodities Produced Overview* (ABS, n.d.) “An estimation of agricultural activity undertaken by an agricultural establishment. Three-year average weighted prices are applied to livestock turn-off and livestock numbers on the farm, and to area and production data for crops. The resultant aggregation of these commodity values is the EVAO, but it is not an indicator of the value of receipts of individual farms. It is an indicator of the extent of agricultural activity.”

Note; while EVAO does not identify the gross income of an individual farm in any one year; it can be used as an indication of the average turnover of farm establishments.

Land Parcel from the LIST Cadastral Parcel Dataset (DPIPWE, 2009). A parcel is an area of land described in the Cadastral dataset as a non-overlapping polygon. This includes the following:

- Authority Land – Land owned or managed by a Commonwealth, State or Local Government Agency, Government Business Enterprise or a legislated Authority.
- Casement – Land which forms part of the Road, Railway or Footway network.
- Private Parcel – Land privately owned by an individual(s), organisation or company.
- Water Area – An “arbitrary” parcel over part or whole of a lake, river, estuary etc for the purpose of completing a “base” layer for the State.
- Other Category – survey inconsistencies can exist where an acknowledged overlap or underlap occurs. These are rare.

Property Identification Number from the LIST Cadastral Parcel Dataset (DPIPWE, 2009). The PID identifies the property in the Valuer-General’s VISTAS property database. The PID may include more than one land parcel.

EXECUTIVE SUMMARY

The purpose of the Agricultural Profile is to provide an understanding of the nature and distribution of agricultural land use and activities across the Region, and the economic value of agriculture to the economy of the Region. A specific objective has been to determine the area and nature of the land in the Region that could potentially be used for agriculture. This will assist in determining “the local and regional significance of that land for agricultural use” as is required in Principle 7 of the State *Policy on the Protection of Agricultural Land 2009*. Separate reports have been prepared for the eight Northern Municipalities. This report summarises the data detailed in the individual reports with the aim of providing a regional picture, and examining the differences between municipalities in order to understand the factors that contribute to the variability of agricultural production across the region.

The understanding is developed from spatial analysis of the land resource using published data-sets such as the Cadastre to determine parcel sizes, Land Capability and vegetative cover (based on TasVeg 2.0 mapping). Analysis of the way the land is used for agriculture uses ABS (2005-06) statistics and some later data.

This report also provides a description of the resources required for the main identified agricultural activities in the Region. For each of these activities, issues of constraint associated with non-agricultural development are considered. The role of buffers and recommended minimum attenuation distances, based on industry expertise and published literature are also discussed. This information will assist in applying Principle 1 of the State *Policy on the Protection of Agricultural Land 2009* which states that “the sustainable development of agriculture should not be confined or restrained by non-agricultural use or development”.

The total area in the Region is 2,004,460 hectares, of which 1,030,986 hectares is potentially available agricultural land.

Detailed analyses of the size distribution of the parcels and holdings show that over 50% of the holdings¹ are less than 40 hectares in all municipalities except Northern Midlands (45%), and over 80% of holdings are less than 40 hectares in Break O'Day, Launceston and West Tamar. Conversely, the highest percentage of holdings greater than 100 hectares is in Northern Midlands (39%), and the lowest is in West Tamar (3%).

Within the potentially available agricultural land the area of Prime Agricultural Land (Capability Classes 1-3) is much less than the non-prime area, representing in total 6% of the land area. The greatest area is in Meander Valley where there is 16,118 hectares of Prime Agricultural Land. In the entire Northern Region, 48% of the potentially available agricultural land area is Land Capability Class 4, 39% is Class 5 and 8% is Class 6. The largest areas of Class 4 land are in Northern Midlands (128,815 hectares) and Meander Valley (60,041 hectares).

The land most likely to be irrigated is in Land Capability Classes 1-4, although some Class 5 land is also irrigated (generally for pasture rather than crops). The quantity of water per hectare of potentially available agricultural land in Land Capability classes 1-4 ranges from 0.1 (George Town

¹ A “Holding” may comprise more than one parcel, and has a unique Property Identification number.

Municipality) to 1.9 ML/ha (Dorset Municipality). The ratio indicates greatest water availability and/or use in Dorset, Meander Valley, Break O'Day and Northern Midlands.

Grazing land is the predominant land use in all municipalities and is greatest in Northern Midlands, with large areas also in Dorset and Meander Valley. Northern Midlands has the largest number of sheep enterprises, and the largest flocks. While the number of flocks is lower, the flock sizes in Break O'Day and Flinders are relatively large. This is consistent with our experience that sheep are generally preferred in lower rainfall environments, and cattle are preferred where rainfall is higher.

The dairy industry is very large in Meander Valley and Dorset, with many herds and large average herd sizes. There are a few herds in the other Municipalities, and none on Flinders.

The largest area of broadacre crops is in Northern Midlands, with smaller areas in Meander Valley and Dorset. These same three Municipalities also have large areas of vegetables crops.

Total Estimated Value of Agricultural Output (EVAO) is highest for Northern Midlands (\$120m) followed by Dorset (\$87m) and Meander Valley (\$105m), and lowest for George Town (\$11m). Average EVAO per establishment is highest for Northern Midlands (\$351,000), followed by Dorset (\$250,000) and Meander Valley (\$242,000), and lowest for Launceston (\$83,000).

The average EVAO in Launceston and West Tamar are well below our recommended threshold level of \$150,000 for long-term viability², and Flinders and George Town are just below. With an EVAO below \$150 000, additional income would need to come from off-farm activities to be able to sustain a family. Thus, these figures support the general perception that there are many "part-time" or "hobby farms" in Launceston and West Tamar. In part this is due to the small size of parcels, but other contributing factors are Land Capability (small extent of Prime Agricultural Land) and little development of, or restricted availability of water resources. Fragmentation from not only the small size of the land parcels but also lack of uniformity in soils, topography and Land Capability, results in small scale management units which makes it difficult to capitalise on investments in plant and equipment. This limits agricultural activities that require relatively large areas to be commercially competitive; e.g. broadacre cropping. It is interesting to note that water availability per hectare of class 1-4 land is also very low for the Launceston and West Tamar municipalities.

There are 2500 people employed in agriculture alone and an additional 377 in the forestry and logging sector, some of whom it can be assumed are employed in plantation forestry on private land within the Region. The agricultural sector alone represents 5% of the employment in the Region. If the total forestry and logging employment figure of 377 is considered, this adds another 1% employed in agriculture in the Region. However, if the Launceston Municipality is excluded³, the agricultural sector represents 12% of the employment in the Region and forestry and logging adds another 1%. Based on these employment figures agriculture is an important contributor to the Regional economy and plantations on private land is a relatively minor part of this. The Launceston Municipality is unique in the Region, not only as it represents the Municipality with the lowest proportion of employment in the agricultural sector, but also because it has the highest proportion of

² In our opinion a viable farm is one producing sufficient income to provide for a family and provide full time employment for one person. On this basis the long-term viability of farms producing less than \$150,000 is questionable.

³ Launceston has a much lower proportion of people employed in agriculture compared to other municipalities which is to be expected given that Launceston City is the major centre of the Region. By excluding Launceston Municipality and the disproportionate population density, a more realistic picture of the importance of agriculture to the majority of the region can be obtained from the employment statistics.

the agricultural sector employed in plantation forestry (35%). Flinders is also unique as although the number of people employed in agriculture is low (110), the proportion of total employment this represents (30%) is very high, which indicates agriculture is a very important contributor to the Municipal economy.

The analysis of the available datasets undertaken in this project leads to the following conclusions:

- Grazing of pasture and fodder crops is likely to continue to be the main agricultural use of land (based on geographical extent) across the Region. Dairying provides the greatest contribution to the Municipal agricultural economy for Dorset and Meander Valley
- Broadacre cropping is mainly conducted in the Northern Midlands and Meander Valley Municipalities, on land in Capability Classes 3 and 4.
- In many parts of the Region agricultural activity is constrained due to small management units. In part this is due to the small size of parcels, but other contributing factors are lack of uniformity in soils, Land Capability and topography. This results in small scale management units which makes it difficult to capitalise on investments in plant and equipment. When this is combined with a lack of high quality land and a restricted availability of irrigation resource, there are very few options for productive agricultural use of this land.
- Parts of most municipalities are suitable for horticultural crops and Dorset, Meander Valley and Northern Midlands have the most favourable attributes. The major limitations associated with the other municipalities are;
 - small scale management units making it difficult to capitalise on investments in plant and equipment. (West Tamar, Launceston, George Town)
 - lack of irrigation capacity (West Tamar, Launceston, George Town, Break O' Day and Flinders)
 - remoteness leading to a lack of support services and making it difficult to attract contractors for most agricultural activities. (Break O'Day and Flinders)
- There are areas in the Region where there is potential for expansion of orchard fruits and vines. Site specific climatic attributes are an important factor in determining where these areas are.
- There are a small number of nurseries and cut flower businesses in the Region. Access to markets is an important driver in site selection. The area of land required is generally small, and soil/Land Capability is not significant in the site selection process.
- Plantation forestry offers landowners similar advantages to cattle grazing, such as low labour input by the landowner. However, growth in the plantation industry is currently somewhat uncertain, although the implementation of a carbon Emissions Trading Scheme and other policy decisions may alter this.

INTRODUCTION

This analysis of agricultural land use within the Region has been undertaken to inform the Local Government strategic planning review of the use and development of rural land. The purpose of the Agricultural Profile is to provide an understanding of the nature and distribution of agricultural land use and activities across the Region, and the economic value of agriculture to the economy of the Region. A specific objective has been to determine the area and nature of the land in the Region that could potentially be used for agriculture. This will assist in determining “the local and regional significance of that land for agricultural use” as is required in Principle 7 of the *State Policy on the Protection of Agricultural Land 2009*. Separate reports have been prepared for the eight Northern Municipalities. This report summarises the data detailed in the individual reports with the aim of providing a regional picture, and examining the differences between municipalities.

The analysis uses as much current data as possible to gain an understanding of the agricultural land resource, the nature of agricultural activities across the Region and value of agriculture to the economy of the Region. The understanding is developed from spatial analysis of the land resource using published data-sets such as the Cadastre to determine parcel sizes, Land Capability and vegetative cover (based on TasVeg 2.0 mapping). Analysis of the way the land is used for agriculture uses ABS (2005-06) statistics and some later data.

This project is concerned with land that is usable for agriculture. The analyses are therefore founded on the land in each Municipality that is privately owned, and in the Rural or Rural Resource (and equivalent) planning zones. Whilst it recognised that some agricultural activities occur in other zones, it is generally historical, not large in amount and there is not a great likelihood of back-zoning. The contribution to agriculture from land in other zones is considered to not be insignificant in the context of this analysis.

“Agricultural land use” is defined under the *State Policy on the Protection of Agricultural Land 2009* and includes plantation forestry, but excludes domestic animals. This report provides a description of the resources required for the main identified agricultural land uses in the Region. For each of these activities, issues of constraint associated with non-agricultural development are considered. The role of buffers and recommended minimum attenuation distances, based on industry expertise and published literature are also discussed. This information will assist in applying Principle 1 of the *State Policy on the Protection of Agricultural Land 2009* which states that “the sustainable development of agriculture should not be confined or restrained by non-agricultural use or development”.

Separate reports have been prepared for the eight Northern Municipalities. This report summarises the data detailed in the individual reports with the aim of providing a regional picture, and examining the differences between municipalities.

OVERVIEW OF METHOD

The analysis is conducted in four steps. The results of the first three steps are drawn from each of the Municipal Agricultural profiles and the fourth step is included in this document:

Step 1. Description of the agricultural land based on analysis of spatial data sets including the Cadastre, Land Capability and current vegetative cover (as an indicator of land use). Water resources for irrigation are also considered. The purpose of this analysis is to define the potentially available agricultural land resource.

Step 2. Description of the way this resource is being used and the contribution by agriculture to the economy (using mainly 2005-06 ABS census data) including employment data. The value of agricultural production is represented by the Estimated Value of Agricultural Operations (EVAO). Employment data was used to provide an indication of the importance of agriculture to the overall economy of the Region and to establish the relative importance of the forestry sector.

Step 3. Description of the land and water resources required for the main enterprise options in the Region. The description is focussed on defining the minimum requirements for commercial scale agricultural activities. (i.e. viable businesses).

Step 4. Description of the agricultural land use activities and associated management activities. The frequency and intensity of management activities are described with a particular focus on identifying the main activities which may lead to restraining of these activities due to non-agricultural use or development in the vicinity. This includes consideration of odour, noise, dust and spray drift. The intention of this section is to define land which is constrained from non-agricultural use or development.

SPATIAL DATA

The following spatial data sets were used to describe the resource:

- Cadastral Parcels. This dataset was provided from the LIST, dated August 2009. Private parcels describe land privately owned by an individual(s), organisation or company.
- Land Capability. Spatial data provided by DPI/PWE. Most mapping is reported at a scale of 1:100,000 based on survey data, except for the more intensively used parts of Meander Valley and Dorset municipalities, which are at a scale of 1:25,000. Some areas have not been surveyed and are modelled using available digital data such as contours at a scale of 1:100,000.
- Municipal Boundaries. Municipal boundaries were derived from the Municipal Schemes dataset (2007) and then adjusted to match the planning zones.
- TasVeg 2.0. This dataset was released 19 February 2008. Mapping was conducted at a scale of 1:25,000, classifying vegetation into 165 mapping units with 154 distinct vegetation communities.
- Planning Zones. Spatial data from the LIST, October 2007.
- Private Reserves. Provided from the LIST, dated August 2009. This dataset includes Private Nature Reserves, Private Sanctuaries and Conservation Covenants proclaimed or registered pursuant to the *Nature Conservation Act 2002*.

- Water for irrigation. The Department of Primary Industry, Parks, Water and Environment (DPIPWE) maintains a database showing water allocations and permitted dams. This database (Water Information Management System, WIMS) was accessed in November 2010 to determine the number and size of dams and allocations for irrigation.

There are two currently available spatial Land Use data sets neither of which has been utilised in this project:

- The Bureau of Rural Sciences (BRS) dataset which was developed by the State. It is based on 1996 imagery. It was started in 2000 and completed in 2003. It is accurate, comprehensive and relevant as far as appropriate categories for land use descriptions. However this dataset is now dated. For example Private Forestry Tasmania estimates that the plantation area has increased by more than 25% since this dataset was completed
- The Landscape Logic dataset. This dataset was created by combining Tasveg 1.3 with aerial imagery. The Land Use categories in BRS were used as a basis, although grouping into broader categories was applied. Some catchments have been field checked (eg Pipers, Georges).

Note: The three Natural Resource Management Regions have recently combined to undertake the Land Use Mapping Project and it is anticipated the project will be completed in Jan 2011. It will be based on Rapid Eye imagery to 5m resolution. The imagery was taken between Nov 2009 and Jan 2010 and it will be five band imagery, hence suitable for spectral analysis. The Land-Use data will be developed one map sheet (Tasmap 1:25 000) at a time and some areas may be available earlier than Jan 2011. Once complete this spatial data layer will be the most up-to-date, comprehensive and complete Land Use data set for the region.

We have not used either of the existing spatial data sets describing land use, for three reasons:

1. The two currently available Land Use datasets are either dated, not accurate, or incomplete.
2. If spatial data is deemed necessary, then it would be appropriate to wait until data from the Regional Land Use mapping project is available.
3. We considered that the TasVeg 2.0 spatial data provides information that is consistent across the region and as reliable as other data currently available.

STATISTICAL DATA

The most recent comprehensive statistical data⁴ available on agriculture for the Municipality is the Australian Bureau of Statistics (ABS) data based on the 2005-6 Census (released March 2008). Note that the ABS census data for agriculture includes all farming establishments with an Estimated Value of Agricultural Output (EVAO) greater than \$5,000. It is also noted that the value of poppies is not included in the ABS value of agricultural output, due to commercial confidentiality, however an average value per hectare of \$3,500 (based on the authors' industry expertise) has been applied to the ABS areas of poppies to obtain an overall value for poppies.

⁴ More recent information may be available through local Productivity Groups, but it would be difficult to integrate this data with ABS data. The authors see merit in using consistent data across all municipalities as this allows comparison between municipalities.

There is a paucity of data at the regional level and there are limitations to relying on ABS census data alone (GHD Hassall, 2008), however, this is still the best available regionally consistent data source. The results should be interpreted as indicative and not taken as specific values.

Although the extent of forestry plantations which form part of an agricultural business is contained in ABS data there is no information on the value. There are more recent, accurate and comprehensive data relating to all plantations (not just those which form part of an agricultural business) on private land available from Private Forests Tasmania (PFT) and these have been used in preference to the ABS data on plantations. The PFT data (email comms. 12/10/'10 PFT) relates to the total area of plantation on Private Land in the Municipality as at 31 December 2009. As plantations are a long-term crop the method of data collection does not allow the determination of an EVAO for plantation forestry.

Employment statistics have been obtained from the 2005-06 ABS census.

INDUSTRY KNOWLEDGE AND EXPERT OPINION

The requirements of specific agricultural enterprises, the frequency and intensity of activities associated with these enterprises and the potential for land use conflict issues arising from these activities is based on our own expertise and confirmation of specific details with industry experts.

Expertise from within the consultancy team for this project

Astrid Ketelaar has been a Natural Resources Management Consultant with AK Consultants (previously Armstrong Agricultural Services) since 1999. She has experience in development applications in the rural zone and has undertaken numerous agricultural and Land Capability assessments in most northern municipalities. Astrid routinely assists farmers with meeting regulatory and approval process requirements for Water Allocations and Dam Assessments for irrigation.

David Armstrong has over 20 years experience as an agricultural consultant, specialising in farm business management in northern Tasmania. David has extensive experience in selecting suitable enterprise options based on land, water and financial resources and understanding the technical aspects of potential land use conflict.

Ruth Hall joined the AK Consultants team as an Agricultural Consultant in 2008 and has led the Agricultural Profile component of the Launceston City Council and West Tamar Council projects conducted in 2009. Ruth lives and works on the family farm at Oatlands and has previously worked in Natural Resource Management and Landcare. Ruth's key roles at AK Consultants include farm business management advice and options for the rural sector in adapting to the impacts of climate change.

Industry expertise sought as part of the project

Dr Richard Smart, Rural Smart
Philip Donnelly, Private Forestry Tasmania
David Stirling, Simplot
Scott Livingston, Livingston Natural Resource Services

RESOURCE DESCRIPTION

LOCATION

The boundaries of the Municipalities within the Northern Region are shown in Figure 1.

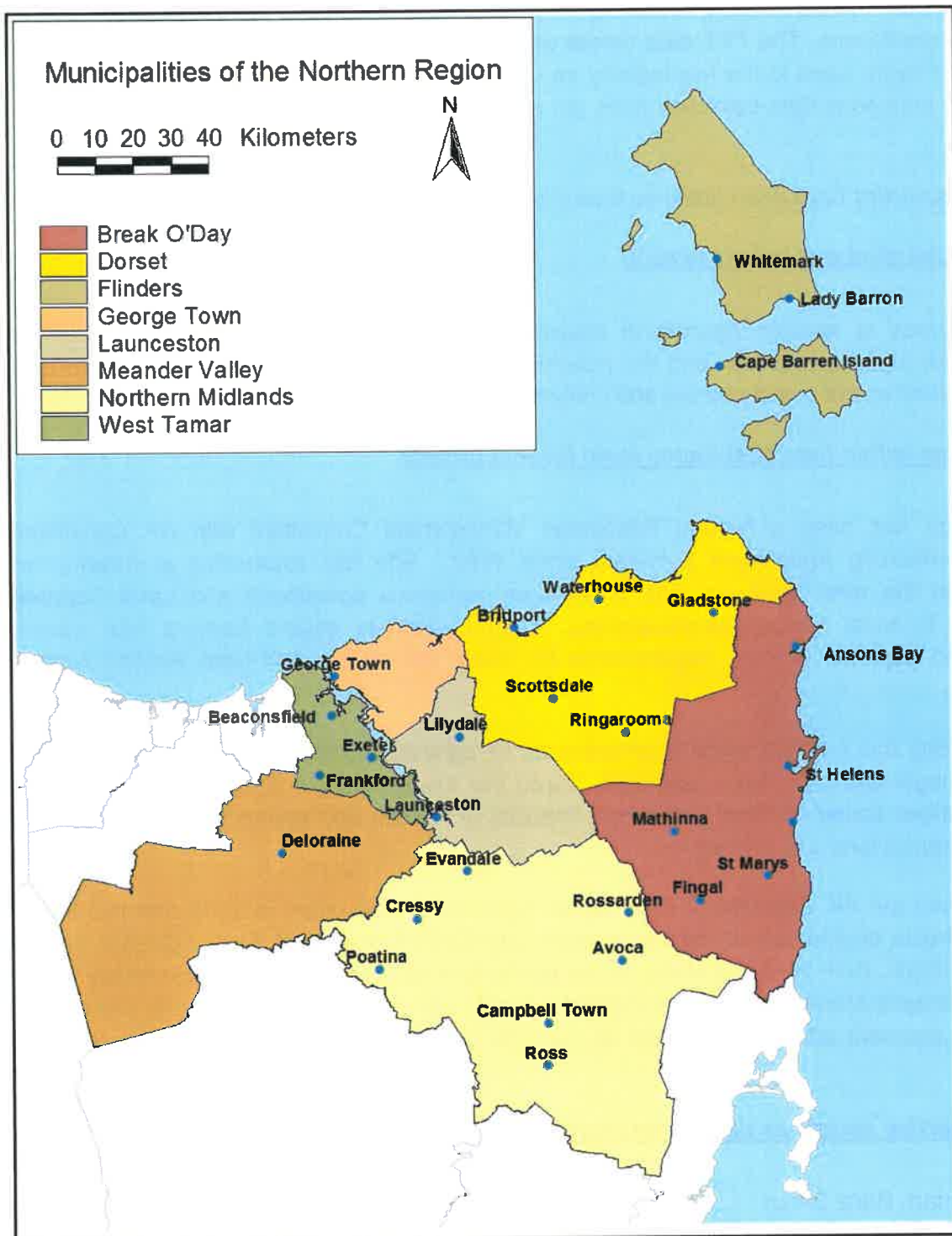


Figure 1. Location Map showing the Municipalities in the Northern Region

LAND IN THE RURAL ZONES

The names of zones vary slightly between municipalities. In this report the term “Rural Zone” refers to all those zones where the intent of the zone is agricultural activity (including plantation forestry).

Table 1. The areas of land in the rural planning zones

Characteristics	BO'D	Dorset	Flinds.	GTC	Lton	MVC	NMC	WTC
Total area (ha)	355352	324301	201879	65406	141379	332742	513844	69667
Rural zone area (ha)	354286	310570	75338	60673	133646	327764	469758	61483
Area of Private Land in the rural zone (ha)	97411	149279	73667	36865	85970	139739	400645	47410

The total area of the Region is 2,004,460 hectares. The area of land in the Rural Zones is 1,793,473 hectares although only a portion of this is available for agricultural use. Tenure, title configuration and size, Land Capability and vegetative cover are important attributes defining the potential for agricultural activity. These attributes have been used as the basis of a Geographical Information System (GIS) analysis of the potential agricultural land resource. The proximity of houses and non-agricultural developments adjacent to agricultural land use can also constrain agricultural land use potential, and a method for identifying those areas spatially has been developed using GIS (AK Consultants, 2010). Although spatial definition⁵ of the areas constrained by existing non-agricultural development is beyond the scope of this project, the descriptions which lead to the decision for determining what land is already constrained for agricultural use are included under the section “Agricultural Activities Description”.

⁵ Displaying those areas on a map

POTENTIALLY AVAILABLE AGRICULTURAL LAND (PAAL)

Potentially available agricultural land (PAAL) in the context of this report is land within the Rural zone which has appropriate Land Capability⁶, more than one hectares parcel size, is currently utilised for agriculture or has no restrictions for conversion to agricultural use. This land has been defined spatially. Both Prime Agricultural Land (Class 1-3) and non-prime agricultural land (Class 4-6⁷) has been included in the PAAL area. The non-prime land identified through this analysis can be considered as the basis for applying Principle 7 of the State Policy on the *Protection of Agricultural Land 2009* which states:

“The protection of non-prime agricultural land from conversion to non-agricultural use will be determined through consideration of the local and regional significance of that land for agricultural use.”

Land that is potentially available for agricultural use has been identified using the following criteria.

- Private Land within the Rural Zone.
- Land Capability Class 6 or better.
- TasVeg code indicating agricultural use or previously cleared land.
- Not under formal reserve
- Area of such land within a parcel greater than 1 ha.

The total area of Potentially Available Agricultural Land in the Region is 1,030,986 hectares

It is common for land parcels that are adjoining and farmed by the same business, to be rated together and identified with a unique Property Identification Number (PID). We have therefore analysed the areas of land associated with each PID, assuming that each PID represents a unique farming business; in effect we have assumed that the PID is a reasonable surrogate for a farm holding. This will not always be correct, but we believe the number of farming businesses or holdings comprising more than one PID to be small. The basis for undertaking this analysis is to gain an understanding of how parcel and holding size relates to productivity for each Municipality.

Analysis of the parcels and holdings within the Potentially Available Agricultural Land provides the following statistics.

Table 2. Potentially Available Agricultural Land (PAAL) in each municipality

	BO'D	Dorset	Flinds.	GTC	Lton	MVC	NMC	WTC
Area of PAAL (ha)	47201	100730	48261	19222	40660	99780	217548	27082
Number of parcels	1577	2028	670	573	1731	2803	2001	1760
Number of PIDs	875	1588	467	422	1311	2145	1138	1431

⁶ Land capability includes consideration of soils and climate (See Grose 1999)

⁷ Class 7 has been excluded from the PAAL area as it is considered to have no value to agriculture (See Appendix 2 for Land Capability definitions from Grose (1999))

The distribution of PID sizes is shown in Figure 2.

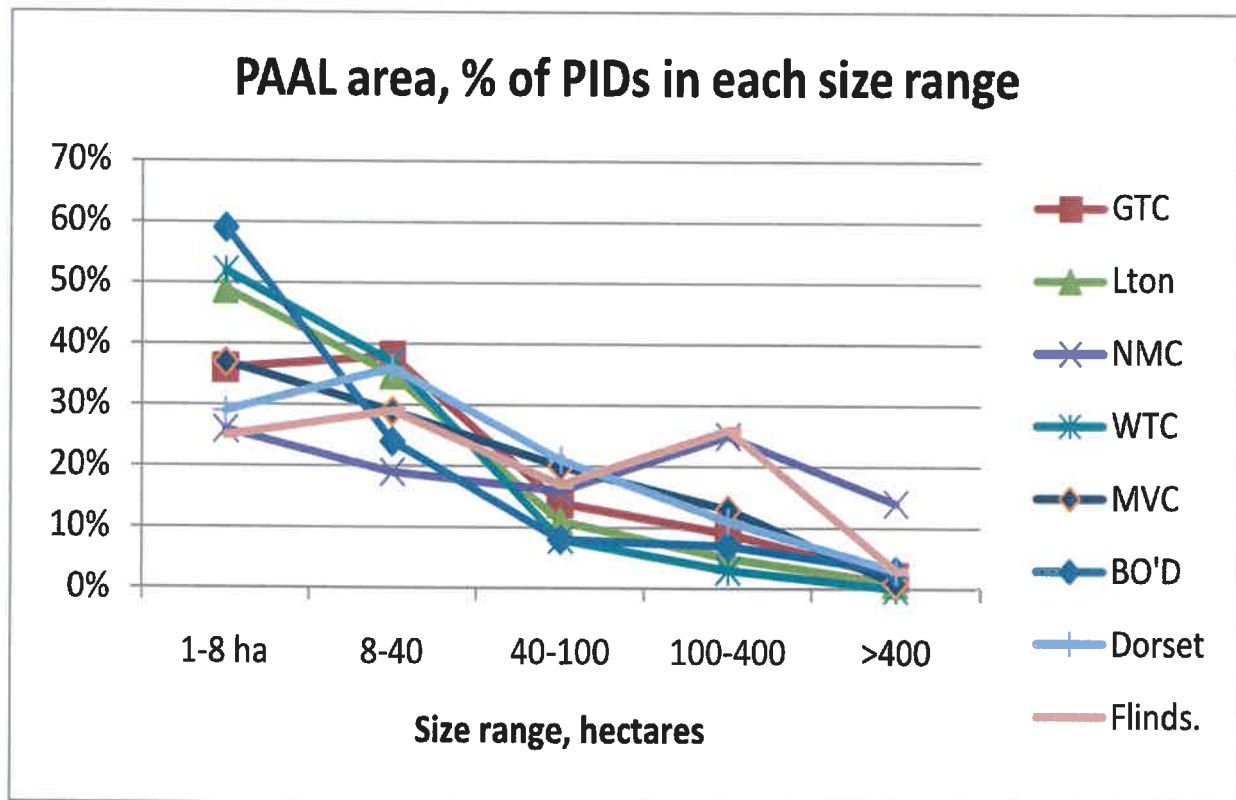


Figure 2. Percentage frequency distribution of PID sizes

Figure 2 indicates the distribution of the PID size ranges in each municipality in the Region. In Break O'Day, Launceston and West Tamar 50-60% of PIDs are less than 8 hectares, and 35-38% are in the range 8-40 hectares.

Larger PIDs (or parcels) have potential for a greater range of profitable uses and also have greater scope to capitalise on efficiencies gained through economies of scale. The size of a title has considerable influence on the enterprise options likely to be undertaken. For all agricultural activities, there is a minimum size below which investment in infrastructure or agricultural improvements is not warranted due to economies of scale. While this can be overcome to some extent by spreading the enterprise across adjacent and nearby titles, ownership or the capacity to lease is a limiting factor, if land availability is affected by diverse ownerships. This limiting factor is compounded when there are numerous small titles involved.

This report assumes the following size ranges based on analysis of enterprises common to the Region and the customary range of agricultural practices:

- Greater than 400 hectares
- 400 – 100 hectares
- 100 - 40 hectares

- 40 - 8 hectares
- 8 - 1 hectare

Although the viability of holdings is dependent upon a range of factors, the size variables are reflective of the potential to conduct agriculture if other factors are preferable, such as access to water for irrigation and the capability of the land. For example while a title larger than 40 ha may still not be large enough to be “viable”, a title of that area is generally large enough to be practically useful for the types of enterprises common in the Region. Titles less than 8ha, have limited capacity for the full range of agricultural activities common in the Region, but may still have characteristics suitable for some industries.

Figure 3 shows the percentage of PIDs less than 40 hectares in area and greater than 100 hectares, and Figure 4 shows the total area of land in PIDs greater than 100 hectares in each municipality.

Over 50% of the PIDs are less than 40 hectares in all municipalities except Northern Midlands (45%), and over 80% of PIDs are less than 40 hectares in Break O’Day, Launceston and West Tamar. Conversely, the highest percentage of PIDs greater than 100 hectares is in Northern Midlands (39%), and the lowest is West Tamar (3%).

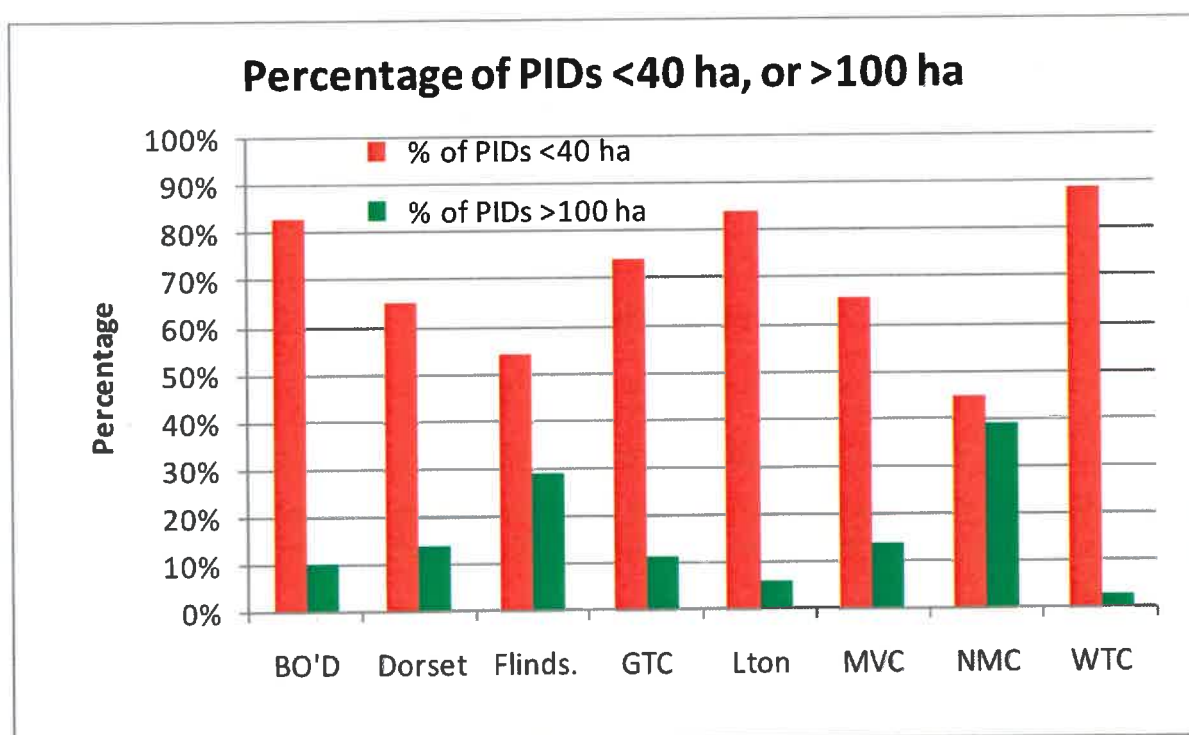


Figure 3. Percentage of PIDs <40 ha in each municipality

The cumulative area of land in PIDs greater than 100 hectares is highest in Northern Midlands (200,000 ha), and lowest is West Tamar (5,388 ha).

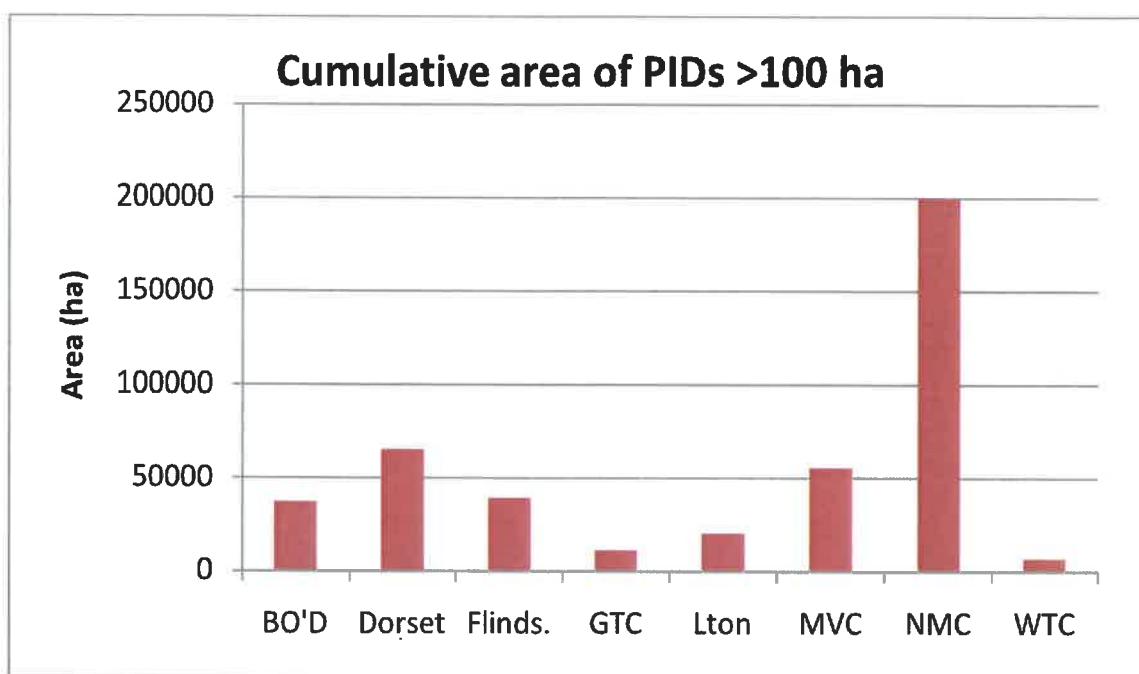


Figure 4. Cumulative area of PIDs >100 ha in each municipality

The Land Capability of the PAAL area in each municipality is indicated in Figure 5. The area of Prime Agricultural Land (Capability classes 1-3) is much less than the non-prime area, representing in total 6% of the PAAL area on the Northern Region. The greatest area is in Meander Valley where there is 16,118 hectares of Prime Agricultural Land in the PAAL area. The largest areas of class 4 land are in Northern Midlands and Meander Valley. In the entire Northern Region, 48% of the PAAL area is LC Class 4, 39% class 5 and 8% class 6.

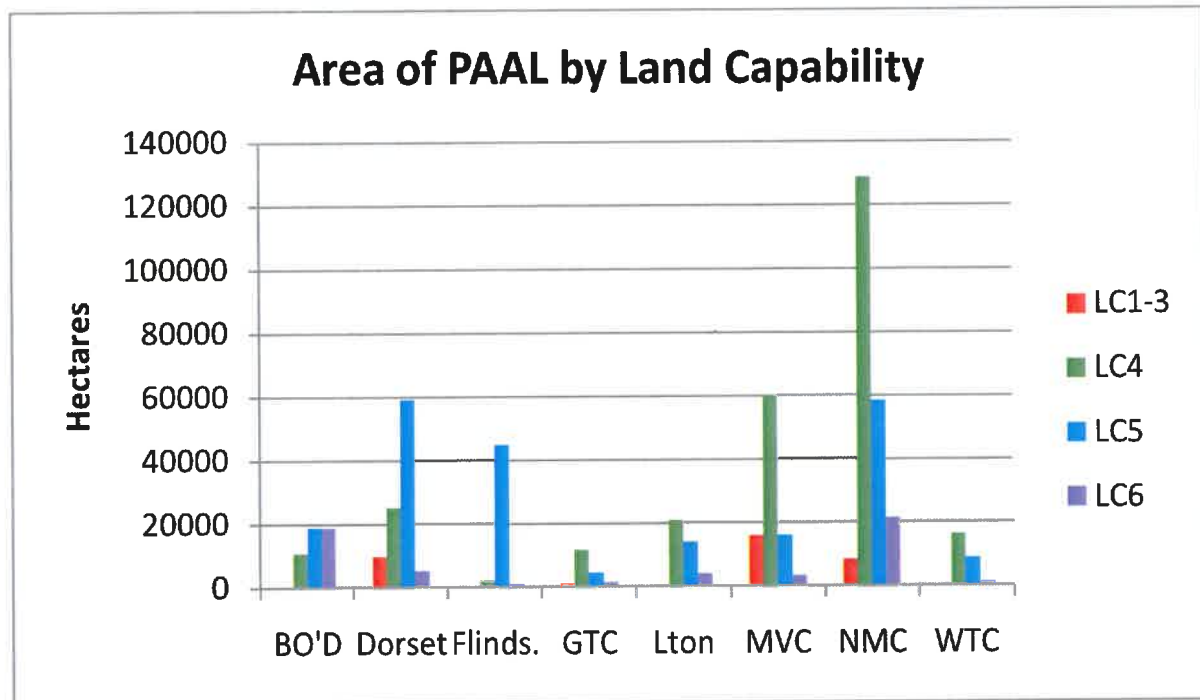


Figure 5. Area of PAAL by Land Capability for each municipality

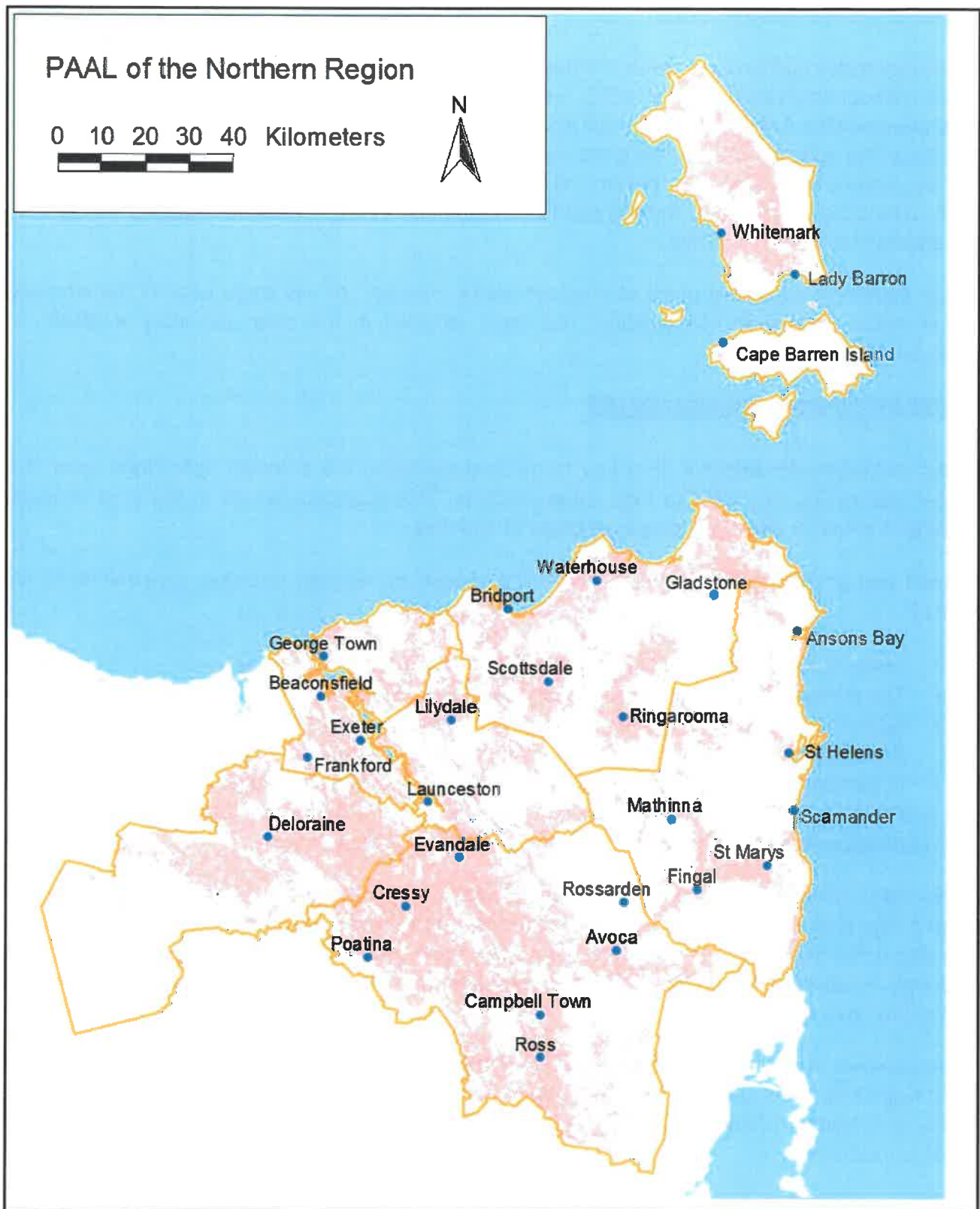


Figure 6. The Potentially Available Agricultural Land (PAAL) in the Region.

OTHER VEGETATION COMMUNITIES

All municipalities contain large areas of Private Land in the rural zones with forest and woodland vegetation communities (DPIPWE, 2008) which are not classed as Threatened communities⁸. The total area over the 8 municipalities is 337,152 hectares. While some of this could be cleared and developed for agricultural uses, there are considerable restrictions on this occurring. In addition to the regulatory constraints, much of this land is in Capability classes 5-6, so the land would be most likely to be used for grazing or forestry plantations. In those circumstances the cost of clearing and development is difficult to justify.

In our opinion, it is unlikely much of this land will be cleared. At this stage none of the land with “other native vegetation communities” has been included in the area potentially available for agriculture (PAAL).

WATER RESOURCES FOR IRRIGATION USE

Water availability for irrigation is a key factor in determining the potential agricultural uses of a parcel, particularly for intensive high value products. This resource can be in the form of winter storage in dams, or direct pumping from bores or streams.

Current and potential water resource availability in each municipality has been determined as the sum of:

- Water currently licensed for direct taking from a stream for irrigation.
- The licensed capacity of irrigation dams already constructed or approved.
- Additional water supplied from irrigation schemes (e.g. the Cressy Longford Irrigation Scheme).
- In general there is little use of water for irrigation in the Northern Region from bores, although there are certain areas where groundwater is used for irrigation. Groundwater use is not measured and has therefore not been included in this assessment.

While there are other irrigation developments under investigation, only schemes where there has been a high level of commitment have been included in the assessment of current water availability. It is also noted that the current water resources that have been included do not all have a high level of supply reliability; for example direct summer takes from many rivers and streams are restricted due to low flows in summer.

The quantities of water available in each municipality, and the quantity per hectare of PAAL with Land Capability 1-4 is shown in Figure 7. Water resource availability is greatest in Dorset, Meander Valley and Northern Midlands Municipalities (67,000 to 85,000 ML) with minimal amounts in the other municipalities.

The land most likely to be irrigated is in Land Capability Classes 1-4, although some Class 5 land is also irrigated (generally for pasture rather than crops). The quantity of water per hectare of PAAL in Land Capability Classes 1-4 ranges from 0.1 (George Town Municipality) to 1.9 ML/ha (Dorset).

⁸ Threatened vegetation communities as per Schedule 3A under the State Nature Conservation Act 2002, and the two lowland grassland communities listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999

This ratio indicates greatest water availability and/or use in Dorset, Meander Valley, Break O'Day and Northern Midlands. Water availability in Break O'Day is surprisingly high at 0.9 ML/ha, probably the result of the intensive irrigation of dairy pastures at Pyengana, and a number of large dams and direct takes in the upper reaches of the South Esk catchment. Availability also seems high for Flinders at 0.5 ML/ha; we believe this is simply because the area of class 4 land is small (2,186 ha).

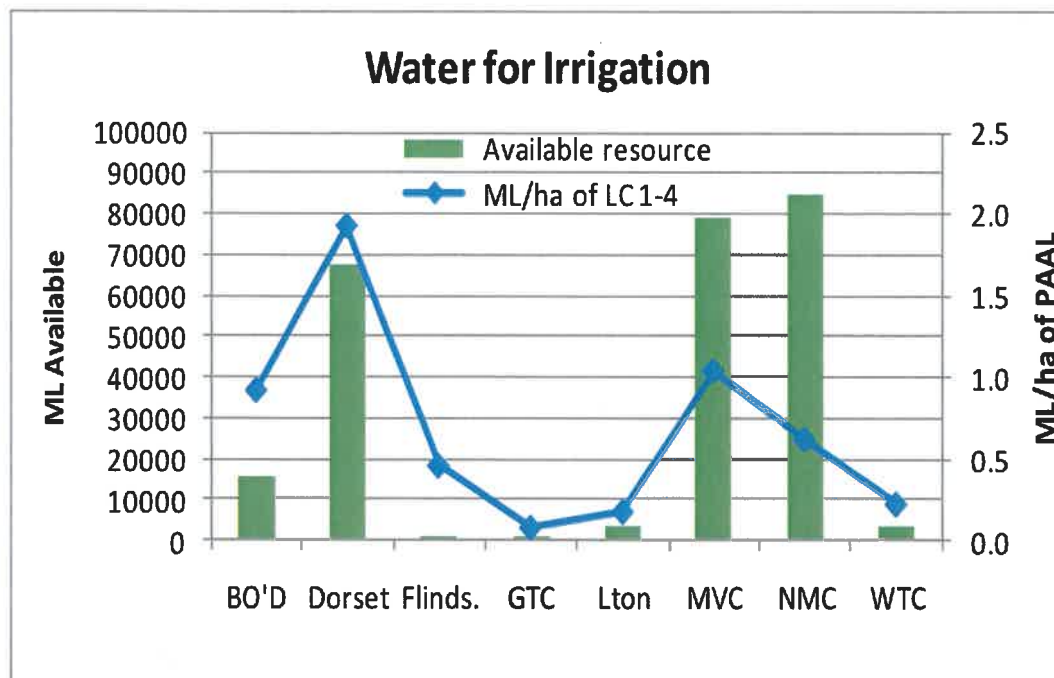


Figure 7. Irrigation water resources by municipality

There are a number of Declared Irrigation Districts in the Northern Region (see Table 3).

Table 3. Declared Irrigation Districts

Municipality	Irrigation Districts
Dorset	Winnaleah Irrigation Scheme, Great Forester
Meander Valley	Meander Valley Irrigation Scheme, Rubicon, Caveside-Dairy Plains, Quamby-Osmaston, Hagley, Whitmore
Northern Midlands	Cressy-Longford Irrigation Scheme, South Esk
Northern Midlands	Lake Leake/Elizabeth/Macquarie
Northern Midlands	Tooms Lake/Macquarie.

The Tasmanian Irrigation Development Board is investigating other schemes to provide additional water in the Northern Midlands and Dorset municipalities. At this time it is not yet determined whether these schemes will proceed.

CURRENT USE OF THE AGRICULTURAL LAND RESOURCE

The ABS data taken from the 2005-06 census and re-issued in 2008 has been used to describe land use areas (excluding plantations) and an estimated value of production (expressed as Estimated Value of Agricultural Operations or EVAO) (ABS, 2008). Private Forests Tasmania data (email comms. 12/10/'10 PFT) has been used to describe the extent of plantation activity on Private Land and employment statistics have been used to provide context of the relative importance of agriculture to the Municipality.

ANALYSIS OF ABS STATISTICAL DATA

Analysis of the ABS data is based on two components;

- Land use - areas of land allocated to various agricultural uses, and numbers of businesses.
- Values of production.

Land use

The areas of land in the major land use categories are shown in Table 5 and in Figure 8

Table 4. Agricultural land use areas from ABS (2008)

Area (hectares)	BO'D	Dorset	Flinds.	GTC	Lton	MVC	NMC	WTC	TOTAL
Grazing pasture	38536	76228	38563	16412	30869	77986	260787	13499	552907
All crops (inc. hay)	1989	7064	1989	644	1192	8592	29834	2118	53422
Native vegetation	17243	35048	17243	4871	5428	9436	43737	3056	136062
Plantations (from PFT)	12386	14901	252	5236	12127	14884	9969	5851	75606
TOTAL	70181	133241	58047	27163	49616	110898	344327	24524	817997

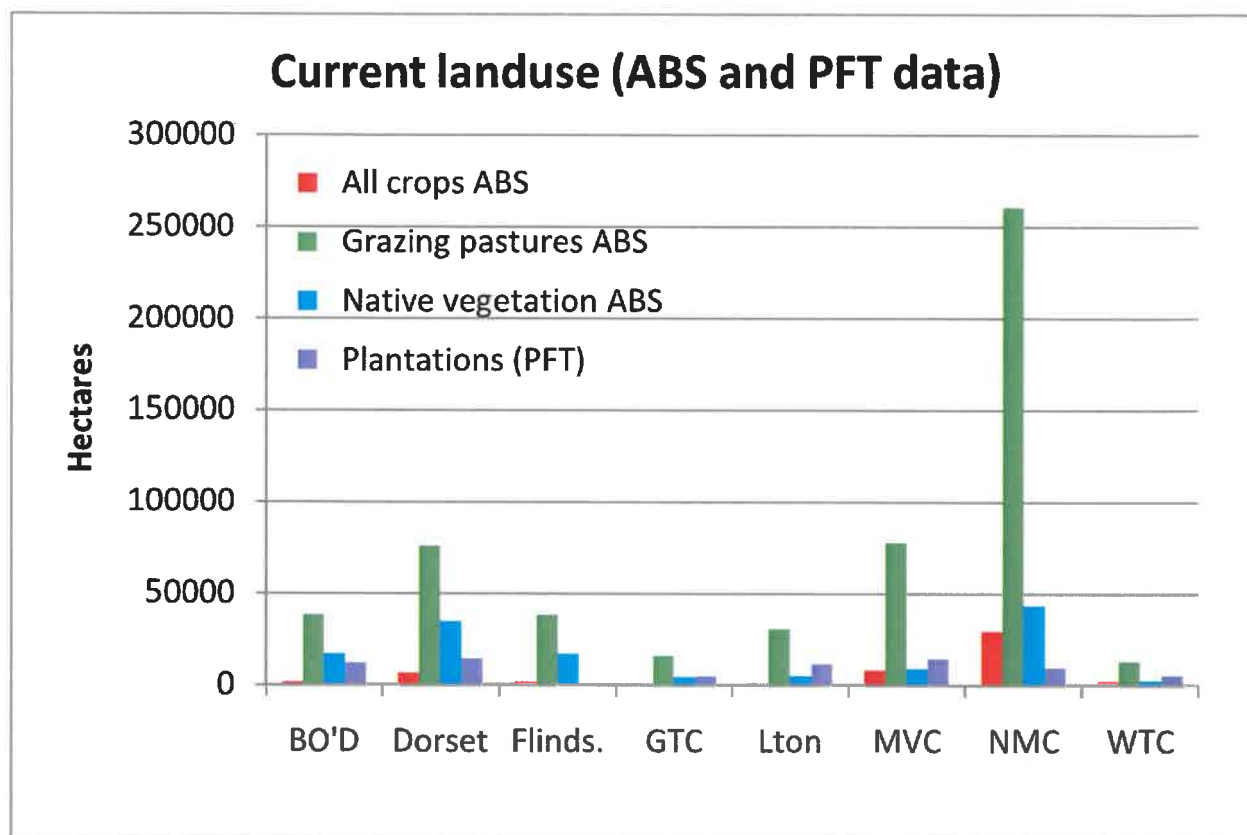


Figure 8. Landuse by municipality

Grazing

Grazing land is the predominant land use in all municipalities and is clearly greatest in Northern Midlands, with large areas also in Dorset and Meander Valley.

Table 5. Number and scale of grazing activities

	BO'D	Dorset	Flinds.	GTC	Lton	MVC	NMC	WTC	TOTAL
Establishments with sheep	40	71	58	5	48	232	266	60	780
Average flock size	2093	1184	2054	927	969	800	3333	399	1470
Establishments with beef cattle	50	272	75	58	112	308	188	115	1178
Average herd size	316	200	267	159	112	132	295	73	194
Establishments with dairy cattle	12	75	0	2	3	84	9	6	191
Average herd size	213	387	0	117	409	410	128	275	242

Northern Midlands has the largest number of sheep enterprises, and the largest flocks. While the number of flocks is lower, the flock sizes in Break O'Day and Flinders are relatively large. This is consistent with our experience that sheep are generally preferred in lower rainfall environments, and cattle are preferred where rainfall is higher.

The dairy industry is very large in Meander Valley and Dorset, with many herds and large average herd sizes. There are a few herds in the other Municipalities, and none on Flinders.

Livestock numbers can be converted to Dry Sheep Equivalents (DSE). The conversion is based on the feed requirements of each type of animal, and its' feed requirement relative to a 45 kilogram Merino wether. For example, a dairy cow is equivalent to approximately 18 DSE. Use of DSE's provides a reliable assessment of the total feed requirements for the mix of livestock.

An analysis of DSE's by Municipality is shown in

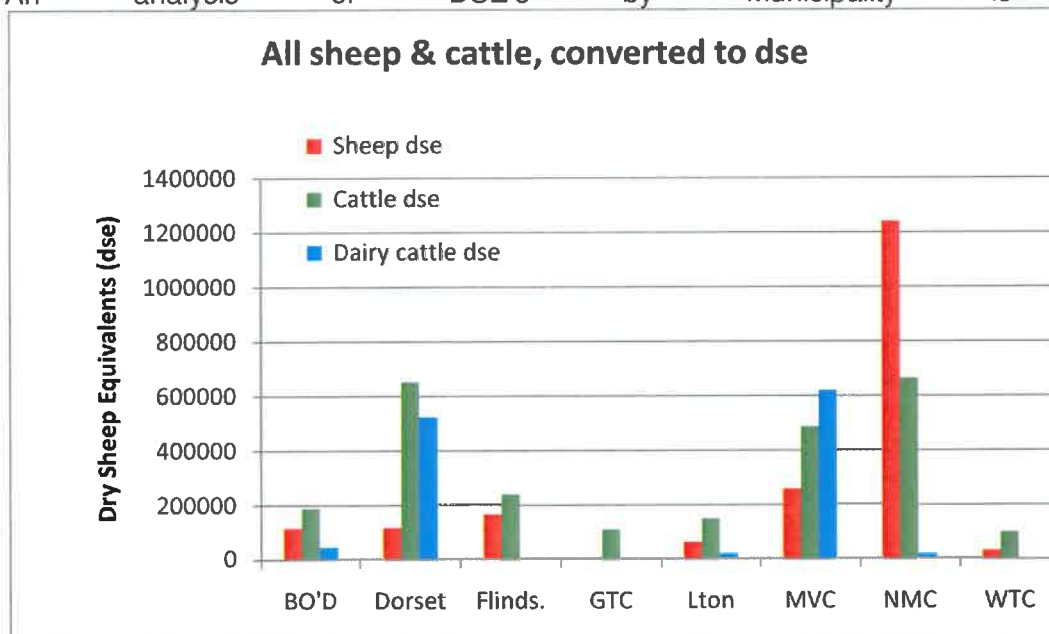


Figure 9. This shows livestock enterprises to be highest in Northern Midlands, Meander Valley and Dorset, with sheep greatest in Northern Midlands, and beef cattle similar in Northern Midlands, Meander Valley and Dorset. Dairy cattle are highest in Meander Valley and Dorset (see

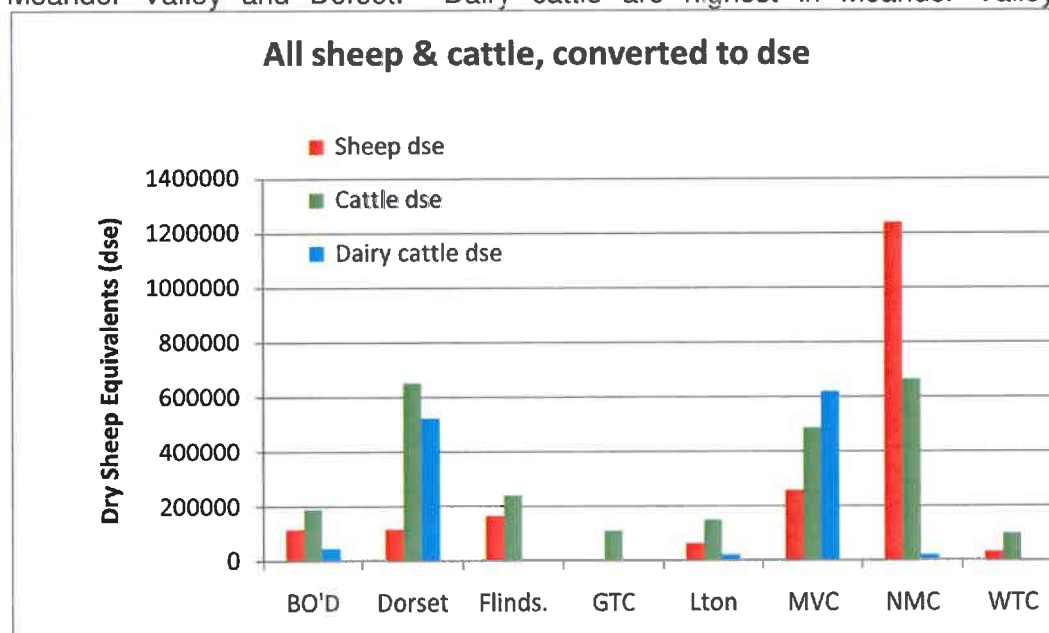


Figure 9).

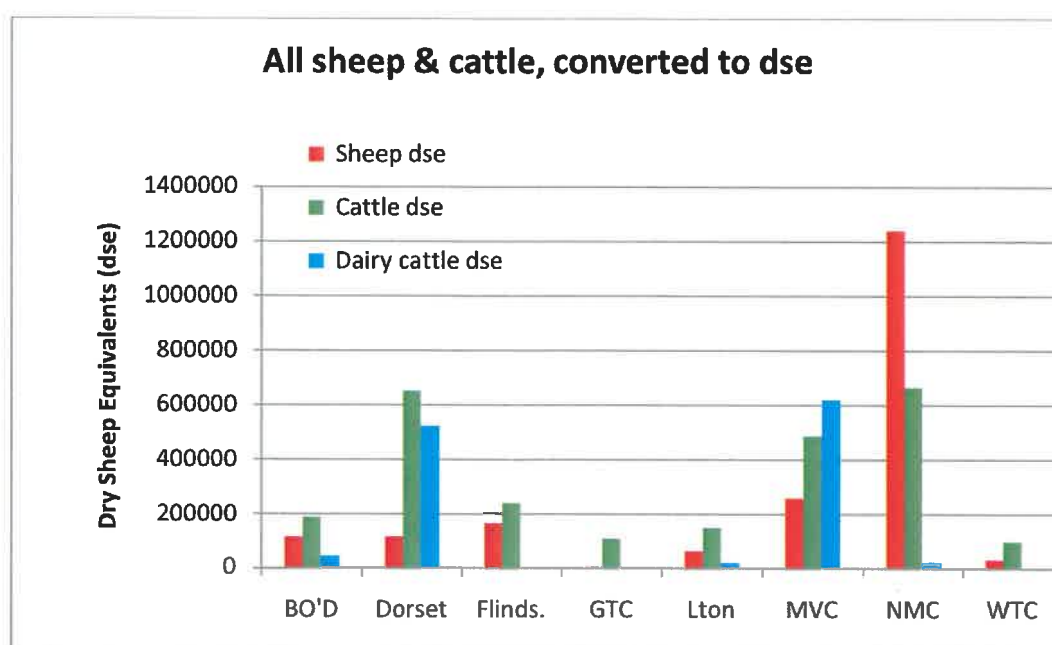


Figure 9. Livestock as Dry Sheep Equivalents in each municipality

There is limited activity with other livestock enterprises, with a small number of establishments with significant activities involving poultry (for eggs), horses and bees.

Broadacre and vegetable cropping

The areas of land used for broadacre cropping and vegetables are shown in Figure 10. The largest area of broadacre crops is in Northern Midlands, with smaller areas in Meander Valley and Dorset. These same three Municipalities also have large areas of vegetables crops.

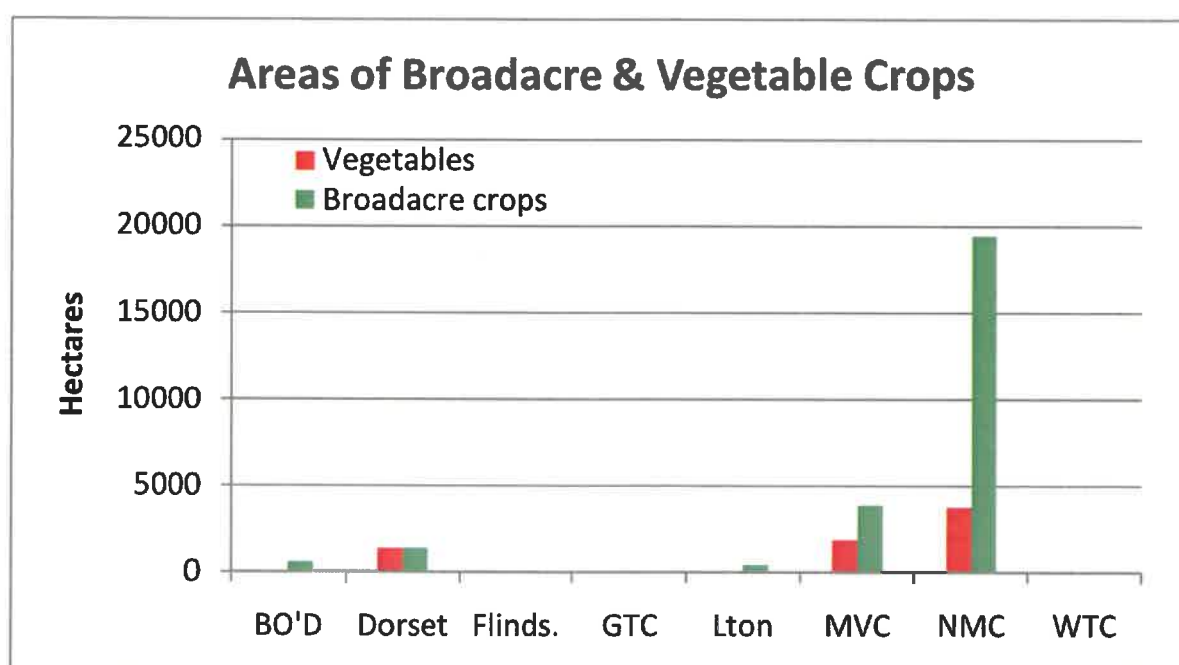


Figure 10. Areas of broadacre and vegetable crops

VALUES OF PRODUCTION

Total farm gate values of production (EVAO) for each municipality and the average EVAO per establishment are shown in Figure 11.

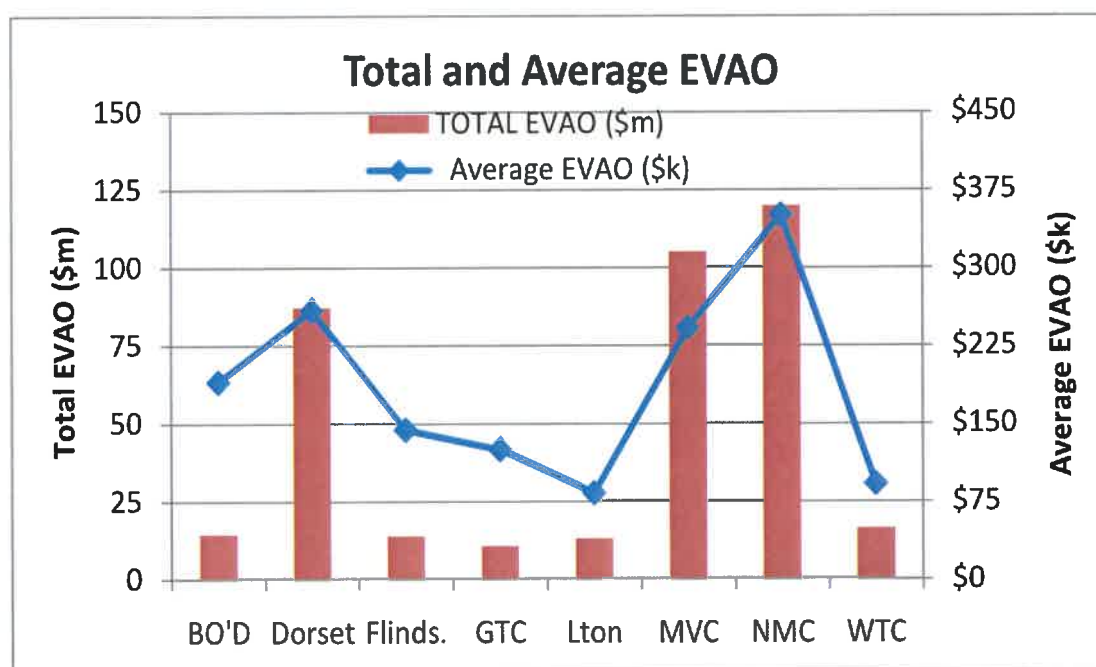


Figure 11. Total and average EVAO per establishment for each municipality

Total Estimated Value of Agricultural Output (EVAO) is highest for Northern Midlands (\$120m) followed by Dorset (\$87m) and Meander Valley (\$105m), and lowest for George Town (\$11m).

Average EVAO per establishment is highest for Northern Midlands (\$351,000), followed by Dorset (\$250,000) and Meander Valley (\$242,000), and lowest for Launceston (\$83,000).

The average EVAO per establishment can be used as a measure of the average turnover of establishments. In the author's opinion experience, a farm with a turnover of less than \$150,000 is often not independently viable. In the author's opinion a viable farm is one producing sufficient income to provide for a family and provide full time employment for one person. Thus, farms with an EVAO of less than \$150,000 are likely to be "part-time" or "hobby farms" requiring off-farm income to support a family.

The average EVAO in Launceston and West Tamar are well below the threshold of \$150,000, and Flinders and George Town just below. These figures support the general perception that there are many "part-time" or "hobby farms" in Launceston and West Tamar.

The main components of total EVAO are shown in Figure 12.

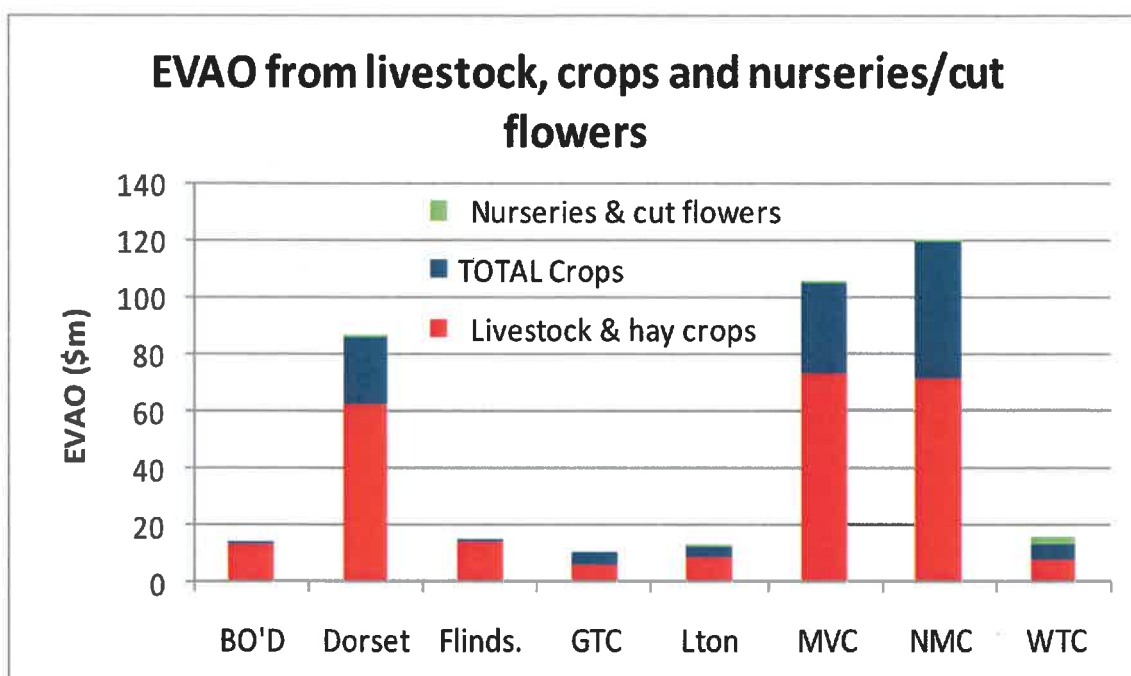


Figure 12. Main components of EVAO for each municipality

Livestock (including hay crops) provide the largest proportion of EVAO in all municipalities.

Value of livestock

The combined value of livestock slaughtering, livestock products and hay crops make the greatest contribution to municipal EVAO in all municipalities, ranging from 99% of total EVAO in Flinders to 49% in West Tamar. Hay crops are included on the assumption that all hay will be fed to livestock.

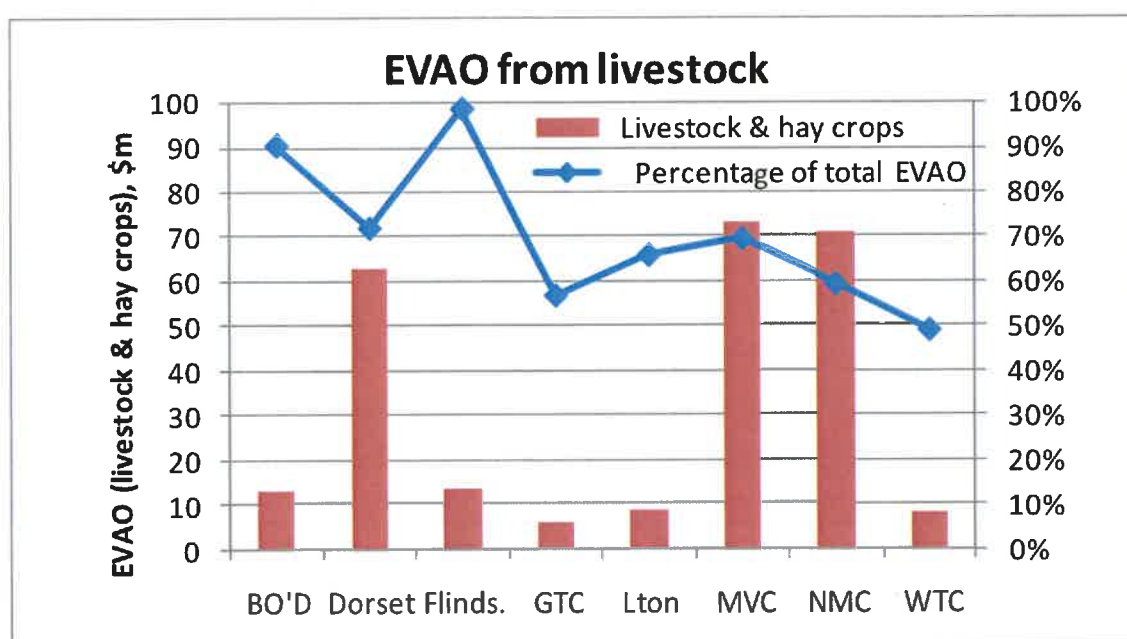


Figure 13. Livestock EVAO

Livestock including slaughtering, products and hay crops provide EVAO of \$60m to \$70m in Dorset, Meander Valley and Northern Midlands, and \$6m to \$14m in the other municipalities.

The EVAO contributions from the various livestock sectors are shown in Figure 13.

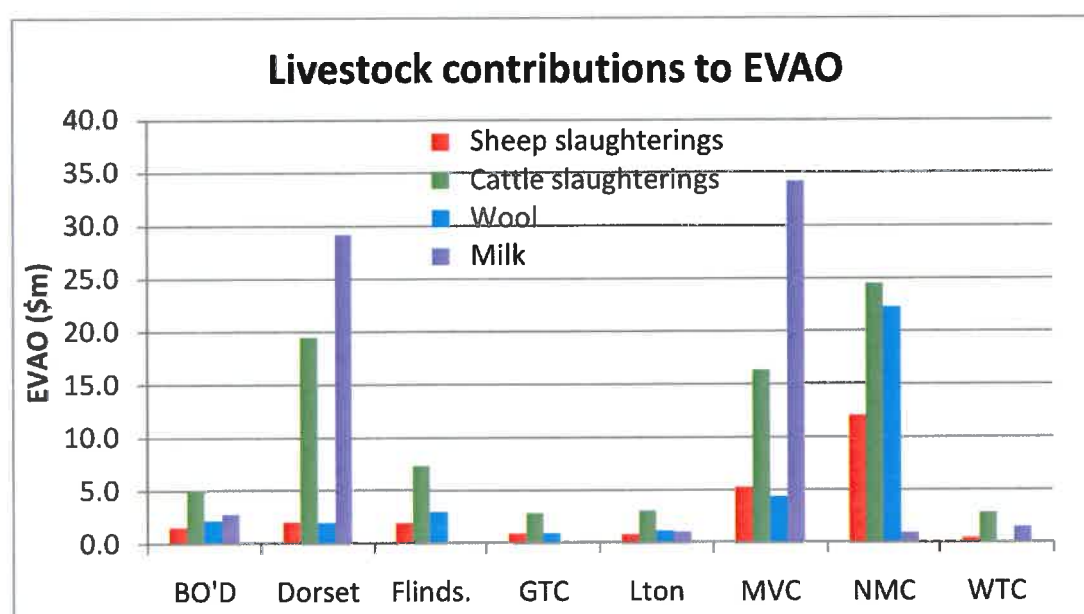


Figure 14. Components of livestock EVAO

On a regional basis, sheep (for slaughter and wool) in Northern Midlands are the dominant contributors to livestock EVAO, while in Dorset and Meander Valley dairy production is the most valuable product. Again on a regional basis, beef is particularly important in Northern Midlands, Dorset and Meander Valley.

It is interesting to note that in the 5 municipalities with the lowest total value of livestock production, beef is the most valuable of the 4 commodities.

Value of crops

The EVAO of the main crops is shown in Figure 15.

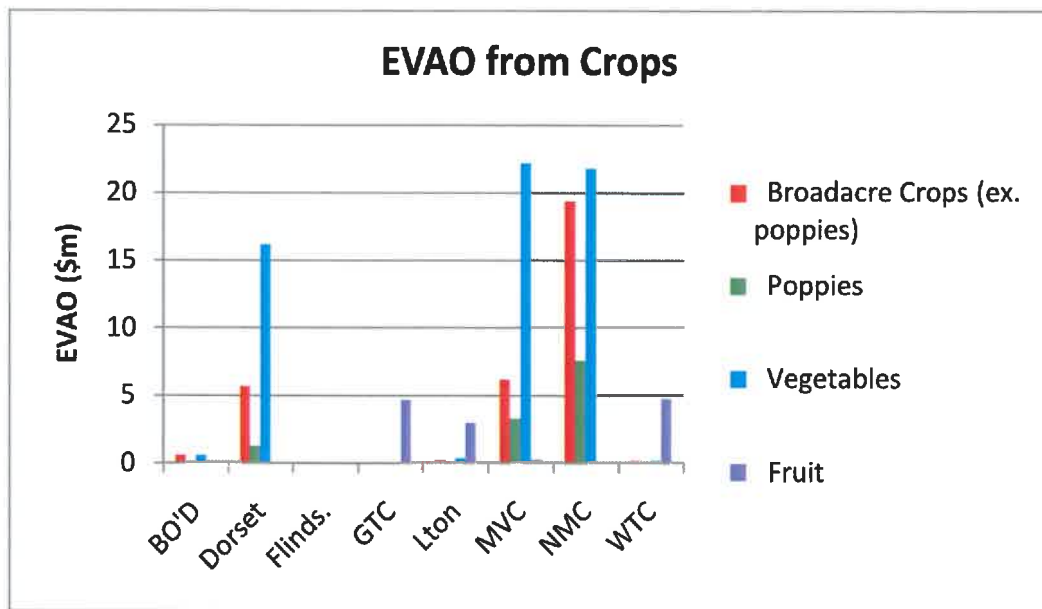


Figure 15. EVAO from Crops

Broadacre crops include cereals, oil seeds (including canola), pasture seeds and a range of other crops. The combined EVAO from these is greatest in Northern Midlands, with smaller values of EVAO in Meander Valley and Dorset (see Figure 15).

EVAO from vegetables is highest in Meander Valley and Northern Midlands, and also very significant in Dorset. There is little vegetable production in the other municipalities.

Fruit production is the highest contributor to crop EVAO in West Tamar, George Town and Launceston. The value from vines has not been determined separately, but is known to be a significant contributor in these three municipalities.

The Nurseries and cut flowers activities contribute more than \$1m of EVAO, only in Dorset and West Tamar, and the number of establishments is small (3 in Dorset and 5 in West Tamar).

AGRICULTURE AND EMPLOYMENT

ABS employment data from the 2005-06 Census shows a total of 3,274 people working in the Region in agriculture, forestry and fishing⁹ (see Table 6). This represents 6.4% of the total employed.

⁹ The sum of the first four rows in Table 6

Table 6. Employment by industry sector based on ABS (2008)

Employment sector	BO'D	Dorset	Flinds.	GTC	Lton	MVC	NMC	WTC	TOTAL
Agriculture	132	509	110	89	226	666	578	190	2500
Forestry & logging	39	112	0	12	123	45	37	9	377
Fishing, hunting & trapping	21	9	6	3	21	3	3	7	73
Ag, forestry & fishing support, and nfd (1)	45	44	3	3	80	55	53	41	324
Other employment inc. inadequately stated	1399	1881	280	2506	32047	3846	2921	3124	48004
TOTAL employment	1636	2555	399	2613	32497	4615	3592	3371	51278
% in Ag. & related (2)	14.5%	26.4%	29.8%	4.1%	1.4%	16.7%	18.7%	7.3%	6.4%

(1) nfd - not further defined

(2) Ag. & related includes Agriculture, Forestry & logging, Fishing, hunting & trapping and Ag, forestry & fishing support and nfd.

The percentage of employees in agriculture (and related sectors) varies from 1.4% in Launceston to 29.8% in Flinders.

Schirmer (2009) calculated employment per 100ha of both hardwood and softwood plantations for Tasmania between 2006 and 2008 at 0.33 to 1.84 per 100ha. This range is high, with the ratio depending on particular circumstances associated with each plantation. For the Northern Region Municipalities we have assumed an average employment of 0.45 persons on-farm per 100 hectares of plantation. This is based on a total area of plantations for the Region of 75,606 hectares. (from PFT as at December 2009). On this basis total employment in plantation forestry on private land is calculated at 340 compared to the total of 377 from the ABS figure for employment which includes all forestry activity in the Region, not just plantation forestry on private land.

Table 6, shows 2500 people employed in agriculture alone and an additional 377 in the forestry and logging sector, some of whom it can be assumed are employed in plantation forestry on private land within the Region. The agricultural sector alone¹⁰ represents 5% of the employment in the Region. If the total forestry and logging employment figure of 377 is considered this adds another 1% employed in agriculture in the Region. However, if Launceston is excluded from the calculations, the agricultural sector represents 12% of the employment in the Region and forestry and logging adds another 1%. Based on these figures agriculture is an important contributor to the Regional economy and plantations on private land is a relatively minor part of this. The Launceston Municipality is unique in the Region not only as it represents the Municipality with the lowest proportion of employment in the agricultural sector but also because it has the highest proportion of the agricultural sector employed in plantation forestry (35%)¹¹.

¹⁰ Using the total figure of employment for the Region (51,278) and the figure for the agricultural sector (2500). This does not include plantations on private land, fishing, hunting and trapping and support services.

¹¹ Based on the Agriculture and Forestry and logging sectors only.

CONCLUSIONS¹²

The characteristics of the land and water resources in each municipality will affect the utilisation of those resources for agriculture. Other factors are also important, for example the proximity to larger urban centres and markets, but in developing these conclusions we have focussed on the impacts of the land (and water) resources and the parcel sizes.

Figure 16 shows the relationship between the quantity of water available for irrigation and the total EVAO for each municipality. The municipalities with the highest EVAO have the largest quantities of water for irrigation (Northern Midlands, Meander Valley and Dorset).

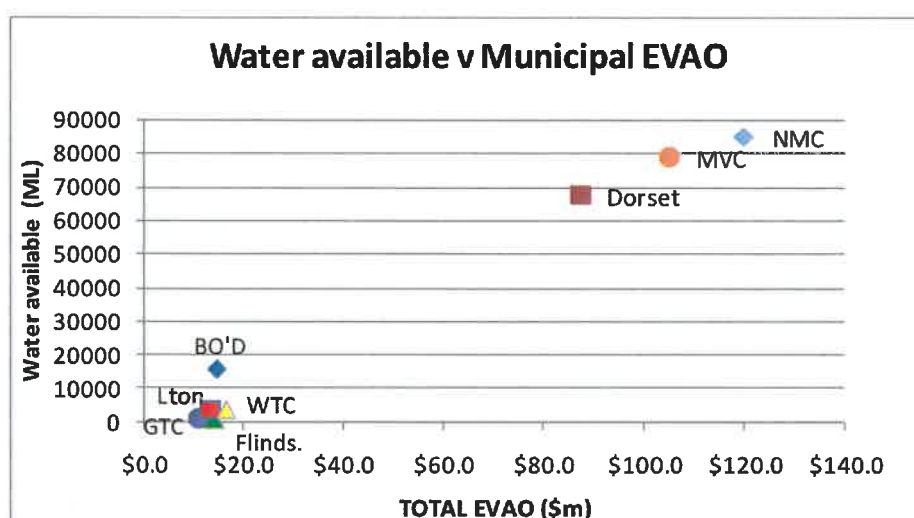


Figure 16. Total municipal EVAO v water available for irrigation

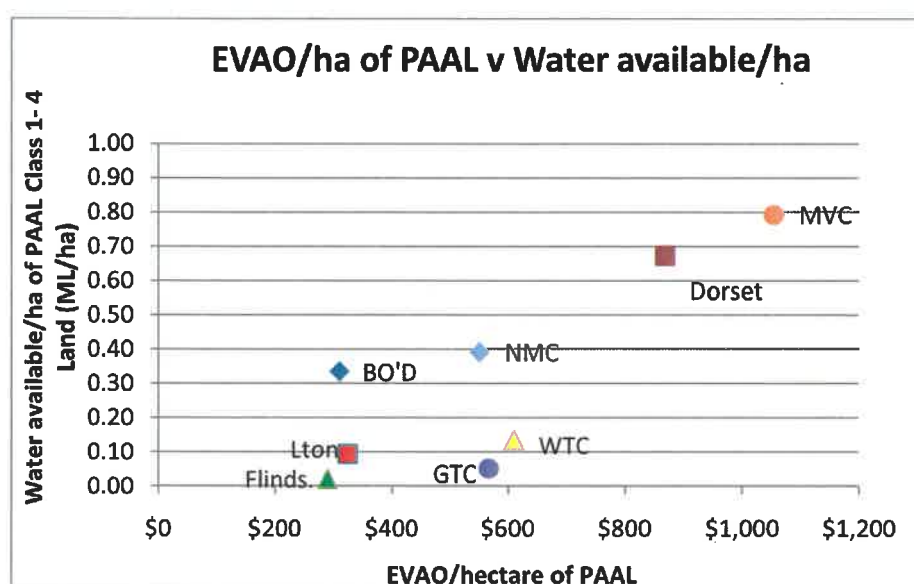


Figure 17. EVAO per hectare v water per hectare for irrigation

¹² The potential impacts of climate change on agricultural activity in the Municipality have not been considered; this issue is the subject of a number of other investigations

The three municipalities with the highest EVAO also have the largest areas of PAAL. However, as shown in Figure 17, Meander Valley and Dorset with the highest quantities of water per hectare of PAAL, also have the highest EVAO per hectare of PAAL.

There are obviously interactions between water availability, Land Capability and EVAO. These graphs demonstrate the close relationship between EVAO on a per hectare and municipal basis and water availability, particularly in Meander Valley, Dorset and Northern Midlands.

There is a close relationship between average holding size area and average EVAO for each municipality. Northern Midlands clearly has the highest average EVAO and the largest average property size. Meander Valley and Dorset also have relatively high average EVAO, but relatively small holding sizes. This can most likely be attributed to the higher irrigation capacity and increased proportion of better quality land in these two municipalities compared to for example Flinders which has little irrigation development and no Class 1-3 land.

A recent study by (Mooney, 2010) which looked at farm diversification in the Northern Midlands draws out complex factors that influence decision making about change. The study found that the key driver for diversification was “economic”, and change was considered essential for survival of the farm business. To be able to diversify or expand the appropriate land area, land capability and water resource needs to be available.

In many parts of the Region agricultural activity is constrained due to small management units. In part this is due to the small size of parcels, but other contributing factors are lack of uniformity in soils, Land Capability and topography. This results in small scale management units, which makes it difficult to capitalise on investments in plant and equipment. This limits agricultural activities that require relatively large areas to be commercially competitive; e.g. broadacre cropping. Historically, this restraint has been overcome, to some extent, by expanding on to adjacent land, however, where there is existing non-agricultural development on adjacent land this option for expansion becomes less feasible. This is particularly relevant for West Tamar, Launceston and George Town. Alternatively diversification into more intensive land use and/or higher value products is appropriate where the soil and water attributes are favourable. This is particularly relevant for Dorset, Meander Valley and Northern Midlands. Where small parcel size, lack of uniformity in topography and soils is combined with lack of high quality land and lack of irrigation resource capability, there are very few options for productive agricultural use of this land. It is interesting to note that water availability per hectare of class 1-4 land is also low for the Launceston and West Tamar municipalities.

LIVESTOCK

Grazing of pastures and fodder crops is currently the main agricultural use of land (based on geographical extent) in all municipalities and this is likely to continue. It is noted that fodder and crops for hay (such as cereals) are commonly part of a pasture renovation program, with the ultimate aim being more productive pasture for grazing.

Conversion of livestock numbers to Dry Sheep Equivalents shows the highest number of dse's is in Northern Midlands, with large numbers in Meander Valley and Dorset. Sheep predominate in Northern Midlands, dairy cattle in Meander Valley and beef cattle in the other 6 municipalities.

Sheep enterprises are best suited to the lower rainfall areas (e.g. Northern Midlands), where poorer quality pastures are more suitable for wool than meat production. In higher rainfall areas pasture

production and quality is better, and that is more suitable for meat production (via beef cattle or meat sheep breeds).

Where irrigation is available pasture production is more reliable and pasture of better quality can be grown for livestock, thus yields per hectare are higher. However, the higher cost of inputs (eg; water & fertilizer) to maintain this feed means that the pasture must be converted to higher value product, such as milk. As a result, dairying is best suited to higher rainfall areas and land with irrigation (eg, Dorset and Meander Valley Municipalities).

The area of Prime Agricultural Land is relatively small, only 6% of the total PAAL area. While the Prime land can be cropped intensively, the non-Prime land needs to have a pasture phase in rotation with crops. The intensity of cropping can vary from, say, 2 to 5 years of crop in 10 years. During the pasture phase, livestock are carried to utilise the pasture. As the majority of cropped land is in Land Capability class 4, this means that livestock production will likely continue to be an integral part of nearly all the cropping land in the Northern Region.

Returns per hectare are generally relatively low (except where the stock are run intensively on high-producing pastures (high rainfall or irrigated land), so farms need to be large in area to be independently viable if livestock is the primary agricultural activity on the farm.

BROADACRE CROPS

Broadacre cropping is mainly conducted in the Northern Midlands and Meander Valley Municipalities, on land in Capability classes 3 and 4. A variety of supporting resources have developed around these industries, including for example processors, contractors, merchandise suppliers and technicians (e.g. agronomists). Currently a wide variety of crops are grown, including cereals, oil seeds, poppies and pasture seeds.

These crops generally require some irrigation (not necessary for cereals), reasonable soils, plant and equipment and skills. Financial returns are generally medium, i.e. higher than grazing but lower than for vegetables.

Most arable land in the Northern Region is suitable for broadacre crops, although there are some specific requirements, for example pyrethrum requires very well drained soils, and harvesting of cereals has been difficult in some humid coastal areas.

Farms with broadacre crops require reasonably large paddocks and cropping areas for machinery ownership and operations can be cost-competitive (because returns per hectare are “medium”). In addition, broadacre cropping is more likely on Capability class 4 land which will require a period of pasture and thus grazing. Such farming operations are commonly called “mixed farms”, with the mix of enterprises a necessary consequence of the Land Capability and crop rotation requirements. To be commercially viable, each of the enterprises needs to be of a reasonable scale to be economically efficient.

HORTICULTURAL CROPS

Most horticulture in the Region is based on processed vegetables, such as potatoes and peas, although there have been substantial areas of onions, carrots and broccoli for example for fresh (i.e. un-processed) markets (both local and overseas).

These crops require land in Capability classes 1-4, and irrigation. Crop areas tend to be at least 5-10 hectares. The main determinant of the areas planted is the availability of market contracts and it is necessary to have a market arranged before planting. Contracting companies prefer experienced growers with a minimum of 100ha and a proven track record and on-going contracts (pers. comm. 19 June 2006, David Stirling, Simplot). Cropping rotations are highly variable, but a representative rotation on Capability class 3-4 land in the Hagley area of Meander Valley is poppies, potatoes, cereals then rye grass for grazing for at least 2 years. Growing say 20 hectares of each crop in this rotation, which is relatively intensive will require 100 hectares of suitable land, and at least 140 ML of water for irrigation (allowing 4 ML/ha for the potatoes, 3 ML/ha for poppies and nothing for the cereal and ryegrass). On poorer quality land a larger areas would be required, as the intensity of cropping would be less, and the pasture phase longer.

Parts of most municipalities are suitable and Dorset, Meander Valley and Northern Midlands have the most favourable attributes for horticultural crops. The major limitations associated with the other municipalities are;

- fragmentation from not only the small size of the land parcels but also lack of uniformity in soils, topography and Land Capability, which results in small scale management units which makes it difficult to capitalise on investments in plant and equipment. (West Tamar, Launceston, George Town)
- remoteness leading to a lack of support services and making it difficult to attract contractors for most agricultural activities. (GeorgeTown, Break O'Day and Flinders)

ORCHARD FRUIT AND VINES

Orchard fruits such as cherries and pome fruits, and vines have proved to be suitable in the Tamar Valley, and it is highly likely there are additional areas where the soils and micro-climates are suitable. The pome fruit industry has been in decline presumably due to markets and cost of production. Imports from New Zealand into Australia will put pressure on local producers.

The cherry industry is expanding, with access to Japan, and there are suitable areas in the Northern Region. Climatic issues are paramount, with preference for low summer rainfall areas. Planting areas of 10-20 hectares will be preferable to justify the necessary plant and equipment.

There are areas suitable for vines and viticulture seems likely to grow in Tasmania (West, 2009). Areas in the region with potential include Northern Midlands and Tamar Valley. There are other areas in the region with suitable soils and climates (warm temperatures, low frost risk and low autumn rainfall) and further investigation into suitability is likely to lead to potential in specific areas.

NURSERIES, AND CUT FLOWERS

There are a small number of these businesses in the region. Access to markets is an important driver in site selection. The area of land required is generally small, and soil/Land Capability is not significant.

PLANTATION FORESTRY

Plantation forestry offers landowners similar advantages to cattle grazing, such as low labour input by the landowner. However, growth in the plantation industry is currently somewhat uncertain. While there is significant potential for new forestry developments, there is also a high degree of uncertainty. The "Tas Forest Principals" mentions "socially acceptable" plantations, but without any definition of what that means there is a high degree of uncertainty as to how this will be interpreted. However given past objections to plantations it can be assumed that any sort of development, especially in the Tamar Valley on existing cleared land would have to be small scale farm forestry to gain acceptance socially. "Socially acceptable" is also likely to require;

- excluding plantation activity from water supply catchment areas,
- excluding plantation activity from areas requiring conversion of native forests,
- eliminating the use of chemicals used for weed or browsing control,
- buffer distances from houses and
- exclusion of monocultures; ie must be multi species.

With the demise of MIS there is not any investment process in place for any scale of development and there is none foreseen in the immediate future. With Gunns closing their woodchips mills and selling plantations there will be a significant change to market access and probably lower returns to growers, at least in the short term while things settle. In addition the need for certification of plantations will add to costs, but possibly not to returns. All these factors above lead to a high degree of uncertainty in the scope for commercially attractive plantation forestry activity on Private Land.

Tree planting is currently the only internationally recognized mechanism for offsetting carbon emissions from other industrial sectors. Should an Emissions Trading Scheme be implemented in Australia and a competitive carbon price established; it is likely that there will be significant conversion of agricultural land to plantation forestry as an efficient and cost effective means of storing carbon for offsets. The Tasmanian Wedges Report (McLennan, 2009) indicated that up to 20% of Tasmania's arable land is considered open to conversion to forest plantations. The Tasmanian Climate Action Council has highlighted that a key priority for all sectors of Government in Tasmania will be to ensure that any policies to actively promote farm-based forest replanting are balanced with policies that adequately protect existing and future farming.

AGRICULTURAL ACTIVITIES DESCRIPTION

The Agricultural Profile identified the main agricultural activities conducted within each Municipality and the Region as a whole. These are livestock grazing, broadacre crops, horticultural crops, orchard fruit and vines, nurseries, cut flowers and plantation forestry. For each of these activities the attributes to be able to conduct these enterprises at a commercial scale have been broadly defined (see Table 7).

Table 7 can be used to analyse existing and potential land use based on the characteristics described. There are many other factors (site specific, ownership characteristics and broader regional factors) which determine the potential land use of any given parcel, however Table 7 can be used as guide to establish the potential for the most intensive land use in any given area based on easily assessable and relatively permanent characteristics. Once the potential land use has been established based on the characteristic in Table 7, the minimum separation distance between the most likely potential agricultural activity and residential land use can be considered.

Principle 1 of the *State Policy on the Protection of Agricultural Land 2009* states that “the sustainable development of agriculture should not be confined or restrained by non-agricultural use or development”. In the context of Principle 1, the terms “confined or restrained” are taken to refer to a reduction or limitation in the type, scale, or intensity of an existing or potential agricultural activity. In the author’s opinion this includes incident specific land use conflict issues (eg. dust from adjacent activity), critical mass land use conflict issues (eg. community petitions against odour/noise from an agricultural activity) as well as indirect impacts such as a changing property values due to competition from non-agricultural development.

Hider (2004) describes these three restraining areas in terms of the;

1. cost-price squeeze and the need for farmers to intensify or diversify leading to new technologies such as bird-scaring devices or new management techniques such as night harvesting.
2. community expectations where the consumer is concerned about the quality of the product, the production method and the impacts on the neighbours.
3. increasing desirability of the rural lifestyle.

In order to be able to respond to these pressures and remain viable farmers need to be able to

1. Increase the scale of their operations by acquiring more land.
2. Intensify their operations in order to increase productivity or improve quality
3. Seek to produce new products that will deliver a higher return

from (Hider, 2004)

The remainder of this section focuses on providing information on the nature of the main agricultural activities in the Northern Region to inform the implementation of Principle 1 at the strategic level.

23

dse is for F.I land on average
Hm dse for 1 headle

12-15 sheep
headle

Agricultural Profile – Northern Regional Summary 2010

Table 7. Resource requirements for various land uses

Resource	Livestock		Broad acre crops				Vegetables		Berries	Orchard fruits & vines	Nurseries & cut flowers	Forestry plantations
	Sheep	Cattle	Cereals	Others	Processed	Un-processed						
Land Capability	LC3-6	LC3-5/6	LC1-4	LC1-4	LC1-4	LC1-4	LC1-4	LC1-4	LC1-4/5	LC1-4/5	LC1-4 or N/A	LC4-6
Minimum paddock sizes	No minimum	No minimum	10-15 ha min.	5-10 ha min.	10 ha min.	10 ha min.	10 ha min.	10 ha min.	2-4 ha	2-5 ha,	2-4 ha min.	10-20 ha min.
Farm size for a "viable" business	5,000-10,000 dse (area depends on rainfall)	5,000-10,000 dse (area depends on rainfall)	Broadacre cropping will be a mix of crops in rotation with pasture and livestock. The area required for viability is highly variable.						4-10 ha	10-30 ha.	5-10 ha	10-20 ha min.
Irrigation water	Not required	Not required	Not necessary	Mostly necessary, 2-3 ML/ha.	Necessary, 2-6ML/ha.	Necessary, 2-6ML/ha.	Necessary, 2-6ML/ha.	Necessary, 2-6ML/ha.	Necessary, 1-3ML/ha.	Necessary, 2-3ML/ha?	Necessary, small quantity	Not required
Climate specifications	Lower rainfall preferred for wool	No preferences	Susceptible to spring frosts. Difficult to harvest in humid coastal conditions	Susceptible to spring frosts	Susceptible to spring frosts	Susceptible to spring frosts	Susceptible to spring frosts	Susceptible to spring frosts	High rainfall (or irrigation)	Susceptible to spring frosts for vines. Susceptible to summer rains for cherries. Susceptible to disease in high humidity in March for vines	Preferably low frost risk area	Rainfall above 700-800 mm
Infrastructure	Yards & shed	Yards, crush, loading ramp	Minimal	Irrig facilities	Irrig facilities	Irrig facilities	Irrig facilities	Irrig facilities	Irrig facilities	Irrig facilities	Plastic/glass houses	None
Plant & equipment	Minimal	Minimal; hay feeding plant	Tractors & implements	Tractors & implements	Tractors & implements	Tractors & implements	Tractors & implements	Tractors & implements	Tractors & implements	Tractors & implements	Small plant	None
Market contracts	Not required	Not required	Not required	Generally required	Necessary	Highly preferred	Highly preferred	Highly preferred	Desired	Desired	Contracts preferable	Varies
Labour	Medium	Low	Low	Low	Low	Variable/medium	Variable/medium	Variable/medium	High at times	High at times	High at times	Low
Local services	Shearers	Vet	Agronomist, contractors	Agronomist, contractors	Agronomist, contractors	Agronomist, contractors	Agronomist, contractors	Agronomist, contractors	Pickers	Pickers	Pickers	Contractors
Regional suitability	NM and dryer areas good for wool. All areas suitable; larger farm sizes needed for viability.	All areas suitable. Suits small farms.	Generally large areas, so need larger paddocks and larger farms, eg, NM, Dorset, BOYD, MVC.	Generally large areas, so need larger paddocks and larger farms, eg, NM, Dorset, BOYD, MVC.	Medium sized paddocks & farms; area for crop rotations and irrigation; eg., Dorset, NM, MVC.	Medium sized paddocks & farms; area for crop rotations and irrigation; eg., Dorset, NM, MVC.	Medium sized paddocks & farms; area for crop rotations and irrigation; eg., Dorset, NM, MVC.	Medium sized paddocks & farms; area for crop rotations and irrigation; eg., Dorset, NM, MVC.	Specific site requirements; proximity to markets and transport/carriers.	Specific site requirements; potentially available in most municipalities.	Proximity to markets is important; less suitable for Flinders too remote.	Low rainfall areas less preferred, and Flinders too remote.
Recommended min. buffer for individual dwellings (1)	50m to grazing area	50m to grazing area	200m to crop	200m to crop	200m to crop	200m to crop	200m to crop	200m to crop	200m to crop	200m to crop	200m to crop	Site specific (1) 20m for inner zone and additional 15m for outer zone on flat ground (3)
Recommended min. buffer for residential areas (1)	50m to grazing area	50m to grazing area	300m to crop	300m to crop	300m to crop	300m to crop	300m to crop	300m to crop	300m to crop	300m to crop	300m to crop	Site specific (1)

Note from Table 7

- (1) From (Learmonth, Whitehead, Boyd, & Fletcher, 2007) except where indicated.
- (2) From (State Dairy Effluent Working Group, 1997)
- (3) From (Tas Fire Service, 2003 updated 2010)

Tables 8 to 13 describe the frequency and intensity of the management activities and the associated issues likely to constrain this use for each of the agricultural land use categories in Table 7. Tables 8 to 13 are a broad guide only and site specific, cultivar specific and seasonal variations occur. Aside from these specific issues associated with these activities Learmonth et. al. (2007) also provides a comprehensive list of potential land use conflict issues (see Appendix 3). Tables 8 to 13 provide the rationale behind the recommended minimum buffers contained in Table 7.

Table 8. Farming activity - Grazing

Management Activity	Issues likely to constrain the activity	Comment
Pasture sowing Herbicide spraying Cultivation Drilling	Spray drift, noise Noise, dust Noise, dust	Ground based or aerial – often very early in the morning
Graze	Noise at certain time eg weaning calves Livestock trespass	Tractor
Forage Conservation Mow, Rake, Bale, Cart bales	Noise, dust	tractor
Fertiliser spreading	Noise	tractor
Insecticide spraying	Spray drift Noise	Ground based or aerial – often very early in the morning
Irrigation	Spray drift Noise	Potentially turbid and not potable Pump

Table 9. Farming Activity – Poppy crop

Management Activity	Issues likely to constrain the activity	Comment
Pre-cultivation spray	Spray drift Noise	Ground based or aerial – often very early in the morning
Cultivation – several passes (2-4)	Noise Dust	Tractor Dust is unlikely as soils are likely to be moist
Lime Spreading	Noise	tractor
Drilling	Noise	tractor
Herbicide sprays (2)	Spray drift Noise	Ground based or aerial often very early in the morning
Insecticide & fungicide sprays (2-3)	Spray drift Noise	Ground based or aerial – likely to be very early in the morning
Irrigation	Spray drift Noise	Potentially turbid and not potable Pump
Harvesting	Noise	Tractor
Potential forage crops after harvesting, cultivation broadcast seed & harrow, irrigate	Noise Noise Noise, spray drift	Tractor Tractor Pump

Table 10. Farming Activity - Potato crop

Management Activity	Issues likely to constrain the activity	Comment
Pre-cultivation spray	Spray drift Noise	Ground based or aerial – often very early in the morning
Cultivation – several passes (2-4)	Noise Dust	Tractor Dust is unlikely as soils are likely to be moist
Fertilise Spreading	Noise	
Planting	Noise	
Herbicide spray	Spray drift Noise	Ground based or aerial – often very early in the morning
Insecticide & fungicide sprays (5+)	Spray drift Noise	Ground based or aerial – likely to be very early in the morning
Fertiliser Spreading	Noise Odour	Tractor From manure/organic fertilisers
Irrigation	Spray drift Noise	Potentially turbid and not potable Pump
Harvesting	Noise	Tractor

Table 11. Farming activity – Strawberries (3 yr rotation)

Management Activity	Issues likely to constrain the activity	Comment
Fungicide	Spray drift Noise	Ground based likely to be very early in the morning
Herbicide spraying	Spray drift Noise	Ground based likely to be very early in the morning
Cultivation	Noise	
Fertiliser	Spray drift Noise	Ground based likely to be very early in the morning
Planting	By hand Noise	Tractor & traffic
Inter-row maintenance herbicide and/or mowing	Spray drift Noise	Ground based likely to be very early in the morning
Irrigation		
Harvesting Dec -March	By hand Noise	Tractor & traffic

Table 12. Farming activity – cherries (after establishment)

Management Activity	Issues likely to constrain the activity	Comment
Fungicide spraying	Spray drift Noise	Ground based likely to be very early in the morning
Herbicide spraying	Spray drift Noise	Ground based likely to be very early in the morning
Insecticide spraying	Spray drift Noise	Ground based likely to be very early in the morning
Irrigation		
Frost fans	Noise	
Harvesting Dec - March	By hand or machine Noise	Tractor & traffic
Pruning June – Sept	By hand	Tractor & traffic

Table 13. Farming activity – vines (after establishment)

Management Activity	Issues likely to constrain the activity	Comment
Fungicide spraying Sept – March (max 10)	Spray drift Noise	Ground based likely to be very early in the morning
Herbicide spraying Autumn and summer 2-3	Spray drift Noise	Ground based likely to be very early in the morning
Irrigation		
Frost fans	Noise	
Pruning, training June – Sept	By hand	
Harvesting March -May	By hand or machine Noise	Tractor & traffic

The recommended minimum buffers from Learmonth et. al. (2007) included in Table 7 are based on open flat ground. A risk based approach where an analysis of the potential for constraining adjacent agricultural land use is assessed as Low, Medium or High, allows for inclusion of more variables in to the consideration. The Land Use Conflict Risk Assessment from Learmonth et. al. (2007) is designed to be used at the development level, however it can also be used at the strategic level to guide to assess the potential for agricultural land use to be restrained by non-agricultural development. The risk based approach can be subjective and is dependent on the assessor's knowledge of agricultural land use and constraint issues.

The likelihood and consequences of conflict are combined in a matrix to determine the risk, using the following assessment table.

Land use conflict risk assessment matrix (from Learmonth et al, n.d.)		Likelihood of a dispute or conflict arising over the land use or activity		
		Very likely	Likely	Unlikely
Likely consequences from a dispute or conflict over the land use or activity	Major consequences & impacts likely	HIGH	HIGH	MEDIUM
	Modest or periodic consequences & impacts likely	HIGH	MEDIUM	LOW
	Minimal consequences and impacts likely	MEDIUM	LOW	LOW

Table 14. Risk assessment Matrix

By determining the risk level it may be appropriate to design buffers which reduce the risk.

According to GHD Hassall (2008) the Guidelines developed by the Queensland Government (Queensland Government, 2008) for buffer design are recognised as the most comprehensive and appropriate for land use planning in Australia. Descriptions of the elements which lead to constraining of agricultural activities are provided and include odour, noise, dust, smoke and ash. Figure 18 from Queensland Government (2008) provides a design of buffer areas which includes consideration of a vegetated buffer.

The separation distances in Queensland Government (2008) for flat land with no buffer elements are consistent with those provided by Learmonth et. al. (2007) for residential areas adjacent to agricultural activities where spray drift, noise and dust is anticipated. For single dwellings Learmonth et. al. (2007) has a reduced buffer distance (from 300m to 200m) for cropping activities.

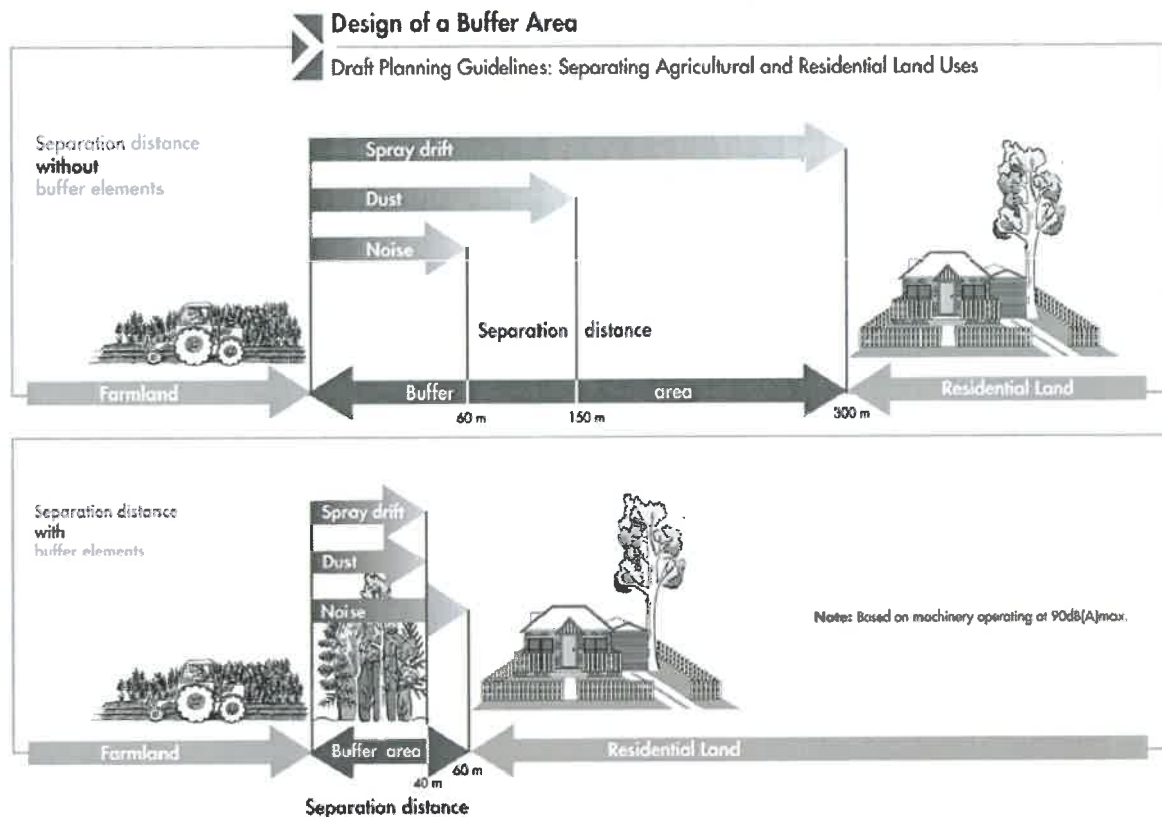


Figure 18. Buffer design from (Queensland Government, 2008)

There is also scope to apply the buffers to identify land which is already constrained for agricultural use due to proximity of non-agricultural activities. This may be appropriate at the rural/urban interface. Although there are many examples within the region of intensive agricultural land use occurring in close proximity to residential areas, there are also numerous examples of agricultural activity which has been restrained because of non-agricultural development.

Hider (2004) states that “agriculture near residential development may lose the flexibility required to remain viable in the long term. This means that over time viable agriculture is replaced by less viable agriculture essentially residential properties”. Hence, the long term viability of agricultural within the “buffer areas” is questionable.

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APPENDIX 1. SPATIAL DATA ANALYSIS

The spatial data analysis was conducted for each Municipality. The results were then collected for the purposes of comparing at a regional level.

CHARACTERISTICS OF PARCELS IN THE RURAL ZONE

The Municipal boundary was derived from Municipal Schemes dataset (DPIPWE, 2007) and adjusted to conform with the Planning Zones. Each planning zone was derived from the Planning Zones dataset (DPIPWE, 2007). The Rural Zones were grouped and used to select the private land parcels from the Cadastre (DPIPWE, 2009).

The Land Capability dataset (DPIPWE, 2007) was used to analyse the Land Capability of all private land in the following groupings; Class 3, Class 4 and 4+5, Class 5 and 5+4 and 5+6, Class 6 and 6+5, Class 7 and 6+7 and 7+6. Land Capability Class 7 (and Class 7+ 6 and Class 6+7) as defined by Grose (1999) is considered to have no value for agriculture and was excluded from the selection of potentially available agricultural land, regardless of vegetation.

Private Reserves Spatial (DPIPWE, 2009) data was used to analyse the number, area and type of private reserve. Land that has been formally reserved was excluded from the selection of potentially available agricultural land, regardless of Land Capability or vegetation. There are several categories of reserves on Private Land, and only formal reserves are assumed to have complete limitations for agricultural use. Other reserves such as riparian reserves which are derived as a result of a forest practices plan are not included.

Private parcels < 1ha were removed from consideration. The Cadastre data includes many small private parcels (some as small as a few square metres) that appear to be fragments of larger parcels or aberrations, resulting from imperfections in the definition of the parcel boundaries. In addition, titles of less than 1 hectare are unlikely to have any use for agricultural activities where they do not form part of a larger property. As a result parcels of less than 1 hectare were removed from consideration.

TasVeg 2.0 (DPIPWE, 2008) was used to determine the area of the main vegetation groups on Private Land in the Rural Zone.

Agricultural uses; includes TasVeg 2 codes

Un-threatened grasslands, GCL, GHC, GRP, GSL

Ag developed land, FAG, FPF, FMG, FRG, FSM, FPL, FPU, FWU.

The unthreatened grasslands codes have been selected on the assumption that they may be used currently for grazing or could be developed for more intensive agricultural use. The Agricultural developed land codes include plantation forestry and weeds as well as regenerating cleared land.

Protected/threatened veg communities; DAS, DAZ, DGL, DMO, DOV, DRI, DTO, DVC, DVF, WBR, WGK, WVI, RKP, RKF, RPW, RKS, RPF, RPP, RFE, NAL, NBS, NCR, NLN, NME, NNP, AWU, AHF, AHL, AHS, ASF, SCW, SCK, SHC, SBM, SMP, SRC, SRI, HCM, MSP, MGH, MDS, M AP, GPH, GPL, GTL.

Threatened vegetation communities as per Schedule 3A under the *State Nature Conservation Act 2002*, including the latest amendments of the two recently listed lowland grassland communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* are protected from clearance and conversion and hence cannot be utilised for agriculture in any form. The exception is grazing; however this is only relevant for the drier vegetation communities. Where grazing in a reserve is permitted it is generally at low stocking rates to control vegetative growth with the principle management objective still being conservation. The extent of these areas and the commercial return are considered to be not significant enough to warrant the inclusion of these in the agricultural uses category in the context of this assessment.

Non-vegetation areas; FPE, FUM, FUR, OAQ, OSM

This category includes buildings and other infrastructure, permanent easements, water and sand and mud. These areas have been removed from the determination of the area of land potentially available for agriculture. This includes irrigation dams and areas within a farmhouse curtilage, hence this is not strictly correct. However, the proportion of land area excluded under these codes is insignificant.

All other veg communities; The balance of the remaining TasVeg 2.0 codes

The other vegetation communities category is comprised of non-threatened native forest and woodland codes in TasVeg. A proportion of this area could be cleared or developed for agriculture. Limited clearing and conversion is permitted until January 2015¹³, based on a maximum of 40 hectares per year per holding, and this time limit may stimulate some clearing. However, Forest Practices Plans are required, which would limit the area of clearance and conversion to areas that do not impact on other values. The result is that a very significant proportion of land that currently carries 'other' native vegetation cannot be cleared. Hence this category is considered separately.

CHARACTERISTICS OF POTENTIALLY AVAILABLE AGRICULTURAL LAND (PAAL)

Potentially available agricultural land was selected from the analysis described above to have the following characteristics:

Private

 Within the Rural Zone

 With LC better than or equal to 6

Not privately reserved

 With TasVeg2 code for agricultural use

 Area within a parcel greater than 1 hectare.

Analysis of frequency distributions of parcels and PIDs sizes was conducted in Excel after exporting from the PAAL derived dataset.

¹³ Agreement in the Tasmanian Community Forest Agreement (May 2005)

WATER INFORMATION MANAGEMENT SYSTEM (WIMS)

The Water Information Management System (WIMS) dataset is a register of dams and water licences and is available from the Department as two downloadable spreadsheets (one for dams and one for licences). The version used in this report was retrieved from the site on November 15, 2010, from <http://water.dpiw.tas.gov.au/>.

For the purposes of analysing the number of dams the following attributes were selected from the dataset:

- All dams in the Municipality regardless of whether they were in the rural zone¹⁴
- Only those dams listed as “irrigation”
- Only include existing dams and proposed dams with current permits. All proposed dams with permits which expired prior to 31 Dec 2009 were excluded

For the purposes of analysing the allocations the following attributes were selected from the dataset:

- Where there are multiple offtakes listed for the same water quantity per water licence only the primary source is included in the tally of the volume.

For the purposes of spatially displaying the offtakes and dams the above attributes were ignored and all offtakes and dams were included in Figure 4 in each of the Municipal Agricultural Profiles.

¹⁴ It is not possible to discern where the water will be used hence the assumption is that if it is an irrigation dam then it will be used for agricultural activities, even though the dam may not be located within the Rural zone.

APPENDIX 2. LAND CAPABILITY FROM GROSE (1999)

Land Capability in Tasmania is described in 7 classes, with the highest class having the greatest limitations to agricultural use of the land (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. (NB some parts of Tasmania are currently able to crop more frequently on Class 4 land than suggested above. This is due to the climate being drier than 'normal'. However, there is a high risk of crop or soil damage if 'normal' conditions return.)

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

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

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

APPENDIX 3. POTENTIAL SOURCES OF RURAL ZONE CONFLICT

Living and Working in Rural Areas. A handbook for managing land use conflict issues on the NSW North Coast. Learmonth, R., Whitehead, R., Boyd, B., and Fletcher, S. n.d.

Table 1. Typical rural land use conflict issues in the north coast region

Issue	Explanation
Absentee landholders	Neighbours may be relied upon to manage issues such as bush fires, straying stock, trespassers etc. while the absentee landholder is at work or away.
Access	Traditional or informal 'agreements' for access between farms and to parts of farms may break down with the arrival of new people.
Catchment management	Design, funding and implementation of land, water and vegetation management plans are complicated with larger numbers of rural land-holders with differing perspectives and values.
Clearing	Neighbours may object to the clearing of trees, especially when it is done apparently without approvals or impacts on habitat areas or local amenity.
Cooperation	Lack of mutual co-operation through the inability or unwillingness on behalf individuals to contribute may curtail or limit traditional work sharing practices on-farm or in the rural community.
Dogs	Stray domestic dogs and wild dogs attacking livestock and wildlife and causing a nuisance.
Drainage	Blocking or changing drainage systems through a lack of maintenance or failure to cooperate and not respect the rights of others.
Dust	Generated by farm and extractive industry operations including cultivating, fallow (bare) ground, farm vehicles, livestock yards, feed milling, fertiliser spreading etc.
Dwellings	Urban or residential dwellings located too close to or affecting an existing rural pursuit or routine land use practice.
Electric fences	Electric shocks to children, horses and dogs. Public safety issues.
Fencing	Disagreement about maintenance, replacement, design and cost.
Fire	Risk of fire escaping and entering neighbouring property. Lack of knowledge of fire issues and the role of the Rural Fire Service.
Firearms	Disturbance, maiming and killing of livestock and pest animals, illegal use and risk to personal safety.
Flies	Spread from animal enclosures or manure and breeding areas.
Heritage management	Destruction and poor management of indigenous and non indigenous cultural artefacts, structures and sites.
Lights	Bright lights associated with night loading, security etc.
Litter	Injury and poisoning of livestock via wind blown and dumped waste. Damage to equipment and machinery. Amenity impacts.
Noise	From farm machinery, scare guns, low flying agricultural aircraft, livestock weaning and feeding, and irrigation pumps.
Odours	Odours arising from piggeries, feedlots, dairies, poultry, sprays, fertiliser, manure spreading, silage, burning carcasses/crop residues.
Pesticides	Perceived and real health and environmental concerns over the use, storage and disposal of pesticides as well as spray drift.
Poisoning	Deliberate poisoning and destruction of trees/plants. Spray drift onto non-target plants. Pesticide or poison uptake by livestock and human health risks.
Pollution	Water resources contaminated by effluent, chemicals, pesticides, nutrients and air borne particulates.
Roads	Cost and standards of maintenance, slow/wide farm machinery, livestock droving and manure.
Smoke	From the burning of crop residues, scrub, pasture and windrows.
Soil erosion	Loss of soil and pollution of water ways from unsustainable practices or exposed soils. Lack of adequate groundcover or soil protection.
Straying livestock	Fence damage, spread of disease, damage to crops, gardens and bush/rainforest regeneration.
Theft/vandalism	Interference with crops, livestock, fodder, machinery and equipment.
Tree removal	Removal of native vegetation without appropriate approvals. Removal of icon trees and vegetation.
Trespass	Entering properties unlawfully and without agreement.
Visual/amenity	Loss of amenity as a result of reflective structures (igloos, hail netting), windbreaks plantings (loss of
Water	Competition for limited water supplies, compliance with water regulations, building of dams, changes to flows. Stock access to waterways. Riparian zone management.
Weeds	Lack of weed control particularly noxious weeds, by landholders.

Based on: Smith, RJ (2003) Rural Land Use Conflict: Review of Management Techniques – Final Report to Lismore Living Centres (PlanningNSW).

Mapping Tasmania's Agricultural Estate

Project Summary

The draft Tasmanian Planning Scheme (the draft TPS) proposes a recalibration of the *Planning Directive No 1 – The Format and Structure of Planning Schemes* (PD1) Rural Resource Zone and Significant Agriculture Zone which are currently in Interim Planning Schemes (IPS).

The two rural Zones were recalibrated to address issues identified through the implementation of IPS.

The Agriculture Zone is aimed at the land subject to agriculture for example, Tasmania's agricultural estate.

The Agriculture Zone is the only Zone which implements the *State Policy on the Protection of Agricultural Land 2009* (the PAL Policy) and has a clear focus on agricultural uses in accordance with the PAL Policy.

The Rural Zone is aimed at the non-urban land which is otherwise compromised for agricultural use, with the exception of plantation forestry.

While agricultural use is still expected to occur in the Rural Zone, it would be at a lesser intensity than areas covered by the Agriculture Zone.

The PAL Policy aims to conserve and protect agricultural land so that it remains available for the sustainable development of agriculture.

The PAL Policy places a high level of importance on prime agricultural land and requires appropriate protection for agricultural land within irrigation districts and other areas that may benefit from broad-scale irrigation.

While all agricultural land is considered important, the PAL Policy at Principle 7 provides for the protection of non-prime agricultural land to be determined through consideration of the local and regional significance of the land for agricultural use.

The aim of the project is to map Tasmania's 'agricultural estate' to guide the application of the draft TPS's Agriculture Zone. Essentially this aims to draw a line between rural land that is of State, regional or local significance for inclusion in the Agriculture Zone and that which is of less significance for inclusion in the Rural Zone.

This is not to say that the less significant land will not support viable agricultural use as many industries, particularly some niche industries, vineyards and plantation forestry are appropriate to be located in the Rural Zone.

Determining what is significant for agriculture will be technically difficult and requires suitable expertise in this field.

There is no single data set that would provide a simple mapping tool. A combination of data sets will need to be analysed and different attributes may need to be considered for different areas of the State.

There is an opportunity to build on the agricultural land studies undertaken in the three regions for the preparation of the Regional Land Use Strategies, noting that each undertook a slightly different assessment. However, each region appears to have used similar data sets and parameters in undertaking their assessments.

Flinders Planner

From: Budget Reservations <reservations@budget.com.au>
Sent: Monday, 4 April 2016 3:37 PM
To: Flinders Planner
Subject: Budget Reservation Confirmation - 28770717AU3



Not displaying correctly [click here](#)

Dear Robyn Cox



Your reservation is confirmed for:
16/05/2016 01:00 PM

Reservation Number

28770717AU3

Driver: **Robyn Cox - 25 and over**

BOOKING DETAILS

Pickup

Date: 16/05/2016 01:00 PM
Location: Airport Terminal
Suburb: ADELAIDE
Phone: 08 8234 4900
Opening Hours: Monday - Sunday: 06:00 AM - 11:00 PM
[\[view map\]](#)

Return

Date: 22/05/2016 05:45 AM
Location: Airport Terminal
Suburb: ADELAIDE
Phone: 08 8234 4900
Opening Hours: Monday - Sunday: 06:00 AM - 11:00 PM
[\[view map\]](#)

VEHICLE



Toyota Yaris 5DR Auto or similar
Compact
Group B

RENTAL COST

OPTIONS

Base rate	\$209.82
5 day, 16 hours, \$34.97 per 1 Day Unlimited kilometres.	
Vehicle Registration Fee	\$39.00
Premium Location Surcharge:	\$44.79
Administration Fee	\$10.28

Flinders Planner

From: ciloms@ciloms.com.au
Sent: Tuesday, 16 February 2016 8:33 AM
To: Flinders Planner
Subject: YOUR RESERVATION # 22626

To: Robyn Cox
From: Ciloms Reservations
Tel direct: (03) 93352788
Email: airport@cilomsairportlodge.com.au
http: <http://www.ciloms.com.au/>
Date: Tullamarine, 16 February 2016

Dear Robyn Cox

Thank you for choosing to stay with us, we are pleased to confirm your accommodation details as follows:

Guest Name: Robyn Cox
Arrival Date: 21/04/2016
Departure Date: 23/04/2016
Room Type: 1 Standard Room
Adults: 1 Adult
Total Stay Rate: AUD 278.00
Confirmation Nr: 22626
Reservation Status: DEFINITE

We are looking forward to welcome you at our property.
Please do not hesitate to contact us, should you need any further information or assistance.

Sincerely yours,

Reservations Manager
Ciloms Airport Lodge

Book Online and Save at <http://www.ciloms.com.au/>

Cancellation Policy

You must provide us with 24 hours notice, prior to arrival date, for any cancellation.
Failure to provide 24 hours notice will result in the charge of one night accommodation.

Deposits Policy

Flinders Planner

From: Virgin Australia Itinerary <no-reply@virginaustralia.com>
Sent: Tuesday, 16 February 2016 8:19 AM
To: Flinders Planner
Subject: Virgin Australia e-Ticket April 21 MELBOURNE, AUSTRALIA for MS ROBYN COX UQXGBH
Attachments: Travel Reservation April 21 for COX.pdf; Electronic ticket receipt, April 21 for MS ROBYN COX.pdf



| Travel Details - Itinerary

Flight Details

our Booking Reference is **UQXGBH**



VIRGIN AUSTRALIA INTL Flight Number **VA 1371**
CONFIRMED

Thursday, 21 April

Departure: LST LAUNCESTON, AUSTRALIA
2:55PM

Arrival: MEL MELBOURNE, AUSTRALIA
3:55PM
TERMINAL 3

Please verify flight times prior to departure

Class:	Economy	Duration:	1hour(s) and 0minute(s)
Meal:	Snack	Distance (in Miles):	290
Aircraft:	BOEING 737 800 JET		

Ms Robyn Cox

Seat(s): 15C / Confirmed

Frequent Flyer: 7120008265 VIRGIN AUSTRALIA INTL

[Add to Calendar](#)
