

Report to Support a Section 43 a Application of LUPAA for 2 Lot Subdivision – Technopark Drive, Launceston

Prepared for: **Miranda (Trufferies) Pty Ltd**

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transport infrastructure | community infrastructure | industrial infrastructure | climate change



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Executive Summary

This is a report to support a Section 43a of the Land Use Planning and Approvals Act 1993 for a rezoning from Open Space to Low Density Residential and for a 2 Lot subdivision relative to a land parcel 167726/300 (Lot 300 Technopark Drive), Youngtown.

The already approved development for Low Density Development on the larger part of this site follows a review of the Technopark Master Plan carried out in 2012 by the current land owner and The Department of Economic Development (State Growth). The Master Plan review identified this land as surplus to the long term strategic use of the greater Technopark site as a location for clean technology based businesses and surplus to the open space network in this area.

This application can only be lodged now that the Launceston Planning Scheme has been declared in its final format.



Figure 1: Source - theLIST - Tasmanian Property Information System

The subject site is privately owned. The Department of Economic Development, Heritage and the Arts are, in the main, the owners of the residual land to the north of the subject site. Private land ownership can be found in the Technopark area - the existing call centres and one vacant lot

The previous development was approved following a Section 30p process (Dispensation) which could be applied under the Interim Planning Scheme. The subject site retained the previous Open Space zoning whilst further investigations were undertaken in regard to flora and fauna matter.

It was always anticipated that there would be some level of development on this site - the question was how many lots?

1. Proposal

It is proposed to subdivide this Balance Lot into 2 Lots. To achieve this requires a rezoning. This application can only be considered now the Launceston Planning Scheme has been confirmed as a final document.

This simple 2 Lot subdivision builds on an earlier 54 Lot subdivision in this area the layout which recognised the principles of linking open space areas contained within the 2012 Master Plan Review of Technopark and created a linear open space following a creek line from Youngtown Oval/Playground to the Youngtown Regional reserve.

The subject site was identified as Lot 300 in the approved layout. This partly treed area (Lot 300) backing on to Lorne St was retained as a balance lot until further investigations were carried out into flora and fauna matters.

There are two parts to this proposal.

Firstly, a mapping change which seeks to change zoning of the site from Open Space to Low Density Residential zone.

Secondly, a 2 Lot subdivision which has been designed around the principles of defining a building envelope on each lot and retaining (and enhancing) the native vegetation on each site.

Due to the previous subdivision the 2 proposed lots are fully serviced, down to the driveways and stormwater connections.

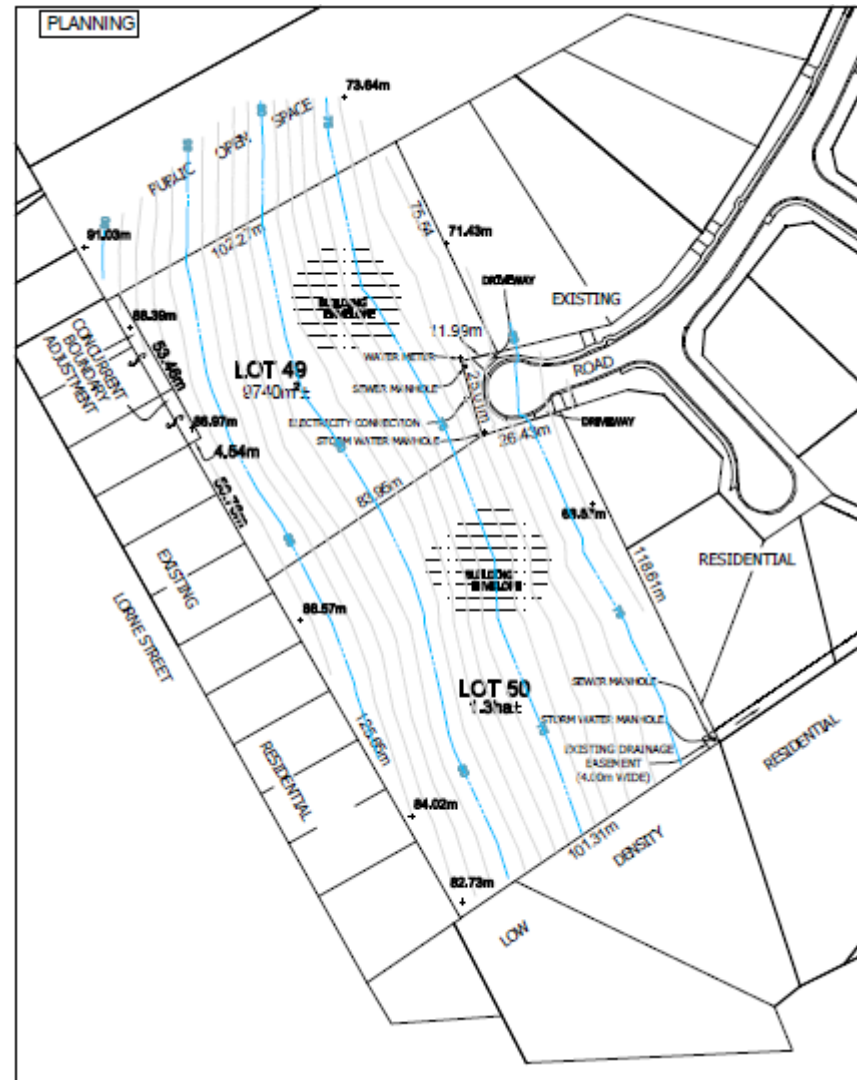


Fig 2 Source - Woolcott Surveys - proposed subdivision layout - Technopark, Launceston

2. Technopark

In 1995/96 the then Tasmania Development and Resources negotiated the purchase of the old Quarantine Station in Quarantine Road, with the intention of developing the site as an “Infopark” for organisations in the Communications and Information Technology fields - now known as the Technopark.

The original Master Plan was prepared in 1996 and was the basis for the development of Technopark for:-

“.....a range of enterprises which strongly emphasise information technology, communications, scientific and technology research and development activities, as well as the manufacture or assembly of the products so developed”¹

The original Master Plan was developed in 1996 at a time when there were no call centres. The next Technopark Master Plan by GHD was developed in 1997, when two call centres were being built and a third planned. The future for call centres in Tasmania and Launceston in particular was good - the future looked very bright for Technopark.

The original plan set out to explore the concept of large semi-industrial type buildings (of a high exterior finish) to be set in rolling parklands - catering for the emerging clean industries of call centres and research based establishments. This plan also looked at the interrelationship between the Technopark area and the surrounding land uses - recognising that the fringe areas of the Technopark land were more suitable for residential uses and connecting suburbs than the large footprint buildings required for call centres.

The final plan (seen below as Figure 4) that accompanied the 1996 Master Plan shows a mix of large industrial/call centre type lots with access off Quarantine Road; a series of interlinking roadways to Woolvern Street, Lorne Street and Belgrave Parade and the notation “future low density housing” to show how the fringe areas could develop. Three areas were shown as public reserve areas - the area fronting Poplar Parade was omitted from the Master Plan.

¹ Source - Info Park Master Plan Feb 1996 - Glen Smith Assoc, GHD and Rawlinsons (Aust)

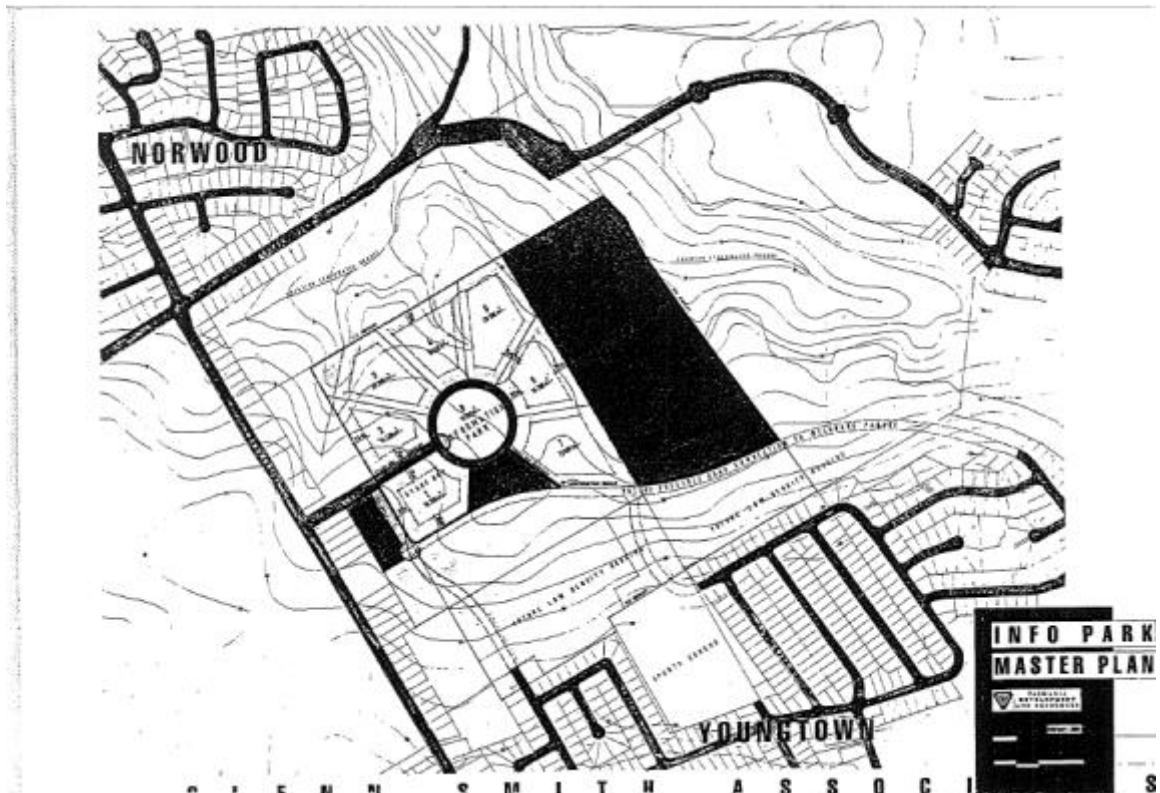


Figure 4: Source - Technopark Master Plan - 1996 - Glenn Smith and Assoc et al

The 1996 plan was an inspirational document - the 1997 plan was more of an operational document - the call centre idea being well established within Technopark.

The 1997 plan built on the inspiration of the earlier plan and sought to address taking the development (which at that time was three call centres under construction) further, refining the detail of the Technopark section only. Little attention was paid to the fringe areas of the site or the area shown as Public Reserve (even though in both plans this is seen as a holding status).

The 1997 plan outlined the staging for the site - planning for the significant public infrastructure needed to service these large footprint buildings designed to house many hundreds of people. The infrastructure was fully costed within the plan and shown graphically in a series of attachments.

The plan also gave a chronological record of remedial works which had happened on the site since the earlier plan - mainly around building demolition, asbestos removal and recording the position of the old cemetery on the site. It was noted that Launceston City Council had refused to accept management of the cemetery area and a title had been created to isolate this land from the rest of the site.

The 1997 plan also examined more practical things that the earlier plan, in its enthusiasm to sell the concept, only given passing consideration of - things like flexible lot sizes and geology.

The geological assessment indicated parts of the site were likely to be subject to landslip and that there should be no building without a full geotechnical assessment. This assessment was based on the best available data at the time.

The flexibility required in terms of lot size was built into the zoning development standards within the Launceston Planning Scheme 1996.

The report also recommended that Launceston City Council eventually take over the entire public infrastructure within Technopark - this has occurred.

3. 2012 Master Plan Review

The Dept of State Development and Miranda (Trufferie) Pty Ltd commissioned a review of the Technopark Master Plan and the following summarises the findings of that review:-

1. There is a strategic case for retaining large footprint sites for high tech or related light industrial / commercial type uses. There is also a case for allowing other uses to locate on these large sites, provided they are compatible with the intent of the development and are sources of employment. There is general agreement amongst all parties consulted that the integrity of the Technopark area should be retained - but there is some scope to introduce other uses into the residual land parcels on the fringe of the site. A 2014 presentation to LCC there was a general feeling that the Technopark zone had to change - that included this site.
2. There is a general acceptance that call centres will not play a part in filling the vacant land at Technopark. Other clean, intel/smart type developments might be: Data processing centres, research developments, corporate headquarters (offices), education centres, integrated aged care facilities and places of assembly would all be the types of development which could fit into the development concept of Technopark.
3. There is a case for also specifying the types of use which would NOT be acceptable in Technopark - developments which generate heavy vehicle traffic, noise, adverse emissions, small sheds, major shopping centres, bulky goods and vehicle sales and servicing.
4. The new planning scheme introduces a limited number of uses, meaning that any proposed use has to fit into one of those standard use categories.
5. The final plan will present an option for the linking of the three open spaces areas - Carr Villa, Youngtown Oval and the Youngtown Regional Reserve. Use will be made of natural features to enhance the open space interest in the area and to avoid narrow corridor type spaces which are bounded by fences, which can present a risk to public safety.
6. Where it is obvious that to connect open spaces the road reserve will have to be used a "Grand Avenue" style should be examined. By Grand Avenue it is meant that there will be presumption in favour of quality mature/semi mature trees; wider footpaths and cycle ways and a reduced road carriageway width which places the motor vehicle as a secondary object in the urban landscape.
7. Should the development of the central area proceed there may be opportunities for forming an open space link through this area. Achieved by previous development application.
8. The surrounding residential land uses are Low Density and Closed Residential. There is general agreement that it is desirable to allow adjacent land zonings into the study area - rather than introducing new zones. To this end extending the Low Density zone found in both Poplar Parade and Belgrave Parade into the residual land of Technopark is appropriate.
9. It is appropriate for the a closed residential area to be considered in the NW corner of the site close to Woolven Street and to the rear of the properties fronting Quarantine Road. Part of this site could also be used for the Technopark type developments.

10. Should the Technopark site develop along the lines suggested in this plan there will be a need for some form of support type services within the central area of the site. Support services could take the form of a small shop, a café, a medical centre, chemist, security office, etc. The final make up of any support services will emerge when the type of development within this area becomes clearer.

The 2012 Master Plan Review presented the Technopark area (the site as a whole - including the subject site) as a series of precincts and described preferred futures for each of those areas. This precinct work has been reproduced in **Appendix A**.

4. Section 30p Process and Subsequent Development Proposal

The Section 30p process applicable under the Interim Planning Scheme allowed the applicant to apply to the Tasmanian Planning Commission for dispensation from certain provisions of the Open Space zoning under the Interim Planning Scheme.

In regard to this site the dispensation related to setting aside the provisions of the Open Space zone in favour of the Low Density Residential zone.

Approval of the dispensation was granted by the Tasmanian Planning Commission in June 2013. As part of this process the subject site was withdrawn from the dispensation to allow further investigation - now complete.

The bulk of the site has been subdivided in line with an approved plan.

5. Titles

The site under consideration is described as 167726/300 (Lot 300 Technopark Drive), Youngtown **Appendix B**.

6. Current Zoning and Use

The site is currently zoned Open Space under the Launceston Planning Scheme 2015. This zone was carried over from the 1996 Launceston Planning Scheme and the Launceston Interim Planning Scheme 2012 and never represented the intended long term use of the site.

It was always assumed by the previous landowner that this was a holding zone until the long term future of the site could be determined. The 1995/96 Master Plan identified this land as being suitable for residential use, linking the Low Density residential area of Belgrave Parade to Quarantine Road.

The site was rough grazing and had been since the State Government took ownership in the early 1990's. There was evidence of illegal wood scavenging over the whole of the Technopark site. The perpetrators were progressively cutting down dead/dying trees on the upper slopes of the site/sites. The current owners of this land have eliminated this practice from their land and have replanted in excess of thirty 30 Black Peppermints to replace lost trees on this site.

The result of all the zoning matters is that we have a privately owned block of land (always has been), zoned for public purposes - with the council having no interest in acquiring this land. The site is incorrectly zoned for the future use.

7. Surrounding Uses

The site sits within an area surrounded by predominantly residential areas to the east, south and west. To the north is the special use zone of Technopark - which is a high amenity commercial type development. Further north is the Carr Villa regional cemetery - to the south the Youngtown Regional Park and to the west the Youngtown oval sports reserve.

The zoning under the Launceston Planning Scheme is therefore diverse, reflecting the uses surrounding the subject site and its location within the Launceston urban area.

The subject site and the subdivided land which makes up the southern part of the site (the subject of the dispensation application) has been grazed for many years. Although zoned for Open Space purposes this land has not been open to public access - the site has always been privately owned and any public access could have been a subject of trespass.



Fig 5 Source - Launceston City Council - mapping system

8. Existing Conditions and General Environment

8.1 Existing Conditions

The site is gentle to moderately sloping from west to east.

The site is well drained with little evidence of water pooling on site. There is a clumping of sparsely placed mature trees on the subject site. The whole site has been extensively grazed.

The issue of land capability is irrelevant in this instance, given the location of the site in an urban setting.

8.2 General Environment Considerations

There are no significant issues in the area regarding air and water quality - the development will neither enhance nor detract from air and water quality.

The site is not in a defined flood risk area.

Enviro Assist

As part of the study a separate document has been commissioned - **Enviro Assist**. This is a report and mapping (GIS) process which takes reputable data bases and overlays them across any title. The report comments on a range of environmental values, including flora, fauna and heritage (both European and indigenous). This study has determined that there are no heritage matters to be considered.

Enviro Assist identified that some extra work be undertaken in regard to flora and fauna issues and geotechnical matters. The results of the flora and fauna study and geotechnical report are presented below. The Enviro Assist report is attached as **Appendix C**

Bushfire

The site requires consideration in terms of the State Bushfire Code. A detailed assessment by an accredited Bushfire assessor has been secured for this site.

The report supports the development of this site along the lines proposed, subject to some not so onerous conditions.

The bushfire assessment is attached at **Appendix D**.

Geotechnical Report

Geo-Environmental Solutions were commissioned to examine and report on the geological issues surrounding this site. The following summaries their findings:-

The site is underlain by Tertiary aged sediments (mapping unit Tsa) of mixed clays/gravels/sands with a small area of Jurassic Dolerite on the upper slopes (mapping unit Jd). The excavated profiles examined in the local area all appear to be stable in their present state. Tertiary sediments in the local area commonly moderately stable formations on gentle slope angles, with little documented history of slope instability. However, where deeper weathered soils are found on steep slopes, then localised slope stability may be an issue as some of the clay soils can be prone to soil creep or mass movement when saturated. Reference to published MRT reports indicates that the majority of prior reports for the local area confirmed that residential development was possible, and that in particular the dolerite sediments are the most suitable. There is a small recent or active slide noted to the north east of the site (MRT reference 1003) described in the report of Mathews (1973) as an earth rotational slide. The soils examined on site appear to be residual in their nature with little colluvial material or hummocks/terraces from past instability, therefore the risk posed by the underlying geology of the site is rated as medium.

The site has a gentle east to south east facing slope of approximately 5-10°, with vegetative cover of mixed pasture, garden, and sparse tree species. Local excavations and prior drilling on the adjacent property at 42a Quarantine Road revealed deep Tertiary sediments. The slope angle on the upper parts of the site generally less than 7°, however the slope on the lower parts of the site is greater than the modelled instability threshold (Ta) for Tertiary sediments in the MRT hazard analysis (Mazengarb 2004).

There was no evidence of landslip or soil creep, notably those trees still present on the site on the slope were growing straight and vertical. Further, the ground surface showed no hummocks, terracing or patterns from past slips or soil creep. The site therefore appears stable in its present state, and there is little evidence of movement of soil materials on. The preliminary assessment of possible land instability has two possible risk classes; debris slide and deep seated movement.

The report concludes that:

- The geotechnical risk associated with residential or other development on the site is classified as **low** according to *Australian Geomechanics Society Guidelines* and **minor** according to *AS1726-1993 Geotechnical Site Investigations*.
- The assessment identified that the area of Jurassic dolerite on the upper slopes are generally free of geotechnical hazards whilst the areas of Tertiary sediments contains slopes slightly above modelled thresholds for possible slope instability
- The risk of foundation instability in future dwellings is moderate, and footing designs should ensure placement of foundations into underlying weathered gravels wherever possible
- Deep excavation and placement of fill should be avoided in accordance with *Australian Geomechanics Society Guidelines for Hillside Construction*
- All earthworks on site must comply with AS3798-2007 and a sediment and erosion control plan should be implemented on site during and after construction.
- All stormwater should be immediately directed to mains outlets upon the construction of hard surfaces to minimise any possible water accumulation and excess flows onto the steep slopes below
- The existing drainage line on site should be adequately managed with new engineering designs to accept design flows as required by the planning authority
- Specific geotechnical investigation should be completed prior to engineering designs for road works on site and any subsequent residential construction

COMMENT - there is nothing to conclude within the Geotechnical report that that this site could not be used for residential purposes. Each individual lot will require specific soil testing to determine foundation design - this is normal. This report is attached as Appendix E

Flora and Fauna

Forwood Forest Solutions Pty Ltd were commissioned to carry out a flora and fauna survey over the site. The following summaries the result of this study:-

The area surveyed is predominantly agricultural land with three patches of remnant forest, which have all been highly disturbed over a long period of time. From the survey one threatened vegetation community listed under the Nature Conservation Act 2002 was recorded. This was: Eucalyptus amygdalina inland forest / woodland on Cainozoic deposits (DAZ). Local diversity within the remnant vegetation has significantly diminished through removal of understory species and a general lack of ground cover diversity.

No threatened flora species listed under the Threatened Species Protection Act 1995 (Tas) (TSP Act) and the Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) (EPBC Act) were recorded.

Three threatened fauna species listed under the TSP Act and EPBC Act may occur or have suitable habitat in the study area. They are eastern-barred bandicoot, spotted tailed quoll and masked owl.

Three declared weeds were recorded. They are blackberry, gorse and english broom which are listed as 'declared weeds' under the schedules of the Tasmanian Weed Management Act 1999 (Tas). Three introduced urban weeds - cotoneaster, hawthorn, wild rose and one agricultural weed - capeweed were recorded and although not 'declared weeds' are considered to have a significant impact on agriculture and natural values.

The study recommended that further work be undertaken in the Spring to confirm implied assumptions from the Forwood Study Appendix F.

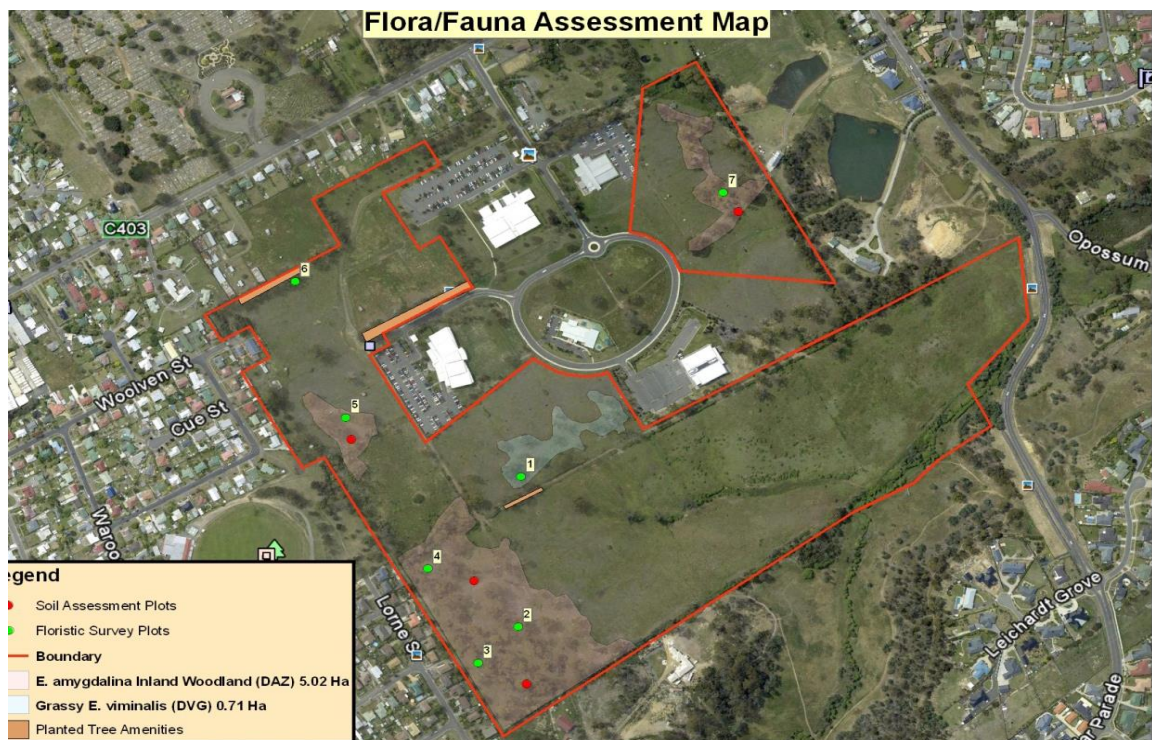


Figure 6: Forwood Forest Solutions

ECOtas were commissioned to carry out the Spring survey of the subject site. The summary findings are listed below:

Non-priority flora (e.g. species of biogeographic significance)

□ No species of high conservation significance detected - no special management actions required.

Non-priority fauna (e.g. species of biogeographic significance)

□ No species of high conservation significance detected - no special management actions required.

Threatened flora

□ No plant species, listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or the Tasmanian *Threatened Species Protection Act 1995*, were detected within the study area - no special management actions are required.

Threatened fauna

□ Potential habitat is present for eastern barred bandicoot but field survey did not indicate actual presence of this species (pasture is very dense) - no special management actions are required.

Vegetation types

□ The study area supports one TASVEG mapping unit: “agricultural land” (TASVEG code: FAG). FAG is not classified as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002* or on schedules of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* - no special management actions are required.

Weeds

□ Two species, classified as “declared weeds” within the meaning of the Tasmanian *Weed Management Act 1999*, was detected from the title area. *Rubus anglocandicans* (blackberry) and *Ulex europaeus* (gorse) are both localised to boundary areas or isolated paddock clumps. The extent of weeds is not such that a complex and/or formal weed management plan is considered warranted because development of a subdivision with associated infrastructure such as roads will effectively eliminate the patches of weeds.

Plant and animal disease

□ No evidence of plant disease (*Phytophthora cinnamomi*, rootrot fungus; myrtle wilt; myrtle rust) was detected - no special management actions are required.

Individual trees

□ No particular ecological significance is accorded to the isolated remnant trees within the study area - no special management actions are required.

It should also be noted that the trees on site are under stress. Those which have been cut down show signs of significant internal rot. Already 30 black Peppermints have been planted to replace those stressed trees removed as part of the management regime for this site.

Updated Flora and Fauna

Environmental Consulting Options Tasmania carried out further assessment of the subject site to determine a true picture of the flora significance of the site.

The following is a summary of the findings:

Non-priority flora (e.g. species of biogeographic significance)

□ No species of high conservation significance detected - no special management actions required.

Non-priority fauna (e.g. species of biogeographic significance)

□ No species of high conservation significance detected - no special management actions required.

Threatened flora

□ No plant species, listed as threatened on the Commonwealth Environment Protection and Biodiversity Conservation Act 1999, were detected within the study area - no special management actions are required.

□ Two plant species, listed as threatened on the Tasmanian Threatened Species Protection Act 1995, were detected within the study area: *Hypoxis vaginata* var. *vaginata* (sheathing yellowstar) and *Arthropodium strictum* (chocolate lily) are both localised - no special management actions are considered warranted, although a permit to “take” under the Act may be required if sites will be disturbed.

Threatened fauna

□ Potential habitat is present for the eastern barred bandicoot but field survey did not indicate actual presence of this species (pasture understorey is very dense) - no special management actions are required.

Vegetation types

- The study area supports one TASVEG mapping unit:
- “Eucalyptus amygdalina forest and woodland on dolerite” (TASVEG code: DAD).
- DAD is not classified as threatened under Schedule 3A of the Tasmanian Nature Conservation Act 2002 or on schedules of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 - no special management actions are required (especially considering the ecological condition of the vegetation i.e. effectively “pasture”).

Weeds

- Three species, classified as “declared weeds” within the meaning of the Tasmanian Weed Management Act 1999, were detected from the title area, as follows:
- *Rubus anglocandicans* (blackberry) - localised dense patches and scattered small clumps;
- *Ulex europaeus* (gorse) - localised patches and occasional individuals; and
- *Cytisus scoparius* (english broom) - localised to one small area.

Several additional plant species, not formally classified as “declared weeds” but considered as “environmental weeds”, were detected from the title area (all with scattered to locally dense infestations), as follows:

- *Rosa rubiginosa* (sweet briar);
- *Crataegus monogyna* (hawthorn);
- *Hedera helix* (ivy);
- *Acacia retinodes* (hills wirilda);
- *Cotoneaster glaucophyllus* var. *serotinus* (largeleaf cotoneaster); and
- *Cotoneaster franchetii* (grey cotoneaster).

The extent of weeds is not such that a complex and/or formal weed management plan is considered warranted because development of a subdivision with associated infrastructure such as roads will effectively eliminate some of the patches of weeds, and owner occupation will result in a cessation of “over the fence” dumping of garden waste and removal of in-lot infestations of prickly weeds.

- In the short-term (i.e. until development occurs), leaving the weeds “as is” will not result in a worsening of the infestation and may actually provide protective habitat for birds and native mammals.
- In the longer term, an Environmental Site Management Plan is provided at Appendix E to guide future management.

Plant and animal disease

- No evidence of plant disease (*Phytophthora cinnamomi*, rootrot fungus; myrtle wilt; myrtle rust) was detected - no special management actions are required.

Individual trees

- At the time of initial assessment and reporting, no particular ecological significance was accorded to the isolated remnant trees within the title area and no special management actions were recommended.
- Subsequent to the initial assessment, some trees have been felled as part of the preparation of the building envelopes. The removal of these trees has not resulted in a significant deleterious impact on biodiversity values associated with the title area. In recognition of the loss of these trees, some re-planting has already occurred.
- It is clear, however, that the health of many of the remaining trees within the proposed titles, including some still located close to likely house sites, is very poor and that several of the trees have a dangerous downslope lean. Recognising that some of these trees will require removal for protection of residents and infrastructure, a longer term Environmental Site Management Plan is provided at Appendix E to guide replacement plantings of canopy and understorey species.

Recommendations

The study area proposed for subdivision and eventual residential occupation under the provisions of the existing planning scheme supports “pasture under remnant eucalypts” subject to long-term grazing. The ecological condition of the site is considered very low.

No formal referral to the relevant Commonwealth government agency under the provisions of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 is considered warranted.

No formal referral to the relevant State government agency under the provisions of the Tasmanian Threatened Species Protection Act 1995 is considered warranted, unless known sites of threatened flora will be affected by proposed works.

It is recommended that the applicant check the conservation status of these species closely to the time of application (because at the time of writing, at least *Arthropodium strictum* has been formally recommended for removal from the Act).

Where necessary, apply for a permit under Section 51 of the Tasmanian Threatened Species Protection Act 1995, and apply any relevant permit conditions (noting that none are recommended under the present report), related to the disturbance of threatened flora, if sites supporting such species will be affected by the proposed works.

No specific management conditions are recommended under the provisions of the planning application but an Environmental Site Management Plan is provided to guide future weed management and revegetation activities.

Traffic Study

The applicant commissioned Terry Eaton to produce a traffic impact assessment of the earlier proposed development (including this site). The report is attached at **Appendix G**.

The report concludes:

- When fully developed the subdivision is likely to generate around 400 vehicle movements per day
- The current vehicle movements per day for Quarantine Road is 6 - 7000. This is predicted to grow to 9500 in 2030
- With a fully developed Technopark and a fully developed subdivision the morning peak in 2030 is predicted to be 850 vehicles for that one hour period in the morning and 580 for the afternoon peak hour. The assumption is that all the vacant sites will be developed with buildings which will accommodate the same number of persons as a call centre. This is an extremely conservative assumption - given that large, mass employing industries are highly unlikely ever to occupy the Technopark site.
- When the remaining land within the Technopark site (the non-commercial land is developed there will be opportunities for connections into other parts of the Youngtown suburb.

The Traffic Report summarises the above by saying:

A traffic assessment for stages 1 and 2 of a proposed subdivision south of Techno Park indicates the subdivision will generate a minor component of the traffic using Techno Park Drive based on predicted plus 20 year traffic conditions and with full take up of the Techno Park land by developments similar to the existing.

Analysis of the Quarantine Road/Techno Park Drive junction indicates some congestion at morning peak hour times but with a service level comparative to that existing elsewhere on higher order access roads within the Launceston Urban area.

No traffic safety issues have been identified with regard to the subdivision layout and the existing street network in proximity to the development.

Extension of the subdivision by future staging of the western part of the land can allow access to Lorne Street, Youngtown to enhance connectivity for both the subdivision and Techno Park.

COMMENT - as the study included this site there should be no traffic issues associated with a further two lots being added to the overall development of this site.

9. Services and Infrastructure

The site is fully serviced in terms of water, sewer, stormwater, power and communications.

Figure 7 below displays a plan of as constructed services for the site.



Figure 7: Source Tas Water - Servicing Plan

The comments from Ben Lomond Water (from 2013 - now Taswater) are:

Depending upon the nature of the proposed development (assumed commercial with a residential component) existing services would be adequate.

Generally the sewers are 150 mm diameter or larger with substantial grade. Further investigation involving hydraulic modelling may be required when you provide further detail on the intended use and in turn the likely discharge to the sewer.

The water main in Techno Park Drive is 150mm - as smaller 63OD polyethylene main also exists.

Service pressures in the area meet WSAA minimum Static Head requirements - Hydraulic Modelling for fire flows for the proposed development may be required when you provide more detail on the intended use.

In line with the provisions of the previous Master Plans the whole site is well serviced with capacity to be fully developed for a range of commercial and residential uses. The 1997 Master Plan made a strong point of making certain there were adequate services available for the fully developed Technopark site.

There are adequate services on site to cater for the development proposed. This was confirmed by a representative of Ben Lomond Water (Taswater) at the TPC hearing into the dispensation.

The 2 Lots are fully serviced as a result of the previous subdivision.

10. Planning Controls

The relevant land use control document is the Launceston Planning Scheme 2015. Under the planning scheme the subdivision is prohibited in the Open Space zone - hence the previous Section 30p process. Hence the Section 43a process now being considered.

To assess the proposed subdivision reference then has to be made to the Low Density Residential zone and the development standards applicable to that zone.

10.1 Specific Proposal

It is proposed that the subject site be subdivided into 2 lots - to contain a single dwelling on each. Lot 49 will have an area of 9740 sqm. Lot 50 will have an area of 1.3ha.

The lot numbers are an extension of the previously approved layout - recognising that this site was always going to be developed - the question was only how many lots.

COMMITMENT - That to prevent further subdivision of this land it is suggest that a Part 5 agreement be entered into restricting the development to a single dwelling (and outbuildings) on each lot and preventing the creation of further titles.

10.2 Objectives of the Planning Scheme

The objective of the Planning Scheme are:-

3.1 Maintaining the primacy of Launceston city in Tasmania and in the Northern Region

3.2 Maintaining Launceston as the business and commercial heart of the region

3.3 Managing growth for a changing population

3.4 Promoting social inclusion

3.5 Promoting a nationally important heritage city

- 3.6 Public spaces, public Life
- 3.7 Maximising the effectiveness of transport networks
- 3.8 Maximising the efficiency of infrastructure
- 3.9 Maintaining and improving the quality of the natural environment
- 3.10 Managing natural hazards
- 3.11 Managing Climate change

COMMENT The proposal does not adversely impact on any of the listed matters. A Low Density Residential use would act as a buffer or low impact zone between the Regional Recreational Reserve, Technopark and the existing Low Density Residential and General Residential uses.

10.3 Defined Uses

The planning scheme defines the likely end use of the proposed lots as Residential use.

10.4 Low Density Residential Zone

10.4.1 Purpose of the Zone

12.1 Zone Purpose

12.1.1.1 To provide for residential use or development on larger lots in residential areas where there are infrastructure or environmental constraints that limit development.

12.1.1.2 To provide for non-residential uses that are compatible with residential amenity.

12.1.1.3 To provide for development that is compatible with the natural character of the surrounding area.

COMMENT The proposal does not adversely impact on any of the listed matters. A Low Density Residential would create a buffer or low impact zone between the Regional Recreational Reserve, Technopark and the existing Low Density Residential use. These matters were discussed at length during the Section 30P process and the above stance was supported by the Tasmanian Planning Commission. This then is an extension to the principles agreed during the dispensation process.

10.4.2 Table of Use

Residential use is a No Permit use (if it complies with defined provisions) or a Permit use (if it does not comply with the defined provisions) within the Low Density Residential zone table.

10.4.3 Standards for Use

This section examines the provisions for development and use within the Low Density Residential Zone table:-

12.3 - 12.5 Standards for Use

COMMENT: The proposed use is not one listed in those to be considered in regard to e above clauses. The proposal complies with this section of the Scheme. Residential uses are a permitted use within the Low Density Residential zone.

12.4 Development Standards

The following Clauses only apply to development within the Residential Use Class.

12.4.1 Site coverage

12.4.2 Building Height, Setback and Siting

12.4.3 Outbuildings and Other Structures

COMMENT: The proposal relates to a 2 lot subdivision. As a result the Clauses listed above do not apply in this instance.

The following clauses apply to the use classes specified in Table 12.4.4 below. *All discretionary use classes, other than Residential use class that is a single dwelling.*

12.4.4 Development for discretionary uses

COMMENT: As the application is for subdivision these clauses do not apply in this instance.

The following clauses apply to subdivision development for the use classes specified in Table 12.4.5 below. *All use classes.*

12.4.5 Lot Size and Dimensions

A1.1

Each lot, or a lot proposed in a plan of subdivision, must:

- a) have a minimum area of no less than 1,500m²; and*
- b) be able to contain a 25m diameter circle with the centre of the circle no greater than 25m from the frontage;*

COMMENT: Compliance is claimed against A1.1 above as the lots exceed 1500 sqm and both are able to contain the required circle.

12.4.6 Frontage and Access

A1

Each lot, or a lot proposed in a plan of subdivision, must have a frontage to a road maintained by a road authority of no less than 4m.

COMMENT: Compliance is claimed against A1 above as each lot has a frontage in excess of 4m.

P2

Each lot, or a lot proposed in a plan of subdivision, must be provided with reasonable vehicular access to a boundary of a lot or building area on the lot, if any, having regard to:

- a) the topography of the site;*
- b) the distance between the lot or building area and the carriageway;*
- c) the nature of the road and the traffic;*
- d) the character of the area; and*
- e) the advice of the road authority.*

COMMENT: As there is no Acceptable solution compliance relies on P2 - the access points already exist and are best located for the likely end use.

12.4.7 Discharge of Stormwater

A1

Each lot, or a lot proposed in a plan of subdivision, including roads, must be capable of connecting to a public stormwater system.

COMMENT: Compliance is claimed against A1 above - each lot will/is connected to a public stormwater system.

A2

The Council's General Manager has provided written advice that the public stormwater system has the capacity to accommodate the stormwater discharge from the subdivision.

COMMENT: Not applicable to this development. The sites were serviced under the earlier stage as Lot 300 was a lot in its own right.

12.4.8 Water and Sewerage Services

A1

Each lot, or a lot proposed in a plan of subdivision, must be connected to a reticulated water supply.

A2

Each lot, or a lot proposed in a plan of subdivision, must be connected to a reticulated sewerage system.

COMMENT: Compliance is claimed against Acceptable Solution clauses A1 and A2. Each Lot will be/is already connected to reticulated services.

12.4.9 Integrated Urban Landscapes

A1

Subdivision does not:

- a) create any new road, public open space or other reserves; or*
- b) remove or clear native vegetation; or*
- c) modify, drain, pipe or disturb any natural watercourse or wetland.*

COMMENT: The subdivision will create no new roads and open space areas (already approved).

Building envelopes have been selected to avoid the removal of any further native trees. The intent is to define these building envelopes via a Part 5 agreement to prevent the loss of more trees to create a building site.

Compliance is claimed against the A1 above.

12.4.10 Walking and Cycling Network

A1 *No new road, footpath or public open space is created.*

COMMENT: Compliance is claimed against A1 - no new road, footpath or open space is to be created. These elements are already approved.

10.4.4 Codes

Within the Planning Scheme are a series of codes which need to be considered. These are listed in table format and appropriate comments made against each code.

Code	Comment
Bushfire Code	A full Bushfire assessment has been carried out for this site and the development proposed. There is little reason why this site cannot be developed when considering this matter.
Potentially Contaminated Land Code	There is no evidence of past uses which could result in contamination of this site.
Landslip Code	This aspect has been researched and a report presented regarding site stability. This report is attached as an appendix
Road and Railway Assets Code	Not applicable in this case
Flood Prone Area Code	Not applicable in this case
Car Parking and Sustainable Transport Code	Each lot is capable of containing its own car parking demand. Developing this infill site will create the opportunity for routing of public transport into this area.
Scenic Management Code	Not applicable in this case
Biodiversity Code	Not applicable in this case. The only area of the site where there is a possibility of threatened flora has been studied further and it has been shown that there are no threatened species on the subject site.
Water Quality Code	Construction Management Plans will ensure that soils disturbed during construction and waste liquids will not enter any water courses and thus negatively impact on water quality.
Recreation and Open Space Code	Whilst this is a subdivision and the Code should apply and thus POS should flow (or cash in lieu) this is not part of this proposal. The reason being that in part of the original subdivision a POS contribution of in excess of 17% was part of the layout. It is illogical to expect the applicant to contribute further to POS in this area. A request for such will be made to the General Manager as required by the Planning Scheme.
Environmental Impacts and Attenuation Code	Not applicable in this case
Airport Impact Management Code	Not applicable in this case
Local Historic Heritage Code	Not applicable in this case
Coastal Code	Not applicable in this case
Telecommunication Code	Not applicable in this case
Invermay/Inveresk Inundation Code	Not applicable in this case
Cataract Gorge Management Area	Not applicable in this case
Signs Code	Not applicable in this case
Development Plan Code	The site is not covered by the Development Plan Code.

11. Strategic Considerations

11.1 State Policies

11.1.1 Protection of Agricultural Land Policy

Being a block of land within an existing urban area this policy has no relevance in this instance. The Tasmanian land classification system identifies this site as white land (urban land) and of no agricultural value.

There are no adjoining rural activities which could link with this land to create a meaningful farming holding.

11.1.2 State Coastal Policy

The site is outside the area defined under the State Coastal Policy. The site is some 10klm from a defined coastal area.

Overall the development will not impact on the coast and is in keeping with the State Coastal Policy.

11.1.3 Water Quality Management Policy

The proposal will not have any negative impact on this State policy. Any stormwater from the hard surface areas will be directed to an approved Council system.

11.1.4 Economic Development Plan

This very minor proposal has little relevance to this Policy document.

11.2 Regional Land Use Strategy - Northern Tasmania 2011

This very minor development has little relevance to the Regional Land Use Strategy.

11.3 Council Strategic Plan 2008 – 2013

This minor development has little relevance to the Council Strategic Planning Process.

11.4 Open Space Strategy 2007

The previous subdivision application addressed the objectives of the 2007 Open Space Strategy by providing links from Youngtown Oval to the Regional Reserve. This minor application does not add to this strategy.

11.5 Launceston Residential Strategy 2009

In 2010 Launceston City Council adopted the Residential Strategy for the City. Within the Strategy there was a detailed assessment of housing needs and the current stock of serviced and subserviced land within the City.

The outcome of this work was a priority ranking of types (tiers) of housing development which would best meet the needs of the community and also represent good planning outcomes.

In order the priority tires were:

1. Residential development on “brownfield” sites for example surplus public land, site where industry has relocated, mixed use developments in accessible locations on the CBD fringe or adjacent to District or Neighbourhood Centres.
2. Increased density in existing residential areas where opportunities exist or where capacity for change has been identified, primarily through unit developments or redevelopment.
3. Development on vacant land in urban infill locations including undeveloped portions of existing residential areas and vacant land currently within a residential zone.
4. Development on the most appropriate vacant land on the edge of urban areas
5. Rural residential development in the most appropriate areas
6. Individual rural houses unconnected to a primary industrial use.

COMMENT - The site under consideration falls into an example of a “brownfield” site.

The site is “brownfield” insofar as land was part of the old quarantine station, was owned by a public entity and taken with the neighbouring land can be assessed as mixed use. The site is certainly not on the fringe of the CBD - but is in close proximity to a District Shopping Centre - Kings Meadows.

This is urban infill of land which was placed under an inappropriate zone until such time as the future of the site was determined. Whilst the land is not currently zoned residential there is every indication from the 1996 and 2012 master plan work that this is the best use for this site.

12. Economic Considerations

The proposal does not detract from the ability of Technopark to fulfil its strategic objective of catering for the needs of clean, hi-tech businesses requiring a large footprint site set within a parkland setting.

This parcel and others on the periphery of the Technopark area have been identified as superfluous to the overall development of the main site and thus should be considered as infill based around trying to reflect surrounding uses.

13. Social Considerations

The proposal opens up an area for greater housing choice and infills a site within the urban area. It also links open space area in line with the current Council Open Space strategy, encouraging healthy life style choices and creating circular recreational opportunities within Youngtown.

14. Environmental Matters

There are no environmental matters which need to be considered further with this application.

15. Conclusion

This is a sound proposal which will make use of a surplus infill site within the Launceston urban area. The site was removed from earlier consideration only to allow for further flora and fauna study. This has now been completed and shows no real impact on threatened flora. Part 5 agreements will limit further subdivision and contain dwellings to building envelopes.

Appendix A

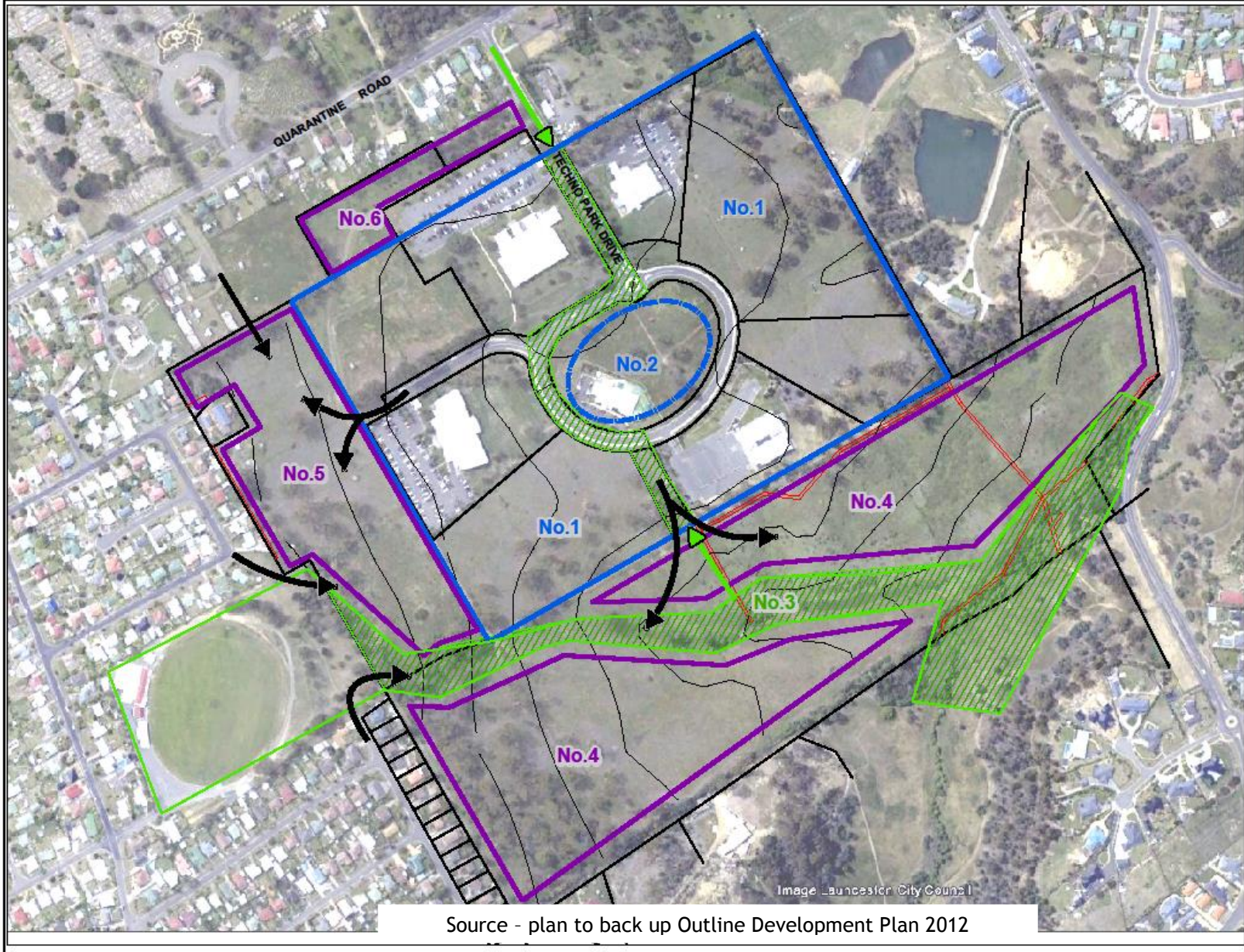
Description of Various Sections within the 2012 Outline Development Plan



The Outline Development Plan has been presented in a series of areas on a plan with a written description of the type of development, the principles and outcomes sought in each area.

Area	Description
No 1	This area covers the whole of the Technopark area. The call centres and the vacant land have been identified as strategic for the attraction of a range of large footprint commercial buildings. These will be clean industries which employ people, do not rely on heavy transport, do not create nuisance and embrace the concept of retaining a quality landscaped setting. The zoning table relative to Technopark should be reviewed with a view to opening up the range allowable uses within the zone - provided the uses meet the agreed criteria.
No 2	This is the central section of the Technopark area, currently containing the Childcare Centre. Within this area there is also the cemetery which Launceston City Council should manage as part of the overall infrastructure of the site. Should this central area not be used for a large footprint building it should be considered as a community gathering area of small footprint support uses - café, shops, medical centre, etc with paved areas, shade trees, seats - a public place for those who work or live close to this site.
No 3	This is the open space which links Youngtown Oval, the small local park and the Youngtown Regional Park. It follows a water course and joins the Regional Park at a similar water course. The link to Carr Villa will be along Technopark Drive and through a newly constructed access road into the vacant land - a Grand Parade of landscaping and footpath/recreation trails where the traffic pavement is kept to a minimum - even below the accepted standards of Launceston City Council. Ideas regarding this concept are presented in an appendix - these have been drawn from various projects around the world where the car is subservient to the person.
No 4	There are two areas in this section. A large part of this section will be the high value trufferie and an olive grove to create interest in the site when viewed from Poplar Parade. The Low Density Residential zones in Belgrave Parade and Poplar Parade will be extended into this area to fill the land deemed to be surplus from the establishment of the trufferie and olive grove. One of the principles of any residential lots on the higher slopes will be to retain trees (where possible). For the boundary adjoining the Technopark site there will be an extensive landscaping buffer - much of which is already in place. Building envelopes will be defined to prevent the scattering of buildings in the landscape and to give certainty to those investing in this area. As an indication - Minimum lot size 1500 sqm; 30m diameter circle in each lot; internal lots with minimum 6m frontage; trees plotted; building envelopes and minimum of 3m setback from site boundaries.
No 5	This is a complex area requiring some further thought and decisions regarding final uses. The area could accommodate a large footprint building, however unless there was careful design a building of this size could impact on the amenity of the neighbouring residential area. Alternatively, this area could be opened up for residential purposes. A mix of Low Density and Closed Residential uses would be appropriate. A buffer between the Technopark area and any newly formed lots would be appropriate. The final lot layout in this area and the degree to which Technopark uses, Low Density or Closed Residential uses are distributed will be determined by the final road layout and access points. Discussion with neighbours fronting Quarantine Road may open up opportunities for road linkages and extension of the residential layout already approved by Council. A further study into industry needs and opportunities will be needed to determine whether the land should have a Technopark focus.
No 6	This area will either form part of the Closed Residential area or the Technopark area. Its final use will be determined once opportunities are explored for the development of adjoining areas. There is stand alone title in this area which could be sold for a single dwelling site.

Black Arrows	Black Arrows represent possible road access points. This study will not recommend one or more over any others as the final uses and layout may prefer a particular access point or points. In regard to the Lorne Street and Medina Crescent access points only one should be considered - this will allow the open space to flow more freely without interruption from traffic ways. When final road access points are agreed there will need to be a traffic impact study undertaken to justify the selection.
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Appendix B

Title Details



SEARCH OF TORRENS TITLE

VOLUME 167726	FOLIO 300
EDITION 2	DATE OF ISSUE 20-Mar-2015

SEARCH DATE : 21-Apr-2015

SEARCH TIME : 08.19 PM

DESCRIPTION OF LAND

City of LAUNCESTON

Lot 300 on Sealed Plan 167726

Derivation : Part of 276 Acres Gtd. to Thomas Landale

Prior CT 164558/1

SCHEDULE 1

M391095 TRANSFER to MIRANDA (TRUFFERIE) PASTORAL COMPANY PTY LTD Registered 17-Oct-2012 at noon

SCHEDULE 2

B946281, C892420 & C944710 Land is limited in depth to 15 metres, excludes minerals and is subject to reservations relating to drains sewers and waterways in favour of the Crown

SP167726 EASEMENTS in Schedule of Easements

SP167726 FENCING PROVISION in Schedule of Easements

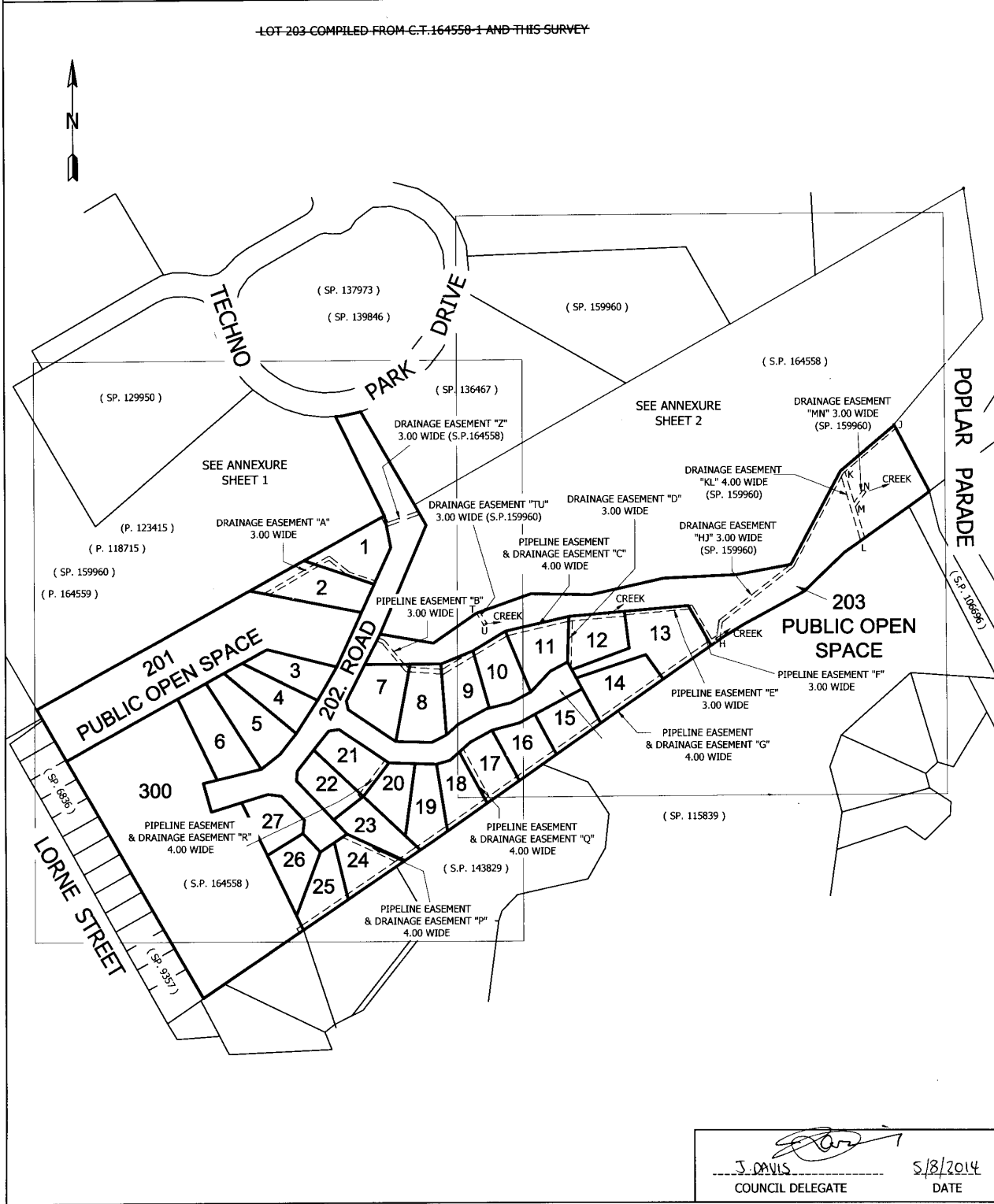
SP164558 FENCING PROVISION in Schedule of Easements

B950538 & C944710 FENCING PROVISION in Transfer

UNREGISTERED DEALINGS AND NOTATIONS


No unregistered dealings or other notations

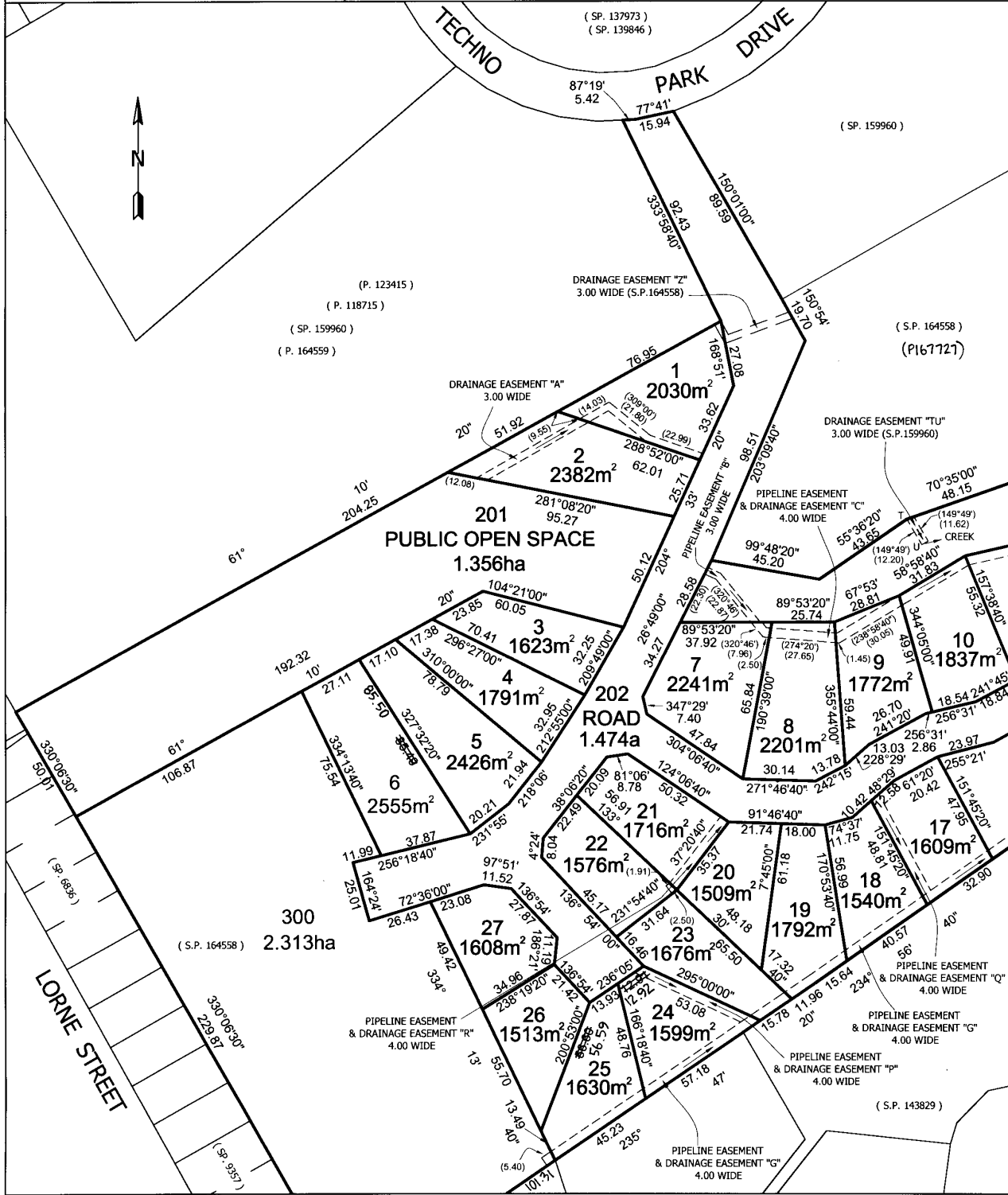
OWNER: MIRANDA (TRUFFERIE) PASTORAL COMPANY PTY LTD		PLAN OF SURVEY		REGISTERED NUMBER SP167726	
FOLIO REFERENCE: 164558/1				APPROVED 22 AUG 2014 EFFECTIVE FROM <i>Alice Kawa</i> Recorder of Titles	
GRANTEE: PART OF 276 ACRES GTD TO THOMAS LANDALE		WOOLCOTT SURVEYS BY SURVEYOR BRETT RICHARD WOOLCOTT LOCATION CITY OF LAUNCESTON			
MAPSHEET MUNICIPAL CODE No 120		LAST UPI No 3197988		LAST PLAN No SP.164558	
				ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN	



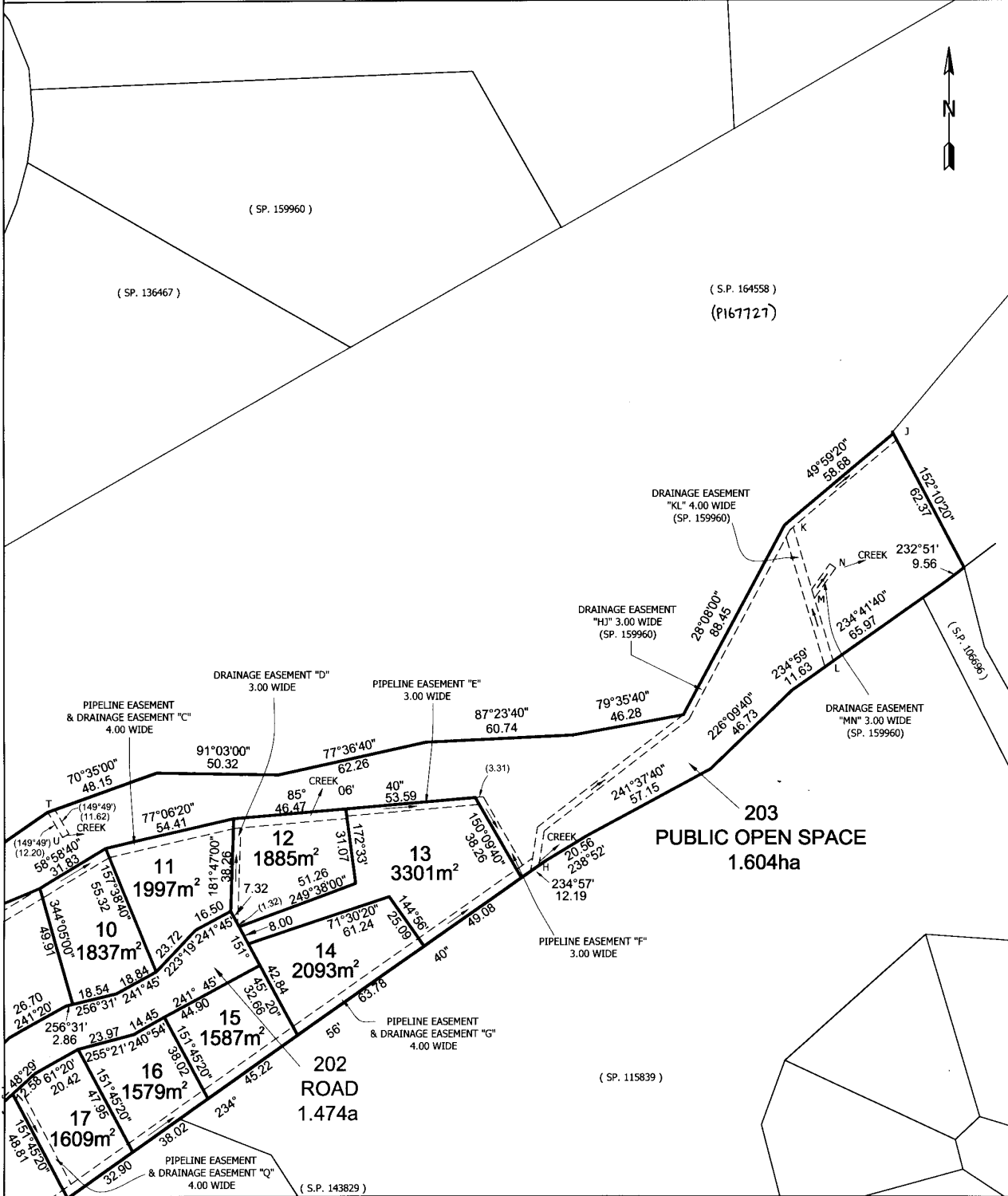
J. DAVIS
 COUNCIL DELEGATE

5/8/2014
 DATE

<p>PLAN OF SURVEY ANNEXURE SHEET</p>  <p>WOOLCOTT SURVEYS SHEET 1 OF 2 SHEETS</p>	<p>OWNER: MIRANDA (TRUFFERIE) PASTORAL COMPANY PTY LTD</p> <p>FOLIO REFERENCE: 164558/1</p> <p>SCALE 1:1500 LENGTH IN METRES</p>	<p>Registered Number</p> <p>SP 167726</p>
<p>SIGNED FOR IDENTIFICATION PURPOSES</p> <p><i>S. OAVIS</i> Council Delegate 18/2014 Date</p>	<p>THIS ANNEXURE SHEET FORMS PART OF THE ATTACHED INDEX PLAN. THE SURVEYORS CERTIFICATE EXTENDS TO THE DETAIL ON THIS SHEET.</p> <p><i>[Signature]</i> Registered Land Surveyor 30/04/2014 Date</p>	<p>APPROVED 22 AUG 2014 EFFECTIVE FROM</p> <p><i>Alice Kawa</i> Recorder of Titles</p>



<p>PLAN OF SURVEY ANNEXURE SHEET</p> <p>WOOLCOTT SURVEYS SHEET 2 OF 2 SHEETS</p>		<p>OWNER: MIRANDA (TRUFFERIE) PASTORAL COMPANY PTY LTD</p> <p>FOLIO REFERENCE: 164558/1</p> <p>SCALE 1:1500 LENGTH IN METRES</p>	<p>Registered Number</p> <p>SP 1677 26</p>
<p>SIGNED FOR IDENTIFICATION PURPOSES</p> <p><i>J. Davis</i> Council Delegate</p> <p>5/8/2014 Date</p>	<p>THIS ANNEXURE SHEET FORMS PART OF THE ATTACHED INDEX PLAN. THE SURVEYORS CERTIFICATE EXTENDS TO THE DETAIL ON THIS SHEET.</p> <p><i>A. Woolcott</i> Registered Land Surveyor</p> <p>30/04/2014 Date</p>	<p>APPROVED EFFECTIVE FROM 22 AUG 2014</p> <p><i>A. Woolcott</i> Registered Land Surveyor</p>	



SCHEDULE OF EASEMENTS	Registered Number
NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	SP 167726

PAGE 1 OF 5 PAGES

EASEMENTS AND PROFITS

Each lot on the plan is together with:-

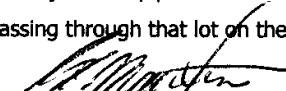

- (1) such rights of drainage over the drainage easements shown on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and
- (2) any easements or profits a prendre described hereunder.


Each lot on the plan is subject to:-

- (1) such rights of drainage over the drainage easements shown on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and
- (2) any easements or profits a prendre described hereunder.

The direction of the flow of water through the drainage easements shown on the plan is indicated by arrows.

- ↓ Lots 1 & 2 are each subject to a right of drainage (in favour of Launceston City Council) over the land marked DRAINAGE EASEMENT "A" 3.00 WIDE passing through such lot on the plan
- ↓ Lots 1 & 202 are each subject to a right of drainage (in favour of Taswater) over the land marked DRAINAGE EASEMENT "Z" 3.00 WIDE passing through such lot on the plan
- ↓ Lots 1 & 202 are each subject to a right of drainage (appurtenant to lot 2 on Plan 164559) over the land marked DRAINAGE EASEMENT "Z" 3.00 WIDE passing through that lot on the plan
- ↓ Lots 7-12 are each subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "C" 4.00 WIDE passing through such lot on the plan
- ↓ Lots 7-12 are each subject to a right of drainage (in favour of Launceston City Council) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "C" 4.00 WIDE passing through such lot on the plan
- ↓ Lot 12 is subject to a right of drainage (in favour of Launceston City Council) over the land marked DRAINAGE EASEMENT "D" 3.00 WIDE passing through that lot on the plan
- ↓ Lot 13 is subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT "E" 3.00 WIDE passing through that lot on the plan

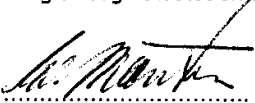

Director:  Director/Secretary: 
 (USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: MIRANDA (TRUFFERIE) PASTORAL COMPANY P/L FOLIO REF: 164558/1 SOLICITOR & REFERENCE: Rae & Partners 134809	PLAN SEALED BY: LAUNCESTON CITY COUNCIL DATE:  DA-0225/2013 & 10042/2013 REF NO. J. DAVIS Council Delegate
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NOTE: The Council Delegate must sign the Certificate for the purposes of identification.

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 2 OF 5 PAGES</p>	<p>Registered Number</p> <p>SP 167726</p>
<p>SUBDIVIDER: MIRANDA (TRUFFERIE) PASTORAL COMPANY P/L FOLIO REFERENCE: 164558/1</p>	

- ↓ Lots 13-19, 23-25, 203 & 300 are each subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "G" 4.00 WIDE passing through such lot on the plan
- ↓ Lots 13-19, 23-25, 203 & 300 are each subject to a right of drainage (in favour of Launceston City Council) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "G" 4.00 WIDE passing through such lot on the plan
- ↓ Lot 17 is subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "Q" 4.00 WIDE passing through that lot on the plan
- ↓ Lot 17 is subject to a right of drainage (in favour of Launceston City Council) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "Q" 4.00 WIDE passing through that lot on the plan
- ↓ Lots 21 & 22 are each subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "R" 4.00 WIDE passing through such lot on the plan
- ↓ Lots 21 & 22 are each subject to a right of drainage (in favour of Launceston City Council) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "R" 4.00 WIDE passing through such lot on the plan
- ↓ Lot 24 is subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "P" 4.00 WIDE passing through that lot on the plan
- ↓ Lot 24 is subject to a right of drainage (in favour of Launceston City Council) over the land marked PIPELINE EASEMENT & DRAINAGE EASEMENT "P" 4.00 WIDE passing through that lot on the plan
- ↓ Lot 203 is subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT "B" 3.00 WIDE passing through that lot on the plan
- ↓ Lot 203 is subject to a pipeline easement (in favour of TasWater) over the land marked PIPELINE EASEMENT "F" 3.00 WIDE passing through that lot on the plan

Director:  Director/Secretary: 

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 3 OF 5 PAGES</p>	<p>Registered Number</p> <p>SP 167726</p>
<p>SUBDIVIDER: MIRANDA (TRUFFERIE) PASTORAL COMPANY P/L FOLIO REFERENCE: 164558/1</p>	

- ↓ Lot 203 is subject to a right of drainage (in favour of TasWater) over the land marked DRAINAGE EASEMENT "HJ" 3.00 WIDE passing through that lot on the plan
- ↓ Lot 203 is subject to a right of drainage (in favour of TasWater) over the land marked DRAINAGE EASEMENT "KL" 4.00 WIDE passing through that lot on the plan
- ↓ Lot 203 is subject to a right of drainage (in favour of Launceston City Council) over the land marked DRAINAGE EASEMENT "KL" 4.00 WIDE passing through that lot on the plan
- ↓ Lot 203 is subject to a right of drainage (in favour of Launceston City Council) over the land marked DRAINAGE EASEMENT "MN" 3.00 WIDE passing through that lot on the plan
- ↓ Lot 203 is subject to a right of drainage (in favour of Launceston City Council) over the land marked DRAINAGE EASEMENT "TU" 3.00 WIDE passing through that lot on the plan

FENCING PROVISION



In respect to the lots on the plan the vendor (Miranda (Trufferie) Pastoral Company Pty Ltd) shall not be required to fence

INTERPRETATION

"TasWater" means the Tasmanian Water and Sewerage Corporation Pty Ltd

"Pipeline easement" means the full right and liberty for TasWater at all times to-

- (1) enter and remain upon the land marked "PIPELINE EASEMENT" on the plan ("the Easement Land") with or without employees, contractors, agents and all other persons duly authorised by it and with or without machinery, vehicles, plant and equipment;
- (2) investigate, take soil, rock and other samples, survey, open and break up and excavate the Easement Land for any purpose or activity that TasWater is authorised to do or undertake;
- (3) install, retain, operate, modify, relocate, maintain, inspect, cleanse and repair the Infrastructure;
- (4) remove and replace the Infrastructure;

Director:  Director/Secretary: 

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 4 OF 5 PAGES</p>	<p>Registered Number</p> <p>167726</p>
<p>SUBDIVIDER: MIRANDA (TRUFFERIE) PASTORAL COMPANY P/L FOLIO REFERENCE: 164558/1</p>	

- (5) run and pass sewage and water through and along the Infrastructure;
- (6) do all works reasonably required in connection with such activities or as may be authorised or required by any law:
 - (1) without doing unnecessary damage to the Easement Land; and
 - (2) leaving the Easement Land in a clean and tidy condition; and
- (7) if the Easement Land is not directly accessible from a highway, then for the purpose of undertaking any of the preceding activities TasWater may with or without employees, contractors, agents and all other persons authorised by it, and with or without machinery, vehicles, plant and equipment enter the Lot from the highway at any then existing vehicle entry and cross the Lot to the Easement Land; and
- (8) use the Easement Land as a right of carriageway for the purpose of undertaking any of the preceding purposes on other land, TasWater reinstating any damage that it causes in doing so to any boundary fence of the Lot.

PROVIDED ALWAYS THAT:

- (1) The registered proprietors of the lots on the plan ("the Owner") must not without the written consent of TasWater first had and obtained and only in compliance with any conditions which form the consent:
 - (a) alter, excavate, plough, drill or otherwise penetrate the ground level of the Easement Land;
 - (b) install, erect or plant any building, structure, fence, pit, well, footing, pipeline, paving, tree, shrub or other object on or in the Easement Land;
 - (c) remove any thing that supports, protects or covers any Infrastructure on or in the Easement Land;
 - (d) do anything which will or might damage or contribute to damage to any of the Infrastructure on or in the Easement Land;
 - (e) in any way prevent or interfere with the proper exercise and benefit of the Easement Land by TasWater or its employees, contractors, agents and all other persons duly authorised by it; or
 - (f) permit or allow any action which the Owner must not do or acquiesce in that action.
- (2) TasWater is not required to fence any part of the Easement Land.
- (3) The Owner may erect a fence across the Easement Land at the boundaries of the Lot.
- (4) The Owner may erect a gate across any part of the Easement Land subject to these conditions:
 - (a) the Owner must provide TasWater with a key to any lock which would prevent the opening of the gate; and

Director:  Director/Secretary: 

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

<p>ANNEXURE TO SCHEDULE OF EASEMENTS</p> <p>PAGE 5 OF 5 PAGES</p>	<p>Registered Number</p> <p>SP 167726</p>
<p>SUBDIVIDER: MIRANDA (TRUFFERIE) PASTORAL COMPANY P/L FOLIO REFERENCE: 164558/1</p>	

- (b) if the Owner does not provide TasWater with that key or the key provided does not fit the lock, TasWater may cut the lock from the gate.
- (5) If the Owner causes damage to any of the Infrastructure, the Owner is liable for the actual cost to TasWater of the repair of the Infrastructure damaged.
- (6) If the Owner fails to comply with any of the preceding conditions, without forfeiting any right of action, damages or otherwise against the Owner, TasWater may:
 - (a) reinstate the ground level of the Easement Land; or
 - (b) remove from the Easement Land any building, structure, pit, well, footing, pipeline, paving, tree, shrub or other object; or
 - (c) replace any thing that supported, protected or covered the Infrastructure.

"Infrastructure" means infrastructure owned or for which TasWater is responsible and includes but is not limited to:

- (a) sewer pipes and water pipes and associated valves;
- (b) telemetry and monitoring devices;
- (c) inspection and access pits;
- (d) markers or signs indicating the location of the Easement Land, the Infrastructure or any warnings or restrictions with respect to the Easement Land or the Infrastructure;
- (e) anything reasonably required to support, protect or cover any of the Infrastructure;
- (f) any other infrastructure whether of a similar nature or not to the preceding which is reasonably required for the piping of sewage or water through the Easement Land or monitoring or managing that activity; and
- (g) where the context permits, any part of the Infrastructure.

Executed by Miranda (Trufferie) Pastoral Company Pty Ltd under section 127 of the Corporations Act 2001 by being signed by two directors-

Director: 

Director/Secretary: 

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

Appendix C

Enviro Assist



EnviroAssist

Techno Park Drive, Kings Meadows

Prepared for: Miranda (Trufferie) Pty Ltd

Date: May 2012
Rev 00

transport infrastructure | community infrastructure | industrial infrastructure | climate change



pitt&sherry

sustainable*thinking*[®]



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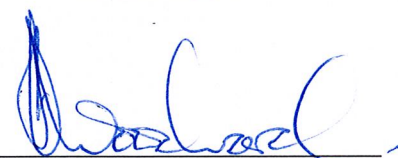
- Appendix A** Detailed Results and Methodology for EnviroAssist
Appendix B Response from Aboriginal Heritage Tasmania
Appendix C Note Sheets

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Prepared by:  **Charlie Livesey** **Date:** 01 May 2012

Reviewed by:  **Michael Walsh** **Date:** 01 May 2012

Authorised by:  **Ian Woodward** **Date:** 01 May 2012

Report Revision History					
Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date

1. Introduction

Miranda (Trufferie) Pty Ltd has requested from pitt&sherry an EnviroAssist desktop assessment for the land:

PID: 3064210

Title Reference: 159960/2HB

The land to be assessed by EnviroAssist is depicted in Figure 1.

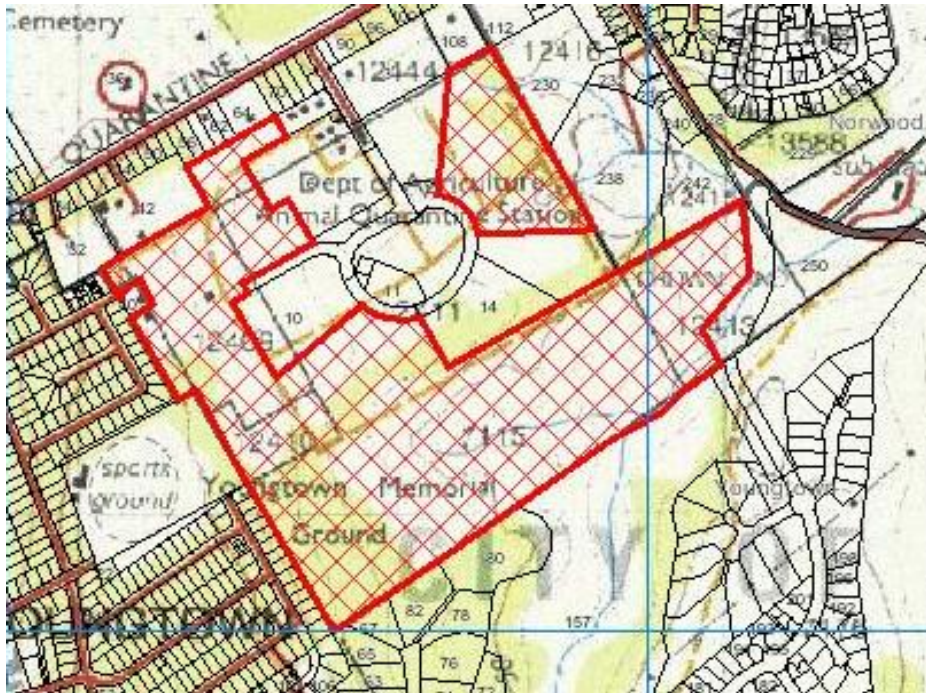


Figure 1 - Land to be assessed by EnviroAssist (Source: theLIST)

2. EnviroAssist

EnviroAssist is a planning tool which utilises existing databases to assess any risks, constraints and issues for the land in relation to:

- Threatened flora and fauna (both State and Commonwealth)
- Weeds
- *Phytophthora* management zones
- Geoconservation
- RAMSAR wetlands
- Tasmanian reserve estate
- Public land classification
- Aboriginal heritage
- Local, State and National historic heritage
- Agricultural Land
- Acid Sulfate Soils.

In addition to the standard EnviroAssist parameters outlined above, this report also takes in account landslip hazards.

In this report, the risks, constraints and issues for the land are assessed from within a 500 m and 5 km radius. By setting the search parameters up to 5 km, a reflection of the values of the broader landscape can be identified.

The detailed results and methodology for EnviroAssist are contained in Appendix A of this report. A summary of these results is included within the main text of this report.

Data in relation to Aboriginal heritage can only be obtained by a specific project based application to Aboriginal Heritage Tasmanian (AHT). The response from AHT in relation to the land is contained in Appendix B.

It is important to note that these results indicate those values known to be present on desktop registers. These registers are typically a combination of the results of past field surveys (in the case of threatened flora, fauna and heritage), known land tenure and some risk assessment.

What this means is that a negative result does not necessarily confirm the absence of any values; it may also indicate that the site has never been surveyed. Accordingly, the results below are an indication of what is known to occur but should not be used as definitive authority for the absence of values.

3. EnviroAssist Results (within 500 m)

Table 1 shows the results of EnviroAssist for the land with a 500 m buffer.

Figure 2 shows the location of values identified in Table 1.

Table 1 - EnviroAssist results within 500 m search radius

Parameter	Results
Threatened flora (point data)	<p>7x <i>Brunonia australis</i> (blue pincushion): Listed as rare under the <i>Threatened Species Protection Act 1995</i> (Tas).</p> <p>1x <i>Arthropodium strictum</i> (chocolate lily): Listed as rare under the <i>Threatened Species Protection Act 1995</i> (Tas).</p> <p>1x <i>Hypoxis vaginata</i> var. <i>vaginata</i> (sheathing yellow star): Listed as rare under the <i>Threatened Species Protection Act 1995</i> (Tas).</p> <p>1x <i>Senecio squarrosus</i> (leafy fireweed): Listed as rare under the <i>Threatened Species Protection Act 1995</i> (Tas).</p>
Threatened vegetation	<i>Eucalyptus amygdalina</i> inland forest and woodland on Cainozoic deposits (DAZ): Listed as threatened under Schedule 3A of the <i>Nature Conservation Act 2002</i> (Tas).
Threatened fauna (point data)	No results identified from desktop assessment (within 500m).
Threatened fauna (based on <u>core</u> habitat mapping)	Study area falls within the core habitat mapping for <i>Tyto novaehollandiae castanops</i> (masked owl): Listed as endangered under the <i>Threatened Species Protection Act 1995</i> (Tas) and Vulnerable under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth).

Parameter	Results
Weeds (Introduced Watch List)	1x <i>Ulex europaeus</i> (gorse): Declared weed under the <i>Weed Management Act 1999</i> (Tas). 1x <i>Cytisus scoparius</i> (english broom): Declared weed under the <i>Weed Management Act 1999</i> (Tas).
Geoconservation	No results identified from desktop assessment (within 500m).
RAMSAR wetlands	No results identified from desktop assessment (within 500m).
Reserve estate	1x Conservation Area (as found in Public Land Classification)
Public land classification	1x Public Reserve
Aboriginal heritage	No results identified from desktop assessment (within 500m).
Local historic heritage	No results identified from desktop assessment (within 500m).
State historic heritage	No results identified from desktop assessment (within 500m).
National heritage	No results identified from desktop assessment (within 500m).
Agricultural land	No results identified from desktop assessment (within 500m).
Acid sulfate soils	1x Low probability of occurrence (6-70% chance of occurrence in mapping unit).
Geohazards	3x Recent or active landslide 1x Fossil or dormant landslide 1x Land slide Zone Fossil or Dormant
Phytophthora management areas	No results identified from desktop assessment (within 500m).

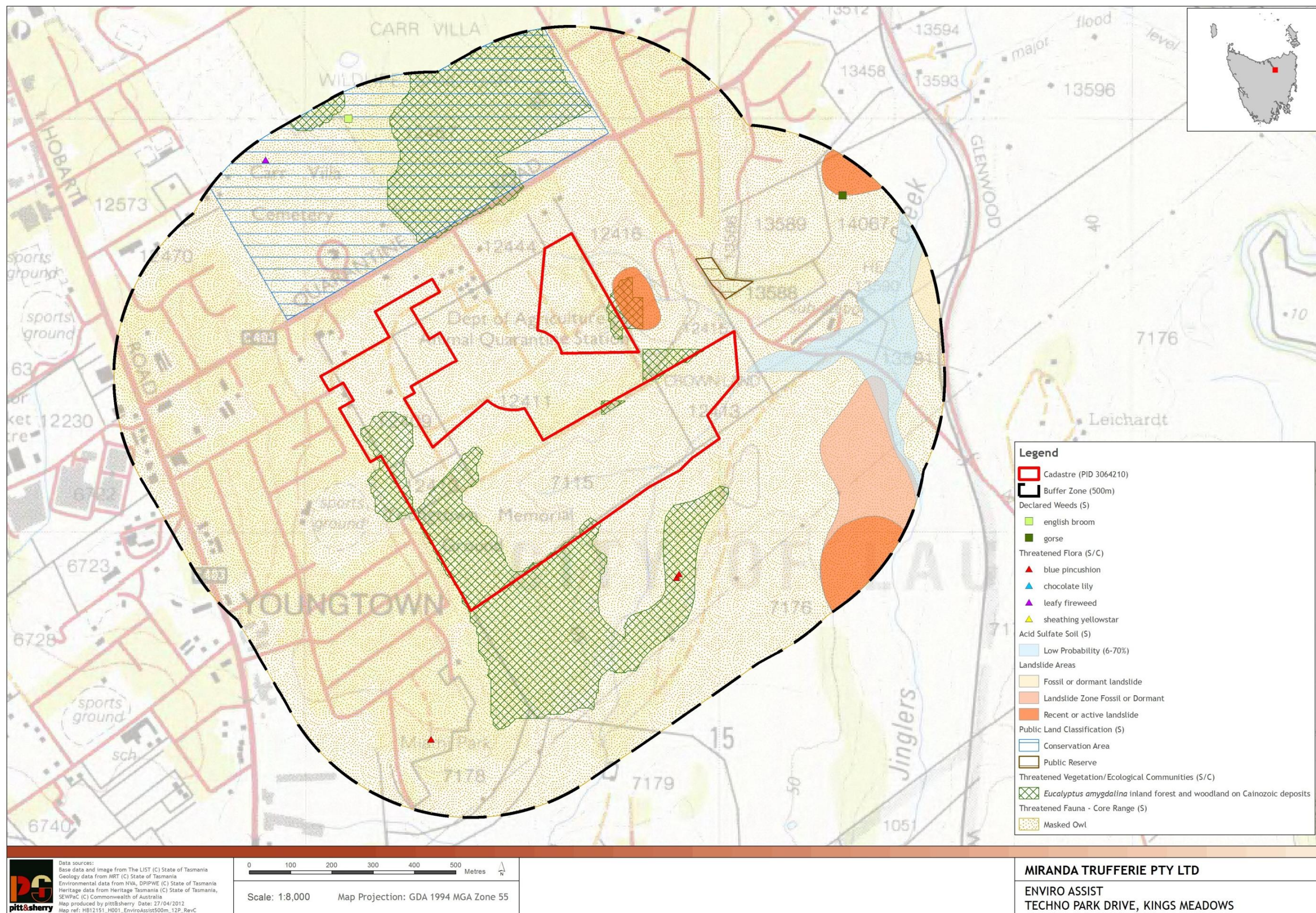


Figure 2 - EnviroAssist results (within 500 m)

3.1 Discussion of Results (within 500 m)

3.1.1 Flora

EnviroAssist shows the occurrence of *Eucalyptus amygdalina* inland forest and woodland on Cainozoic deposits on the land. This vegetation community is listed as threatened under Schedule 3A of the *Nature Conservation Act 2002* (Tas). Occurring in this vegetation community (to the south of the property) are records of the threatened plant *Brunonia australis* (blue pincushion). Within the vicinity there are also records of three other threatened plants, being *Arthropodium strictum* (chocolate lily), *Hypoxis vaginata* var. *vaginata* (sheathing yellow star) and *Senecio squarrosus* (leafy fireweed).

All of these threatened plants identified within 500 m are listed as rare under the Threatened Species Protection Act 1995 (Tasmania). These plant species are not listed under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth). Further information (note sheets) in relation to these species is included in Appendix C.

3.1.2 Fauna

The land falls within the core habitat mapping for *Tyto novaehollandiae castanops* (masked owl). This species is listed as endangered under the *Threatened Species Protection Act 1995* (Tas) and Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth). The masked owl inhabits a diverse range of forests and woodlands including agricultural and forest mosaics. Forests with relatively open understoreys, particularly when these habitats adjoin areas of open or cleared land, are favoured.¹

3.1.3 Weeds

Ulex europaeus (gorse) and *Cytisus scoparius* (english broom) have been identified within the vicinity of the study area. Both of these weed species are listed as declared under the *Weed Management Act 1999* (Tas). Further information (note sheets) in relation to these species is included in Appendix C.

3.1.4 Aboriginal Heritage

No sites listed in the Tasmanian Aboriginal Heritage Site Index (TASI) have been recorded within 500 m of the land. Aboriginal Heritage Tasmania (AHT) found “that there is limited risk to Aboriginal heritage in the development proposal as the area has previously been highly disturbed and there are no TASI sites located within 1 km of the development location”. See Appendix B for the file response from AHT.

3.1.5 Historic heritage

No historic heritage sites listed under local, state or national statutory registers occur within 500 m of the land.

3.1.6 Acid Sulfate Soils

There is a low probability of occurrence of acid sulfate soils to the east of the land.

¹ http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=67051#habitat

3.1.7 Geohazards

There is a recording of a recent or active landslide on the eastern boundary of the property.

4. EnviroAssist Results (5 km Radius)

By setting the search parameters to encompass a 5 km radius, the values of the broader landscape can be identified. This is an important step as it can give an indication as to the level of risk of encountering conservation values within or directly adjacent the site, given the limitations of the desktop registers previously discussed.

Several important values (see Appendix A for further details) have been identified within a 5 km radius of the land including:

- 62 listed threatened flora species
- 8 listed threatened vegetation communities
- 13 listed threatened fauna species
- 25 weed species
- 1 Aboriginal heritage site
- 3 local historic heritage sites
- 5 state historic heritage sites
- High probability of acid sulfate soils
- Various geohazards.

5. Recommendations

On the basis of the results identified it is recommended that the following further investigations be undertaken:

- Flora and fauna field survey (based on the values identified within 500 m and 5 km of the land and to confirm the on-ground extent of *Eucalyptus amygdalina* inland forest and woodland on Cainozoic deposits)
- There is a low risk of Aboriginal heritage being present as the area has previously been highly disturbed and there are no TASI sites located within 1 km. On this basis, it is unlikely that an aboriginal heritage survey will be required. However, it is recommended that a development footprint (when known) be provided to AHT to confirm this.
- Based on the absence of sites listed on statutory heritage registers (within 500 m) it is unlikely that a historic heritage survey will be required. This recommendation is based on a desktop assessment only. Historic features that are not contained within statutory registers may exist on the land.

Appendix A

Detailed Results and Methodology for EnviroAssist



Results with 500 m Buffer

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Threatened flora (point data)	10	7x <i>Brunonia australis</i> (Blue Pincushion) 1x <i>Dichopogon strictus</i> (Chocolate Lily) 1x <i>Hypoxis vaginata</i> var. <i>Vaginata</i> (Sheating Yellowstar) 1x <i>Senecio squarrosus</i> (Leafy Fireweed)	Natural Values Atlas	In relation to flora species listed under the <i>Threatened Species Protection Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=threatened&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=7&number=1	24 th February 2012
Threatened vegetation	6	6x <i>Eucalyptus amygdalina</i> inland forest and woodland on Cainozoic deposits (DAZ)	Natural Values Atlas	In relation to communities listed as threatened under Schedule 3A of the <i>Nature Conservation Act 2002</i> and ecological communities listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	Threatened Vegetation is a derivation of TASVEG (the State wide vegetation map) supplied by Information and Land Services, DPIIWE. Metadata (TASVEG): http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=tasveg&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=1&number=1	30 th March 2011

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Threatened fauna (point data)	0	NA	Natural Values Atlas	In relation to fauna species listed under the <i>Threatened Species Protection Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=threatened&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=4&number=1	24 th February 2012
Threatened fauna (based on <u>core</u> habitat mapping)	1	1x <i>Tyto novaehollandiae castanops</i> (Masked Owl)	Natural Values Atlas	In relation to core habitat for fauna species listed under the <i>Threatened Species Protection Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=threatened&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=3&number=1	30 th March 2011
Weeds (Introduced Watch List)	2	1x <i>Ulex europaeus</i> (Gorse) 1x <i>Cytisus scoparius</i> (English Broom)	Natural Values Atlas	In relation to the <i>Weed Management Act 1999</i>	http://www.thelist.tas.gov.au/asdd/ANZTA0015000084.html	24 th February 2012

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Geoconservation	0	NA	Tasmanian Geoconservation Database V7.0	In relation to sites of geoconservation significance and sensitivity of disturbance to these sites.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=geoconservation&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=2&number=1	7 th September 2011
RAMSAR wetlands	0	NA	LIST Ramsar Wetlands	In relation to listed RAMSAR sites.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=ramsar&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=1&number=1	29 th March 2011
Reserve estate	1	1x Conservation Area (as found in Public Land Classification)	LIST Reserve Estate	In relation to reserved areas identified.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=reserve&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=2&number=1	28 th February 2011

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Public land classification	2	1x Conservation Area 1x Public Reserve	LIST Public Land Classification	In relation to land identified.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=public%20land&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=1&number=1	27 th April 2012
Aboriginal heritage	0	NA	Aboriginal Site Index (TASI) site request	In relation to already registered TASI sites.	Not provided	AHT consulted on 24/04/2012 - See Appendix B
Local historic heritage	0	NA	<i>Launceston Planning Scheme 1996</i>	In relation to already registered sites at a local level.	This is checked in relation to the listings identified under the relevant Scheme. Some sites are not well defined and ambiguous.	Scheme checked on 27/04/2012
State historic heritage	0	NA	Tasmanian Heritage Register	In relation to already registered sites at the State level.	Not provided	30 th August 2011

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
National heritage	0	NA	World Heritage Areas Commonwealth Heritage List Spatial Database National Heritage List Spatial Database	In relation to already registered sites at a National level.	http://www.environment.gov.au/metadataexplorer/full_metadata.jsp?docId=%7B6C54FE6C-2773-47C6-8CBC-4722F29081EF%7D&loggedIn=false http://www.environment.gov.au/metadataexplorer/full_metadata.jsp?docId=%7B0E1C1328-465A-4E6A-9EC1-60A16D0A30CF%7D&loggedIn=false http://www.environment.gov.au/metadataexplorer/full_metadata.jsp?docId=%7B4E0D1183-BAB8-4E4C-901E-10B75396D5B5%7D&loggedIn=false	24 th February 2012
Agricultural land	0	NA	Land Capability Data (Land Class value ≤ 3)	In relation to the <i>State Policy on the Protection of Agricultural Land 2009</i>	Not provided	16 th September 2008

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Acid sulfate soils	1	1x Low probability of occurrence (6-70% chance of occurrence in mapping unit)	<p>Inland Areas of Tasmania with potential to contain Acid Sulfate Soil</p> <p>Coastal areas of Tasmania with potential to contain Acid Sulfate Soil</p> <p>Marine Subaqueous and Intertidal areas of Tasmania with potential to contain Acid Sulfate Soil</p> <p>Sampling Sites of Coastal areas of Tasmania with potential to contain Acid Sulfate Soil</p>	In relation to areas of the state with the potential to contain acid sulphate soil.	<p>http://www.thelist.tas.gov.au/asd/ANZTA0015000078.html</p> <p>http://www.thelist.tas.gov.au/asd/ANZTA0015000077.html</p> <p>http://www.thelist.tas.gov.au/asd/ANZTA0015000079.html</p> <p>http://www.thelist.tas.gov.au/asd/ANZTA0015000083.html</p>	1 st December 2009
Geohazards	5	<p>3x Recent or active landslide</p> <p>1x Fossil or dormant landslide</p> <p>1x Land slide Zone Fossil or Dormant</p>	<p>Landslide point</p> <p>Landslide line</p> <p>Landslide area</p> <p>Proclaimed Landslip A and B areas</p> <p>[Mineral Resources Tasmania]</p>	In relation to mass wasting hazards in the form of landslides and karst subsidence.	http://www.mrt.tas.gov.au/portal/page?_pageid=35,839627&_dad=portal&_schema=PORTAL	27 th April 2012

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Phytophthora management areas	0	NA	Pc management zones 03_GDA_regions [Department of Primary Industries, Parks, Water and Environment]	In relation to the conservation of Tasmanian plant species and communities threatened by <i>Phytophthora cinnamomi</i> .	Schahinger, R., Rudman T., and Wardlaw, T. J. (2003). <i>Conservation of Tasmanian Plant Species & Communities threatened by Phytophthora cinnamomi. Strategic Regional Plan for Tasmania</i> . Technical Report 03/03, Nature Conservation Branch, Department of Primary Industries, Water and Environment, Hobart.	24 th January 2012

Results with 5km buffer

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Threatened flora (point data)	430	62 listed species	Natural Values Atlas	In relation to flora species listed under the <i>Threatened Species Protection Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=threatened&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=7&number=1	24 th February 2012
Threatened vegetation	63	8 listed threatened vegetation/ecological communities	Natural Values Atlas	In relation to communities listed as threatened under Schedule 3A of the <i>Nature Conservation Act 2002</i> and ecological communities listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	Threatened Vegetation is a derivation of TASVEG (the State wide vegetation map) supplied by Information and Land Services, DPIPWE. Metadata (TASVEG): http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=tasveg&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=1&number=1	30 th March 2011

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Threatened fauna (point data)	61	13 listed species	Natural Values Atlas	In relation to fauna species listed under the <i>Threatened Species Protection Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=threatened&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=4&number=1	24 th February 2012
Threatened fauna (based on <u>core</u> habitat mapping)	1	1x <i>Tyto novaehollandiae castanops</i> (Masked Owl)	Natural Values Atlas	In relation to core habitat for fauna species listed under the <i>Threatened Species Protection Act 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=threatened&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=3&number=1	30 th March 2011
Weeds (Introduced Watch List)	103	25 listed species	Natural Values Atlas	In relation to the <i>Weed Management Act 1999</i>	http://www.thelist.tas.gov.au/asdd/ANZTA0015000084.html	24 th February 2012

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Geoconservation	0	NA	Tasmanian Geoconservation Database V7.0	In relation to sites of geoconservation significance and sensitivity of disturbance to these sites.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=geoconservation&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=2&number=1	7 th September 2011
RAMSAR wetlands	0	NA	LIST Ramsar Wetlands	In relation to listed RAMSAR sites.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=ramsar&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=1&number=1	29 th March 2011
Reserve estate	18	3x Conservation Area 2x Nature Recreation Area 3x Private Sanctuary 9x Informal Reserve on other public land 1x Informal Reserve on State Forest or Forestry Tas managed land	LIST Reserve Estate	In relation to reserved areas identified.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=reserve&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=2&number=1	28 th February 2011

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Public land classification	40	3x Conservation Area 1x Nature Conservation Area 35x Public Reserve 1x State Reserve	LIST Public Land Classification	In relation to land identified.	http://asdd.ga.gov.au/asdd/tech/zap/advanced-full.zap?&target=tas-1&syntax=html&field1=any&field2=any&field3=any&field4=&field5=&field6=anzlic%5Fsearch%5Fword&term1=public%20land&term2=&term3=&term4=&term5=&term6=&term7=&op2=and&op1=and&start=1&number=1	6 th September 2004
Aboriginal heritage	1	TASI 8654 (Approximately distance 1.2km)	Aboriginal Site Index (TASI) site request	In relation to already registered TASI sites.	Not provided	AHT consulted on 24/04/2012 - See Appendix B
Local historic heritage	3	413 - 419 Hobart Road - Franklin House - UPI 7306/7/8 (Approximate distance 1.2 km) 418 Hobart Road - St James Anglican Church - UPI 6935 (Approximate distance 1.3 km) 15 Station Road St Leonards - St Leonards Methodist Chapel - UPI 14220 (Approximate distance 2.2 km)	<i>Launceston Planning Scheme 1996</i>	In relation to already registered sites at a local level.	This is checked in relation to the listings identified under the relevant Scheme. Some sites are not well defined and ambiguous.	Scheme checked on 27/04/2012

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
State historic heritage	5	<p>Rose Lane Park (Approximate distance 2.6 km)</p> <p>St Peter's Anglican Church & Cemetery (Approximate distance 2.5 km)</p> <p>Conjoined Federation Terraces (Approximate distance 4.4 km)</p> <p>Former Manse, Units 1 & 2, 7 Frederick Street (Approximate distance 4.3 km)</p> <p>Commercial Retail (Approximate distance 4.5 km)</p>	Tasmanian Heritage Register	In relation to already registered sites at the State level.	Not provided	30 th August 2011

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
National heritage	0	NA	World Heritage Areas Commonwealth Heritage List Spatial Database National Heritage List Spatial Database	In relation to already registered sites at a National level.	http://www.environment.gov.au/metadataexplorer/full_metadata.jsp?docId=%7B6C54FE6C-2773-47C6-8CBC-4722F29081EF%7D&loggedIn=false http://www.environment.gov.au/metadataexplorer/full_metadata.jsp?docId=%7B0E1C1328-465A-4E6A-9EC1-60A16D0A30CF%7D&loggedIn=false http://www.environment.gov.au/metadataexplorer/full_metadata.jsp?docId=%7B4E0D1183-BAB8-4E4C-901E-10B75396D5B5%7D&loggedIn=false	24 th February 2012
Agricultural land	3	3x Land Capability Class 3	Land Capability (Land Class value ≤ 3)	In relation to the <i>State Policy on the Protection of Agricultural Land 2009</i>	Not provided	16 th September 2008

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Acid sulfate soils	119	<p>45x 1x High probability of occurrence (>70% chance of occurrence in mapping unit)</p> <p>67x 1x Low probability of occurrence (6-70% chance of occurrence in mapping unit)</p> <p>7x 1x Extremely low probability of occurrence (1-5% chance of occurrence in mapping unit)</p>	<p>Inland Areas of Tasmania with potential to contain Acid Sulfate Soil</p> <p>Coastal areas of Tasmania with potential to contain Acid Sulfate Soil</p> <p>Marine Subaqueous and Intertidal areas of Tasmania with potential to contain Acid Sulfate Soil</p> <p>Sampling Sites of Coastal areas of Tasmania with potential to contain Acid Sulfate Soil</p>	In relation to areas of the state with the potential to contain acid sulphate soil.	<p>http://www.thelist.tas.gov.au/asdd/ANZTA0015000078.html</p> <p>http://www.thelist.tas.gov.au/asdd/ANZTA0015000077.html</p> <p>http://www.thelist.tas.gov.au/asdd/ANZTA0015000079.html</p> <p>http://www.thelist.tas.gov.au/asdd/ANZTA0015000083.html</p>	1 st December 2009
Geohazards	84	<p>36x Fossil or dormant landslide</p> <p>7x Landslide Zone Fossil or dormant</p> <p>2x Landslide Zone Recent or Active</p> <p>39x Recent or active landslide</p>	<p>Landslide point</p> <p>Landslide line</p> <p>Landslide area</p> <p>Proclaimed Landslip A and B areas</p> <p>[Mineral Resources Tasmania]</p>	In relation to mass wasting hazards in the form of landslides and karst subsidence.	http://www.mrt.tas.gov.au/portal/page?_pageid=35,839627&_dad=portal&_schema=PORTAL	27 th April 2012

Assessment	Total Number of Features	Feature Information	Data Sources	Assessment of Risks, Constraints and Issues	Metadata/Limitations	Data Download Date
Phytophthora Management Areas	0	NA	Pc management zones 03_GDA_regions [Department of Primary Industries, Parks, Water and Environment]	In relation to the conservation of Tasmanian plant species and communities threatened by <i>Phytophthora cinnamomi</i> .	Schahinger, R., Rudman T., and Wardlaw, T. J. (2003). <i>Conservation of Tasmanian Plant Species & Communities threatened by Phytophthora cinnamomi. Strategic Regional Plan for Tasmania</i> . Technical Report 03/03, Nature Conservation Branch, Department of Primary Industries, Water and Environment, Hobart.	24 th January 2012

Appendix B

Response from Aboriginal Heritage Tasmania



Response from Aboriginal Heritage Tasmania

Hi Charlie,

Please find attached. AHT find that there is limited risk to Aboriginal heritage in the development proposal as the area has previously been highly disturbed and there are no TASI sites located within 1km of the development location.

Thanks,

Karen

Karen McFadden
Senior Archaeologist

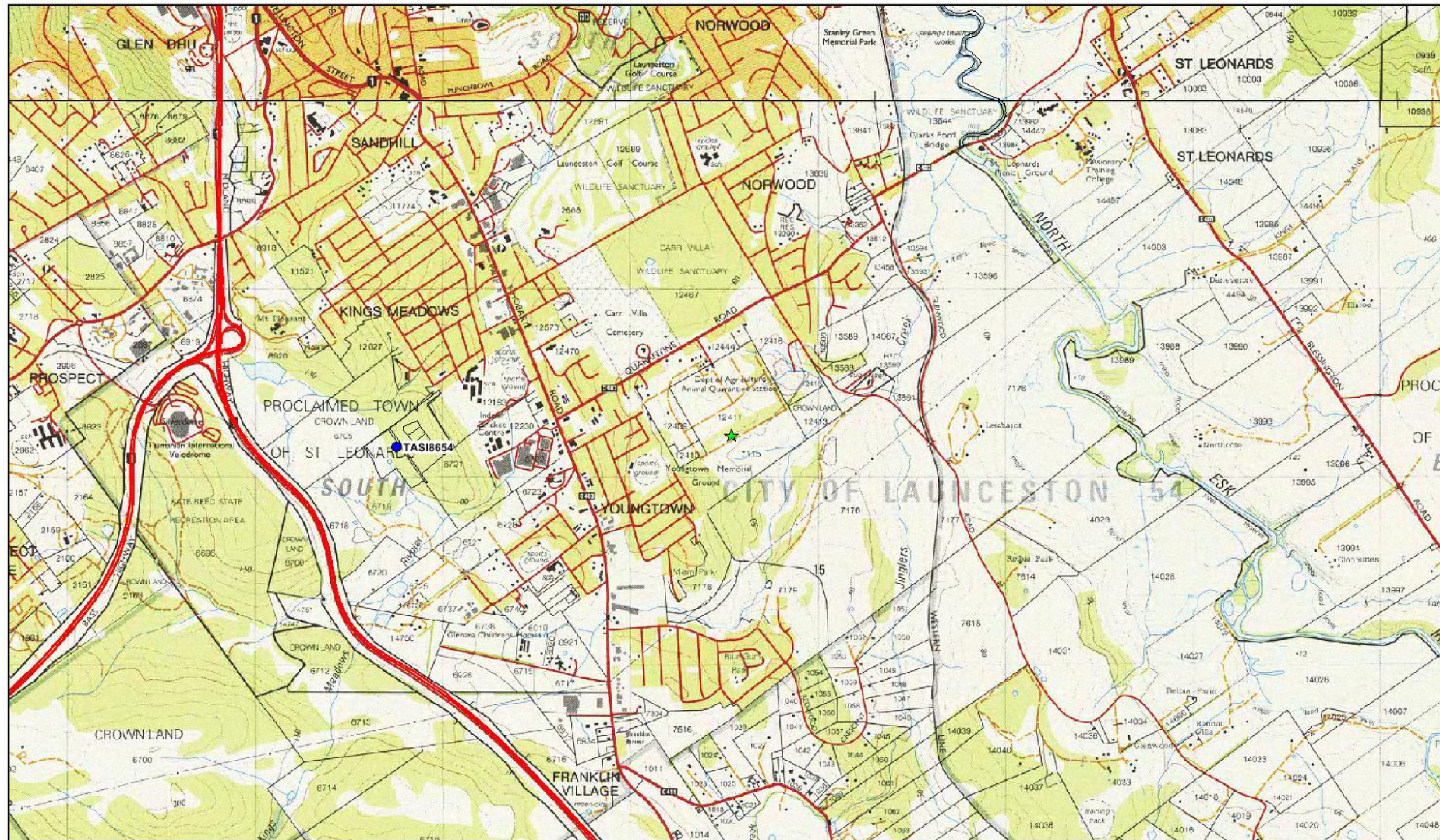
Aboriginal Heritage Tasmania
Department of Primary Industries, Parks, Water and Environment
5th Floor, Marine Board Building, 1 Franklin Wharf
GPO Box 771, Hobart, TAS, 7001

p 03 6233 6618 f 03 6233 2287
e karen.mcfadden@heritage.tas.gov.au

www.aboriginalheritage.tas.gov.au



The attachment referred to in the response from AHT:



GDA94 - Zone 55

Youngtown

Produced by Karen McFadden - Aboriginal Heritage Tasmania
Printed on 21/07/2012

This map is intended for research purposes only by the proponent/consultant identified in the title.
The TAST site information is confidential and not for public dissemination.
This map cannot be used for any other purpose without written permission from AHT.
Base data provided by DPIW, Information and Land Services Division (ILS),
PWS Track Management and other PWS and RMC projects.

Appendix C

Note Sheets



Arthropodium strictum



Arthropodium strictum.
H & A Wapstra.

FAMILY: LILIACEAE

BOTANICAL NAME: *Arthropodium strictum*,
R.Br., *Prodr.* 276 (1810)

COMMON NAME: Chocolate lily

COMMONWEALTH STATUS: (*EPBC Act*)
Not Listed

TASMANIAN STATUS: (*TSP Act*) rare

Description

A plant up to 90 cm tall with tuberous roots that are usually between 15 mm long and 5-10 mm wide. **Leaves:** The leaves are flat and up to 40 cm long and 1-7 mm wide. **Flowers:** The inflorescence is either racemose (succession along stem where oldest flower is at the base) or paniculate (inflorescence with primary and secondary axis, branched). There is one flower per node (stem joint), however there may occasionally be two from the lower nodes. The flower stalks are up to 35 cm long and each flower has bracts (leaf-like structures) that are between 5-15 mm long. All flower parts are between 6-14 mm long and purple in colour. The outer segments are between 3-4 mm wide and the inner ones between 6-10 mm wide. The margins are narrowly fringed. The anthers (pollen sacs) are between 3-4.5 mm long and are either purple or yellow. The filaments (stalk holding anthers) are flattened. The ovary is between 1-1.5 mm in diameter. The flowers have a distinctive scent, which smells like chocolate. **Fruit:** The fruit is a capsule that is spherical in shape and between 4-7 mm in diameter. It is usually enclosed in the remnants of the flower parts. The seeds are black and angular (description from Curtis & Morris 1994). Herbarium specimens have been collected in November and December. **This species was previously known as *Dichopogon strictus*.**

Distribution and Habitat

On the mainland this species occurs in South Australia, Victoria and New South Wales. In Tasmania, *Arthropodium strictum* is found in open forest, dry hillsides and grasslands. It occurs predominantly in the eastern half of the State (through the Midlands, north-east and on the East Coast) (Curtis & Morris 1994).

Key Sites and Populations

Key sites for this species include the Symmons Plains Raceway, Rokeby Hills, Launceston, Carr Villa Cemetery, Launceston, Mt. Pleasant, Launceston, the Midlands Highway, Ecclestone Road, South Bridgenorth Road Junction, Lake River west of Campbell Town, Hillwood on the Tamar River and Powranna Road.

Known Reserves

Reserved in the Carr Villa Conservation Area, the Forest Vale State Reserve, Franklin-Gordon Wild Rivers National Park, Maria Island National Park, Mount Roland Regional Reserve, Powranna Nature Reserve, Punchbowl Conservation Area, Tom Gibson Nature Reserve, Walls of Jerusalem National Park and Wellington Park.

Ecology and Management

Mature plants are unlikely to be killed by fire and may regenerate from the tuberous roots system. Occasional low-density fires between 5-15 years may open the sward, allowing habitat for the germination of new plants (Morgan 1998).

This species is suffering incremental loss due to agricultural and residential development.

Bees are the most likely pollination vector for this species (A. Hingston pers. comm.).

Conservation Status Assessment

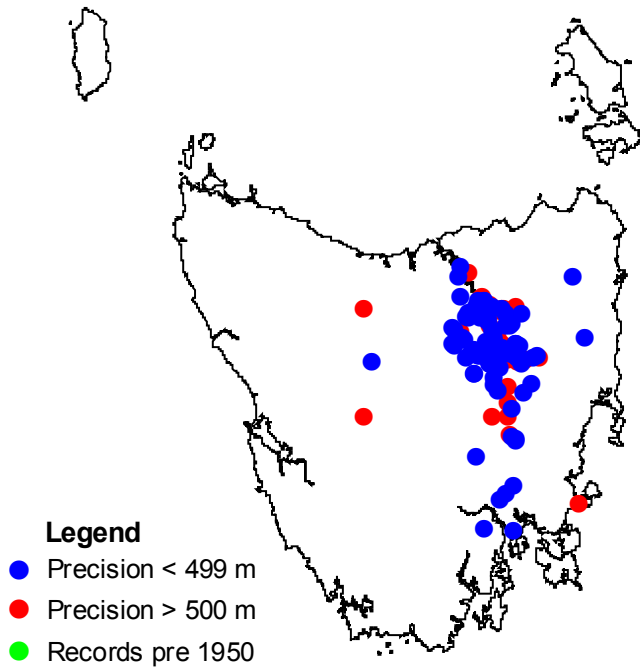
This species requires reassessment for possible delisting due to its widespread distribution and large number of populations and individuals.

Further Information

- Cunningham, GM, Mulham, W, Milthorpe, P & Leigh, J 1992, *Plants of Western New South Wales*, Inkata Press, Sydney.
- Curtis, WM & Morris, DI 1994, *The Student's Flora of Tasmania*, Part 4B, Printing Authority of Tasmania, Hobart.
- Gray, M & Knight, J eds 2001, *Flora of Melbourne: A Guide to the Indigenous Plants of the Greater Melbourne Area*, Hyland House Publishing, Melbourne.
- Morgan, JW 1998, 'Comparative Germination Responses of 28 Temperate Grassland Species', *Australian Journal of Botany*, vol .46, pp.209-219.
- Strickland, K & P 1994, *Peninsular Plants*, Volume Two, Kareelah Bush Nursery, Melbourne.

Tasmanian Distribution

(As per Threatened Species Unit records, January 2003)



1:25 000 Map Sheets

Bains, Beaconsfield, Blessington, Bothwell, Bridgenorth, Campbell Town, Cathedral, Cethana, Cleveland, Cluan, Collinsvale, Conara, Cressy, Delmont, Diamond, Ellinthorp, Evandale, Exeter, Fingal, Hanleth, Hobart, Jacobs, Launceston, Liffey, Lilydale, Longford, Millers, Nile, O Connors, Oatlands, Poatina, Prospect, Riedle, Ross, Tea Tree, Tunbridge, Victoria.

Date last modified: 03/05/2004

Brunonia australis



Brunonia australis. H & A Wapstra.

FAMILY: BRUNONIACEAE

BOTANICAL NAME: *Brunonia australis*,
Sm. ex R.Br., *Prodr.* 590 (1810)

COMMON NAME: blue pincushion

COMMONWEALTH STATUS: (*EPBC Act*)
Not Listed

TASMANIAN STATUS: (*TSP Act*) rare

Description

A small herb with a perennial rootstock. **Leaves:** The leaves arise from the base of the plant creating a rosette of silky soft leaves (due to the presence of many fine hairs). They are greyish, entire and between 4-10 cm long (including the leaf stalk) and 3-15 mm wide. **Flowers:** The flowers are distinctively bright, cornflower blue. They are tubular and measure between 6-8 mm long. The flowers are crowded, forming a hemispherical head that is between 15-20 mm in diameter. The flower heads are situated on erect, slender, leafless stalks between 10-30 cm tall. Each plant produces up to two flower heads at a time. Flowering occurs from mid November to late January. **Fruit:** The fruit is a small nut, resembling a shuttlecock, enclosed in the flower base (description from Cunningham *et al.* 1992, Strickland 1992). Most herbarium specimens have been collected from November to January. ***Brunonia australis* is the only member of the family Brunoniaceae.**

Distribution and Habitat

On the mainland this species occurs in all States. It is found in dry forests, mallee and desert country. In Tasmania, *Brunonia australis* typically occurs in grassy woodlands and dry sclerophyll forests dominated by black peppermint (*Eucalyptus amygdalina*) or less commonly white gum (*Eucalyptus viminalis*) or stringybark (*Eucalyptus obliqua*). Some smaller populations are found in heathy and shrubby dry forests. It occurs on well-drained flats and gentle slopes with elevations of between 10 and 350 metres. Rainfall varies from 600 mm in the Midlands area to about 1000 mm at Blackwood Creek. It is most commonly found on sandy and gravelly alluvial soils with a particular preference for ironstone gravels. Populations found on dolerite are usually small. It can persist in disturbed sites such as roadside cuttings and grazed areas where it resprouts from rootstock (Threatened Species Unit 2001).

Key Sites and Populations

Key sites for this species include Evandale, Franklin Rivulet, Beaconsfield, Holwell Road, Powranna, Lake River Road, Devon Hills, Lefroy, Prospect, the Casino Golf Course, Youngtown, Norwood, Elphinstone Road, Bishopsbourne, Ecclestone Road – Riverside, Westwood, Relbia, Glenwood Road, Hadspen, Carrick, Mount Joy, Bracknell, Trevallyn State Reserve, Launceston Gorge, Long Plains, Epping Forest, Native Plains, south of Latrobe, Moriarty, Quamby Brook Road, Blackwood Creek, Exeter, Gravelly Beach, Birralea, Selbourne, Legana, Deddington, Isis Valley, East Tamar Highway, East Devonport and Mathinna Plains (although this population may be extinct).

Known Reserves

Reserved in the Carr Villa Conservation Area, Henry Somerset Orchid Private Sanctuary, Punchbowl Conservation Area, Lefroy Forest Reserve, Franklin Rivulet Forest Reserve, Trevallyn State Reserve and the Yorktown Historic Site.

Ecology and Management

A considerable decline has been recorded since settlement. A major cause has been the loss of habitat through urban development and hobby farm expansion. Conversion to pasture and clearing for timber plantations has also contributed to decline in the species. *Brunonia australis* does not tolerate heavy grass competition or invasion by weeds such as gorse (*Ulex europaeus*). Cessation of occasional disturbances such as fire or grazing that opens up the understorey and reduces competition is therefore likely to be detrimental in some populations, particularly as seed does not persist in soils for longer than a few months. Care should be taken when using fire to open up the habitat in some areas to ensure that subsequent heavy cover with wattle, bracken and weeds is not encouraged, as this will ultimately cause a reduction in habitat. A contraction in range of the species is potentially ongoing as many populations are relatively small and subject to continuing threats, particularly as many of these sites are on private land and roadsides. Reducing habitat loss is the most significant factor in arresting the decline. Small populations may become unviable, as the species will not self-pollinate (Threatened Species Unit 2001, TPLUC 1996).

Conservation Status Assessment

There is debate as to whether this species should be listed at all due to the large number of populations and the high number of individuals. However, *Brunonia australis* is a particularly sensitive species and many think that it should continue to be protected under Tasmanian legislation.

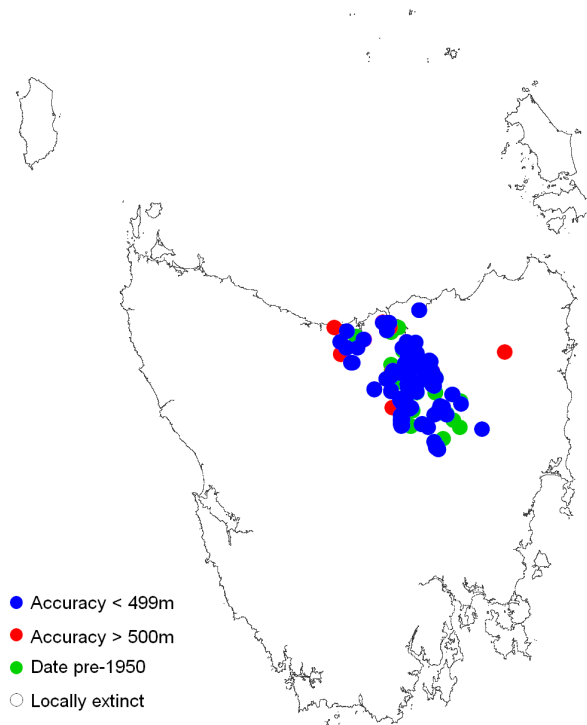
Further Information

- Cunningham, GM, Mulham, W, Milthorpe, P & Leigh, J 1992, *Plants of Western New South Wales*, Inkata Press, Sydney.
- Pyrke, A 1994, *Soil Disturbance by Native Mammals and Germination and Establishment of Plant Species*, BscHons.Thesis, University of Tasmania, Hobart.
- Strickland, K & P 1994, *Peninsular Plants*, Volume Two, Kareelah Bush Nursery, Melbourne.

- Tasmanian Public Land Use Commission 1996, *Environment & Heritage Report Vol IV, Background Report*, Part C, Tasmanian Commonwealth Regional Forest Agreement, Hobart.
- Threatened Species Unit 2001 *Draft Listing Statement, Blue pincushion Brunonia australis*, Department of Primary Industries, Water and Environment, Hobart.

Tasmanian Distribution

(Extracted from the Natural Values Atlas, March 2008)



1:25 000 Map Sheet

Beaconsfield, Bell Bay, Bridgenorth, Cleveland, Cluan, Conara, Cressy, Delmont, Devonport, Dilston, Evandale, Exeter, Hanleth, Harford, Latrobe, Launceston, Liffey, Lilydale, Longford, Millers, Montana, Nile, O'Connors, Poatina, Prospect, Railton, Victoria, Westbury, Weymouth.

Date last modified: 11/03/2008

View

<http://www.dpiw.tas.gov.au/threatenedspecieslists>

Contact details

Threatened Species Section, Department of Primary Industries and Water, GPO Box 44, Hobart, Tasmania, Australia, 7001. Phone (03) 6233 6556; fax (03) 6233 3477.

Permit

It is an offence to collect, disturb, damage or destroy this species unless under permit.

Hypoxis vaginata



Hypoxis vaginata. H & A Wapstra.

FAMILY: LILLIACEAE

BOTANICAL NAME: *Hypoxis vaginata*,
Schldl., *Linnaea* 20: 568 (1847)

COMMON NAME: Sheathing yellow star

COMMONWEALTH STATUS: (*EPBC Act*)
Not Listed

TASMANIAN STATUS: (*TSP Act*) rare

Description

A small, herbaceous plant that forms tubers approximately 1 cm in diameter. The plants are often positioned on bulb-like fleshy stems or stem bases that are remnant from previous seasons. The loose dry covering of the bulb is densely fibrous with the roots also being fleshy and fibrous. **Leaves:** The blades are flat or folded and up to 7 cm long and 4 mm wide. The leaf margins often have fleshy and distant sharp teeth. **Flowers:** There are 1-2 flowering parts per bulb, each with one yellow flower that is borne on a leafless stem with a small secondary leaf-like structure (bracteole) attached. The bracteole is membranous to woody and up to 22 mm long. The outer lobes of the flowers are between 6-12 mm long and greenish-yellow underneath with purplish margins in the outer segments. Flowering occurs briefly in spring followed by die back. **Fruit:** The fruit is a capsule and the seeds are beaked and black-brown in colour (description from Curtis & Morris 1994). Most herbarium specimens have been collected in September and October. **This taxon has been split into two varieties: *Hypoxis vaginata* var. *brevistigmata* and *Hypoxis vaginata* var. *vaginata*, both of which are currently protected under the legislation.**

Distribution and Habitat

On the mainland this species occurs in Western Australia, South Australia, Victoria and New South Wales. In Tasmania, *Hypoxis vaginata* is found in the midlands and the north of the State where the plant grows in unimproved pastures and swampy or poorly drained situations from sea level to 200 metres altitude (Curtis & Morris 1994, TSU records 2003).

Key Sites and Populations

Key sites include Blessington, Point Sorrell, Hawley Beach, Epping Forest, Punchbowl (Launceston), Carr Villa (Launceston), Bridport, Chimney Saddle Hill and Keach Hill.

Known Reserves

Reserved in the Carr Villa Conservation Area, Hawley Nature Reserve and the Tippogoree Hills Forest Reserve.

Ecology and Management

The most significant impact affecting this species is forest clearing, which has resulted in habitat depletion (TPLUC 1996).

Conservation Status Assessment

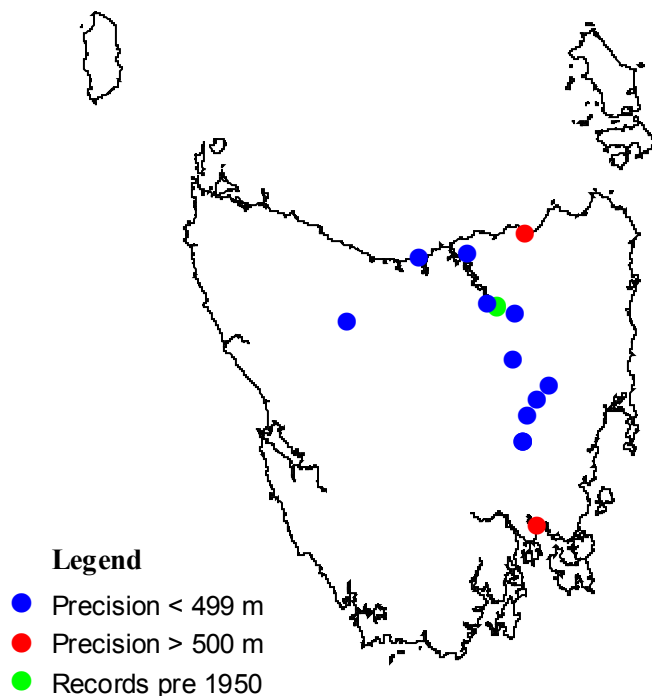
Reassessment of *Hypoxis vaginata* is required due to the recent split of the species into two varieties.

Further Information

- Curtis, WM & Morris, DI 1994, *The Student's Flora of Tasmania*, Part 4B, Printing Authority of Tasmania, Hobart.
- Kirkpatrick, JB 1991, *Tasmanian Native Bush: A Management Handbook*, Tasmanian Environment Centre, Hobart.
- Tasmanian Public Land Use Commission 1996, *Environment & Heritage Report Vol IV, Background Report*, Part C, Tasmanian Commonwealth Regional Forest Agreement, Hobart.

Tasmanian Distribution

(As per Threatened Species Unit records, June 2003)



1:25 000 Map Sheets

Bell Bay, Blessington, Bridport, Campbell Town, Carlton, Cleveland, Devonport, Launceston, Oatlands, Pencil Pine, Prospect, Roys, Tunbridge.

Date last modified: 15/08/03

Senecio squarrosus



Senecio squarrosus.
Tasmanian Herbarium specimen.

FAMILY: ASTERACEAE

BOTANICAL NAME: *Senecio squarrosus*,
A.Rich., *Voy. Astrolabe* 2: 107 t.35 (1834)

COMMON NAME: Leafy groundsel

COMMONWEALTH STATUS: (*EPBC Act*) Not Listed

TASMANIAN STATUS: (*TSP Act*) rare

Description

An annual or short lived perennial herb with an erect stem, between 40-80 cm tall.

Stems: The stems are finely marked with longitudinal lines and have web-like hairs.

Leaves: The lower leaves are lance-shaped with a base that narrows and becomes stalk-like. The leaf margins are coarsely toothed and the entire leaf is between 7-10 cm long. The upper leaves are progressively smaller and stalkless with a wide base. The margins are toothed and bent backwards. All leaves have green upper surfaces, which are hairless or somewhat rough to the touch. The lower surfaces are often purplish with web-like hairs. **Flowers:** This species has only a few flower heads. The florets are a deep yellow colour and are longer than the phyllaries (leaf-like structures associated with the flower heads). There are between 16-20 phyllaries, which are 7-8 mm long and green or purplish with clear overlapping margins. Flowering is from October to December (Flora of Victoria). **Fruit:** The fruit is small, dry, leathery and black in colour, approximately 2 mm long. The fruit are also cylindrical and ribbed, with the ribs being densely covered in short hairs. The pappus (ring of scales or hairs found on top of fruit) consists of short white hairs (description from Curtis 1963).

Distribution and Habitat

On the mainland this species occurs in all the states with the exception of Queensland and the Northern Territory. It is also known from New Zealand and Timor. The Tasmanian distribution of *Senecio squarrosus* includes the north around the Launceston area and on Gull Island in the Furneaux Group and the south near Hobart, with populations at Cambridge, Kingston and Blackmans Bay. In the south-east, *Senecio squarrosus* has been recorded from Dunalley. This species is associated with dry sclerophyll forest (Curtis 1963, TPLUC 1996).

Key Sites and Populations

Key sites include the Queens Domain (Hobart), water reserve at Mt Nelson, Kingston, northern slopes of Knocklofty Hill (Hobart), mouth of Humphrey Rivulet, Holyman Drive (Hobart Airport), Carr Villa (Launceston), Conical Rocks and Gull Island (Cape Barren Island).

Known Reserves

Carr Villa Conservation Area, Gull Island Conservation Area, Heathy Hills Nature Reserve, Huntingdon Nature Reserve, Launceston Golf Course Private Sanctuary, Reedy Marsh Forest Reserve and the South Bruny National Park.

Ecology and Management

This species requires disturbance and information suggests that recruitment occurs after fire. Forest clearance has been identified as an adverse impact on *Senecio squarrosus*. Regular burning between 5-15 years has been suggested as a management strategy (TPLUC 1996).

Insects are the most likely pollination vector for this species (A. Hingston pers. comm.).

Conservation Status Assessment

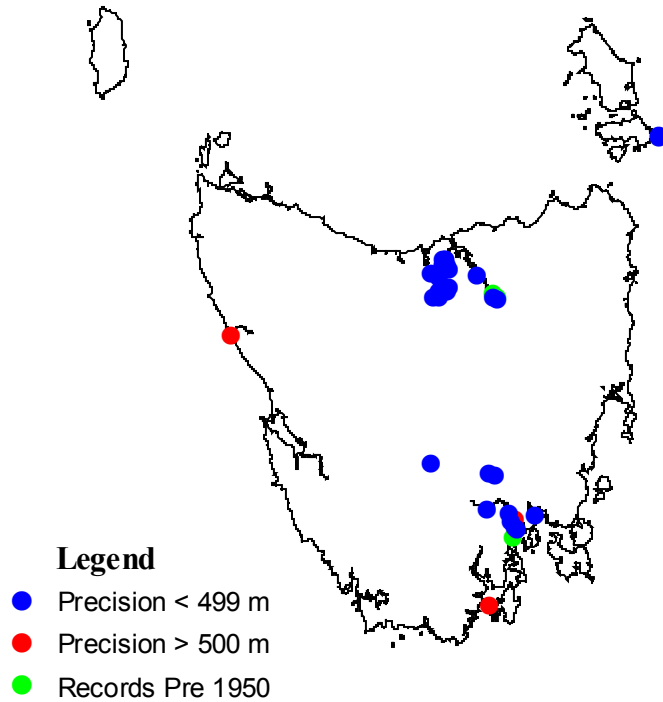
There is no immediate need for reassessment of *Senecio squarrosus*.

Further Information

- Curtis, WM 1963, *The Student's Flora of Tasmania*, Part 2, Government Printer, Hobart.
- Kirkpatrick, JB 1991, *Tasmanian Native Bush: A Management Handbook*, Tasmanian Environment Centre, Hobart.
- Tasmanian Public Land Use Commission 1996, *Environment & Heritage Report Vol IV, Background Report*, Part C, Tasmanian Commonwealth Regional Forest Agreement, Hobart.

Tasmanian Distribution

(As per Threatened Species Unit records, June 2003)



1:25 000 Map Sheets

Bridgenorth, Deloraine, Elderslie, Exeter, Hardwicke, Harford, Hobart, Launceston, New Norfolk, Ouse, Parkham, Partridge, Prospect, Taroona, Thirsty, West Frankford.

Date last modified: 03/09/03



Broom

(Montpellier broom – *Genista monspessulana*

English broom – *Cytisus scoparius*)

What is broom?

- Broom is a significant pasture and environmental weed.
- There are two types of broom in Tasmania. Montpellier broom and English broom are both **declared weeds** under the *Tasmanian Weed Management Act 1999*. The importation, sale and distribution of Montpellier broom and English broom are prohibited in Tasmania.



How to identify broom

- Montpellier broom and English broom are erect, semi-woody shrubs growing 2 to 3 metres high.
- The leaves of Montpellier broom and English broom are trifoliate (have three leaflets) with the central leaflet being longer than the outer two leaflets.
- Broom flowers are bright yellow. English broom normally flowers in late spring while Montpellier broom flowers from late winter to late spring.
- Both brooms produce seed in pods. When the seeds are mature and still attached to the parent plant, the pods open explosively to eject the seed up to 3 metres.
- If you are still in doubt about the weed you are dealing with, contact your Regional Weed Management Officer on 1300 368 550 for help.



English broom – *Cytisus scoparius*



Montpellier broom – *Genista monspessulana*

Broom in Tasmania

- English broom occurs throughout the settled areas of the state, being locally abundant on roadsides, waste areas, poor quality pastures and in disturbed bushland. Montpellier broom is widely distributed in Tasmania's north, north-east and in the south.
- Broom can form dense thickets in degraded pasture and reduce productivity and access. Broom along roadsides can reduce visibility and increase road maintenance costs. Dense thickets of broom can also provide cover for pest animals such as rabbits.
- Broom also invades a wide range of native vegetation including native grassland, woodland/open forest and subalpine grassland, where it competes with native plants and alters fauna habitat.

What is the legal status of gorse in your area?

- The legal responsibilities of landholders and other stakeholders in dealing with broom are laid out in the gorse Statutory Weed Management Plan at www.dpipwe.tas.gov.au.
- Use Table 1 (Zone A municipalities) and Table 2 (Zone B municipalities) in the Statutory Weed Management Plan to find out whether your area falls in an eradication or containment zone.

Control of Broom

Do's and Don'ts of Broom Control

Do's

- Plan your control program, this will save time and money in the long-run;
- Consider the impact of your control methods on off-target species, especially if herbicides are used;
- Ensure machinery and equipment is washed down between sites or prior to contractors leaving site;
- Get in early - for new infestations, eradicate before the plants reach the flowering stage: once plants begin seeding, control becomes more difficult and expensive;
- Carefully time your use of herbicide for best results (see Herbicides for Broom Control for more information);
- Coordinate your control program with neighbouring landholders where your weed problem crosses property boundaries;
- Revisit and regularly inspect the site and ensure follow-up is undertaken;
- Use a combination of different control methods; and
- Establish vigorous pasture (or native species) after removal to reduce re-infestation.

Don'ts

- Don't introduce broom to broom-free areas (e.g. by failing to wash down machinery and equipment between sites);
- Don't start your control program without first planning your approach;
- Don't allow broom to flower and set seed before treatment;

- Don't rely on one attempt at removal – follow-up is essential;
 - Don't rely on just one control method;
 - Never burn broom without follow up treatment of regrowth; and
 - Do not burn broom in native vegetation.
-

Spread of broom

- Broom spreads solely by seed. The bursting pods can eject seed for 1 to 3 metres from the parent plant. Ants may also disperse seeds. Dry pods containing seeds can also be blown short distances by wind.
 - Broom seeds are not buoyant in water but can be carried in the bed load of rivers and streams, resulting in long distance dispersal downstream. Long distance seed movement can also occur in mud and soil carried on road graders and earth moving equipment, farm machinery, vehicles and footwear and in sand and gravel from quarries.
 - Seed can also be carried within the digestive tracts of horses and other animals. Contaminated agricultural produce may also result in some spread.
 - Seed germination usually occurs after some soil or vegetation disturbance including cultivation, fire, slashing, herbicide treatment, road-making and pig-digging. However, broom can also invade native vegetation without major disturbance.
-

Avoiding the introduction of broom

- If cultivation must be carried out in infested areas, ensure all equipment is cleaned and checked for broom seed before moving to un-infested areas. If possible, always work un-infested areas first.
 - Gravel and sand should not be removed from infested quarries and streams.
 - Broom growing along access tracks must be controlled to limit spread of seed. Vehicles, bush walkers and horse riders using infested areas should keep to designated routes to minimise the spread of seed.
-

Physical removal

- Small plants can be hand pulled or grubbed in spring when the ground is soft.
 - Cutting seedlings when they are 5 to 10 cm high can provide effective control of regenerating plants.
 - Larger shrubs should be cut close to ground level and the stumps painted with herbicide. See Herbicides for Broom Control for more information.
 - Dense thickets can be slashed with a brushcutter and regrowth sprayed with herbicide. See Herbicides for Broom Control for more information.
-

Cultivation

- Pasture improvement is the best method of control for broom infested pastures on arable land where large plants can be mechanically removed, followed by repeated cultivation, pasture establishment and grazing.
- Some dense infestations have been destroyed by bulldozing and repeated cultivation over two years. However, soil disturbance will move seed from the surface and distribute it through the soil profile and may in some instances make long term eradication more difficult.

Burning

- Fire can be used to remove mature bushes and to reduce the broom seed bank in the soil.
- Heating of the soil by fire can stimulate the germination of up to 90% of seed in the soil. Regeneration after fire can then be treated with herbicide or by hand weeding.
- When pasture species cannot be established on burned areas (e.g. stony ground, creek banks), or regeneration of native species is required (conservation areas and bushlands), do not use fire to remove broom.
- Burning can be useful several months after spraying of an infestation as it reduces the dead stems to ashes.

Grazing

- Sheep and goats will graze broom seedlings and flowers and assist in preventing infestations.

Biological control

- Biological control is the use of a living species, usually an insect, mite or disease, to control a weed;
- Biological control will not eradicate broom, but may be used in conjunction with other control methods;
- Biological control agents for English broom that have been released in Tasmania include the twig mining moth and the broom bud psyllid.
- For more information on biological control programs in Tasmania contact the Tasmanian Institute of Agricultural Research .

Native vegetation

- In native vegetation, preventing ground disturbance will help reduce the rate of invasion by brooms.
- Do not burn broom in native vegetation. Bushes should be removed with minimal soil disturbance.

Chemical control

- A number of herbicides are registered for use on Broom in Tasmania. See Herbicides for Broom Control for more information.

For more information

- Visit the Department of Primary Industries, Parks, Water and Environment website at www.dpipwe.tas.gov.au.
- Contact your Regional Weed Management Officer on 1300 368 550.

Herbicide for Broom Control

Disclaimer

These herbicide recommendations are made subject to the product being registered for that purpose under relevant legislation. It is the user's responsibility to check that registration or an off-label permit covers the proposed use. Always read the herbicide label.

If in doubt, check with the Australian Pesticides and Veterinary Medicines Authority (APVMA) website at www.apvma.gov.au.

Only herbicides registered for use in pasture and non-cropping situations – or included under off-label provisions - are listed in the following table. For recommendations in specific crops consult an agronomist.

Care must be taken in using herbicides as non-target plants contacted may be harmed.

Wetting agents

Most herbicides require a wetting agent for best results. Carefully consult the product label for specific directions regarding any adjuvants.

Waterways and wetlands

Be careful! Many herbicides can cause damage to waterways and wetlands. Check the herbicide label directions carefully before use near waterways and wetlands. For more information see Rivercare: guideline for safe and effective herbicide use near water at www.dpipwe.tas.gov.au

Herbicide Brands and Concentrations

Herbicides are referred to by the active chemical ingredient in the following table. The product trade names in this publication are supplied on the understanding that no preference between equivalent products is intended and that the inclusion of a product does not imply endorsement by DPIPWE over any other equivalent product from another manufacturer. Information on available brands containing the herbicide you require should be obtained from a reputable herbicide supplier or the APVMA website at www.apvma.gov.au.

There may be a number of products with the same active ingredient some with alternate formulations (concentration) registered for control of a weed eg: Glyphosate 360g/L, Glyphosate 450g/L may be registered for use on the same weed. Alternate formulations such as these will have a different application rate. ALWAYS check the label.

Herbicide for Broom Control

Foliar application

Stage of Growth	Herbicide (active ingredient)	Example of commercial product (concentration of active ingredient)	Application rate of commercial product	Withholding period	Comments
Spring to mid summer (prior to pod formation)	Triclopyr+ Picloram	Grass-up™ (300 g/L + 100 g/L)	2.5ml/L	nil	<p>Where thorough coverage of the plants can be achieved, one application will usually give complete control with no regrowth.</p> <p>Treated bushes should be checked twelve months after the herbicide application and any regrowth treated.</p> <p>Will not affect grasses, will severely damage clovers and other broadleaved plants, including surrounding trees, if contacted by the spray.</p> <p>Soil-residual, hindering the re-establishment of clovers and other broadleaved plants for 6-12 months.</p> <p>Picloram remains active in the soil for extended periods and may leach into groundwater.</p>
	Triclopyr	Garlon® 600 (600 g/L)	1.7ml/L	nil	<p>Thoroughly spray foliage.</p> <p>Less volatile and preferred to triclopyr+picloram in urban or horticultural areas.</p> <p>Will not affect grasses, will severely damage clovers and other broadleaved plants, including surrounding trees, if contacted by the spray.</p>

Herbicide for Broom Control

Foliar application continued

Triclopyr + Picloram+ Aminopyralid	Grazon™ Extra (300g/L + 100g/L + 8g/L)	Spring to Mid Summer 2.5ml/L Autumn to Winter 3.5ml/L	nil	<p>Where thorough coverage of the plants can be achieved, one application will usually give complete control with no regrowth.</p> <p>Picloram remains active in the soil for extended periods and may leach into groundwater</p> <p>Treated bushes should be checked twelve months after the herbicide application and any regrowth treated.</p>
*Metsulfuron methyl	Brushoff® (600 g/Kg)	0.1 – 0.15g/L	nil	<p>APVMA Off-Label permit – PER8949.</p> <p>Will not affect grasses, will severely damage clovers and other broadleaved plants, including surrounding trees, if contacted by the spray.</p> <p>Soil-residual, hindering the re-establishment of clovers and other broadleaved plants for 6-12 months.</p>

Herbicide for Broom Control

Basal bark and cut stump application

Stage of Growth	Herbicide (active ingredient)	Example of commercial product (concentration of active ingredient)	Application rate of commercial product	Withholding period	Comments
Use when plants are actively growing	Triclopyr	Garlon® 600 (600 g/L)	20ml per litre of diesel distillate	nil	<p>Basal Bark: Use for plants with a basal diameter up to 50mm without removing top growth. Spray or paint bark from ground level to a minimum height of 30 cm, wetting thoroughly to runoff.</p> <p>Cut Stump: Apply immediately (within 15 seconds) after top growth removal.</p>
	Picloram	Vigilant®- Herbicide Gel (43g/kg)	3-5mm thick	nil	<p>Cut Stump: Cut stems 20mm above ground level, immediately apply gel over cut surface. For multi-stemmed plants treat at least 80 percent of stems including all main stems.</p> <p>Picloram remains active in the soil for extended periods and may leach into groundwater.</p>
	* Triclopyr+ Picloram	Access™ (240g/L + 120 g/L)	1 part to 60 parts of diesel distillate	nil	<p>APVMA Off-Label permit – PER8949.</p> <p>Basal Bark: Use for plants with a basal diameter up to 50mm without removing top growth. Spray or paint bark from ground level to a minimum height of 30 cm, wetting thoroughly to runoff.</p> <p>Cut Stump: Apply immediately (within 15 seconds) after top growth removal.</p> <p>Picloram remains active in the soil for extended periods and may leach into groundwater.</p>

Herbicide for Broom Control

Basal bark and cut stump application continued

Use when plants are actively growing	* Glyphosate	(360 g/L)	Undiluted	nil	In accordance with APVMA Off-Label permit – PER8949. Cut Stump: Apply immediately (within 15 seconds) after top growth removal.
	Roundup® Biactive™	(360 g/L)			In accordance with APVMA Off-Label permit – PER8949. Suitable for use near waterways. Cut Stump: Apply immediately (within 15 seconds) after top growth removal.

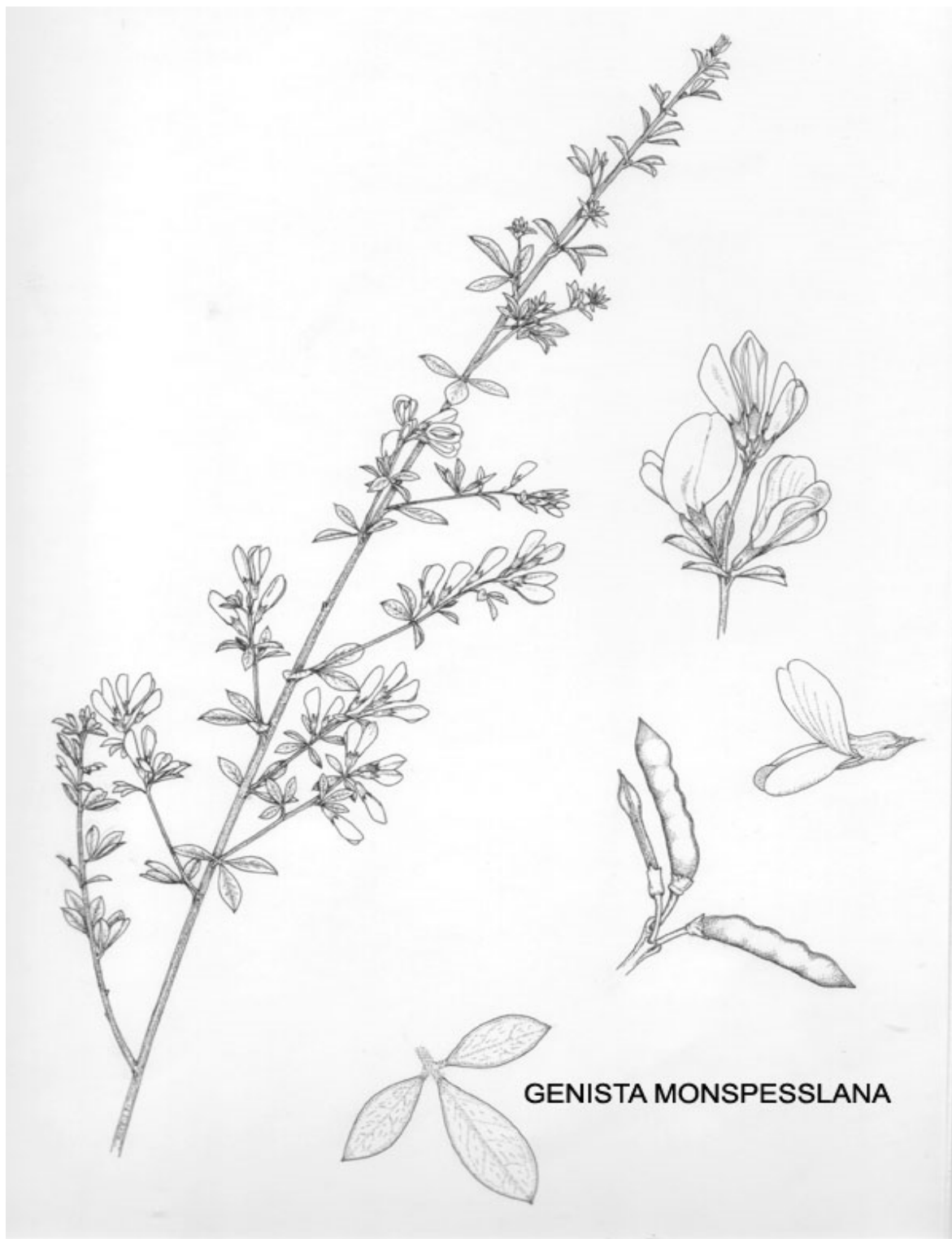
* These products are not registered for this use in Tasmania and will not be mentioned on product labels, however Permit Number – PER8949 issued by the Australian Pesticides & Veterinary Medicines Authority allows this specific use. If using this method and herbicide you will require a copy of this off-label permit.

For further information on permit details visit the APVMA website at www.apvma.gov.au.

English Broom - *Cytisus scoparius*



Montpellier broom – *Genista monspessulana*



Important Disclaimer

To the extent permitted by law, the Tasmanian Department of Primary Industries, Parks, Water and Environment (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using information or material (in part or in whole) contained in this publication.

Weed Notes



Gorse (*Ulex europaeus*)

What is gorse?

Gorse is a serious agricultural and environmental weed.

- Gorse is a declared weed under the Tasmanian *Weed Management Act 1999*. The importation, sale and distribution of gorse are prohibited throughout Tasmania.
- Gorse is also a Weed of National Significance (WONS).



How to identify gorse

- Gorse is a prickly evergreen shrub which may grow to a height and diameter in excess of 3 metres. All the stems and leaves end in a sharp spine. Gorse flowers are bright yellow pea-like flowers, and are borne all over the plant. The buds develop during February and March, although flowering tends to occur in spring and autumn. Gorse bears large quantities of brown to black seed in grey, hairy pods.
- If you are still in doubt about the weed you are dealing with, contact your Regional Weed Management Officer on 1300 368 550 for help.



Gorse in Tasmania

- Gorse is widely distributed in Tasmania and is found in most municipalities. The exceptions are a handful of north-eastern and south-eastern municipalities and the Bass Strait Islands which have relatively small, localised populations of gorse.
- Gorse is a major agricultural weed, and serious infestations of pasture can dramatically reduce stocking rates. Gorse is also a threat to many natural environments such as forests, woodlands, riparian (stream-side) vegetation, wetlands and native grasslands. Other impacts of gorse include providing shelter for pest animals, and an increased risk of bushfires.

What is the legal status of gorse in your area?

- The legal responsibilities of landholders and other stakeholders in dealing with gorse are laid out in the gorse Statutory Weed Management Plan at www.dpipwe.tas.gov.au.
- Use Table 1 (Zone A municipalities) and Table 2 (Zone B municipalities) in the Statutory Weed Management Plan to find out whether your area falls in an eradication or containment zone.

Control of Gorse

Do's and Don't's of Gorse control

Do's

- Plan your control program, this will save time and money in the long-run;
- Use a combination of different control methods;
- Consider the impact of your control methods on off-target things, especially if herbicides are used;
- Ensure machinery and equipment is washed down between sites or prior to contractors leaving site;
- Revisit the site and use follow-up treatments over at least 5 years;
- Coordinate your control program with neighbouring landholders where your gorse problem crosses property boundaries;
- For large infestations, tackle the smaller, outlying patches first. The larger infestation can be tackled later.

Don't's

- Don't introduce gorse to gorse-free areas (e.g. by failing to wash down machinery and equipment between sites);
- Don't start your control program without first planning your approach;
- Don't rely on just one control method;
- Don't rely on one attempt at removal – follow-up is essential;
- Never burn gorse without follow up treatment of regrowth;
- Don't burn gorse in or next to native vegetation.

Spread of gorse

- Gorse reproduces by seed; each plant produces huge numbers of seeds with a water-resistant coating which allows them to remain dormant in the soil for up to 30 years.
 - Seeds are usually released in hot or dry conditions but can be stimulated into germination following burning or mechanical disturbance. Most seeds fall around the parent plant but the pods can split open and shoot seeds for a distance of up to 5m, allowing infestations to spread rapidly.
 - Gorse can also spread from seed movement in water, soil, machinery and footwear. Individual gorse bushes can live for up to 30 years.
 - See the Washdown Guidelines for Weed and Disease Control at www.dpipwe.tas.gov.au for detailed information on how to wash-down equipment and personnel to reduce the chance of spreading gorse.
-

Avoid the introduction of gorse

- Preventing the introduction of gorse to gorse-free areas is the best means of control. Good machinery and equipment hygiene-practices are vital.
 - Gorse seed is usually carried into new areas in soil and mud attached to machinery or boots. Gorse seed is too heavy to be dispersed by wind, and birds are not important in spreading seed.
 - Gorse seed can also be carried in water. Removing gorse bushes on the edges of water courses is important in preventing dispersal of seed downstream.
-

Physical removal

- Physical removal of gorse will not control an infestation unless it is combined with other methods of follow-up control. Regular slashing or mowing by themselves are NOT effective in eradicating gorse because plants will regrow from cut stumps or dormant seed in the soil as soon as slashing ceases.
-

Cultivation

- Mechanical clearing is an ideal method of controlling large infestations on land that is later sown down with a competitive pasture species. This treatment may require targeted herbicide spraying of regrowth and a second subsequent sowing of pasture.
 - Avoid causing unnecessary disturbance to the soil, and avoid using heavy machinery along creeks and rivers.
 - Follow-up management is vital. This includes establishment of a vigorous pasture, grazing of gorse seedlings, and herbicide use on plants surviving grazing.
-

Burning

- Frequent burning of gorse without follow-up will lead to increased germination of seed and more gorse. Burning should ONLY be used in conjunction with other control methods.
 - Burning is useful for removing large stands of gorse and making follow-up spraying more effective. Fire destroys large amounts of seed and stimulates much of the remaining seed to germinate, so that the seedlings can be sprayed the following year, greatly reducing the seed in the soil.
 - Burning can be useful several months after spraying of an infestation as it reduces the dead stems to ashes.
 - Burning can be useful when combined with grazing by sheep or goats. Burning will reduce the amount of mature (and unpalatable) foliage and stems of older bushes, as well as stimulating the growth of seedling-shoots which are more palatable to grazing animals.
 - Gorse burns readily and gorse fires may cause severe damage to adjacent bush. Extreme care should be taken when burning gorse near native vegetation, fences or buildings. Gorse growing underneath high voltage power lines should not be burned without consulting the power company.
-

Grazing

- Grazing can be useful when combined with other control methods such as burning and herbicide, but is usually not effective on its own at eradicating gorse.
 - Grazing by sheep is only moderately effective at controlling regrowth gorse seedlings. Sheep will browse gorse bushes during spring or when pasture feed is in short supply. However, sheep prefer pasture to gorse, and control of established plants cannot be achieved by sheep grazing alone.
 - Goats prefer to browse young gorse shoots rather than pasture. However well established gorse bushes are not readily killed by goat browsing alone, and will recover when the goats are removed.
 - One strategy is to burn mature gorse bushes, then stock with goats supported by large numbers of sheep during spring and early summer to reduce pasture carry-over. Reducing pasture carryover into late summer/autumn by sheep-grazing in the spring means that goat browsing pressure can be maintained on the gorse bushes throughout the growing season.
-

Biological control

- Biological control is the use of a living species, usually an insect, mite or disease, to control a weed;
 - Biological control will not eradicate gorse, but can be used in conjunction with other control methods;
 - Biological control agents that have been released in Tasmania include the gorse seed weevil, gorse spider mite, and gorse thrips.
 - These gorse control agents can be released into heavy infestations to reduce the vigour and abundance of the gorse to assist with other control methods as part of an integrated management program.
-

Chemical control

- A number of herbicides are registered for use on Gorse in Tasmania. See Herbicides for Gorse Control for more information.
-

For more information

- Visit the Department of Primary Industries, Parks, Water and Environment website at www.dpipwe.tas.gov.au
- Contact your Regional Weed Management Officer on 1300 368 550.

Herbicide for Gorse Control

Disclaimer

These herbicide recommendations are made subject to the product being registered for that purpose under relevant legislation. It is the user's responsibility to check that registration or an off-label permit covers the proposed use. Always read the herbicide label.

If in doubt, check with the Australian Pesticides and Veterinary Medicines Authority (APVMA) website at www.apvma.gov.au.

Only herbicides registered for use in pasture and non-cropping situations – or included under off-label provisions - are listed in the following table. For recommendations in specific crops consult an agronomist.

Care must be taken in using herbicides as non-target plants contacted may be harmed.

Wetting agents

Most herbicides require a wetting agent for best results. Carefully consult the product label for specific directions regarding any adjuvants.

Waterways and wetlands

Be careful! Many herbicides can cause damage to waterways and wetlands. Check the herbicide label directions carefully before use near waterways and wetlands. For more information see Rivercare: guideline for safe and effective herbicide use near water at www.dpipwe.tas.gov.au

Herbicide Brands and Concentrations

Herbicides are referred to by the active chemical ingredient in the following table. The product trade names in this publication are supplied on the understanding that no preference between equivalent products is intended and that the inclusion of a product does not imply endorsement by DPIPWE over any other equivalent product from another manufacturer. Information on available brands containing the herbicide you require should be obtained from a reputable herbicide supplier or the APVMA website at www.apvma.gov.au.

There may be a number of products with the same active ingredient some with alternate formulations (concentration) registered for control of a weed eg: Glyphosate 360g/L, Glyphosate 450g/L may be registered for use on the same weed. Alternate formulations such as these will have a different application rate. ALWAYS check the label.

Herbicide for Gorse Control

Foliar (leaf) application

Herbicide (active ingredient)	Commercial products (content of active ingredient)	Rate of commercial product per litre of water	Withholding period	Comments
Triclopyr + Picloram + Aminopyralid	Grazon Extra(300 g/L + 100 g/L + 8g/L)	2.5 ml (bushes 1 - 1.5 m tall) 3.5 ml (bushes > 1.5 m tall) 5 ml	nil	<p>Use in spring to early summer treatments only. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results.</p> <p>Autumn Treatment. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results.</p> <p>Winter treatment only. Brownout may not be complete until summer. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results.</p> <p>Picloram is soil-residual, hindering the re-establishment of clovers and other broadleaved plants for up to twelve months</p> <p>In dense stands, access paths should be cleared to allow complete coverage</p> <p>Regrowth needs to be around 50 - 100 cm high before follow-up treatment</p> <p>Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees</p>

Herbicide for Gorse Control

Foliar application continued

Triclopyr + Picloram	Grass-up™ (300g/L + 100g/L)	2.5 ml (bushes 1 - 1.5 m tall) 3.5 ml (bushes > 1.5 m tall) 5 ml	nil	<p>Use in spring to early summer treatments only. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results.</p> <p>Autumn Treatment. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results.</p> <p>Winter treatment only. Brownout may not be complete until summer. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results. Picloram is soil-residual, hindering the re-establishment of clovers and other broadleaved plants for up to twelve months</p> <p>In dense stands, access paths should be cleared to allow complete coverage</p> <p>Regrowth needs to be around 50 - 100 cm high before follow-up treatment</p> <p>Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees</p>
Triclopyr	Garlon 600 (600 g/L)	1.7 ml - 3.4 ml	nil	<p>Apply from spring to mid-summer</p> <p>Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees</p> <p>Use the higher rate on older plants</p> <p>Preferred to triclopyr + picloram mixture in urban or horticultural areas, and near waterways/wetlands</p>

Herbicide for Gorse Control

Foliar application continued

Metsulfuron-methyl	Brush-Off (600 g/Kg)	0.1 – 0.15 g	nil	(APVMA Off-Label permit – PER8949 Suitable for bushes up to 2 m tall Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees Metsulfuron-methyl is soil-residual, hindering the re-establishment of clovers and other broadleaved plants for up to twelve months
Glyphosate	Roundup Biactive (360 g/L) Glyphosate 360 (360 g/L)	10 - 15 ml	1 day	Apply all year round but only if actively growing Non-selective and will affect grasses, clovers and most broadleaf plants
Ammonium thiocyanate	Amitrole T® (220 g/L)	20 ml	Orchards and vines - 56 days Other areas - nil	Apply during summer or before full flowering Non-selective and will affect grasses, clovers and most broadleaf plants Use in restricted spraying areas Apply to bushes up to 2 m tall Respraying will be necessary
Glyphosate+Metsulfuron-methyl	Trounce® (835 g/L + 10 g/L)	1.7 g	nil	Actively growing (except spring) Use in restricted spraying areas Use surfactant as directed by label.

Herbicide for Gorse Control

Cut stump application

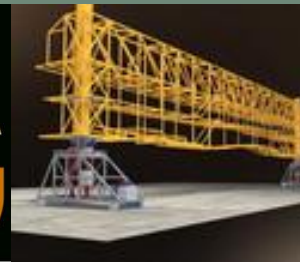
Herbicide (active ingredient)	Commercial products (content of active ingredient)	Rate of commercial product per litre of water	Withholding period for use in pasture	Comments
Glyphosate	Roundup Biactive (360 g/L) Glyphosate 360 (360 g/L)	1 litre	nil	Use when plants are actively growing Apply immediately (within 15 seconds) after top growth removal
Triclopyr	Garlon 600 (600 g/L)	1:60 in diesel	nil	For cut-stump treatment,. Apply immediately (within 15 seconds) after top growth removal (APVMA Off-Label permit – PER8949)
Picloram	Vigilant® Herbicide Gel 43g/kg	3-5mm thick layer 5mm	nil	Stems up 20mm diameter Stems greater than 20mm diameter In the case of multi-stem plants treat at least 80% of stems including main stems

* These products are not registered for this use in Tasmania and will not be mentioned on product labels, however Permit Number – PER8949 issued by the Australian Pesticides & Veterinary Medicines Authority allows this specific use. If using this method and herbicide you will require a copy of this off-label permit.

For further information on permit details visit the APVMA website at www.apvma.gov.au.



transport infrastructure | community infrastructure | industrial infrastructure | climate change



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ABN 67 140 184 309



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Appendix D

Bushfire Assessment



10 March 2015

Mr G Walkem
Director
Miranda (Trufferies) Pty Ltd
PO Box 1630
LAUNCESTON TAS 7250



sustainablethinking®

transport
community
mining & industrial
carbon & energy

Dear Graeme

Bushfire Assessment – 2 Lot subdivision – Lot 300 - Technopark

Miranda (Trufferies) Pty Ltd have requested that **pitt&sherry** provide a Bushfire assessment in regard to a two lot subdivision within the Technopark subdivision.

It is proposed to form two lots on a large single lot at the head of a cul de sac. The lots will be 9738 sqm and 1.339ha in area. The large site is the residual lot from a previous subdivision and backs on to the residential area of Youngtown which is accessed off Lorne St. A building envelope of 20m x 20m has been identified for each site.

The building envelopes have been selected to capture existing clearings on each site; minimise further vegetation clearing and to keep any development on these lots to a minimal impact.

The site is currently zoned Open Space under the Planning Scheme. This is a “holding” zone until the future of the site can be determined – rather than a reflection of the end use as public open space.

In determining the extent of Bushfire risk consideration is given to any bushfire prone vegetation within 100m of the site.

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Melbourne
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Figure 1 - Bushfire Prone Vegetation Assessment.

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The only area which qualifies as being bushfire prone vegetation is located to the north and north west of the site – the rear of Youngtown Oval and the residual land which is part of the greater Technopark development.

The site itself contains a stand of remnant native vegetation, which is best described as being mature to overly mature. There is evidence of significant weed infestation across each site. The weeds have only become evident since the land ceased use as grazing land some two years ago. The land has been extensively grazed as an animal quarantine station and also through agistment in later years.

Land to the west is zoned General Residential. Land to the north east, east and south is zoned Low Density Residential and is being actively used for this purpose. All these areas then present a very low risk in terms of bushfire.

Water is available within the newly constructed court as part of the Low Density subdivision. There is a hydrant located in the road reserve between the two proposed lots.

The sites are accessed from a fully constructed, sealed roadway of some 7.5m width.

The site slopes from west to east and has a fall of 15m across the site.

	Slope	Vegetation	Minimum Distance from vegetation required to meet BAL-19
North	Flat (along contour)	Grassland	14 metres
South	Flat (along contour)	Urban Area	N/a
East	7 degrees	Urban Area	N/a
West	Uphill	Urban Area	N/a

Given the above, the external risk from bushfire is very low. The greatest risk of bushfire would come from within each site. To that end there are a number of management regimes which can be considered to reduce the risk to surrounding properties and also to structures built within the building envelopes.

Firstly, keep all ground cover along the western and southern boundaries under 100mm in length during fire risk season. Secondly, keep the vegetation/ground cover under 100mm within the fuel management areas around each building envelope.

BAL RATING FOR EACH LOT

Taking all the above factors into consideration the following BAL ratings can be achieved for each lot:-

Lot 49 BAL 12.5
Lot 50 BAL 12.5

RECOMMENDATIONS

1. That groundcover along the boundaries to the west, north and south for a width of 14m shall be kept below 100mm in length during the fire risk period.
2. That a fuel management area shall be established for each lot as shown on the Bushfire Management Plan. The fuel managed area will generally accord to the building envelopes on each lot. Vegetation in these areas will be kept below 100mm in length.

3. A fuel reduced area will be formed around the fuel management area. Within these areas specimen trees can be retained, with ground cover being less than 100mm in length.

Yours sincerely

A handwritten signature in black ink, appearing to be 'Ian Abernethy', with a long horizontal flourish extending to the right.


Ian Abernethy
Planning Manager - North

Enc. Bushfire Management Plan and Certificate



Tasmania Fire Service

Approved Form of a Bushfire Hazard Management Plan

Chief Officer's requirements for a Bushfire Hazard Management Plan for compliance or exemption			
<i>Version:</i>	<i>1</i>	<i>Issue Date:</i>	<i>7 February 2014</i>
Purpose	<p>To provide an approved form for a Bushfire Hazard Management Plan in accordance with:</p> <p>Section 60A of the <i>Fire Service Act 1979</i> -</p> <p><i>bushfire hazard management plan</i> means a plan showing means of protection from bushfires in a form approved in writing by the Chief Officer.</p> <p>Section 3 <i>Land Use Planning and Approvals Act 1993</i></p> <p><i>bushfire hazard management plan</i> means a plan showing means of protection from bushfires in a form approved in writing by the Chief Officer;</p> <p><i>Chief Officer</i> means the person appointed as Chief Officer under section 10 of the <i>Fire Service Act 1979</i>;</p>		
Declaration	<p>A Bushfire Hazard Management Plan (BHMP) is in a form approved by the Chief Officer if:</p> <ol style="list-style-type: none">1. The BHMP is consistent with a Bushfire Report that has been prepared taking into consideration such of the matters identified in Schedule 1 as are applicable to the purpose of the BHMP; and2. The BHMP contains a map, plan or schedule identifying the specific measures required to provide a tolerable level of risk from bushfire for the purpose or activity described in the BHMP having regard to the considerations in Schedule 2; and3. The BHMP is consistent with all applicable Bushfire Hazard Management Advisory Notes issued by the Chief Officer.		
	 <p>Mike Brown AFSM Chief Officer Tasmania Fire Service</p>		

Schedule 1 - Bushfire Report

A Bushfire Report is an investigation and assessment of bushfire risk to establish the level of bushfire threat, vulnerability, options for mitigation measures, and the residual risk if such measures are applied on the land for the purpose or activity described in the assessment.

A Bushfire Report must include:

- a) A description of the characteristics of the land and of adjacent land;
- b) A description of the use or development that may be threatened by a bushfire on the site or on adjacent land; and
- c) Whether the use or development on the site is likely to cause or contribute to the occurrence or intensification of bushfire on the site or on adjacent land; and
- d) Whether the use or development on the site, and any associated use or development, can achieve and maintain a tolerable level of residual risk for the occupants and assets on the site and on adjacent land having regard for –
 - i. The nature, intensity and duration of the use;
 - ii. The type, form and duration of any development;
 - iii. A Bushfire Attack Level assessment to define the exposure to a use or development; and
 - iv. The nature of any bushfire hazard mitigation measures required on the site and/or on adjacent land.

Schedule 2 - Bushfire Hazard Management Plan

A BHMP is a document containing a map, plan or specification and must:-

- a) Identify the site to which the BHMP applies by address, Property Identifier (PID), and reference to a Certificate of Title under the *Land Titles Act 1980*;
- b) Identify the certifying Bushfire Hazard Practitioner, Accreditation Number, and Scope of Accreditation.
- c) Identify the proposed activity to which the BHMP applies by reference to any plans, specifications or other documents that are applicable for the purpose of describing the proposed use or development;
- d) Indicate the bushfire hazard management and protection measures required to be implemented by the Bushfire Report;
- e) If intended to be applied for the purpose of satisfying a regulatory requirement, identify the regulation by its statutory citation and indicate the applicable provisions for which the BHMP applies; and
- f) Have, as a schedule, the Bushfire Report that details specific bushfire hazard management and bushfire mitigation measures required to achieve a tolerable level of residual risk for the proposed activity and any building or development on the site, including:
 - i) Measures to achieve compliance with any mandatory land use planning requirement in a planning process required under the *Land Use Planning and Approvals Act 1993 (Attachment 1)*;
 - ii) Measures to achieve compliance with any mandatory outcome for a building or work undertaken in accordance with the *Building Act 2000* and the Building Regulations 2004 (Form 55).

Attachment 1: Certificate of Compliance to the Bushfire-prone Area Code under Planning Directive No 5

Code E1 – Bushfire-prone Areas Code

Certificate under s51(2)(d) Land Use Planning and Approvals Act 1993

<i>Office Use</i>
<i>Date Received</i>
<i>Permit Application No</i>
<i>PID</i>

1. Land to which certificate applies¹	
Name of planning scheme or instrument: Launceston Interim Planning Scheme 2012(The Scheme)	

Use or Development Site Street Address Lot 49 and 50 Technopark Drive	Certificate of Title / PID CT 167726/300
Land that is not the Use or Development Site relied upon for bushfire hazard management or protection Street Address N/a	Certificate of Title / PID

2. Proposed Use or Development (provide a description in the space below) Two Lot Subdivision	
---	--

- Vulnerable Use
- Hazardous Use
- X Subdivision
- New Habitable Building on a lot on a plan of subdivision approved in accordance with Bushfire-prone Areas Code.
- New habitable on a lot on a pre-existing plan of subdivision
- Extension to an existing habitable building
- Habitable Building for a Vulnerable Use

¹ If the certificate relates to bushfire management or protection measures that rely on land that is not in the same lot as the site for the use or development described, the details of all of the applicable land must be provided.

3. Documents relied upon²

<i>Document or certificate description:</i>	
X	<p>Description of Use or Development³ (Proposal or Land Use Permit Application)</p> <p>Documents, Plans and/or Specifications</p> <p><i>Title: Proposal Plan – 2 Lot subdivision – 2014-139</i></p> <p><i>Author: Woolcott Surveys</i></p> <p><i>Date: March 2015</i></p>
X	<p>Bushfire Report⁴</p> <p><i>Title: BUSHFIRE ASSESSMENT – 2 Lot subdivision – Lot 300 - Technopark</i></p> <p><i>Author: Ian Abernethy</i></p> <p><i>Date: 10/03/15</i></p>
X	<p>Bushfire Hazard Management Plan⁵</p> <p><i>Title: Bushfire Management Plan – 2014-139</i></p> <p><i>Author: Woolcott Surveys</i></p> <p><i>Date: March 2014</i></p>
<input type="checkbox"/>	<p>Other documents</p> <p><i>Title:</i></p> <p><i>Author:</i></p> <p><i>Date:</i></p>

² List each document that is provided or relied upon to describe the use or development, or to assess and manage risk from bushfire, including its title, author, date, and version.

³ Identify the use or development to which the certificate applies by reference to the documents, plans, and specifications to be provided with the permit application to describe the form and location of the proposed use or development. For habitable buildings, a reference to a nominated plan indicating location within the site and the form of development is required.

⁴ If there is more than one Bushfire Report, each document must be identified by reference to its title, author, date and version.

⁵ If there is more than one Bushfire Hazard Management Plan, each document must be identified by reference to its title, author, date and version

4. Nature of Certificate ⁶					
Applicable Standard	Assessment Criteria	Compliance Test: Certificate of Insufficient Increase in Risk	Compliance Test: Certified Bushfire Hazard Management Plan	Reference to applicable Bushfire Risk Assessment or Bushfire Hazard Management Plan ⁷	
<input type="checkbox"/> E1.4 – Use or development exempt from this code					
E1.4. (identify which exemption applies)		No specific measures required because the use or development is consistent with the objective for each of the applicable standards identified in this Certificate	<input type="checkbox"/> Not Applicable		
<input type="checkbox"/> E1.5.1 - Vulnerable Use					
<i>E1.5.1.1 – location on bushfire-prone land</i>	A2	Not Applicable	Tolerable level of risk and provision for evacuation	<input type="checkbox"/>	
<input type="checkbox"/> E1.5.2 - Hazardous Use					
<i>E1.5.2.1 – location on bushfire-prone land</i>	A2	Not Applicable	Tolerable level of risk from exposure to dangerous substances, ignition potential, and contribution to intensify fire	<input type="checkbox"/>	
<input checked="" type="checkbox"/> E1.6.1 - Subdivision					
<i>E1.6.1.1 - Hazard Management Area</i>	A1	No specific measure for hazard management	X Provision for hazard management areas in accordance with BAL 19 Table 2.4.4 AS3959	<input type="checkbox"/>	
<i>E1.6.1.2 - Public Access</i>	A1	No specific public access measure for fire fighting	X Layout of roads and access is consistent with objective	<input type="checkbox"/>	
<i>E1.6.1.3 - Water Supply</i>	A1 Reticulated water	No specific water supply for fight fighting	X Not Applicable		

⁶ The certificate must indicate by placing a ✓ in the corresponding for each applicable standard and the corresponding compliance test within each standard that is relied upon to demonstrate compliance to Code E1

⁷ Identify the Bushfire Risk Assessment report or Bushfire Hazard Management Plan that is relied upon to satisfy the compliance test

		supply				
		A2 Non-reticulated water supply	No specific water supply measure for fight fighting	n/ a	Water supply is consistent with objective	<input type="checkbox"/>

<input type="checkbox"/>	E1.6.2 - Habitable Building on lot on a plan of subdivision approved in accordance with Code					
	<i>E1.6.2.1 - Hazard Management Area</i>	A1	No specific measure for hazard management	<input type="checkbox"/>	Provision for hazard management areas in accordance with BAL 19 Table 2.4.4 AS3959 and managed consistent with objective	<input type="checkbox"/>
	<i>E1.6.2.2 – Private Access</i>	A1	No specific private access for fire fighting	<input type="checkbox"/>	Private access is consistent with objective	<input type="checkbox"/>
		A2	Not Applicable		Private access to static water supply is consistent with objective	<input type="checkbox"/>
	<i>E1.6.2.3 - Water Supply</i>	A1	No specific water supply measure for fight fighting	<input type="checkbox"/>	Water supply is consistent with objective	<input type="checkbox"/>

<input type="checkbox"/>	E1.6.3 - Habitable Building (pre-existing lot)					
	<i>E1.6.3.1 - Hazard Management Area</i>	A1	No specific measure for hazard management	<input type="checkbox"/>	Provision for hazard management is consistent with objective; or	<input type="checkbox"/>
				<input type="checkbox"/>	Provision for hazard management areas in accordance with BAL 29 Table 2.4.4 AS3959 and managed consistent with objective	<input type="checkbox"/>
	<i>E1.6.3.2 - Private Access</i>	A1	No specific private access measure for fire fighting	<input type="checkbox"/>	Private access is consistent with objective	<input type="checkbox"/>
		A2	Not applicable		Private access to static water supply is consistent with objective	<input type="checkbox"/>
	<i>E1.6.3.3 - Water Supply</i>	A1	No specific water supply measure for fight fighting	<input type="checkbox"/>	Water supply is consistent with objective	<input type="checkbox"/>

<input type="checkbox"/> E1.6.4 - Extension to Habitable Building						
	<i>E1.6.4.1 – hazard management</i>	A1	No specific hazard management measure	<input type="checkbox"/>	Provision for hazard management is consistent with objective; or	<input type="checkbox"/>
				<input type="checkbox"/>	Provision for hazard management areas in accordance with BAL 12.5 Table 2.4.4 AS3959 and managed consistent with objective	<input type="checkbox"/>
<input type="checkbox"/> E1.6.5 – Habitable Building for Vulnerable Use						
	<i>E1.6.5.1 – hazard management</i>	A1	No specific measure for hazard management	<input type="checkbox"/>	Bushfire hazard management consistent with objective; or Provision for hazard management areas in accordance with BAL 12.5 Table 2.4.4 AS3959 and managed consistent with objective	<input type="checkbox"/>

5. Bushfire Hazard Practitioner – Accredited Person

Name	Ian Abernethy	Phone No:	0417233732
Address:	Level 4/113 Cimitiere St Launceston	Fax No:	
		Email address:	iabernethy@pittsh.com.au
Fire Service Act 1979 Accreditation No:	BFP- 124	Scope:	

6. Certification

I, *Ian Abernethy* certify that in accordance with the authority given under the Part 4A of the Fire Service Act 1979 –

<i>The use or development described in this certificate is exempt from application of Code E1 – Bushfire-Prone Areas in accordance with Clause E1.4(a) because there is an insufficient increase in risk to warrant specific measures for bushfire hazard management and/or bushfire protection in order to be consistent with the objective for all of the applicable standards identified in Section 4 of this Certificate</i>	<input type="checkbox"/>
--	--------------------------

or

<i>There is an insufficient increase in risk to warrant specific measures for bushfire hazard management and/or bushfire protection in order for the use or development described to be consistent with the objective for each of the applicable standards identified in Section 4 of this Certificate.</i>	<input type="checkbox"/>
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and/or

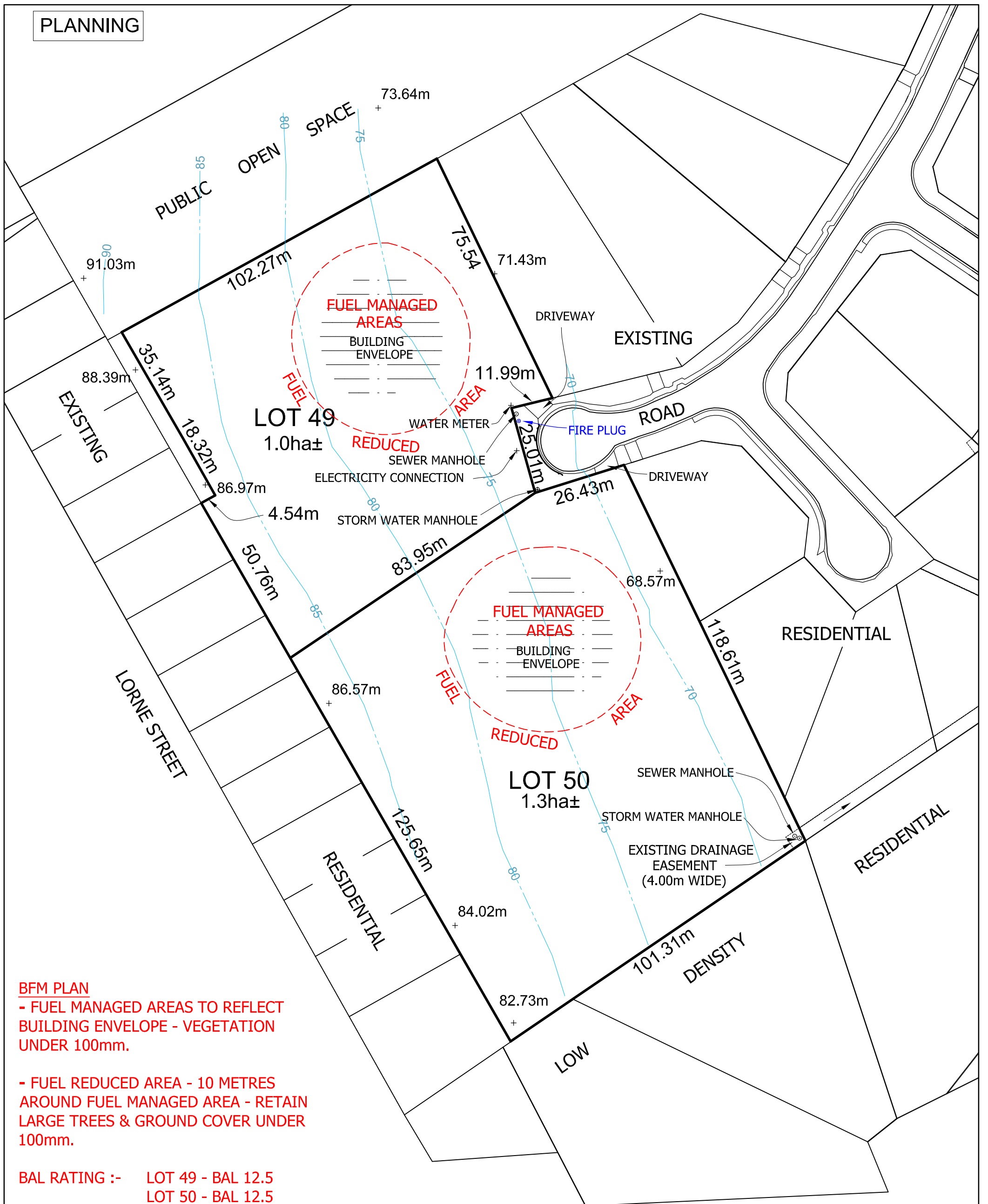
<i>The Bushfire Hazard Management Plan/s identified in Section 4 of this certificate is/are in accordance with the Chief Officer's requirements and can deliver an outcome for the use or development described that is consistent with the objective and the relevant compliance test for each of the applicable standards identified in Section 4 of this Certificate</i>	X
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Signed



Date 10th March 2015

PLANNING



BFM PLAN

- FUEL MANAGED AREAS TO REFLECT BUILDING ENVELOPE - VEGETATION UNDER 100mm.

- FUEL REDUCED AREA - 10 METRES AROUND FUEL MANAGED AREA - RETAIN LARGE TREES & GROUND COVER UNDER 100mm.

BAL RATING :- LOT 49 - BAL 12.5
LOT 50 - BAL 12.5

BUILDING ENVELOPE & THEIR LOCATIONS ARE SUBJECT TO A PART V AGREEMENT WITH COUNCIL AND FINAL SURVEY.

- Notes:
1. HORIZONTAL DATUM PLANE BASED ON SPM10631.
 2. VERTICAL DATUM AHD BASED ON SPM10631.
 3. ALL DIMENSIONS AND AREAS ARE SUBJECT TO SURVEY.
 4. THIS PLAN WAS PREPARED AS A PROPOSAL PLAN TO ACCOMPANY A DEVELOPMENT APPLICATION TO COUNCIL AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
 5. CONTOUR INTERVAL - 1.0m
CONTOUR INDEX INTERVAL - 5.0m

BUSHFIRE MANAGEMENT PLAN
2 LOT SUBDIVISION
LOT 300 - C.T. 167726-300
OWNER: MIRANDA (TRUFFERIE) PASTORAL CO



10 Goodman Court Invermay TAS 7248
PO Box 593 Mowbray Heights TAS 7248
Phone (03) 6332 3760
Fax (03) 6332 3764
Email: admin@woolcottsurveys.com.au

Job Number
2014-139

Drawn MBR	File name 2014-139_BUSHFIREMANAGEMENTPLAN_290714.DWG	Date 29/07/14	Scale 1:1000@A3	Edition 1.2	Sheet 10F1
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Appendix E

Geotechnical Report



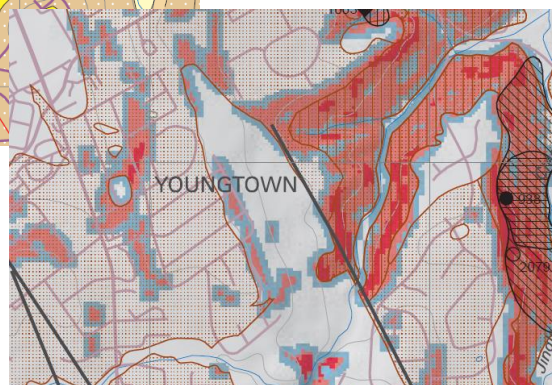
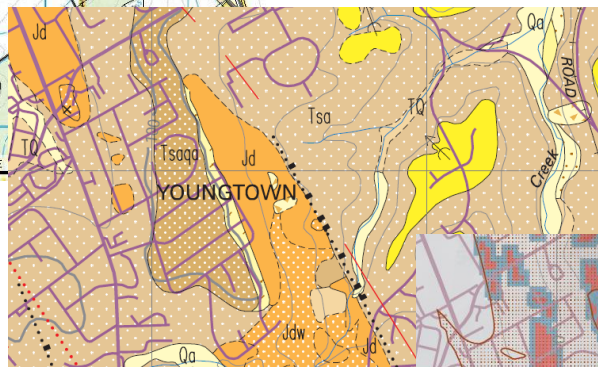
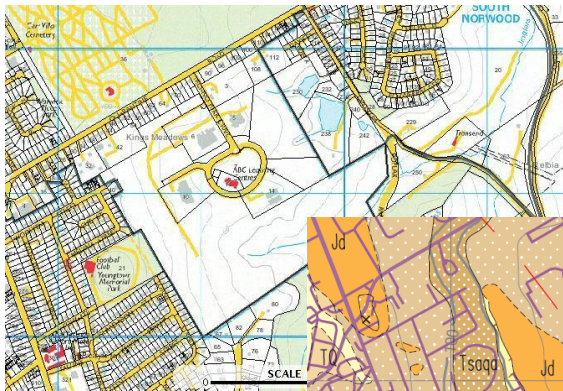


GEO-ENVIRONMENTAL
SOLUTIONS

PRELIMINARY GEOTECHNICAL ASSESSMENT

Lot 1 Technopark Drive Kings Meadows

May 2012



Introduction

Client:	Surv-Tek
Date of inspection:	12/5/12
Location:	Lot 1 Technopark Drive, Kings Meadows
Land description:	Approx 18.7ha, approx 60 m asl
Building type:	Proposed future residential development
Investigation:	Desktop and visual survey
Inspected by:	JP Cumming

Background information

Map:	Mineral Resources Tasmania, Launceston sheet 1:25 000
Rock type:	Jurassic Dolerite and Tertiary sediments
Soil depth:	Variable estimated 1.0-3.0m+
Landslide zoning:	Some areas above threshold $Ta - 7^\circ$, Mazengarb 2004
Local meteorology:	Annual rainfall approx 550 mm
Local services:	Fully serviced

Site conditions

Slope and aspect:	East facing slope, approx 10-20% natural slope
Site drainage:	Good surface drainage, imperfect subsoil drainage
Vegetation:	Mixed pasture and sparse tree species
Weather conditions:	Fine, approx 20mm rainfall received in preceding 7 days.
Ground surface:	Moist clay loam surface

Investigation

A desktop and visual field survey of the property was completed to identify the principle geological units on the site and significant topographical features. A search of published geological information and previous geotechnical investigations in the local area was also undertaken.

Geotechnical Assessment of site stability

Site and published geological information was integrated to complete a detailed geotechnical assessment of the site with reference to the principles outlined in AS1726-1993 *Geotechnical Site Investigations* and the *Australian Geomechanics Society* (2007).

Site location and context

The proposed development site is located on Tertiary aged sediments of mixed clays/gravels/sand with a small area of Jurassic dolerite, in a mid slope position (see figure 1 & 2). The site has a gentle slope of 5-10°, and the slope morphology shows no visible signs of past land instability. The site is not in a declared landslip zone, but is close an area mapped by Mineral Resources Tasmania (Mazengarb 2004) as having possible geological hazards (see figure 4). However, in accordance with local government requirements a preliminary investigation of each of the possible land instability hazards has been undertaken in the following sections.

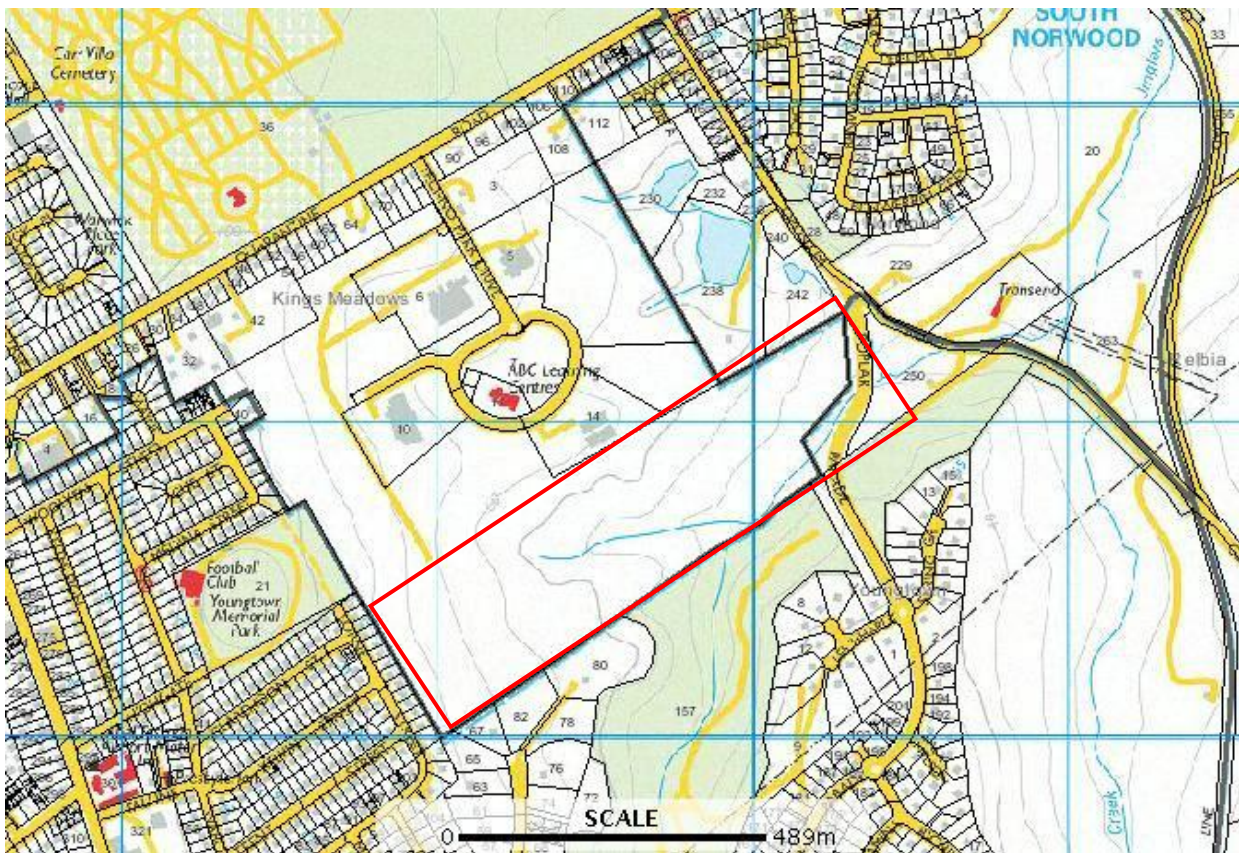


Figure 1 – Site location – approximate study area in red



Figure 2 – Google Earth Image of the site – note small drainage line running west-east

Geological setting

The site is underlain by Tertiary aged sediments (mapping unit Tsa) of mixed clays/gravels/sands with a small area of Jurassic Dolerite on the upper slopes (mapping unit Jd). The excavated profiles examined in the local area all appear to be stable in their present state. Tertiary sediments in the local area commonly moderately stable formations on gentle slope angles, with little documented history of slope instability. However, where deeper weathered soils are found on steep slopes, then localised slope stability may be an issue as some of the clay soils can be prone to soil creep or mass movement when saturated. Reference to published MRT reports indicates that the majority of prior reports for the local area confirmed that residential development was possible, and that in particular the dolerite sediments are the most suitable. There is a small recent or active slide noted to the north east of the site (MRT reference 1003) described in the report of Mathews (1973) as an earth rotational slide. The soils examined on site appear to be residual in their nature with little

colluvial material or hummocks/terraces from past instability, therefore the risk posed by the underlying geology of the site is rated as medium.

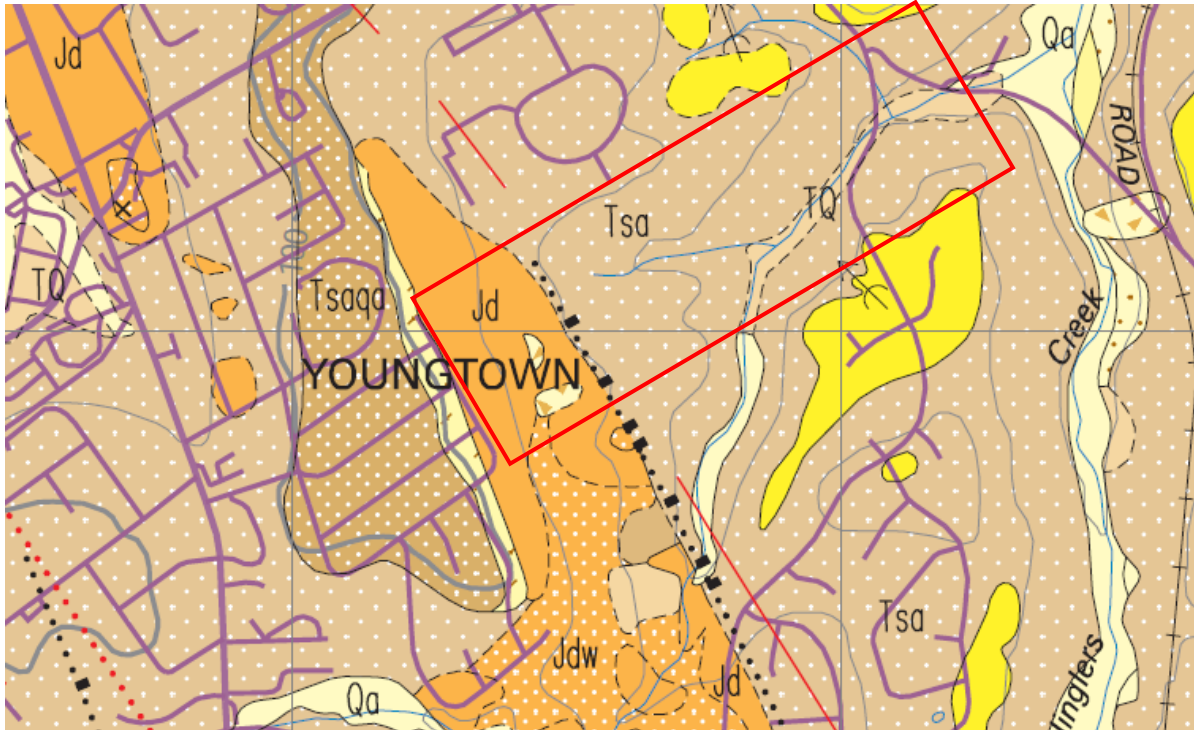


Figure 3 – Extract from Mineral Resources Tasmania 1:25000 Geological Sheet

Potential for landslip

The site has a gentle east to south east facing slope of approximately 5-10°, with vegetative cover of mixed pasture, garden, and sparse tree species. Local excavations and prior drilling on the adjacent property at 42a Quarantine Road revealed deep Tertiary sediments. The slope angle on the upper parts of the site generally less than 7°, however the slope on the lower parts of the site is greater than the modelled instability threshold (Ta) for Tertiary sediments in the MRT hazard analysis (Mazengarb 2004).

There was no evidence of landslip or soil creep, notably those trees still present on the site on the slope were growing straight and vertical. Further, the ground surface showed no hummocks, terracing or patterns from past slips or soil creep. The site therefore appears stable in its present state, and there is little evidence of movement of soil materials on. The preliminary assessment of possible land instability has two possible risk classes; debris slide and deep seated movement.

Deep seated instability

The local area is listed as a possible deep seated instability hazard due to the geology and slope angles utilised in the modelling of Mazengarb (2004) – see figure 4. The subject site is modelled as having some areas of slope exceeding the lowest threshold angle ($T_a = 7^\circ$ – mapped as light red in figure 4) for Tertiary sediments in the Launceston area. However, the gentle slope angles on the site are generally less than the modelled threshold for instability in the Rosetta B scenario of 10 degrees (except small area mapped as darker red in figure 4). The actual slope angles in across the site of 5-8 degrees reflect the lower risk associated with the modelled setback areas, indicating a general low to moderate risk associated with deep seated instability. Based upon field inspection of the sediments in the local area the sediments have undergone variable/deep weathering, whilst the weathered rock clasts and gravels are moderately consolidated and extend for some metres below the natural ground surface. Deep site/road cuttings examined in the local area appear to have withstood excavation and exposure, with little sign of localised instability such as slumping. The hazard associated with potential deep seated instability on the property is therefore rated as low, as a result of semi-quantitative modelling undertaken in the risk management model.

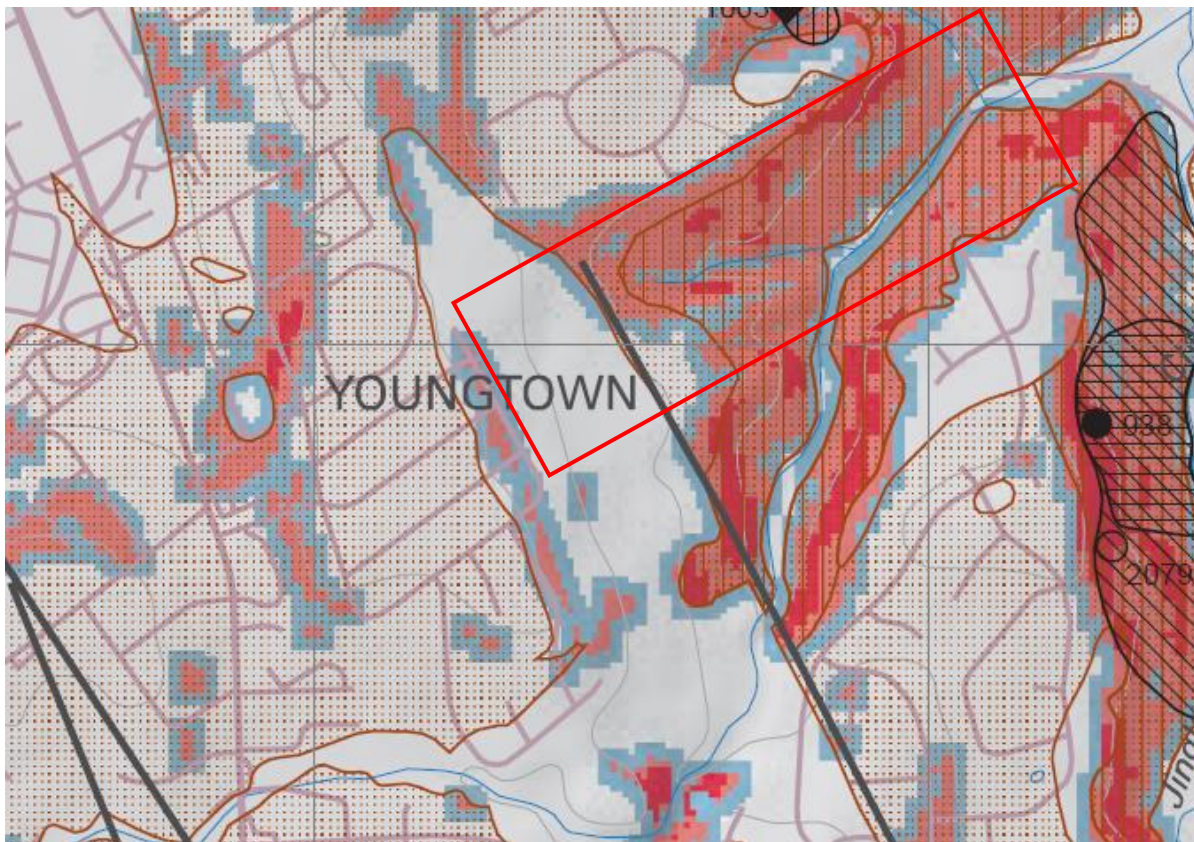


Figure 4– Extract from deep seated landslide hazard map (Mazengarb 2004)

Debris Flow hazard

The possibility of a debris flow in the Tertiary sediments in the local area has been modelled due to the gentle slope (see geomorphology in figure 5). The site is close to a residual surface, and is free from slope deposits or other poorly consolidated material. However, where deep excavation and filling may occur there would be a possibility of shallow seated instability if the ground cover conditions altered. Field inspection on the subject site revealed residual soils with an inherent moderate potential for slope movement. Therefore any shallow surface instability would only have some chance of occurring where deep excavation and poorly placed fill is present, and or concentrated flows could occur. Therefore the proposed construction of an access road and future residential dwellings is not likely to result in deep and uncontrolled excavation, with no dramatic increase in the apparent risk of slope instability.

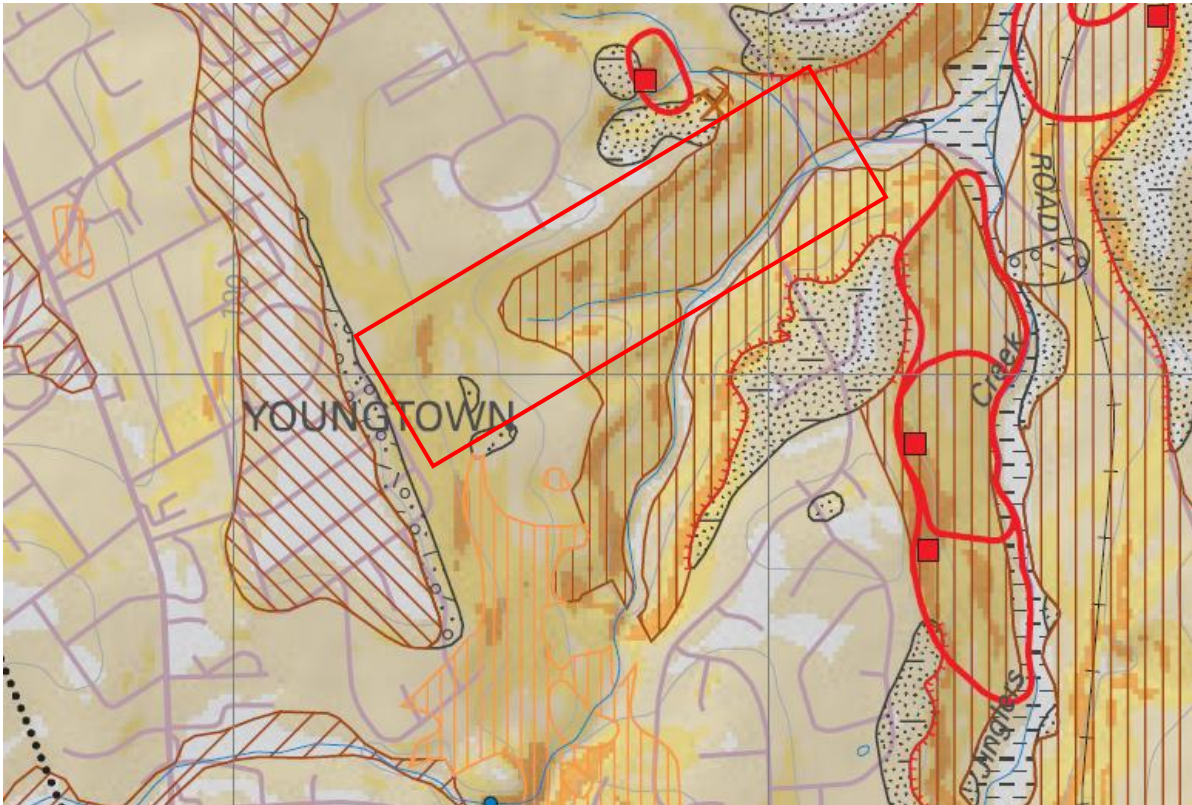


Figure 5 – Extract from geomorphology map (Mazengarb 2004), diagonal hatch indicates residual surface, mixed circles and lines indicates slope deposits to the south of site

Potential for foundation movement

The gentle slope and presence of high reactivity clay subsoils must be considered in the design of the footings, but both factors do not preclude the design of serviceable footings.

Given the slope morphology of the site careful attention should be paid to surface drainage, with upslope drainage of any construction area recommended. Therefore, provided that footings are designed in accordance with recommendations for clay sites in AS2870-2011 the geotechnical risk relating to potential foundation movement is acceptable. I do however stress that attention should be paid to suitable backfill surrounding footings, articulation in the buildings, and drainage to avoid water accumulation in the foundation area (in line with recommendations in AS2870-2011 and CSIRO BTF-18). Site specific geotechnical investigation will also be required prior to any residential construction, and prior to any engineering designs and site works for infrastructure.

Potential for vegetation removal to cause instability & erosion

There are sparse pasture/weeds/ornamental vegetation present on site, the removal of which is likely to have a small effect upon surface soil stability. Therefore, the risk of site instability and erosion from vegetation removal is considered to be low and acceptable. The risk of soil erosion should not be ignored either, such that I recommend standard Soil and Water Management Planning (SWMP) is undertaken prior to any earthworks.

Potential for runoff/flooding to cause instability

Given the sloping nature of the site there is a small potential for excess water flow onto the site to cause shallow seated instability if the construction does not make allowance for appropriate drainage. At present there are no formal drainage structures in place to divert surface water flows should the need arise in extreme weather events. Therefore consideration should be given to drainage controls during the detailed design phase of the project prior to building/plumbing approvals. In particular the drainage line on site will require specific hydrological modelling and design as part of the engineering design phase for the site to ensure flows are adequately managed and not allowed to concentrate on site.

Semi-Quantitative Risk Assessment

The following quantitative risk assessment is based upon the Australian Geomechanics Society Sub-committee report (March 2007) Landslide Risk Management Concepts and Guidelines.

Landslide Risk Management Model

Adapted from AGS Sub-committee (March 2007) Landslide Risk Management Concepts and Guidelines.

Date 21/5/12

Site Lot 1 Technopark Drive, Kings Meadows

Project Proposed residential subdivision

Scoping Future residential dwellings on Tertiary sediments with slope angle 5-10°
Hypothetical deep seated slide develops in soil/sediments on site
Hazard and risk to be quantified.

1. Hazard Identification

- | | |
|--|---|
| a. Type of potential instability | Rotational slide |
| b. Location | In area of future dwellings |
| c. Estimated area affected(m²) | 100 (20m across and 5 m down slope) |
| d. Estimated volume (m³) | 200 (soil/sediments 2 m deep) |
| e. Initiating event(s) | Extreme heavy/prolonged rainfall/earthquake |
| f. Estimated velocity of movement | Slow (5×10^{-5} mm/sec) |
| g. Estimated travel distance | 5m |

2. Frequency Analysis

- | | |
|--|--|
| a. Estimated frequency of event (P_H) | 0.002 (1 in 500 yr event) |
| b. Justification of frequency | Stability of sediments on site & existing cuttings |

3. Consequence Analysis

- | | |
|--|---|
| a. Element at risk | Property, services & occupants |
| b. Value at risk (E) | \$1 000 000 (multiple dwellings) |
| c. Temporal probability (P_{T:S}) | 0.5 (probability of occupation) |
| d. Property vulnerability (V_{P:S}) | 0.10 (proportion of property value lost) |
| e. Probability of effect (P_{S:H}) | 0.10 (probability of debris affecting building) |
| f. Human vulnerability (V_{D:T}) | 0.001 (probability of loss of life) |

4. Quantitative Risk Calculation

- | | |
|---|--------------------------------------|
| a. Property [R_{prop} = (P_H) x (P_{S:H}) x (V_{P:S}) x (E)] | = \$20 (annual loss of dollar value) |
| b. Loss of life [R_{DI} = (P_H) x (P_{S:H}) x (P_{T:S}) x (V_{D:T})] | = 2.5×10^{-7} |

5. Semi-quantitative risk estimation for property

- | | |
|-----------------------------------|--|
| a. Likelihood of event | Level E- Rare (exceptional conditions req) |
| b. Consequence to property | Level 3 – Medium (significant damage) |
| c. Combined level of risk | Low – risk acceptable |

6. Sensitivity Analysis

Most uncertainty surrounds frequency of event (item 2a)

7. Risk Evaluation (should the risk be accepted, reduced, avoided or rejected?)

From the assessment in 4a&4b the risk to life and property is acceptable

8. Risk Treatment

a. Options

- | | |
|----------------------------|---|
| Accept risk | Recommended |
| Avoid risk | |
| Reduce likelihood | Yes – utilise drainage controls on site |
| Reduce consequences | yes – footing design based upon best practice |
| Transfer | |

b. Treatment Plan

Appropriately designed footings in line with best practice recommendations
Installation of appropriate drainage surrounding all dwellings
Stormwater and wastewater correctly connected to council services
Any site cuts to be adequately retained and fill minimised

c. Implement Plan

Yes

d. Monitoring

Project monitoring required – professional supervision of sensitive earthworks recommended

Conclusions

The geotechnical risk associated with residential development on the site is classified as **low** according to *Australian Geomechanics Society Guidelines* and **minor** according to *AS1726-1993 Geotechnical Site Investigations*.

- This assessment is a preliminary geotechnical assessment for scoping of future residential development on the site which has identified that the area of Jurassic dolerite on the upper slopes are generally free of geotechnical hazards whilst the areas of Tertiary sediments contains slopes slightly above modelled thresholds for possible slope instability
- The risk of foundation instability in future dwellings is moderate, and footing designs should ensure placement of foundations into underlying weathered gravels wherever possible
- Deep excavation and placement of fill should be avoided in accordance with Australian Geomechanics Society Guidelines for Hillside Construction
- All earthworks on site must comply with AS3798-2007 and a sediment and erosion control plan should be implemented on site during and after construction.
- All stormwater should be immediately directed to mains outlets upon the construction of hard surfaces to minimise any possible water accumulation and excess flows onto the steep slopes below
- The existing drainage line on site should be adequately managed with new engineering designs to accept design flows as required by the planning authority
- Specific geotechnical investigation should be completed prior to engineering designs for road works on site and any subsequent residential construction

It is my opinion that the risk of land instability will not increase substantially as a result of future residential development on the site provided that current best practice for construction and soil and water management practices are followed.



Kris Taylor B.Sc (hons)
Engineering Geologist

Appendix 1 – Geotechnical risk assessment terminology

Geotechnical Risk Assessment – Example of Qualitative Terminology

Adapted from AGS Sub-committee (March 2007) Landslide Risk Management Concepts and Guidelines.

Qualitative Measures of Likelihood

Level	Descriptor	Description	Indicative Annual Probability
A	Almost Certain	The event is expected to occur	$> \sim 10^{-1}$
B	Likely	The event will probably occur under adverse conditions	$\sim 10^{-2}$
C	Possible	The event could occur under adverse conditions	$\sim 10^{-3}$
D	Unlikely	The event might occur under very adverse circumstances	$\sim 10^{-4}$
E	Rare	The event is conceivable only under exceptional circumstances	$\sim 10^{-5}$
F	Barely Credible	The event is inconceivable or fanciful	$\sim 10^{-6}$

Note: “~” means approximate

Qualitative Measures of Consequences to Property/Element at risk

Level	Descriptor	Description
1	Catastrophic	Structure completely destroyed or large scale damage requiring major engineering works for stabilization.
2	Major	Extensive damage to most of structure, or extending beyond site boundaries requiring significant stabilization works.
3	Medium	Moderate damage to some of structure, or significant part of site requiring large remedial works.
4	Minor	Limited damage to part of structure or part of site requiring some reinstatement or remedial works.
5	Insignificant	Little damage or effect.

Note: The “Description” may be edited to suit a particular case.

Qualitative Risk Analysis Matrix – Level of Risk to Property/Element at Risk

Likelihood	Consequences to Property				
	1: Catastrophic	2: Major	3: Medium	4: Minor	5: Insignificant
A – Almost Certain	VH	VH	VH	H	M or L
B – Likely	VH	VH	H	M	L
C – Possible	VH	H	M	M	VL
D – Unlikely	H	M	L	L	VL
E – Rare	M	L	L	VL	VL
F – Not Credible	L	VL	VL	VL	VL

Risk Level Implications

Risk Level	Example Implications	
VH	Very High Risk	Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to acceptable levels; may be too expensive and not practical
H	High Risk	Detailed investigation, planning and implementation of treatment option required to reduce risk to acceptable levels
M	Moderate Risk	Tolerable provided treatment plan is implemented to maintain or reduce risks. May be acceptable. May require investigation and planning of treatment options.
L	Low Risk	Usually acceptable. Treatment requirements and responsibility to be defined to maintain or reduce risks.
VL	Very Low Risk	Acceptable. Manage by normal site maintenance procedures.

Notes: (1) The implications for a particular situation are to be determined by all parties to the risk assessment; these are only given as a general guide.

(2) Judicious use of dual descriptors for likelihood, Consequence and Risk to reflect the uncertainty of the estimate may be appropriate in some cases

Appendix 2 – Guidelines for Hillside Construction

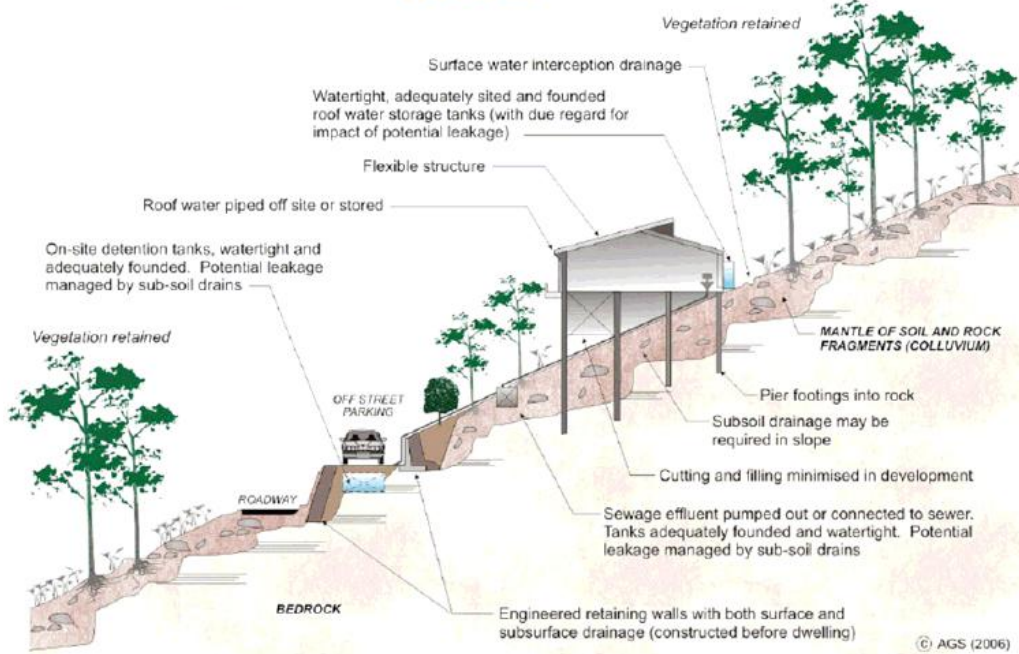
PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

APPENDIX G - SOME GUIDELINES FOR HILLSIDE CONSTRUCTION

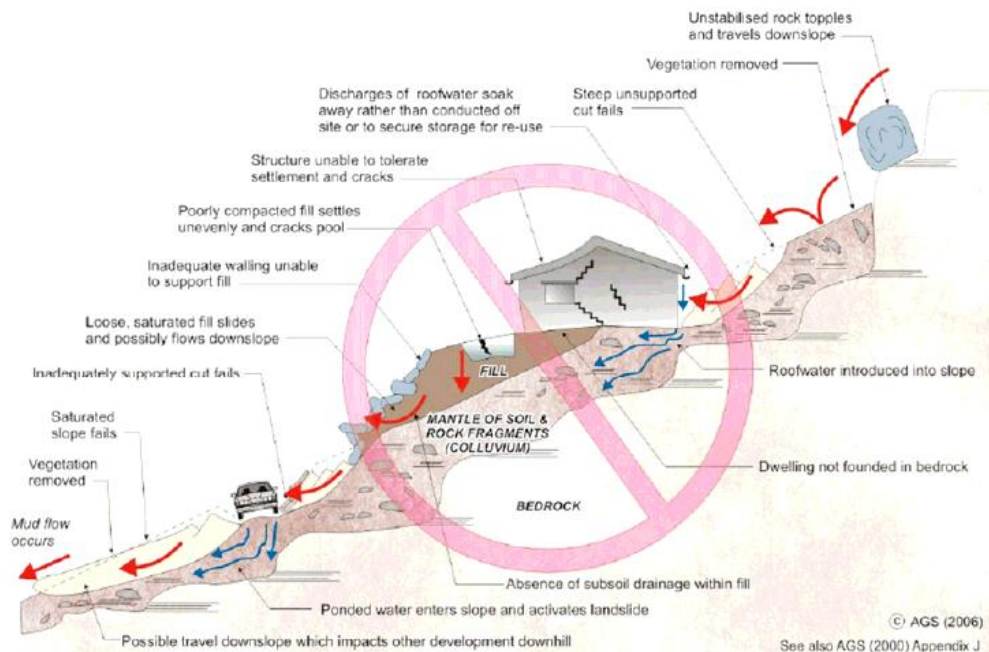
<i>GOOD ENGINEERING PRACTICE</i>		<i>POOR ENGINEERING PRACTICE</i>
ADVICE		
GEOTECHNICAL ASSESSMENT	Obtain advice from a qualified, experienced geotechnical practitioner at early stage of planning and before site works.	Prepare detailed plan and start site works before geotechnical advice.
PLANNING		
SITE PLANNING	Having obtained geotechnical advice, plan the development with the risk arising from the identified hazards and consequences in mind.	Plan development without regard for the Risk.
DESIGN AND CONSTRUCTION		
HOUSE DESIGN	Use flexible structures which incorporate properly designed brickwork, timber or steel frames, timber or panel cladding. Consider use of split levels. Use decks for recreational areas where appropriate.	Floor plans which require extensive cutting and filling. Movement intolerant structures.
SITE CLEARING	Retain natural vegetation wherever practicable.	Indiscriminately clear the site.
ACCESS & DRIVEWAYS	Satisfy requirements below for cuts, fills, retaining walls and drainage. Council specifications for grades may need to be modified. Driveways and parking areas may need to be fully supported on piers.	Excavate and fill for site access before geotechnical advice.
EARTHWORKS	Retain natural contours wherever possible.	Indiscriminatory bulk earthworks.
CUTS	Minimise depth. Support with engineered retaining walls or batter to appropriate slope. Provide drainage measures and erosion control.	Large scale cuts and benching. Unsupported cuts. Ignore drainage requirements
FILLS	Minimise height. Strip vegetation and topsoil and key into natural slopes prior to filling. Use clean fill materials and compact to engineering standards. Batter to appropriate slope or support with engineered retaining wall. Provide surface drainage and appropriate subsurface drainage.	Loose or poorly compacted fill, which if it fails, may flow a considerable distance including onto property below. Block natural drainage lines. Fill over existing vegetation and topsoil. Include stumps, trees, vegetation, topsoil, boulders, building rubble etc in fill.
ROCK OUTCROPS & BOULDERS	Remove or stabilise boulders which may have unacceptable risk. Support rock faces where necessary.	Disturb or undercut detached blocks or boulders.
RETAINING WALLS	Engineer design to resist applied soil and water forces. Found on rock where practicable. Provide subsurface drainage within wall backfill and surface drainage on slope above. Construct wall as soon as possible after cut/fill operation.	Construct a structurally inadequate wall such as sandstone flagging, brick or unreinforced blockwork. Lack of subsurface drains and weepholes.
FOOTINGS	Found within rock where practicable. Use rows of piers or strip footings oriented up and down slope. Design for lateral creep pressures if necessary. Backfill footing excavations to exclude ingress of surface water.	Found on topsoil, loose fill, detached boulders or undercut cliffs.
SWIMMING POOLS	Engineer designed. Support on piers to rock where practicable. Provide with under-drainage and gravity drain outlet where practicable. Design for high soil pressures which may develop on uphill side whilst there may be little or no lateral support on downhill side.	
DRAINAGE		
SURFACE	Provide at tops of cut and fill slopes. Discharge to street drainage or natural water courses. Provide general falls to prevent blockage by siltation and incorporate silt traps. Line to minimise infiltration and make flexible where possible. Special structures to dissipate energy at changes of slope and/or direction.	Discharge at top of fills and cuts. Allow water to pond on bench areas.
SUBSURFACE	Provide filter around subsurface drain. Provide drain behind retaining walls. Use flexible pipelines with access for maintenance. Prevent inflow of surface water.	Discharge roof runoff into absorption trenches.
SEPTIC & SULLAGE	Usually requires pump-out or mains sewer systems; absorption trenches may be possible in some areas if risk is acceptable. Storage tanks should be water-tight and adequately founded.	Discharge sullage directly onto and into slopes. Use absorption trenches without consideration of landslide risk.
EROSION CONTROL & LANDSCAPING	Control erosion as this may lead to instability. Revegetate cleared area.	Failure to observe earthworks and drainage recommendations when landscaping.
DRAWINGS AND SITE VISITS DURING CONSTRUCTION		
DRAWINGS	Building Application drawings should be viewed by geotechnical consultant	
SITE VISITS	Site Visits by consultant may be appropriate during construction/	
INSPECTION AND MAINTENANCE BY OWNER		
OWNER'S RESPONSIBILITY	Clean drainage systems; repair broken joints in drains and leaks in supply pipes. Where structural distress is evident see advice. If seepage observed, determine causes or seek advice on consequences.	

PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE



Appendix F

Flora and Fauna Report (1) Revised Flora and Fauna Report (2)



**ECOLOGICAL ASSESSMENT OF PROPOSED SUBDIVISION
(LOT 300 – C.T. 167726-300), QUARANTINE ROAD
(TECHNO PARK), YOUNGTOWN, TASMANIA**



**Environmental Consulting Options Tasmania (ECOtas) for
Miranda (Trufferie) Pastoral Co.**

16 February 2015

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AUTHORSHIP

Field assessment: Mark Wapstra

Report production: Mark Wapstra

Habitat and vegetation mapping: Mark Wapstra

Base data for mapping: TheList, TasMap, Woolcott Surveys

GIS mapping: Mark Wapstra

Digital and aerial photography: Mark Wapstra, GoogleEarth, TheList

ACKNOWLEDGEMENTS

Graeme Walkem provided background information and on-site guidance on the proposed subdivision design.

COVER ILLUSTRATION

View across through open grassy remnant eucalypt woodland; insets: LHS – *Arthropodium milleflorum* (chocolate lily); RHS – *Hypoxis vaginata* (sheathing yellowstar), two “threatened” plants present in the study area.

Please note: the blank pages in this document are deliberate to facilitate double-sided printing.

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SUMMARY

General

Miranda (Trufferie) Pastoral Co. engaged Environmental Consulting Options Tasmania (ECOtas) to undertake an ecological assessment of private property at the Techno Park site, Quarantine Road (identified as the "balance lot" of previous subdivisions – Lot 300: C.T. 167726-300), Youngtown, primarily to facilitate further land use planning through Launceston City Council planning procedures.

The study area was assessed on 16 October 2013 and 29 January 2015 by Mark Wapstra.

Summary of key findings

Non-priority flora (e.g. species of biogeographic significance)

- No species of high conservation significance detected – no special management actions required.

Non-priority fauna (e.g. species of biogeographic significance)

- No species of high conservation significance detected – no special management actions required.

Threatened flora

- No plant species, listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, were detected within the study area – no special management actions are required.
- Two plant species, listed as threatened on the Tasmanian *Threatened Species Protection Act 1995*, were detected within the study area: *Hypoxis vaginata* var. *vaginata* (sheathing yellowstar) and *Arthropodium strictum* (chocolate lily) are both localised – no special management actions are considered warranted, although a permit to "take" under the Act may be required if sites will be disturbed.

Threatened fauna

- Potential habitat is present for the eastern barred bandicoot but field survey did not indicate actual presence of this species (pasture understorey is very dense) – no special management actions are required.

Vegetation types

- The study area supports one TASVEG mapping unit:
 - "*Eucalyptus amygdalina* forest and woodland on dolerite" (TASVEG code: DAD).
- DAD is not classified as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002* or on schedules of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* – no special management actions are required (especially considering the ecological condition of the vegetation i.e. effectively "pasture").

Weeds

- Three species, classified as "declared weeds" within the meaning of the Tasmanian *Weed Management Act 1999*, were detected from the title area, as follows:
 - *Rubus anglocandicans* (blackberry) – localised dense patches and scattered small clumps;

- *Ulex europaeus* (gorse) – localised patches and occasional individuals; and
- *Cytisus scoparius* (english broom) – localised to one small area.
- Several additional plant species, not formally classified as “declared weeds” but considered as “environmental weeds”, were detected from the title area (all with scattered to locally dense infestations), as follows:
 - *Rosa rubiginosa* (sweet briar);
 - *Crataegus monogyna* (hawthorn);
 - *Hedera helix* (ivy);
 - *Acacia retinodes* (hills wirilda);
 - *Cotoneaster glaucophyllus* var. *serotinus* (largeleaf cotoneaster); and
 - *Cotoneaster franchetii* (grey cotoneaster).
- The extent of weeds is not such that a complex and/or formal weed management plan is considered warranted because development of a subdivision with associated infrastructure such as roads will effectively eliminate some of the patches of weeds, and owner occupation will result in a cessation of “over the fence” dumping of garden waste and removal of in-lot infestations of prickly weeds.
- In the short-term (i.e. until development occurs), leaving the weeds “as is” will not result in a worsening of the infestation and may actually provide protective habitat for birds and native mammals.
- In the longer term, an Environmental Site Management Plan is provided at Appendix E to guide future management.

Plant and animal disease

- No evidence of plant disease (*Phytophthora cinnamomi*, rootrot fungus; myrtle wilt; myrtle rust) was detected – no special management actions are required.

Individual trees

- At the time of initial assessment and reporting, no particular ecological significance was accorded to the isolated remnant trees within the title area and no special management actions were recommended.
- Subsequent to the initial assessment, some trees have been felled as part of the preparation of the building envelopes. The removal of these trees has not resulted in a significant deleterious impact on biodiversity values associated with the title area. In recognition of the loss of these trees, some re-planting has already occurred.
- It is clear, however, that the health of many of the remaining trees within the proposed titles, including some still located close to likely house sites, is very poor and that several of the trees have a dangerous downslope lean. Recognising that some of these trees will require removal for protection of residents and infrastructure, a longer term Environmental Site Management Plan is provided at Appendix E to guide replacement plantings of canopy and understorey species.

Recommendations

The study area proposed for subdivision and eventual residential occupation under the provisions of the existing planning scheme supports “pasture under remnant eucalypts” subject to long-term grazing. The ecological condition of the site is considered very low.

No formal referral to the relevant Commonwealth government agency under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is considered warranted.

No formal referral to the relevant State government agency under the provisions of the Tasmanian *Threatened Species Protection Act 1995* is considered warranted, unless known sites of threatened flora will be affected by proposed works. It is recommended that the applicant check the conservation status of these species closely to the time of application (because at the time of writing, at least *Arthropodium strictum* has been formally recommended for removal from the Act). Where necessary, apply for a permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995*, and apply any relevant permit conditions (noting that none are recommended under the present report), related to the disturbance of threatened flora, if sites supporting such species will be affected by the proposed works.

No specific management conditions are recommended under the provisions of the planning application but an Environmental Site Management Plan is provided to guide future weed management and revegetation activities.

PURPOSE, SCOPE, LIMITATIONS AND QUALIFICATIONS OF THE SURVEY

Purpose

Miranda (Trufferie) Pastoral Co. engaged Environmental Consulting Options Tasmania (ECOtas) to undertake an ecological assessment of private property at the Techno Park site, Quarantine Road (identified as the "balance lot" of previous subdivisions – Lot 300: C.T. 167726-300), Youngtown, primarily to facilitate further land use planning through Launceston City Council planning procedures.

Scope

This report relates to:

- flora and fauna species of conservation significance, including a discussion of listed threatened species potentially present, and other species of conservation significance/interest;
- vegetation types (forest and non-forest, native and exotic) present, including a discussion of the distribution, condition, extent, composition and conservation significance of each community;
- plant and animal disease management issues;
- weed management issues; and
- a discussion of some of the policy and legislative implications of the identified ecological values.

This report follows, in a general sense, the government-produced *Guidelines for Natural Values Assessments* (DPIPWE 2009) in anticipation that the report (or extracts of it) may be used as part of various approval processes that may be required for the development proposal on the site. The assessment also complies, in a general sense, with the Tasmanian EPA's *Environmental Effects Report* requirements. The report format will also be applicable to other assessment protocols as required the Commonwealth Department of the Environment (for any referral/approval that may be required under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*).

The report also specifically addresses further information usually requested by local government for developments on titles where particular environmental values need to be considered under the relevant planning scheme.

Limitations

The ecological assessment was undertaken on 16 October 2013 with a follow-up assessment on 29 January 2015. Many plant species have ephemeral or seasonal growth or flowering habits, or patchy distributions (at varying scales), and it is possible that some species were not recorded for this reason. However, every effort was made to sample the range of habitats present in the survey area to maximise the opportunity of recording the majority of species present (particular those of conservation significance). Late spring and into summer is usually regarded as the most suitable period to undertake the majority of botanical assessments (although this season is particularly good for spring-flowering species, including many threatened species such as orchids, with an

“early” season in progress due to good winter rains and warming conditions). While some species have more restricted flowering periods, a discussion of the potential for the site to support these is presented. It is noted that the survey coincided with the peak flowering of many threatened plants in nearby council-managed reserves, which were checked by the author on 15 & 16 October 2013 prior to the initial site survey.

The survey was also limited to vascular species: species of mosses, lichens and liverworts were not recorded. However, a consideration is made of species (vascular and non-vascular) likely to be present (based on habitat information and database records) and reasons presented for their apparent absence.

Surveys for threatened fauna were practically limited to an examination of “potential habitat” (i.e. comparison of on-site habitat features to habitat descriptions for threatened fauna), and detection of tracks, scats and other signs.

Qualifications

Except where otherwise stated, the opinions and interpretations of legislation and policy expressed in this report are made by the author and do not necessarily reflect those of the relevant agency. The client should confirm management prescriptions with the relevant agency before acting on the content of this report. In this case, the values identified from the title area should be able to be dealt with adequately through local government planning procedures without the need for more complex and higher government approvals.

Permit

Any plant material was collected under DPIPW permit TFL 13066 (in the name of Mark Wapstra). Relevant data will be entered into DPIPW’s *Natural Values Atlas* database by the author. Some plant material may be lodged at the Tasmanian Herbarium by the author.

THE STUDY AREA

The study area comprises private land, centred on 514475mE 5408150mN (GDA 94; TASMAR Prospect 5040), southwest of the existing Techno Park complex (Figures 1 & 2). The study area comprises the far western portion of the subject title identified as the “balance lot” of previous subdivisions (Lot 300: C.T. 167726-300).

The study area comprises gentle to moderately sloping land that is generally east to north-east facing, looking down over a broad grassy valley. The area has a long history of stock grazing and the entire study area comprises open eucalypt woodland over “pasture”. While aerial imagery indicates a “forest” cover, site assessment clearly indicated a “woodland” canopy structure over an almost purely pasture grass understorey with occasional weed patches. In effect, this part of the title area is managed as grazing land – this land use has implications for vegetation classification (see later sections of report).

Elevation of the study area ranges from 70-95 m a.s.l.

Older geology mapping maps the entire study area and large portions of surrounding areas as Tertiary (Cainozoic)-age “dominantly non-marine sequences of gravel, sand, silt, clay and regolith” (geocode: Ts). This mapping appears to be superseded by more recent geological mapping shown on TheList, which indicates that the upper slopes are Jurassic-age “dolerite (tholeiitic) with locally

developed granophyre" (geocode: Jd), the midslopes Jurassic-age "inferred dolerite beneath soil or Cainozoic deposits" (geocode: Jdi), the lower slopes Tertiary-age "poorly consolidated clay, silt, and clayey labile sand with rare gravel and lignite; some iron oxide-cemented layers and concretions; some leaf fossils" (geocode: Tsa), with pockets of Quaternary-age "talus consisting dominantly of dolerite boulders" (geocode: Qptd). The substrate strongly influences vegetation classification in this part of the State, and has relevance at this site. Geological mapping has influenced the existing vegetation mapping (see **RESULTS Vegetation types Comments on existing TASVEG mapping**), which is inaccurate for the broader area. Site assessment indicated a very strong dolerite-dolerite talus influence on the soils and vegetation.

Land tenure and other categorisations of the study area are as follows:

- private property identified as Lot 300 – C.T. 167726-300 (see Figures 2 & 3 for details);
- City of Launceston municipality, zoned as "Open Space" with "Priority Habitat" overlay;
- Northern Midlands Bioregion (according to the 5/6.1 boundaries used by most government agencies); and
- Northern Natural Resource Management (NRM) region.

The study area is bounded entirely by other private titles, as follows:

- north: part of the greater Techno Park complex;
- south: occupied large residential lots;
- east: recently developed residential subdivision; and
- west: occupied residential lots (Lorne Street).

THE PROPOSAL

The proposal is to subdivide the section of the title identified as the "balance lot" of previous subdivisions into two lots (Lot 49 ± 1 ha; Lot 50 ± 1.3 ha; Public Open Space to north of Lot 49), accessed from the end of a cul-de-sac (position shown in Figure 3 – already installed).

METHODS

Nomenclature

All grid references in this report are in GDA94, except where otherwise stated.

Vascular species nomenclature follows de Salas & Baker (2014) for scientific names and Wapstra et al. (2005+) for common names. Fauna species scientific and common names follow the listings in the cited *Natural Values Atlas* reports (DPIPWE 2013a).

Vegetation classification follows TASVEG, as described by Kitchener & Harris (2013).

Preliminary investigation

Available sources of threatened flora and fauna records, vegetation mapping and other potential environmental values were interrogated (note that database reports were not re-run in 2015 but

the base data was checked on the author's GIS for new records and species' listings). These sources include:

- Tasmanian Department of Primary Industries, Parks, Water & Environment's *Natural Values Atlas Report No. 59118 ECOtas_Walkem_QuarantineRoad* for the approximate project area buffered by 5 km, dated 8 October 2013 (DPIPWE 2013a) – Appendix F;
- Forest Practices Authority's *Biodiversity Values Database* report, specifically the species' information for grid reference centroid 514529mE 5408166mN buffered by 2 km, hyperlinked species' profiles and predicted range boundary maps, dated 21 October 2013 (FPA 2013) – Appendix G;
- Commonwealth the then Department of Sustainability, Environment, Water, Population & Communities' *Protected Matters Search Tool Report* for -41.47821 147.1739 buffered by 5 km, dated 21 October 2013 (CofA 2013) – Appendix H;
- the TASVEG 3.0 vegetation coverage (as available through a GIS coverage – Figure 4);
- other sources listed in tables and text as indicated.

Botanical survey

The study area was assessed on 16 October 2013 and 29 January 2015 by Mark Wapstra (ECOtas). The survey aimed to assess the range of habitat types present in the study area (at the broad scale e.g. vegetation type, altitude variation, and at the finer scale e.g. microhabitats such as open areas, tracks, poorly-drained patches, disturbed sites, etc.). In this case, the study area comprises open grazed pasture with scattered trees such that survey was not restricted in any manner, and the survey area was virtually homogenous.

Reference to topographic maps (Prospect 5040 TASMMap 1:25000 scale), aerial photography (GoogleEarth, TheList) and vegetation maps (TASVEG as per the cited *Natural Values Atlas* report) established the approximate range and distribution of topographic and habitat variation present in the study area.

Where threatened flora and declared weeds were detected, hand-held GPS (Garmin Oregon 650) was used to locate the position and extent of the populations. Counts were made of individuals in each patch, where practical.

Detailed plots recording all vascular species, vegetation structure and site characteristics were undertaken in each of the representative native vegetation types. Plot data and species list can be supplied on request.

Zoological survey

Potential habitat for threatened fauna (as listed on databases referred to above) was assessed by reference to the vegetation types and site characteristics present. The presence of mammals, birds, frogs and reptiles was determined by opportunistic discovery (e.g. sightings and calls) during the main botanical assessment, and evidence such as tracks, scats and other signs.

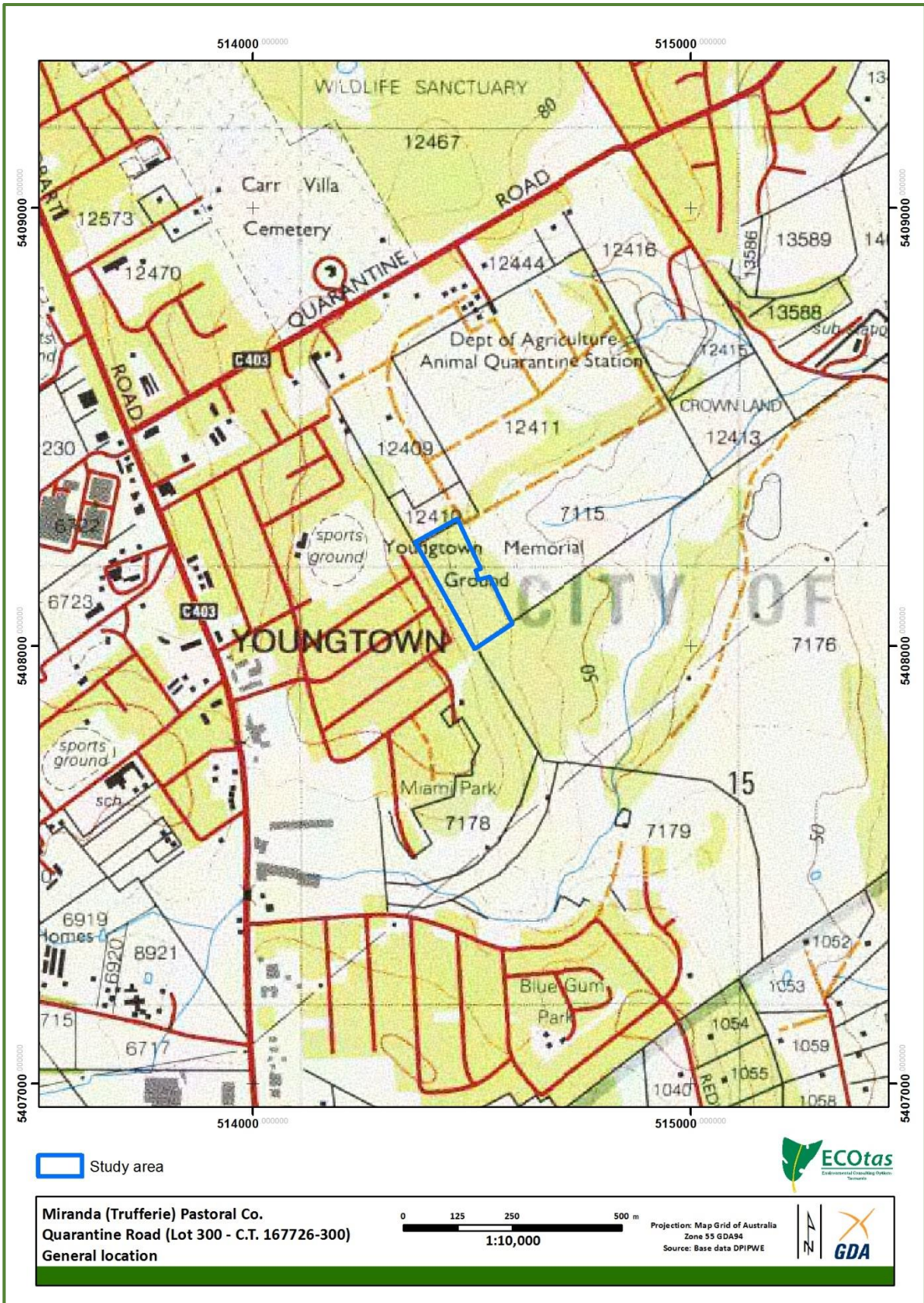


Figure 1. General location of the study area



Figure 2. Detailed location of study area showing current vegetation cover (area to east has now been developed)

RESULTS

Vegetation types

Comments on TASVEG mapping

This section, which comments on the existing TASVEG 3.0 mapping for the study area, is included to highlight the differences between existing mapping and the more recent mapping from the present study to ensure that any parties assessing land use proposals (via this report) do not rely on existing mapping. Note that TASVEG mapping, which was mainly a desktop mapping exercise based on aerial photography, is often substantially different to ground-truthed vegetation mapping, especially at a local scale.

TASVEG (Figure 4) maps the entire study area as:

- “*Eucalyptus amygdalina* inland forest and woodland on Cainozoic deposits” (TASVEG code: DAZ).

This mapping is inaccurate because DAZ is restricted to Cainozoic sedimentary deposits and never occurs on Jurassic dolerite or dolerite talus, which is the clear substrate of the grassed slopes. The classification as a TASVEG forest or woodland mapping unit is also problematic because the site has been clearly managed as grazing land, with the eucalypt canopy merely a remnant of the original denser canopy. In a very technical sense, classification as a native forest mapping unit is possible (see section below).

Vegetation types recorded as part of the present study

Vegetation types have been classified according to Kitchener & Harris (2013) *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation (Second Edition)*. Conservation priorities alluded to in Table 1 and discussed in the text below are taken from Schedule 3A of the *Nature Conservation Act 2002* (DPIPWE 2013b). Table 1 provides information on the vegetation type identified with notes provided on condition. Figure 5 indicates the revised mapping of the vegetation within the study area.

Plant species

General observations

A total of 89 vascular plant species were recorded from the study area, comprising 58 dicotyledons (including 8 native, 1 endemic and 49 exotic species); 31 monocotyledons (including 8 native and 23 exotic species); 0 pteridophytes and 0 gymnosperms. Additional surveys at different times of the year may detect additional short-lived herbs and grasses, although such surveys are not considered warranted because any additional species detected are not likely to have a high priority for conservation management.

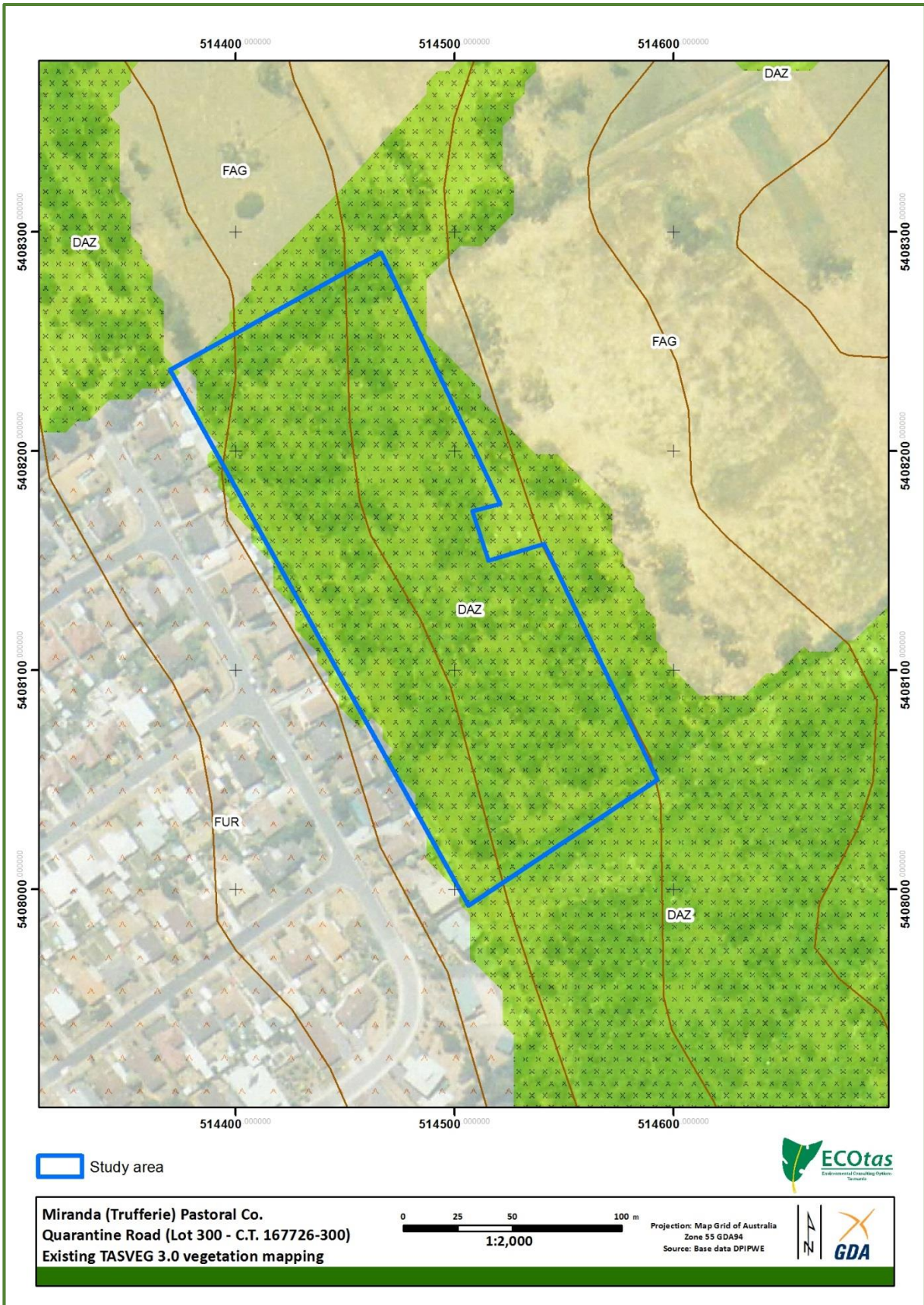


Figure 4. Existing TASVEG mapping of the study area (refer to text for description of the vegetation codes)



Figure 5. Revised vegetation mapping of the study area (refer to text for description of the vegetation codes)

Table 1. Vegetation mapping units present in study area

[conservation priorities: TASVEG – as per Schedule 3A of the Tasmanian *Nature Conservation Act 2002*, using units described by Kitchener & Harris (2013), relating to TASVEG mapping units only; EPBCA – as per the listing of ecological communities on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, relating to communities as described under that Act, but with equivalencies to TASVEG units; area of each vegetation type is approximate only]

TASVEG name and code (Kitchener & Harris 2013)	Conservation priority TASVEG EPBCA	Area (ha)	Comments
Dry eucalypt forest and woodland			
<i>Eucalyptus amygdalina</i> forest and woodland on dolerite (DAD)	Not threatened Not threatened	2.90	<p>DAD occupies the entire study area. Canopy gaps have not been mapped separately as “agricultural land” (TASVEG code: FAG) because they are small and mapping at this scale impractical. Similarly, patches dominated by woody and shrubby weeds have not been mapped as “weed infestations” (TASVEG code: FWU) because most occurrences are small and a sparse eucalypt canopy remains.</p> <p>As described by Kitchener & Harris (2013), DAD is a forest to woodland vegetation type with a multi-aged canopy of eucalypts over a variably layered understorey of secondary tall shrubs (most notably wattles) and understorey shrubs (often heath and legume species) and a variably grassy-sedgy ground layer. As intended by TASVEG 3.0, DAD does not comprise scattered remnant trees of a single age over dense swards of mainly pasture grasses and weeds utilised for stock grazing. In effect, such “forest” is better regarded as “pasture under scattered trees”. Unfortunately, despite extensive areas of such vegetation in Tasmania, an appropriate classification is unavailable under TASVEG 3.0 and such patches tend to get mapped as the original/remnant forest type, in this case, DAD. Where this classification leads to a perverse outcome (e.g. mandatory protection of a vegetation type because of its classification), further discussion is warranted. However, in this case, DAD has a low priority for conservation management at a local, regional, and Statewide level such that the classification of this patch as DAD (rather than FAG) has no significant management implications. The “Priority Habitat” overlay under the local planning scheme is discussed elsewhere in the report.</p> <p>From the above discussion it is clear that the ecological condition of the “DAD” is poor and no special management prescriptions are warranted due to its classification. It is noted that two threatened flora species are present – their status is discussed under <u>Priority species recorded from the study area</u>.</p>

Priority species recorded from the study area

No plant species, listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, were detected from within the study area.

Two plant species, listed as threatened on the Tasmanian *Threatened Species Protection Act 1995*, were detected from within the study area. *Hypoxis vaginata* var. *vaginata* (sheathing yellowstar) and *Arthropodium strictum* (chocolate lily) were both scattered and localised (Figure 6, Table 2, Plates 1-4). The presence of these species can often be indicative of other similar “grassy woodland” threatened flora species but in this case the intensity of grazing and dense swards of pasture grass has probably resulted in their elimination (if ever present). Both *Hypoxis vaginata* and *Arthropodium strictum* are renowned for their ability to persist and/or colonise very heavily

disturbed sites, including roadside verges, frequently slashed and mown “nature strips” in suburban areas and intensively grazed and managed (including cultivated, fertilised and sown) pasture.

Both species are listed as “rare” (Schedule 5) on the Tasmanian *Threatened Species Protection Act 1995* but are widely regarded as requiring a review of their conservation status. There are some minor taxonomic issues associated with *Hypoxis vaginata* (mainly as compared to mainland Australian populations) but it is a widespread and locally abundant species, often occurring in the 100s of 1000s in winter-wet pastures and woodlands. *Arthropodium strictum* is present in virtually every remnant bushland reserve in the greater Launceston area (and numerous additional sites around Tasmania) and usually occurs in locally very high numbers (100s to 1000s), and has been formally recommended for removal from the Act (pending ministerial approval only).

In my opinion, both species should be removed from schedules of the Act but the process of review is usually time-consuming and the result unpredictable. As such, it is appropriate to treat the species as “threatened” for the purposes of land use planning. In this case, based on the ecological condition of the land in question, the locally low population numbers of both species at this site and the context of the site (i.e. these populations do not represent range extensions or infillings, merely adding yet another population to the database record), no special prescriptions are considered warranted for a land subdivision.

The site assessment of 29 January 2015 indicated that the building envelope development works that have occurred to date have avoided the previously identified sites for threatened flora. On the reasonable assumption that *Arthropodium strictum* will be removed from the Act, further works are highly unlikely to disturb in any material manner populations of threatened flora.

If further works occur prior to the species being delisted (if such an event occurs), a permit to “take” under Section 51 of the Act will be required, if specific sites (identified in Table 2, Figure 5) are anticipated to be disturbed. If such works occur after a delisting, no permit will be required. The implication of this conclusion is that the presence of these species should not constrain land use decision-making under the planning scheme.

Table 2. Details of threatened flora recorded from study area [site = as per numbered points in Figure 6]

Site	Species	Easting	Northing	Location	Abundance & extent	Date	Reporter
1	<i>Arthropodium strictum</i>	514515	5408078	southern end, middle	x 1	16 October 2013	M. Wapstra
2	<i>Arthropodium strictum</i>	514527	5408081	southern end, middle	x 6 3 x 3 m	16 October 2013	M. Wapstra
4	<i>Arthropodium strictum</i>	514408	5408201	northwest of study area (incl. what was no. 3)	x 1	16 October 2013	M. Wapstra
5	<i>Arthropodium strictum</i>	514471	5408104	central west of study area	x 1	16 October 2013	M. Wapstra
6	<i>Hypoxis vaginata</i> var. <i>vaginata</i>	514532	5408031	south-eastern section	x 5 (flowers) 1 x 1 m	16 October 2013	M. Wapstra
7	<i>Hypoxis vaginata</i> var. <i>vaginata</i>	514559	5408045	south-eastern section	c. 50 10 x 5 m	16 October 2013	M. Wapstra



Plate 1. Habitat of *Arthropodium strictum*

Plate 2. *Arthropodium strictum* in flower



Plate 3. Habitat of *Hypoxis vaginata*

Plate 4. *Hypoxis vaginata* in flower



Figure 6. Distribution of threatened flora within the study area

Comments on priority flora recorded from databases

Table 3 provides a listing of priority flora from within 500 m and 5000 m of the study area (nominal buffer widths usually used to discuss the potential of a particular study area to support various species listed in databases), with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded. Some species not listed on databases but considered by the author to have potential to occur in the survey area are also discussed.

Note that the field assessment was not restricted to the species listed in Table 3 but considered any threatened flora with the potential to be present. While the database analysis utilises a nominal buffer of 5000 m, the author's own experience of the greater Launceston-Tamar area, combined with database interrogation, meant that the specific potential for numerous other species previously recorded from the wider area were taken into account.

Table 3. Priority flora records from within 500 m and 5000 m of boundary of study area

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). Information below is sourced from the DPIPWE's *Natural Values Atlas* (DPIPWE 2013a) and other sources where indicated. Habitat descriptions are taken from TSS (2003+), except where otherwise indicated.

Species	Status TSPA EPBCA	Observations	Comments
Records within the study area			
No records shown on databases from within the study area but see Table 2			
Records within 500 m of study area			
<i>Brunonia australis</i> (blue pincushion)	r -	4 records [80 additional records within 5000 m]	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses). This species was not detected (easily detected in Launceston bushland reserves at the time of both the 2013 and 2015 site assessments).
Records within 5000 m of study area, and not considered in above section			
<i>Alternanthera denticulata</i> (lesser joyweed)	e -	3 records	Potential habitat (flood-prone river beds and similar poorly-drained sites) absent.
<i>Aphelia gracilis</i> (slender fanwort)	r -	1 record	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Aphelia pumilio</i> (dwarf fanwort)	r -	3 records	As above.
<i>Arthropodium strictum</i> (chocolate lily)	r -	90 records	Species detected – see Priority species recorded from study area
<i>Asperula subsimplex</i> (water woodruff)	r -	1 record	Potential habitat (poorly-drained sections of native grassland and grassy woodland) absent.
<i>Bolboschoenus caldwellii</i> (sea clubsedge)	r -	9 records	Potential habitat (shallow, standing, sometimes brackish water) absent.

Species	Status TSPA EPBCA	Observations	Comments
<i>Boronia gunnii</i> (river boronia)	v VU	2 records	Potential habitat (flood-prone rocky river beds e.g. Cataract Gorge) absent.
<i>Caesia calliantha</i> (blue grasslily)	r -	48 records	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Caladenia filamentosa</i> (daddy longlegs)	r -	1 record	Potential habitat (usually heathland and heathy woodland) absent.
<i>Caladenia patersonii</i> (patersons spider-orchid)	r -	3 records	As above.
<i>Carex longebrachiata</i> (drooping sedge)	r -	3 records	This is a species of virtually any environment that has moist areas present (from drainage lines in paddocks to roadside ditches, usually on broad lowland flats). Potential habitat is marginally present but the species was not detected.
<i>Carex tasmanica</i> (curly sedge)	- VU	4 records	As above.
<i>Corunastylis nuda</i> (tiny midge-orchid)	r -	1 record	Potential habitat (variable but mainly forest and woodland) absent.
<i>Cryptandra amara</i> (pretty pearlflower)	e -	2 records	Potential habitat (native grasslands and grassy shrubland, often associated with basalt or dolerite outcrops on highly insolated sites) absent.
<i>Cynoglossum australe</i> (coast houndstongue)	r -	5 records	Potential habitat is usually stabilised dunes and backbeaches, but also rocky headlands and inland lowland sites and rocky slopes. The species can occur in "paddocks" but usually where there is a population in less disturbed habitat immediately adjacent. The study area does not present as suitable habitat (pasture too well-developed) and the species was not detected.
<i>Damasonium minus</i> (starfruit)	r -	1 record	Potential habitat (still to slow-flowing freshwater bodies) absent.
<i>Diuris palustris</i> (swamp doubletail)	e -	2 records	Potential habitat (swampy areas, low-lying damp grasslands and grassy woodlands) absent.
<i>Epacris exserta</i> (south esk heath)	e EN	8 records	Potential habitat (flood-prone rocky river beds and banks e.g. Cataract Gorge, sections of the South Esk River) absent.
<i>Epilobium pallidiflorum</i> (showy willowherb)	r -	1 record	Potential habitat (still to slow-flowing freshwater bodies) absent.
<i>Euphrasia scabra</i> (yellow eyebright)	e -	1 record	Potential habitat ("damp" heathy woodland, usually on dolerite) absent.
<i>Haloragis heterophylla</i> (variable raspwort)	r -	1 record	Potential habitat (poorly-drained sites such as ditches, outflows of dams, grassy drainage depressions subject to ephemeral flow) absent.
<i>Hypoxis vaginata</i> (sheathing yellowstar)	r -	26 records [as var. <i>vaginata</i> and var. <i>brevistigmata</i>]	Species (as var. <i>vaginata</i>) detected – see <u>Priority species recorded from study area</u>

Species	Status TSPA EPBCA	Observations	Comments
<i>Juncus amabilis</i> (gentle rush)	r -	1 record	Potential habitat (poorly-drained sites such as ditches, outflows of dams, grassy drainage depressions subject to ephemeral flow) absent. This species was not detected but other species of <i>Juncus</i> were present (typical pioneer disturbance-philes).
<i>Lepidium pseudotasmanicum</i> (shade peppergrass)	r -	1 record	Potential habitat (usually on disturbed sites such as around buildings and under pine trees and otherwise grassy areas, sometimes including around bases of remnant "paddock trees") marginally present. This species was not detected.
<i>Persicaria decipiens</i> (slender waterpepper)	v -	4 records	Potential habitat (flood-prone river beds and similar poorly-drained sites) absent.
<i>Poa mollis</i> (soft tussockgrass)	r -	2 records	Potential habitat (sheoak and eucalypt grassy woodland, usually associated with massive rock outcrops or steep rocky slopes on dolerite) absent.
<i>Prostanthera rotundifolia</i> (roundleaf mintbush)	v -	3 records	Potential habitat (sheoak and eucalypt grassy woodland, usually associated with massive rock outcrops or steep rocky slopes on dolerite) absent.
<i>Pterostylis grandiflora</i> (superb greenhood)	r -	2 records	Potential habitat (shaded "damp" forests) absent.
<i>Pterostylis ziegeleri</i> (grassland greenhood)	v VU	3 records	Potential habitat (native grasslands and grassy woodlands on fertile substrates) absent (at least completely atypical of all known sites).
<i>Pultenaea prostrata</i> (silky bushpea)	v -	2 records	Potential habitat (heathy to grassy forests, woodlands and native grasslands) absent.
<i>Rytidosperma indutum</i> (tall wallabygrass)	r -	5 records	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Senecio macrocarpus</i> (largefruit fireweed)	x VU	1 record	This species is considered extinct in Tasmania. Presume habitat (flood plains of major river systems in lowland areas) absent.
<i>Senecio squarrosus</i> (leafy groundsel)	r -	17 records	This species has been detected at numerous sites throughout Tasmania in a range of forest and non-forest habitats. Potential habitat is probably absent. The species was not detected.
<i>Velleia paradoxa</i> (spur velleia)	v -	4 records	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Veronica plebeia</i> (trailing speedwell)	r -	1 record	Potential habitat (variable but usually grassy to shrubby eucalypt forests, often very rocky sites) absent.
<i>Westringia angustifolia</i> (narrowleaf westringia)	r -	1 record	Potential habitat (usually mid-elevation rocky slopes and riparian area, almost always on dolerite) absent.
Additional species from Protected Matters Report (CofA 2013), and not considered in above sections			
<i>Acacia axillaris</i> (midlands wattle)	v VU	Species or species' habitat likely to occur within area	Potential habitat (flood-prone rocky river beds and banks, adjacent rocky slopes and broad "damp" woodland flats) absent.

Species	Status TSPA EPBCA	Observations	Comments
<i>Barbarea australis</i> (riverbed wintercress)	e CR	Species or species' habitat likely to occur within area	Potential habitat (flood-prone rocky river beds and banks) absent.
<i>Boronia hippopala</i> (velvet boronia)	v VU	Species or species' habitat may occur within area	The listing of this species is erroneous as it is known to be restricted to the Eastern Highlands as at Dukes Marshes, Elizabeth River, etc.
<i>Caladenia caudata</i> (tailed spider-orchid)	v VU	Species or species' habitat known to occur within area	Potential habitat (heathy to grassy woodland, forest and heathland, usually on insolated sites) absent.
<i>Colobanthus curtisiae</i> (grassland cupflower)	v EN	Species or species' habitat likely to occur within area	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Dianella amoena</i> (grassland flaxlily)	r EN	Species or species' habitat likely to occur within area	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Diuris lanceolata</i> (large golden moths)	e E	Species or species' habitat likely to occur within area	The listing of this species is erroneous as it is known to be restricted to the northwest/west coast of Tasmania.
<i>Glycine latrobeana</i> (clover glycine)	v VU	Species or species' habitat likely to occur within area	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Lepidium hyssopifolium</i> (shade peppercress)	e EN	Species or species' habitat likely to occur within area	Potential habitat (usually on disturbed sites such as around buildings and under pine trees and otherwise grassy areas, sometimes including around bases of remnant "paddock trees") marginally present. This species was not detected.
<i>Prasophyllum apoxychilum</i> (tapered leek-orchid)	e EN	Species or species' habitat may occur within area	Potential habitat (heathy to shrubby forest and woodland, usually on dolerite but sometimes granite) absent.
<i>Pterostylis commutata</i> (midlands greenhood)	e CR	Species or species' habitat may occur within area	Potential habitat (native grasslands, usually on broad valley floors) absent.
<i>Xanthorrhoea arenaria</i> (sand grasstree)	v VU	Species or species' habitat may occur within area	Potential habitat (near-coastal heathland and heathy woodland, usually on deep sands) absent.
Additional species considered by the author with potential to be present but not shown in databases			
<i>Asperula scoparia</i> subsp. <i>scoparia</i> (prickly woodruff)	r -	no database records	Potential habitat (grassy woodlands) present (but probably too densely dominated by pasture grasses).
<i>Austrostipa nodosa</i> (knotty speargrass)	r -	no database records	As above.
<i>Austrostipa scabra</i> (rough speargrass)	r -	no database records	As above.

Fauna species

General observations

Appendix C provides an annotated list of vertebrate species detected during the course of assessment, which included 9 species comprising 2 mammal and 7 bird species. The detection of these species was opportunistic and more targeted surveys are likely to detect a greater diversity of species. However, such surveys are not considered warranted due to the localised extent of the any proposed disturbance footprints.

Priority fauna – sightings

No fauna species, listed as threatened on the Tasmanian *Threatened Species Protection Act 1995* or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, were recorded from the study area. Potential habitat for one species was recorded (see Table 4 for more details).

Comments on priority fauna recorded from databases

Table 4 provides a listing of priority fauna recorded from within 500 m and 5000 m (nominal buffer widths usually used to discuss the potential of a particular study area to support various species listed in databases) of the study area, with comments on whether potential habitat is present for the species, and possible reasons why a species was not recorded.

Table 4. Priority fauna records from within 500 m and 5000 m of boundary of study area

Species listed below are listed as rare (r), vulnerable (v), endangered (e), or extinct (x) on the Tasmanian *Threatened Species Protection Act 1995* (TSPA); vulnerable (VU), endangered (EN), critically endangered (CR) or extinct (EX) on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). Information below is sourced from the DPIPWE’s *Natural Values Atlas* (DPIPWE 2013a), Bryant & Jackson (1999) and FPA (2013). Note that wholly marine, pelagic and littoral species are excluded from the table below because such habitats are absent from the study area and the proposed works will not deleteriously affect such habitats.

Species	Status TSPA EPBCA	Observations	Comments
Records within the study area			
No records shown on databases from within the study area			
Records within 500 m of study area			
No records shown on databases from within 500 m of the study area			
Records and potential habitat within 5000 m of study area, and not considered in above sections			
<i>Accipiter novaehollandiae</i> (grey goshawk)	e -	no database records	Potential habitat is described as “native forest with mature elements below 600 m altitude, particularly along watercourses” (FPA 2013). These habitat elements are absent from the study area.

Species	Status TSPA EPBCA	Observations	Comments
<i>Beddomeia launcestonensis</i> (cataract gorge hydrobiid snail)	e -	no database records	Potential habitat (Cataract Gorge river system and feeder streams) absent.
<i>Botaurus poiciloptilus</i> (Australasian bittern)	- EN	3 records	Potential habitat (natural and artificial wetlands and swampy habitats) absent.
<i>Catadromus lacordairei</i> (green-lined ground beetle)	v -	no database records	Potential habitat (open, grassy/sedgy, low altitude grasslands and woodlands associated with wetlands and low-lying plains or flats adjacent to rivers/streams) (FPA 2013) absent.
<i>Ceyx azureus</i> subsp. <i>diemenensis</i> (azure kingfisher)	e EN	1 record	Potential habitat (tree-lined major river systems) absent.
<i>Aquila audax</i> subsp. <i>fleayi</i> (wedge-tailed eagle)	e EN	no known nests within 1000 m of the boundary of the study area	Potential habitat is defined as "any eucalypt trees in forest (includes remnants). Potential foraging habitat includes a wide variety of forested (including areas subject to native forest silviculture) and non-forest habitats." (FPA 2013). No nests were observed within the study area. Surrounding areas also present as unsuitable potential nesting habitat due to the forest type (low open woodland) and disturbance history (mosaic of rural and residential properties).
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i> (spotted-tailed quoll)	r VU	6 records	Potential habitat as "coastal scrub, riparian areas, rainforest, wet forest, damp forest, dry forest and blackwood swamp forest (mature and regrowth), particularly where structurally complex and steep rocky areas are present, and includes remnant patches in cleared agricultural land" (FPA 2013), habitat types technically present within the study area. No distinctive scats or den sites of this species were recorded. The study area may be used opportunistically by foraging or dispersing individuals but is unlikely to be considered as "critical" habitat. The proposed subdivision and eventual occupation of the lots would not result in a "significant impact" on the habitat of the species, as defined by the guidelines (CofA 2013) related to the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
<i>Galaxias fontanus</i> (swan galaxias)	e EN	no database records	Study area is outside the natural and translocated catchments of this species.
<i>Haliaeetus leucogaster</i> (white-bellied sea-eagle)	v -	no known nests within 1000 m of the boundary of the study area	See comments under wedge-tailed eagle.
<i>Lathamus discolor</i> (swift parrot)	e EN	10 records	Potential habitat for the swift parrot is described as "Potential breeding habitat for the Swift Parrot comprises potential foraging habitat and potential nesting habitat, and is based on definitions of foraging and nesting trees. Potential foraging habitat comprises <i>E. globulus</i> or <i>E. ovata</i> trees that are old enough to flower. For management purposes potential nesting

Species	Status TSPA EPBCA	Observations	Comments
			habitat is considered to comprise eucalypt forests that contain hollow-bearing trees" (FPA 2013). <i>Eucalyptus globulus</i> is absent from the study area, and <i>Eucalyptus ovata</i> restricted to a few scattered trees. Hollow-bearing trees are sparse and presently apparently occupied by starlings and possums and present as highly atypical of known swift parrot nest sites.
<i>Limnodynastes peronii</i> (striped marsh frog)	e -	no database records	Potential habitat (natural and artificial coastal and near-coastal wetlands, lagoons, marshes, swamps and ponds (including dams), with permanent freshwater and abundant marginal, emergent and submerged aquatic vegetation) (FPA 2013) absent.
<i>Litoria raniformis</i> (green and golden frog)	v VU	6 records	Potential habitat is "permanent and temporary waterbodies, usually with vegetation in or around them, including features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features" (FPA 2013), habitat elements absent from the study area.
<i>Haliaeetus leucogaster</i> (white-bellied sea-eagle)	v -	no known nests within 1000 m of the boundary of the study area	See comments under wedge-tailed eagle.
<i>Migas plumleyi</i> (cataract gorge trapdoor spider)	v -	no database records	Potential habitat (moss and lichen covered steep rock exposures in Cataract Gorge) absent.
<i>Oxyethira mienica</i> (ouse river caddisfly)	r -	no database records	Potential habitat (freshwater rivers and streams) absent.
<i>Pasmaditta jungermanniae</i> (cataract gorge snail)	v -	no database records	Potential habitat (intact or disturbed native vegetation with extensive exposed rock faces (usually dolerite), usually greater than 2 m high (e.g. distinct outcrops/cliffs or several large boulders), with well-developed moss and/or lichen cover on rock faces and ledges (such sites often occur in more deeply incised drainage features or steeper slopes)) (FPA 2013) absent.
<i>Perameles gunnii</i> subsp. <i>gunnii</i> (eastern barred bandicoot)	- VU	9 records	Potential habitat is "open vegetation types including woodlands and open forests with a grassy understorey, native and exotic grasslands, particularly in landscapes with a mosaic of agricultural land and remnant bushland" (FPA 2013), habitat types present within the study area. The distinctive diggings of this species were not observed (there was a lot of evidence of rabbits), however, it is likely that the area is used as foraging habitat, at least opportunistically. The proposed subdivision and eventual occupation of the lots would not result in a "significant impact" on the habitat of the species, as defined by the guidelines (CofA 2013) related to the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .

Species	Status TSPA EPBCA	Observations	Comments
<i>Prototroctes maraena</i> (Australian grayling)	v VU	1 record	This is a species of the "middle to lower reaches of coastal rivers" (FPA 2013), a habitat type that is absent.
<i>Pseudemoia pagenstecheri</i> (tussock skink)	v -	no database records	Potential habitat is "grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall tussocks are present" (FPA 2013), which is absent from the study area (species not reported from well-developed "pasture" under sparse remnant trees subject to heavy grazing).
<i>Pseudemoia rawlinsoni</i> (glossy grass skink)	r -	no database records	Potential habitat (swampy ground) absent.
<i>Sarcophilus harrisii</i> (Tasmanian devil)	e EN	48 records	Potential habitat (which is virtually any vegetation type) is present within the study area. No distinctive scats or den sites of this species were recorded. The study area may be used opportunistically by foraging or dispersing individuals but is unlikely to be considered as "critical" habitat. The proposed subdivision and eventual occupation of the lots would not result in a "significant impact" on the habitat of the species, as defined by the guidelines (CofA 2013) related to the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
<i>Thylacinus cynocephalus</i> (thylacine)	x EX	1 record	The record dates to 1969. The species is presumed extinct. No evidence of the species was noted.
<i>Tyto novaehollandiae</i> subsp. <i>castanops</i> (Tasmanian masked owl)	e VU	no database records	Potential habitat "is all areas with trees with large hollows (15 cm entrance diameter). In terms of using mapping layers, potential habitat is considered to be all areas with at least 20% mature crown cover" (FPA 2013) but is more conservatively considered to be eucalypt-dominated forest below c. 600 m elevation. Large trees with obvious large hollows are absent from the study area. It is likely that this species uses the area opportunistically for foraging as potential foraging habitat is present. The proposed subdivision and eventual occupation of the lots would not result in a "significant impact" on the habitat of the species, as defined by the guidelines (CofA 2013) related to the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
Additional species from Protected Matters Report (CofA 2013), and not considered in above sections			
<i>Apus pacificus</i> (fork-tailed swift)	Migratory Marine Species	Species or species' habitat likely to occur within area	Aerial foraging bird that rarely lands – study area presents marginal habitat only and any works in the area would not have a deleterious impact on the species.
<i>Ardea alba</i> (great egret)	Migratory Wetland/ Marine Species	Species or species' habitat known to occur within area	Potential habitat (natural and artificial wetlands and swampy habitats) absent.

Species	Status TSPA EPBCA	Observations	Comments
<i>Ardea ibis</i> (cattle egret)	Migratory Wetland/ Marine Species	Species or species' habitat likely to occur within area	Potential habitat (natural and artificial wetlands and swampy habitats) absent.
<i>Engaeus orramakunna</i> (mt arthur burrowing crayfish)	v VU	Species or species' habitat may occur within area	Study area is well outside the published geographic range of this species. No evidence of burrowing crayfish was noted within the study area.
<i>Hirundapus caudacutus</i> (white-throated needletail)	Migratory Terrestrial Species	Species or species' habitat known to occur within area	Aerial foraging bird that rarely lands – study area presents marginal habitat only and any works in the area would not have a deleterious impact on the species.
<i>Myiagra cyanoleuca</i> (satin flycatcher)	Migratory Terrestrial Species	Breeding known to occur within area	Potential habitat marginally present (species utilises a wide range of habitats but tends to be most frequent in dry open tall woodlands and forests and associated sheltered slopes/gullies). The species was not detected by sight or call during the assessment. The proposed subdivision and eventual occupation of the lots would not result in a “significant impact” on the habitat of the species, as defined by the guidelines (CofA 2013) related to the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .

Other ecological values

Weed species

The majority of plant species (73 from 89 species = 81%) recorded from the study area are considered naturalised in Tasmania and comprise ubiquitous pasture grasses and herbs, although some woody weeds are also present (Figure 7 and Appendix D).

Three species, classified as “declared weeds” within the meaning of the Tasmanian *Weed Management Act 1999*, were detected from the title area, as follows:

- *Rubus anglocandicans* (blackberry) – localised dense patches and scattered small clumps;
- *Ulex europaeus* (gorse) – localised patches and occasional individuals; and
- *Cytisus scoparius* (english broom) – localised to one small area.

Several additional plant species, not formally classified as “declared weeds” but considered as “environmental weeds”, were detected from the title area (all with scattered to locally dense infestations), as follows:

- *Rosa rubiginosa* (sweet briar);
- *Crataegus monogyna* (hawthorn);
- *Hedera helix* (ivy);
- *Acacia retinodes* (hills wirilda);
- *Cotoneaster glaucophyllus* var. *serotinus* (largeleaf cotoneaster); and
- *Cotoneaster franchetii* (grey cotoneaster).

The extent of weeds is not such that a complex and/or formal weed management plan is considered warranted because development of a subdivision with associated infrastructure such as roads will effectively eliminate some of the patches of weeds, and owner occupation will result in a cessation of “over the fence” dumping of garden waste and removal of in-lot infestations of prickly weeds. In the short-term (i.e. until development occurs), leaving the weeds “as is” will not result in a worsening of the infestation and may actually provide protective habitat for birds and native mammals. In the longer term, an Environmental Site Management Plan is provided at Appendix E to guide future management.

Rootrot pathogen, *Phytophthora cinnamomi*

According to Rudman (2005), the vegetation type recorded from the study area is not listed as particularly susceptible to the root-rot pathogen, *Phytophthora cinnamomi*. No evidence of the pathogen was noted (i.e. no dead or dying susceptible plant species). No soil sampling was undertaken (for later laboratory analysis for the pathogen). However, this part of the State is generally considered too dry to allow the pathogen to persist. As such, no special machinery hygiene prescriptions need to be considered for any major works in the area, although it is noted that the guidelines recommended in relation to minimising the risk of introducing weeds will also minimise the risk of introducing plant pathogens.

Myrtle wilt and rust

The study area does not support species of *Nothofagus* (myrtle beech) and no evidence of the pathogen was noted (i.e. no dead or dying susceptible plant species). No evidence of myrtle rust was noted. No special management prescriptions are required.

Chytrid fungus and other freshwater pathogens

Native freshwater species and habitat are under threat from freshwater pests and pathogens including *Phytophthora cinnamomi* (root rot), *Batrachochytrium dendrobatidis* (Chytrid frog disease), *Mucor amphibiorum* (platypus Mucor disease) and the freshwater algal pest *Didymosphenia geminata* (Didymo) (Allan & Gartenstein 2010). Freshwater pests and pathogens are spread to new areas when contaminated water, mud, gravel, soil and plant material or infected animals are moved between sites. Contaminated materials and animals are commonly transported on boots, equipment, vehicles tyres and during road construction and maintenance activities. Once a pest pathogen is present in a water system it is usually impossible to eradicate.

The manual *Keeping it Clean - A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens* (Allan & Gartenstein 2010) provides information on how to prevent the spread of freshwater pests and pathogens in Tasmanian waterways wetlands, swamps and boggy areas.

The study area does not support distinct drainage features. At present there are no specific guidelines for residential subdivision works but minimising the spread of soil, gravel and water between catchments is strongly recommended. In this case, provided machinery, equipment and vehicles access the proposed subdivision area from the existing grassy access and sealed road network through the Techno Park development, no further management conditions are considered warranted.

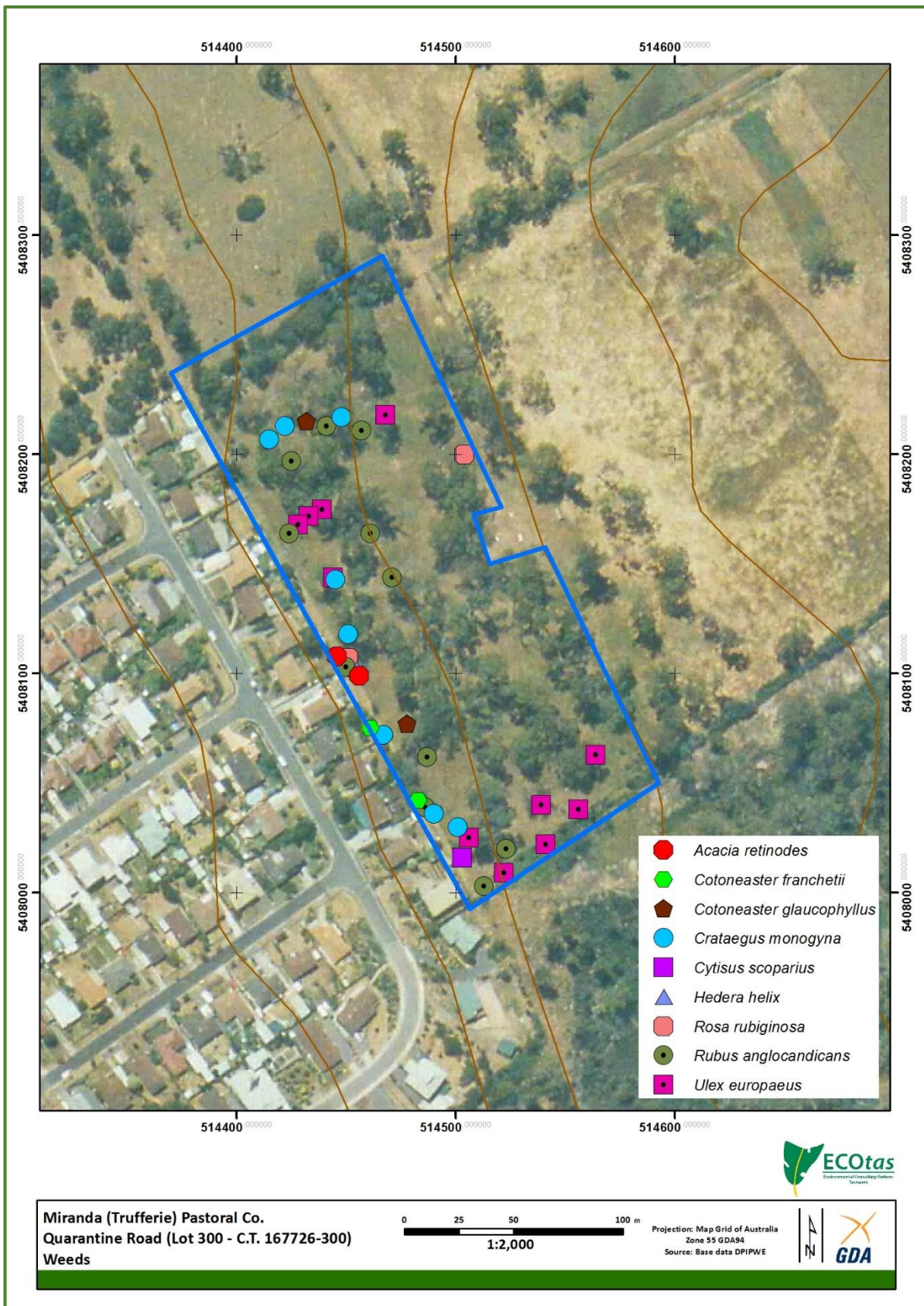


Figure 7. Distribution of weeds within the study area (note that the band of weed infestation along the northwestern boundary, i.e. Public Open Space, is not shown)

Additional "Matters of National Environmental Significance"

The EPBCA *Protected Matters Area* report (DSEWPC 2013) indicates that the report area the Critically Endangered threatened ecological community "Lowland Native Grasslands of Tasmania" is likely to occur within the area. The current and revised vegetation mapping clearly indicates that the study area does not support this vegetation type.

Fire management

While fire management is not considered in the present report, consideration of any required works was made to ensure that any future development takes the ecological values of the area into account with respect to this aspect of the development. Given that the proposed subdivision is wholly within sparsely canopied woodland with a virtually pure pasture grass understorey, no significant fire management works are likely to be necessary. At the time of initial assessment and reporting in 2013, it appeared likely that building envelopes could be positioned to minimise disturbance to standing trees, if this was considered warranted, although any location of a building envelope was unlikely to result in more than a few trees requiring removal (simply because they are so sparse). In any event, any activities undertaken for fire management (e.g. boundary tracks, removal of individual trees, weed removal, etc.) was not considered likely to impact deleteriously on any identified ecological value within or adjacent to the site.

Part of the reason for the follow-up site assessment on 29 January 2015 was to assess the potential significance of the loss of a small number of trees that occurred as part of the development of the existing building envelopes. This is discussed in more detail in the section below.

Conservation value of individual trees

While remnant trees have some biodiversity value in any setting/context, the remnant trees within the proposed subdivision area have a very low stem and canopy density, are in generally poor health, lack obvious hollows for nesting, no special significance for particular threatened fauna species, and are not "supported" by future regeneration (few seedlings or saplings amongst dense pasture grass), such that no special significance was accorded to them at the time of the 2013 site assessment and reporting.

As such, no special management conditions were recommended on ecological grounds and other factors (e.g. public safety, engineering design, etc.) should dictate the fate of these trees in the context of the proposed subdivision. I remain strongly of this view following the site assessment of 29 January 2015. I examined the sites where trees were felled and have been provided with photographic evidence of each of the trees in question (Plates 5 & 6 give examples), along with a surveyed map of their original location (Figure 8). I also note that some progress (around 40 seedlings) has been made in re-planting trees on this site (although some were noted as unsuccessful). In my opinion, many of the remaining trees are likely to present a significant risk to residents and infrastructure based on the evidence of heart rot in many of the felled trees (Plates 5 & 6), the poor health of several trees (Plates 7 & 8) and the downslope lean of many individuals in poor health (Plates 9 & 10). It seems likely to be necessary to remove further trees from the two proposed lots. As the title is covered by the "Priority Habitat" overlay under the *Interim Launceston Planning Scheme 2012*, an Environmental Site Management Plan is presented at Appendix E to guide future re-planting of canopy and understorey trees at this site.



Plates 5 & 6. Examples of cut stumps from title area, both of which clearly show the heart rot (courtesy: Graeme Walkem – note additional images of each tree felled are available)



Plates 7 & 8. Examples of trees in poor health reaching early senescence well before maturity i.e. these trees do not have significant canopy spread or development of hollows associated with old-growth trees



Plates 9 & 10. Examples of leaning trees in poor health around the building envelopes. LHS – note the lean of trees in this image taken across the slope; RHS – note significant lean of rotted out tree in centre of image



Figure 8. Distribution of felled trees (courtesy: Graeme Walkem)

DISCUSSION

Summary of key findings

Non-priority flora (e.g. species of biogeographic significance)

- No species of high conservation significance detected – no special management actions required.

Non-priority fauna (e.g. species of biogeographic significance)

- No species of high conservation significance detected – no special management actions required.

Threatened flora

- No plant species, listed as threatened on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, were detected within the study area – no special management actions are required.
- Two plant species, listed as threatened on the Tasmanian *Threatened Species Protection Act 1995*, were detected within the study area: *Hypoxis vaginata* var. *vaginata* (sheathing yellowstar) and *Arthropodium strictum* (chocolate lily) are both localised – no special management actions are considered warranted, although a permit to “take” under the Act may be required if sites will be disturbed.

Threatened fauna

- Potential habitat is present for the eastern barred bandicoot but field survey did not indicate actual presence of this species (pasture understorey is very dense) – no special management actions are required.

Vegetation types

- The study area supports one TASVEG mapping unit:
 - “*Eucalyptus amygdalina* forest and woodland on dolerite” (TASVEG code: DAD).
- DAD is not classified as threatened under Schedule 3A of the Tasmanian *Nature Conservation Act 2002* or on schedules of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* – no special management actions are required (especially considering the ecological condition of the vegetation i.e. effectively “pasture”).

Weeds

- Three species, classified as “declared weeds” within the meaning of the Tasmanian *Weed Management Act 1999*, were detected from the title area, as follows:
 - *Rubus anglocandicans* (blackberry) – localised dense patches and scattered small clumps;
 - *Ulex europaeus* (gorse) – localised patches and occasional individuals; and
 - *Cytisus scoparius* (english broom) – localised to one small area.
- Several additional plant species, not formally classified as “declared weeds” but considered as “environmental weeds”, were detected from the title area (all with scattered to locally dense infestations), as follows:
 - *Rosa rubiginosa* (sweet briar);
 - *Crataegus monogyna* (hawthorn);

- *Hedera helix* (ivy);
 - *Acacia retinodes* (hills wirilda);
 - *Cotoneaster glaucophyllus* var. *serotinus* (largeleaf cotoneaster); and
 - *Cotoneaster franchetii* (grey cotoneaster).
- The extent of weeds is not such that a complex and/or formal weed management plan is considered warranted because development of a subdivision with associated infrastructure such as roads will effectively eliminate some of the patches of weeds, and owner occupation will result in a cessation of “over the fence” dumping of garden waste and removal of in-lot infestations of prickly weeds.
 - In the short-term (i.e. until development occurs), leaving the weeds “as is” will not result in a worsening of the infestation and may actually provide protective habitat for birds and native mammals.
 - In the longer term, an Environmental Site Management Plan is provided at Appendix E to guide future management.

Plant and animal disease

- No evidence of plant disease (*Phytophthora cinnamomi*, rootrot fungus; myrtle wilt; myrtle rust) was detected – no special management actions are required.

Individual trees

- At the time of initial assessment and reporting, no particular ecological significance was accorded to the isolated remnant trees within the title area and no special management actions were recommended.
- Subsequent to the initial assessment, some trees have been felled as part of the preparation of the building envelopes. The removal of these trees has not resulted in a significant deleterious impact on biodiversity values associated with the title area. In recognition of the loss of these trees, some re-planting has already occurred.
- It is clear, however, that the health of many of the remaining trees within the proposed titles, including some still located close to likely house sites, is very poor and that several of the trees have a dangerous downslope lean. Recognising that some of these trees will require removal for protection of residents and infrastructure, a longer term Environmental Site Management Plan is provided at Appendix E to guide replacement plantings of canopy and understorey species.

Legislative and policy implications

Some commentary is provided below with respect to the key threatened species, vegetation management and other relevant legislation. Note that there may be other relevant policy instruments in addition to those discussed.

Tasmanian Threatened Species Protection Act 1995

Two plant species, listed as threatened on the Tasmanian *Threatened Species Protection Act 1995*, were detected within the study area. *Hypoxis vaginata* var. *vaginata* (sheathing yellowstar) and *Arthropodium strictum* (chocolate lily) were both scattered and localised.

In this case, based on the ecological condition of the land in question, the locally low population numbers of both species at this site and the context of the site (i.e. these populations do not

represent range extensions or infillings, merely adding yet another population to the database record), no special prescriptions are considered warranted for a land subdivision. If the subdivision occurs prior to the species being delisted (if such an event occurs) and the specific sites supporting the species will be disturbed (works to date have not affected identified sites and future works are unlikely to), a permit under Section 51 of the Act will need to be sought by formal application to the Policy & Conservation Assessment Branch of the Department of Primary Industries, Parks, Water & Environment, using the prescribed proforma. If the subdivision occurs after a delisting (if such an event occurs) or works can be undertaken such that disturbance to the mapped sites can be avoided, no permit will be required. The implication of this conclusion is that the presence of these species should not constrain land use decision-making under the planning scheme. If a permit is applied for under the Act, it is recommended that such a permit should be issued without significant restrictions on the proposed works.

The study area supports marginal potential habitat for threatened fauna species but site assessment failed to detect evidence of such species (e.g. tracks, scats, dens, diggings) from within the area proposed for development. No actions under this Act are required.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999

No species, listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, were detected from within the title area.

There is potential habitat for one fauna species listed on this Act, namely *Perameles gunnii* subsp. *gunnii* (eastern barred bandicoot).

The Commonwealth Department of the Environment provides a *Significant Impact Guidelines* policy statement (CofA 2013) to determine if referral to the department is required. In my opinion, with respect to the above species, any proposed disturbance within the study area will not constitute a "significant impact" because while there will be a modification of potential habitat, the loss is not such that it is likely to lead to a long-term decrease in the size of an important population of a species, reduce the area of occupancy of an important population, fragment an existing important population into two or more populations, adversely affect habitat critical to the survival of a species, disrupt the breeding cycle of an important population, modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, result in invasive species that are harmful to a threatened species becoming established in the threatened species' habitat, introduce disease that may cause the species to decline, or interfere substantially with the recovery of the species.

Tasmanian Wildlife (General) Regulations 2010

While the assessment of the study area indicated the presence of species listed on schedules of the Regulations (i.e. "specially protected wildlife", "protected wildlife", "partly protected wildlife" – see Appendix C), no "products" (e.g. nests, dens, etc.) of these species were detected. Any disturbance within the study area will not knowingly disturb listed species or products of such species, such that no special actions are likely to be required in relation to these *Regulations*.

Tasmanian Weed Management Act 1999

The majority of plant species recorded from the study area are considered naturalised in Tasmania and comprise ubiquitous pasture grasses and herbs.

Two species, classified as "declared weeds" within the meaning of the *Tasmanian Weed Management Act 1999*, was detected from the title area. *Rubus anglocandicans* (blackberry) and *Ulex europaeus* (gorse) are both locally common, presenting as discrete clumps amongst heavily grazed pasture beneath trees, scattered individuals, and as denser patches along some boundaries.

Both species are subject to a Statutory Weed Management Plan under the *Weed Management Act 1999* (see information on weed section of DPIPW's web site). The study area falls within the City of Launceston municipality, which for the management of the species is classified as a "Zone B" municipality (widespread infestations).

In relation to "Zone B" species, "containment", within the meaning of the *Weed Management Act 1999*, is the most appropriate management objective for municipalities who have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for these municipalities is ongoing prevention of the spread of declared weeds from existing infestations to areas free or in the process of becoming free of these weeds.

In this case, the extent of weeds is not such that a complex and/or formal weed management plan is considered warranted because development of a subdivision with associated infrastructure such as roads will effectively eliminate some of the patches of weeds, and owner occupation will result in a cessation of "over the fence" dumping of garden waste and removal of in-lot infestations of prickly weeds. In the short-term (i.e. until development occurs), leaving the weeds "as is" will not result in a worsening of the infestation and may actually provide protective habitat for birds and native mammals.

Tasmanian Land Use Planning and Approvals Act 1993 (Interim Launceston Planning Scheme 2012)

The title is currently zoned as Open Space under the provisions of the *Interim Launceston Planning Scheme 2012* (Map 38) with a "Priority Habitat" overlay (Map 38 – see extract at Figure 8 below). It is noted that the priority habitat overlay adheres approximately to the aerial photography that shows an apparent forest cover with a note on the overlay polygon that states "unreserved threatened native vegetation communities excluding areas overlapped by TASVEG (Vegcode: DAZ)". As indicated in **RESULTS Vegetation types recorded as part of the present assessment**, the classification of the "forest" area as DAZ is erroneous and the area has been re-mapped as "*Eucalyptus amygdalina* forest and woodland on dolerite" (TASVEG code: DAD), which is not classified as threatened under the *Tasmanian Nature Conservation Act 2002*, and therefore may not have resulted in the creation of this particular polygon of "Priority Habitat". That said, it is clear that the overlay also attempts to capture values other than a nominal vegetation classification because not all patches mapped as DAZ were captured under the overlay, suggesting the "forest" cover was perceived as having some higher conservation value than surrounding old pasture. Field assessment did indicate that the site has a relatively low biodiversity values because of the absence of a mature canopy component (therefore lack of hollow-bearing trees and coarse woody debris, habitat components usually considered important for threatened and priority fauna species) and a highly modified understorey that comprises over 80% exotic plant species.

In my opinion, the subdivision of the subject area into two lots (as indicated in Figure 3) should not be constrained by the identified ecological values. An Environmental Site Management Plan that provides a guide for weed management and re-planting of canopy and understorey plant species is provided at Appendix E to guide future activities, with a view to maintaining and enhancing the "Priority Habitat" of the lots.



Figure 8. Extract of TASVEG 3.0 mapping of DAZ (diagonal green hatching) and Priority Habitat Overlay (cross-hatching) showing the partial overlap of the polygons

Recommendations

The study area proposed for subdivision and eventual residential occupation under the provisions of the existing planning scheme supports “pasture under remnant eucalypts” subject to long-term grazing. The ecological condition of the site is considered very low.

No formal referral to the relevant Commonwealth government agency under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is considered warranted.

No formal referral to the relevant State government agency under the provisions of the Tasmanian *Threatened Species Protection Act 1995* is considered warranted, unless known sites of threatened flora will be affected by proposed works. It is recommended that the applicant check the conservation status of this species closely to the time of application. Where necessary, apply for a permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995*, and apply any relevant permit conditions (noting that none are recommended under the present report), related

to the disturbance of threatened flora, if sites supporting such species will be affected by the proposed works.

The Environmental Site Management Plan should be used to inform future management within the subdivided lots.

REFERENCES

- Allan, K. & Gartenstein, S. (2010). *Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens*. NRM South, Hobart.
- Bryant, S.L. & Jackson, J. (1999). *Tasmania's Threatened Fauna Handbook: What, Where and How to Protect Tasmania's Threatened Animals*. Threatened Species Unit, Parks & Wildlife Service, Hobart.
- de Salas, M.F. & Baker, M.L. (2014). *A Census of the Vascular Plants of Tasmania and Index to The Student's Flora of Tasmania and Flora of Tasmania Online*. Tasmanian Herbarium, Hobart.
- CofA (Commonwealth of Australia) (2013). *EPBC Act Policy Statement 1.1: Significant Impact Guidelines – Matters of National Environmental Significance*. Department of the Environment & Heritage.
- CofA (Commonwealth of Australia) (2013). *Protected Matters Search Tool Report for -41.47821 147.1739 buffered by 5 km, dated 21 October 2013 – Appendix H*.
- DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2013a). *Natural Values Atlas Report 59118 ECOfas_Walkem_QuarantineRoad* for the approximate project area buffered by 5 km, dated 8 October 2013 – Appendix F.
- DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2013b). Threatened Native Vegetation Communities List July 2007 as per Schedule 3A of the *Tasmanian Nature Conservation Act 2002*. <http://www.dpiw.tas.gov.au/inter.nsf/webpages/awah-6547zl?open>
- DPIPWE (Department of Primary Industries, Parks, Water & Environment) (2009). *Guidelines for Natural Values Assessments, Reporting on the Impact of Proposed Activities on the Natural Values and Providing Recommendations for Mitigating Impacts on these Values*. Development and Conservation Assessment Branch, Department of Primary Industries, Parks, Water and Environment.
- Duretto, M.F. (Ed.) (2009+) *Flora of Tasmania Online*. Tasmanian Herbarium, Tasmanian Museum & Art Gallery: Hobart. www.tmag.tas.gov.au/floratasmania.
- FPA (Forest Practices Authority) (2013). *Biodiversity Values Database* report, specifically the species' information for grid reference centroid 514529mE 5408166mN buffered by 2 km, hyperlinked species' profiles and predicted range boundary maps, dated 21 October 2013 – Appendix G.
- Kitchener, A. & Harris, S. (editors) (2013). *From Forest to Fjaeldmark: Descriptions of Tasmania's Vegetation (Edition 2)*. Department of Primary Industries, Water & Environment, Hobart.
- Rudman T. (2005). *Interim Phytophthora cinnamomi Management Guidelines*. Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water & Environment, Hobart.
- Rudman, T., Tucker, D. & French, D. (2004). *Washdown Procedures for Weed and Disease Control*. Edition 1. Department of Primary Industries, Water and Environment, Hobart.
- TSS (Threatened Species Section) (2003+). *Notesheets and Listing Statements* for various threatened species. DPIWE, Hobart.
- Wapstra, H., Wapstra, A., Wapstra, M. & Gilfedder, L. (2005+, updated online at www.dpipwe.tas.gov.au). *The Little Book of Common Names for Tasmanian Plants*. Department of Primary Industries, Water & Environment, Hobart.

APPENDIX A. Vegetation community structure and composition

The table below provides a detailed description of the vegetation mapping unit identified from the study area. The lists of species provided are representative dominant species only.

***Eucalyptus amygdalina* forest and woodland on dolerite (TASVEG code: DAD)**

DAD occupies the entire study area. Canopy gaps have not been mapped separately as “agricultural land” (TASVEG code: FAG) because they are small and mapping at this scale impractical. Similarly, patches dominated by woody and shrubby weeds have not been mapped as “weed infestations” (TASVEG code: FWU) because most occurrences are small and a sparse eucalypt canopy remains.

As described by Kitchener & Harris (2013), DAD is a forest to woodland vegetation type with a multi-aged canopy of eucalypts over a variably layered understorey of secondary tall shrubs (most notably wattles) and understorey shrubs (often heath and legume species) and a variably grassy-sedgy ground layer. As intended by TASVEG, DAD does not comprise scattered remnant trees of a single age over dense swards of mainly pasture grasses and weeds utilised for stock grazing. In effect, such “forest” is better regarded as “pasture under scattered trees”. Unfortunately, despite extensive areas of such vegetation in Tasmania, an appropriate classification is unavailable under TASVEG and such patches tend to get mapped as the original/remnant forest type, in this case, DAD. Where this classification leads to a perverse outcome (e.g. mandatory protection of a vegetation type because of its classification), further discussion is warranted. However, in this case, DAD has a low priority for conservation management at a local, regional, and Statewide level such that the classification of this patch as DAD (rather than FAG) has no significant management implications.

From the above discussion it is clear that the ecological condition of the “DAD” is poor and no special management prescriptions are warranted due to its classification. It is noted that two threatened flora species are present – their status is discussed under Priority species recorded from the study area.



View into “DAD” showing well-developed pasture understorey with scattered copses of woody and shrubby weeds

Stratum	Height (m) Cover (%)	Species (underline = dominant, parentheses = sparse)
Trees	20-25 m 5-20%	<i>Eucalyptus amygdalina</i> , (<i>E. viminalis</i>), (<i>E. ovata</i>)
Tall shrubs	4-6 (-15) m +	<i>Bursaria spinosa</i> , <i>Acacia dealbata</i>
Low shrubs	1-2 m +	<i>Ulex europaeus</i> , <i>Rosa rubiginosa</i> , <i>Rubus anglocandicans</i>
Grasses/graminoids	95%	<i>Holcus lanatus</i> , <i>Dactylis glomerata</i> , <i>Poa</i> spp.
Herbs	variable	<i>Romulea</i> spp., <i>Geranium</i> spp., <i>Arctotheca calendula</i> , <i>Trifolium</i> spp. <i>Oxalis</i> spp.

APPENDIX B. Vascular plant species recorded from study area

Botanical nomenclature follows *A Census of the Vascular Plants of Tasmania* (de Salas & Baker 2014), with family placement updated to reflect the nomenclatural changes recognised in the *Flora of Tasmania Online* (Duretto 2009+); common nomenclature follows Wapstra et al. (2005+, updated online at www.dpipwe.tas.gov.au).

i = introduced/naturalised; e = endemic to Tasmania

Table A1. Summary of vascular species recorded from the study area

STATUS	ORDER			
	DICOTYLEDONAE	MONOCOTYLEDONAE	GYMNOSPERMAE	PTERIDOPHYTA
	8	8	-	-
e	1	-	-	-
i	49	23	-	-
Sum	58	31	0	0
TOTAL	89			

DICOTYLEDONAE

ASTERACEAE

i	<i>Arctotheca calendula</i>	capeweed
i	<i>Bellis perennis</i>	english daisy
i	<i>Cirsium vulgare</i>	spear thistle
i	<i>Hypochaeris glabra</i>	smooth catsear
i	<i>Hypochaeris radicata</i>	rough catsear
	<i>Senecio quadridentatus</i>	cotton fireweed
i	<i>Silybum marianum</i>	variegated thistle
i	<i>Sonchus oleraceus</i>	common sowthistle
i	<i>Taraxacum officinale</i>	common dandelion

BRASSICACEAE

i	<i>Cardamine hirsuta</i>	hairy bittercress
i	<i>Erophila verna</i> subsp. <i>verna</i>	spring whitlowgrass
i	<i>Sinapis arvensis</i>	charlock
i	<i>Sisymbrium officinale</i>	hedge-mustard

CARYOPHYLLACEAE

i	<i>Cerastium vulgare</i>	common mouse-ear
i	<i>Stellaria media</i>	garden chickweed

EUPHORBIACEAE

i	<i>Euphorbia peplus</i>	petty spurge
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FABACEAE

	<i>Acacia dealbata</i> subsp. <i>dealbata</i>	silver wattle
i	<i>Acacia retinodes</i>	hills wirilda
i	<i>Cytisus scoparius</i>	english broom
i	<i>Lotus corniculatus</i> var. <i>tenuifolius</i>	narrow birdsfoot-trefoil
i	<i>Lotus uliginosus</i>	greater birdsfoot-trefoil
i	<i>Medicago polymorpha</i>	burr medick
i	<i>Trifolium campestre</i>	hop clover
i	<i>Trifolium dubium</i>	suckling clover
i	<i>Trifolium pratense</i>	red clover
i	<i>Trifolium repens</i>	white clover
i	<i>Trifolium subterraneum</i>	subterranean clover
i	<i>Ulex europaeus</i>	gorse
i	<i>Vicia sativa</i> subsp. <i>sativa</i>	common vetch

FUMARIACEAE

i	<i>Fumaria muralis</i> subsp. <i>muralis</i>	wall fumitory
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GENTIANACEAE

i	<i>Centaurium erythraea</i>	common centaury
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GERANIACEAE

i	<i>Erodium botrys</i>	long heronsbill
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i	<i>Erodium cicutarium</i>	common heronsbill
i	<i>Erodium malacoides</i>	oval heronsbill
i	<i>Geranium dissectum</i>	cutleaf cranesbill
	<i>Geranium solanderi</i>	southern cranesbill
	LAMIACEAE	
i	<i>Prunella vulgaris</i>	selfheal
	MALVACEAE	
i	<i>Malva sylvestris</i>	tall mallow
	MYRSINACEAE	
i	<i>Lysimachia arvensis</i>	scarlet pimpernel
	MYRTACEAE	
e	<i>Eucalyptus amygdalina</i>	black peppermint
	<i>Eucalyptus ovata</i> var. <i>ovata</i>	black gum
	<i>Eucalyptus viminalis</i> subsp. <i>viminalis</i>	white gum
	OXALIDACEAE	
i	<i>Oxalis corniculata</i> subsp. <i>corniculata</i>	yellow woodsorrel
i	<i>Oxalis purpurea</i>	largeflower woodsorrel
	PITTOSPORACEAE	
	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	prickly box
	PLANTAGINACEAE	
i	<i>Plantago coronopus</i> subsp. <i>coronopus</i>	slender buckshorn plantain
i	<i>Plantago lanceolata</i>	ribwort plantain
	POLYGONACEAE	
i	<i>Acetosella vulgaris</i>	sheep sorrel
i	<i>Polygonum arenastrum</i>	small wireweed
i	<i>Rumex crispus</i>	curled dock
	RANUNCULACEAE	
i	<i>Ranunculus repens</i>	creeping buttercup
	ROSACEAE	
	<i>Acaena echinata</i>	spiny sheepsburr
	<i>Acaena novae-zelandiae</i>	common buzzy
i	<i>Cotoneaster franchetii</i>	grey cotoneaster
i	<i>Cotoneaster glaucophyllus</i> var. <i>serotinus</i>	largeleaf cotoneaster
i	<i>Crataegus monogyna</i>	hawthorn
i	<i>Rosa rubiginosa</i>	sweet briar
i	<i>Rubus anglocandicans</i>	blackberry
	MONOCOTYLEDONAE	
	ALLIACEAE	
i	<i>Allium triquetrum</i>	triangular garlic
	CYPERACEAE	
i	<i>Carex demissa</i>	low sedge
	HYPOXIDACEAE	
	<i>Hypoxis vaginata</i> var. <i>vaginata</i>	sheathing yellowstar
	IRIDACEAE	
i	<i>Romulea bulbocodium</i>	crocus-leaf oniongrass
i	<i>Romulea minutiflora</i>	smallflower oniongrass
i	<i>Romulea rosea</i> var. <i>australis</i>	lilac oniongrass
	JUNCACEAE	
	<i>Juncus australis</i>	southern rush
	<i>Juncus bufonius</i>	toad rush
	<i>Juncus pallidus</i>	pale rush
	<i>Juncus pauciflorus</i>	looseflower rush
	<i>Juncus procerus</i>	tall rush
	<i>Juncus subsecundus</i>	finger rush
	LAXMANNIACEAE	
	<i>Arthropodium strictum</i>	chocolate lily
	POACEAE	
i	<i>Agrostis capillaris</i> var. <i>capillaris</i>	browntop bent
i	<i>Agrostis stolonifera</i>	creeping bent
i	<i>Aira caryophyllea</i> subsp. <i>caryophyllea</i>	silvery hairgrass
i	<i>Alopecurus pratensis</i> subsp. <i>pratensis</i>	meadow foxtail
i	<i>Anthoxanthum odoratum</i>	sweet vernalgrass
i	<i>Avena sativa</i>	cereal oat

i	<i>Briza maxima</i>	greater quaking-grass
i	<i>Briza minor</i>	lesser quaking-grass
i	<i>Bromus diandrus</i>	great brome
i	<i>Bromus hordeaceus</i>	soft brome
i	<i>Dactylis glomerata</i>	cocksfoot
i	<i>Ehrharta erecta</i> var. <i>erecta</i>	panic veldtgrass
i	<i>Holcus lanatus</i>	yorkshire fog
i	<i>Hordeum leporinum</i>	long-anther barleygrass
i	<i>Phalaris aquatica</i>	toowoomba canarygrass
i	<i>Poa annua</i>	winter grass
i	<i>Poa pratensis</i>	kentucky bluegrass
i	<i>Vulpia bromoides</i>	squirreltail fescue

APPENDIX C. Vertebrate fauna recorded from study area

The following table lists the vertebrate fauna recorded from the study area. The list is based on opportunistic detection during the course of the more detailed botanical assessment. Intensive surveys for vertebrate fauna (e.g. dissection of logs, turning of stones, nocturnal and crepuscular surveys, trapping, etc.) were not undertaken.

Vertebrate nomenclature follows the following texts for the different groups:

Birds: Christidis, L. & Boles, W.E. (2008). *Systematics and Taxonomy of Australian Birds*. CSIRO Publishing, Collingwood;

i = introduced/naturalised; e = endemic to Tasmania

Table C1. Summary of vertebrate species recorded from the study area

STATUS	ORDER			
	MAMMALS	BIRDS	AMPHIBIANS	REPTILES
	1	5	-	-
e	-	1	-	-
i	1	1	-	-
Sum	2	7	0	0
TOTAL	9			

Table C2. Vertebrate fauna recorded from study area

Species	Common name	Comments	Sight	Scat	Call	Other
Mammals						
<i>Trichosurus vulpecula</i>	Common brushtail possum	"Run" up rough-barked <i>Eucalyptus amygdalina</i>				+
i <i>Oryctolagus cuniculus</i>	European rabbit	Scats and diggings numerous		+		+
Birds						
e <i>Platycercus caledonicus caledonicus</i>	Green rosella	Calls and sightings	+		+	
<i>Anthochaera chrysoptera</i>	Little wattlebird	One heard from adjacent "woodland"			+	
<i>Malurus cyaneus</i>	Superb fairy-wren	Small flock around blackberry clump	+		+	
<i>Rhipidura albiscapa</i>	Grey fantail	Several individuals hawking for insects	+			
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped thornbill	Small flock around blackberry clump near pasture	+		+	
<i>Corvus tasmanicus</i>	Forest raven	Three flew through	+		+	+
i <i>Sturnus vulgaris</i>	European starling	Several in remnant trees	+		+	

APPENDIX D. Examples of weeds from title area



LHS. *Acacia retinodes* – a potentially invasive South Australian species that should be removed (although there is no great urgency) and replaced with native Tasmanian understorey species

RHS. *Hedera helix* – localised patch amongst dense grass



LHS. *Cotoneaster franchetii* – large individual on western fenceline (not title boundary)

RHS. *Cotoneaster glaucophyllus* – small individual in middle foreground



LHS. *Ulex europaeus* – scattered patch

RHS. *Ulex europaeus* – isolated individual amongst dense grass



LHS & RHS. *Rubus anglocandicans* – dense clumps on western fence line with large *Crataegus monogyna* in background (LHS)



LHS. *Crataegus monogyna* – large individual
RHS. *Cytisus scoparius* – localised clump in southwestern corner



LHS & RHS. Dense blackberry, hawthorn and other weeds in the area designated as Public Open Space on the northern boundary of proposed Lot 49

APPENDIX E. Draft Environmental Site Management Plan

Preamble

The following information is provided to inform land use decision-making and future on-ground management of proposed lots 49 & 50.

The key ecological issues that need to be addressed are:

- management of environmental weeds;
- maintenance of a forest/woodland canopy and understorey structure and composition;
- management of trees that pose a risk to life and buildings; and
- a means for replacing lost trees over time.

The preceding report on ecological values provides the background to the site, with specific information provided on the above issues including maps and images of the location of weeds.

Existing land use

The land proposed for subdivision is in poor ecological condition, dominated by exotic plant species and a canopy comprising mainly trees in poor health at significant risk of windthrow. The land is freely accessed and has been used for trail bike riding, dumping of rubbish (including garden waste) and illegal firewood collection.

Future land use

The proposal to subdivide the land into two lots with some public open space provides an opportunity to reduce (probably eliminate) the above illegal land uses that contribute to the poor ecological condition of the site. Unfortunately, simply "left to its own devices", the transition of the current "forest" from poor condition to one that has significantly higher "priority habitat" values is unlikely to occur – some proactive intervention will be required.

Location of building envelopes

The proposed locations of the building envelopes on lots 49 & 50 are considered to be of very low impact to biodiversity values because they essentially avoid the more heavily forested parts of the lots, and avoid the mapped locations of threatened flora species.

Management of environmental weeds

The removal of weeds is a considered a relatively high priority, mainly to minimise the rate of spread from the existing sources.

For most species, the main means of treatment will be physical removal using a "cut and paste" method. This will be applicable to species of cotoneaster, gorse, english broom, sweet briar, hills wirilda, and hawthorn.

Blackberry will need to be treated chemically, although an initial phase of "grubbing out" may be beneficial. There are controls on the use of herbicides for treating blackberry (avoiding the fruiting period). Ivy may also need to be "grubbed out" and treated with herbicide.

Most parts of the proposed titles have a relatively low cover of weeds with scattered patches and individuals. The southern, western and northern fencelines, however, are more densely infested and a more intensive program of weed control will be needed.

It is recommended that the most efficient way of approaching weed management on these lots is an intensive first one or two treatments followed by annual treatments to control new seedlings. Engagement of an accredited weed control team is suggested: such a company can provide a timeline of actions and document the treatment events.

Maintenance of a forest/woodland canopy and understorey structure and composition (habitat value)

Creating a multi-aged canopy of eucalypts with an understorey of native shrubs is the key to maintaining and enhancing the biodiversity values of the site. At present, the "forest" is relatively even-aged with only minor evidence of natural regeneration of overstorey species (see images below).



Naturally regenerating seedlings of Eucalyptus viminalis and E. amygdalina on the grassy slope

Removal of weeds will result in areas devoid of native trees and shrubs and these sites provide an ideal location to re-plant species that are indigenous to the area and specifically the vegetation type "Eucalyptus amygdalina forest and woodland on dolerite".

Creating a multi-aged canopy will take many decades. It is recognised that the existing canopy will need to be further modified to take account of dangerous trees. As a guideline, a 5:1 ratio of trees removed:seedlings re-planted is suggested. For example, for the ten trees felled in recent times, planting approximately 50 seedlings of *E. amygdalina*, *E. viminalis* and *E. ovata* is suggested. Obviously such planting should occur outside areas likely to cause future management issues i.e. away from fencelines and buildings.

Given the dry nature of the site, however, as an initial option it is suggested that wherever existing seedlings (see plates above) are encountered, these be protected from grazing by stakes/wrap to maximise their chance of surviving to maturity. As part of any re-planting events, protecting additional seedlings as they are encountered is suggested. Note that these can make up part of the 5:1 ratio. A ratio of 5:1 is suggested because there is likely to be some attrition.

The understorey species in “*Eucalyptus amygdalina* forest and woodland on dolerite” can be quite diverse but the secondary canopy and lower understorey is often quite simple, with the diversity arising from the ground layer (herbs, grasses, low shrubs).

Given the very dense cover of exotic grass at present, re-creating a natural herb-rich grassy understorey typical of “*Eucalyptus amygdalina* forest and woodland on dolerite” is a long-term objective only. One management tool that may work quite well is localised burning (see plates below) followed by mulching (ideally from native plant material but make careful consideration of minimising the risk of introducing weeds) to suppress exotic grass with localised understorey plantings (see suggested list below).



Burning of the dense grass and gorse has resulted in at least temporary removal of gorse (numerous seedlings will appear from soil-stored seed) but also opened up the understorey and made bare ground available for native plantings

Suggested tree and shrub species

Canopy species

Eucalyptus amygdalina (black peppermint) – dominant tree on site

E. viminalis (white gum) – minor component of canopy only (1 in 5 plantings only)

E. ovata (black gum) – very minor component (only use in areas with locally poor drainage)

Secondary canopy

AVOID *Acacia dealbata* (silver wattle) – tends to suffer insect attack and is not long-lived

A. mearnsii (black wattle) – more suited to this site and does not grow as tall as *A. dealbata*

A. melanoxylon (blackwood) – can perform well on these sites but reserve for more poorly-drained and sheltered patches

Understorey

Bursaria spinosa (prickly box) – several present already, ideal for gap-filing and planting along fences (although prickly)

Dodonaea viscosa (native hopbush) – often grows with *Bursaria spinosa* and gap-fills well

Banksia marginata (silver banksia) – excellent habitat species

Astroloma humifusum (native cranberry) – a low shrub that can spread to create an excellent ground cover

Pultenaea pedunculata (matted bushpea) – as above

Pultenaea daphnoides (heartleaf bushpea) – good low to medium shrub that prefers drier sites

P. juniperina (prickly beauty) – low shrub, can tolerate dry to wet conditions

Ground covers

Lomandra longifolia (sagg)

Poa labillardierei (silver tussockgrass)

Dianella revoluta (spreading flaxlily)

Diplarrena moraea (white flag-iris)

Planting schedule

Priority areas

As weeds are treated or patches of understorey are burnt, the opportunity should be taken to re-plant areas of bare soil with native species i.e. no set schedule but based on other events.

As trees are removed (for whatever reason), re-plant (or protect existing seedlings by searching) approximately 5 x as many elsewhere within the titles.

After 5, 15 and 30 years

To create a multi-aged canopy, it is recommended that after the first phase of planting to replace the recently felled trees, and in addition to any planting that occurs for reasons above, that some additional planting of overstorey and understorey species occurs at the 5, 15 and 30 year marks. These intervals are selected to result in the long-term dedication to the objective of creating a multi-aged stand.

Monitoring

It is recommended that every 3-5 years (depending on seasonal conditions e.g. periods of drought, and amount of activity e.g. weed control, etc.) the lots are examined by a suitably qualified person to assess the degree of success of the weed treatment and re-planting program, with a view to guiding the next phase of such activity.

APPENDIX F. DPIPWE's *Natural Values Atlas* report for study area

Appended as pdf file.

APPENDIX G. Forest Practices Authority's *Fauna Values Database* report for study area

Appended as pdf file.

APPENDIX H. DSEWPC's *Protected Matters* report for study area

Appended as pdf file.



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 21/10/13 21:01:11

[Summary](#)

[Details](#)

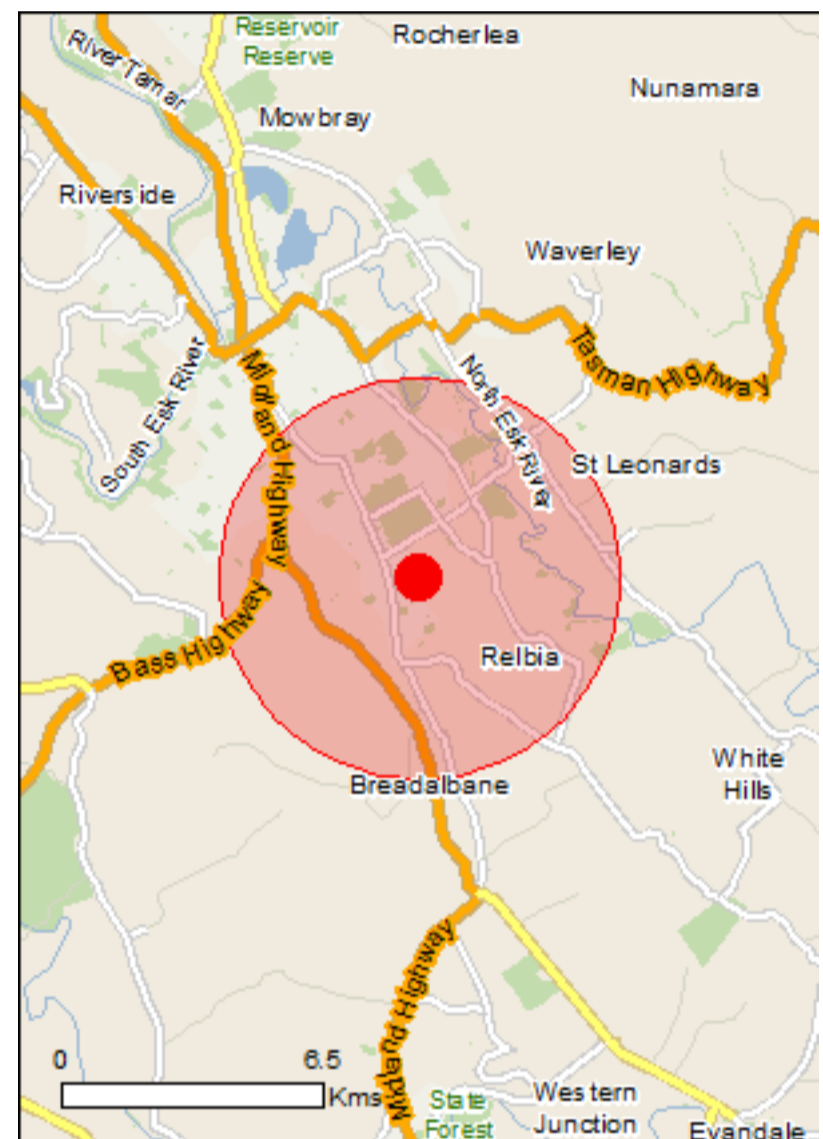
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

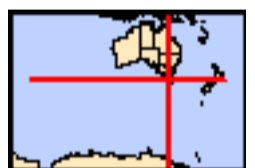
[Acknowledgements](#)



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[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	26
Listed Migratory Species:	7

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As [heritage values](#) of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate.

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	8
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

Place on the RNE:	26
State and Territory Reserves:	6
Regional Forest Agreements:	1
Invasive Species:	27
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Lowland Native Grasslands of Tasmania	Critically Endangered	Community likely to occur within area

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
Birds		
Aquila audax fleayi Wedge-tailed Eagle (Tasmanian) [64435]	Endangered	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Ceyx azureus diemenensis Tasmanian Azure Kingfisher [25977]	Endangered	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat may occur within area
Tyto novaehollandiae castanops (Tasmanian population) Masked Owl (Tasmanian) [67051]	Vulnerable	Breeding known to occur within area
Crustaceans		
Engaeus orramakunna Mount Arthur Burrowing Crayfish [66778]	Vulnerable	Species or species habitat may occur within area
Fish		
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area
Frogs		

Name	Status	Type of Presence
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Dasyurus maculatus maculatus (Tasmanian population) Spotted-tail Quoll, Spot-tailed Quoll, Tiger Quoll (Tasmanian population) [75183]	Vulnerable	Species or species habitat known to occur within area
Perameles gunnii gunnii Eastern Barred Bandicoot (Tasmania) [66651]	Vulnerable	Species or species habitat likely to occur within area
Sarcophilus harrisii Tasmanian Devil [299]	Endangered	Species or species habitat likely to occur within area
Plants		
Acacia axillaris Midlands Mimosa, Midlands Wattle [13563]	Vulnerable	Species or species habitat likely to occur within area
Barbarea australis Native Wintercress, Riverbed Wintercress [12540]	Critically Endangered	Species or species habitat likely to occur within area
Boronia hippopala Velvet Boronia [78925]	Vulnerable	Species or species habitat may occur within area
Caladenia caudata Tailed Spider-orchid [17067]	Vulnerable	Species or species habitat known to occur within area
Carex tasmanica Curly Sedge [9101]	Vulnerable	Species or species habitat likely to occur within area
Colobanthus curtisiae Curtis' Colobanth [23961]	Vulnerable	Species or species habitat likely to occur within area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat likely to occur within area
Diuris lanceolata Snake Orchid [10231]	Endangered	Species or species habitat likely to occur within area
Epacris exserta South Esk Heath [19879]	Endangered	Species or species habitat known to occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area
Lepidium hyssopifolium Basalt Pepper-cress [16542]	Endangered	Species or species habitat likely to occur within area
Prasophyllum apoxychilum Tapered Leek-orchid [64947]	Endangered	Species or species habitat may occur within area
Pterostylis commutata Midland Greenhood [64535]	Critically Endangered	Species or species habitat may occur within area
Pterostylis ziegeleri Grassland Greenhood, Cape Portland Greenhood [64971]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence area
Xanthorrhoea arenaria Sand Grasstree [21603]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land	[Resource Information]
The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.	

Name	Threatened	Type of Presence
Defence - YOUNGTOWN TRAINING DEPOT		
Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within

Name	Threatened	Type of Presence area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area

Extra Information

Places on the RNE [\[Resource Information \]](#)

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Kate Reed Nature Recreation Area and Adjacent Areas (1998 Bounda	TAS	Indicative Place
Tamar River Conservation Area	TAS	Registered
Historic		
East House	TAS	Indicative Place
Infectious Disease Ward (former)	TAS	Indicative Place
Patons Baldwins Wool Milling Factory	TAS	Indicative Place
All the Year Round Hotel	TAS	Registered
Alpha Terrace	TAS	Registered
Chegworth	TAS	Registered
Conjoined Houses	TAS	Registered
Fairlawn	TAS	Registered
Fairlawn Garden	TAS	Registered
Franklin House	TAS	Registered
Greycliffe	TAS	Registered
Ketteringham	TAS	Registered
Mount Pleasant Homestead and Outbuildings	TAS	Registered
Newstead House	TAS	Registered
Old Illaroo House and Stable	TAS	Registered
Pen-y-bryn House and Outbuildings	TAS	Registered
Primitive Methodist Chapel & Hall	TAS	Registered
St James Anglican Church	TAS	Registered
St Peters Anglican Church	TAS	Registered
Strathroy Bridge	TAS	Registered
Strathroy Homestead and Convict Ruin	TAS	Registered
The Gables	TAS	Registered
Towers Distillery and Cottage	TAS	Registered
Wesleyan Chapel & Graves	TAS	Registered

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Carr Villa	TAS
Kate Reed	TAS
Launceston Golf Course	TAS
Punchbowl	TAS
Punchbowl	TAS
Tamar	TAS

Regional Forest Agreements

[[Resource Information](#)]

Note that all areas with completed RFAs have been included.

Name	State
Tasmania RFA	Tasmania

Invasive Species

[[Resource Information](#)]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species

Name	Status	Type of Presence
Oryctolagus cuniculus		habitat likely to occur within area
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus		
Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus		
Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes		
Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia		
Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus asparagoides		
Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. monilifera		
Boneseed [16905]		Species or species habitat likely to occur within area
Cytisus scoparius		
Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista monspessulana		
Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate		
Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii		
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Ulex europaeus		
Gorse, Furze [7693]		Species or species habitat likely to occur within area

Coordinates

-41.47821 147.1739

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Department of Environment, Climate Change and Water, New South Wales](#)
- [-Department of Sustainability and Environment, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment and Natural Resources, South Australia](#)
- [-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [-Environmental and Resource Management, Queensland](#)
- [-Department of Environment and Conservation, Western Australia](#)
- [-Department of the Environment, Climate Change, Energy and Water](#)
- [-Birds Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-SA Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Atherton and Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-State Forests of NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Biodiversity Values Database SearchTo browse the web map please click [HERE](#).

GDA Easting (6 digits)

514529

GDA Northing (7digits)

5408166

(this may take some time)

[click here to print this report](#) (If experiencing print layout issues in internet explorer try hold down the shift key and reload the page. However the print layout functions much better in alternative browsers e.g. Firefox or Chrome.)

The coordinate falls within the following threatened species ranges

Common name	Scientific Name	range class	Habitat Description	Web Map
snail (cataract gorge)	<i>Pasmaditta jungermanniae</i>	Potential Range	Potential habitat for the Cataract Gorge snail is intact or disturbed native vegetation with extensive exposed rock faces (usually dolerite), usually greater than 2 m high (e.g. distinct outcrops/cliffs or several large boulders), with well-developed moss and/or lichen cover on rock faces and ledges (such sites often occur in more deeply incised drainage features or steeper slopes).	Web map
tussock skink	<i>Pseudemoia pagenstecheri</i>	Potential Range	Potential habitat for the Tussock Skink is grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall tussocks are present.	Web map
striped marsh frog	<i>Limnodynastes peroni</i>	Potential Range	Potential habitat for the Striped Marsh Frog is natural and artificial coastal and near-coastal wetlands, lagoons, marshes, swamps and ponds (including dams), with permanent freshwater and abundant marginal, emergent and submerged aquatic vegetation.	Web map
grey goshawk	<i>Accipiter novaehollandiae</i>	Potential Range	Potential habitat for the grey goshawk is native forest with mature elements below 600 m altitude, particularly along watercourses. FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat. Significant habitat may be summarised as areas of wet forest, rainforest and damp forest patches in dry forest, with a relatively closed mature canopy, low stem density, and open understorey in close proximity to foraging habitat and a freshwater body (i.e. stream, river, lake, swamp, etc.). FPA's Fauna Technical Note 12 can be used as a guide in the identification of grey goshawk habitat.	Web map
eastern barred bandicoot	<i>Perameles gunnii</i>	Core Range	Potential habitat for the eastern barred bandicoot is open vegetation types including woodlands and open forests with a grassy understorey, native and exotic grasslands, particularly in landscapes with a mosaic of agricultural land and remnant bushland. Significant habitat for the Eastern Barred Bandicoot is dense tussock grass-sagg-sedge swards, piles of coarse woody debris and denser patches of low shrubs (especially those that are densely branched close to the ground providing shelter) within the core range of the species.	Web map
			Potential habitat for the Tasmanian devil is all terrestrial native habitats, forestry plantations and pasture. Devils require shelter (e.g. dense vegetation, hollow logs, burrows or caves) and hunting habitat (open understorey mixed with patches of dense vegetation) within	

tasmanian devil	<i>Sarcophilus harrisii</i>	Potential Range	their home range (4-27 km ²). Potential denning habitat for the Tasmanian devil is areas of burrowable, well-drained soil or sheltered overhangs such as cliffs, rocky outcrops, knolls, caves and earth banks, free from risk of inundation and with at least one entrance through which a devil could pass (see Tech Note 10 for more details). Significant habitat is a patch of potential denning habitat where three or more entrances (large enough for a devil to pass through) may be found within 100 m of one another, and where no other potential denning habitat with three or more entrances may be found within a 1 km radius, being the approximate area of the smallest recorded devil home range (Pemberton 1990).	Web map
australian grayling	<i>Prototroctes maraena</i>	Potential Range	Potential habitat for the Australian Grayling is all streams and rivers in their lower to middle reaches. Areas above permanent barriers (e.g. Prosser River dam, weirs) that prevent fish migration, are not potential habitat.	Web map
Green Lined Ground	<i>Catadromus lacordairei</i>	Potential Range	Potential habitat for the Green-lined Ground Beetle is open, grassy/sedgy, low altitude grasslands and woodlands associated with wetlands and low-lying plains or flats adjacent to rivers/streams. Key habitat elements that need to be present include sheltering sites such as patches of stones, coarse woody debris and/or cracked soils. The species is a highly active and mobile flyer that often comes to ground close to water sources and is rarely found further than 250 m from such a source.	Web map
green and golden frog	<i>Litoria raniformis</i>	Core Range	Potential habitat for the Green and Gold Frog is permanent and temporary waterbodies, usually with vegetation in or around them. Potential habitat includes features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features.	Web map
white-bellied sea-eagle	<i>Haliaeetus leucogaster</i>	Potential Range	Potential habitat for the White-Bellied Sea-eagle species comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is any large waterbody (including sea coasts, estuaries, wide rivers, lakes, impoundments and even large farm dams) supporting prey items (fish). Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest within 5 km of the coast (nearest coast including shores, bays, inlets and peninsulas), large rivers (Class 1), lakes or complexes of large farm dams. Scattered trees along river banks or pasture land may also be used. Significant habitat for the white-bellied sea-eagle is all native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where nest tree still present).	Web map
			Potential habitat for the Wedge-tailed Eagle comprises potential nesting habitat and potential foraging habitat. Potential foraging habitat is a wide variety of forest (including areas subject to native forest silviculture) and non-forest habitats. Potential nesting habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of	

wedge-tailed eagle	<i>Aquila audax subsp. fleayi</i>	Potential Range	eucalypt or mixed forest. Nest trees are usually amongst the largest in a locality. They are generally in sheltered positions on leeward slopes, between the lower and mid sections of a slope and with the top of the tree usually lower than the ground level of the top of the ridge, although in some parts of the State topographic shelter is not always a significant factor (e.g. parts of the northwest and Central Highlands). Significant habitat for the wedge-tailed eagle is all native forest and native non-forest vegetation within 500 m or 1 km line-of-sight of known nest sites (where the nest tree is still present).	Web map
masked owl	<i>Tyto novaehollandiae</i>	Core Range	Potential habitat for the masked owl is all areas with trees with large hollows (>15 cm entrance diameter). In terms of using mapping layers, potential habitat is considered to be all areas with at least 20% mature eucalypt crown cover (PI-type mature density class 'a', 'b', or 'c'). From on-ground surveys this is areas with at least 8 trees per hectare over 100 cm dbh. Significant habitat for the masked owl includes native dry forest areas with trees with large hollows (?15 cm entrance diameter) that are mostly mature with no or little regrowth component. In terms of using mapping layers, significant habitat is considered to be all areas of dry forest (TASVEG dry Eucalypt forest and woodland) with at least 20% mature eucalypt crown cover (PI-type mature density class 'a', 'b', or 'c') that is classified as mature (Growth Stage class 'M'). From on-ground surveys this is areas with at least 8 trees per hectare over 100 cm dbh and more than half of the canopy cover is comprised of mature trees. Remnants and paddock trees in agricultural areas may also constitute significant habitat.	Web map
spotted-tailed quoll	<i>Dasyurus maculatus</i>	Potential Range	Potential habitat for the spotted-tailed quoll is coastal scrub, riparian areas, rainforest, wet forest, damp forest, dry forest and blackwood swamp forest (mature and regrowth), particularly where structurally complex areas are present, and includes remnant patches in cleared agricultural land. Potential denning habitat for the spotted-tailed quoll includes 1) any forest remnant (>0.5ha) in a cleared landscape that is structurally complex (high canopy, with dense understorey and ground vegetation cover), free from the risk of inundation, or 2) a rock outcrop, rock crevice, rock pile, burrow with a small entrance, hollow logs, large piles of coarse woody debris and caves. (see Tech Note 10 for more details). Significant habitat for the spotted-tailed quoll is all potential denning habitat within the core range of the species.	Web map

N.V.A. threatened fauna records within 5 km

Common Name	Scientific Name	Easting	Northing	Distance (m)	Accuracy (m)	Observation Type	Observed State	NVA Observation ID
green and gold frog	<i>Litoria raniformis</i>	514044	5407413	896	100	Sighting	Present	1159914
eastern barred bandicoot	<i>Perameles gunnii</i>	515417	5407736	987	1850	Sighting	Present	895598

green and gold frog	<i>Litoria raniformis</i>	513680	5407660	988	100	Sighting	Present	953914
green and gold frog	<i>Litoria raniformis</i>	513812	5407383	1062	100	Sighting	Present	1091127
eastern barred bandicoot	<i>Perameles gunnii</i>	514022	5405889	2333	18500	Sighting	Present	898058
eastern barred bandicoot	<i>Perameles gunnii</i>	515413	5405886	2445	1850	Sighting	Present	895451
eastern barred bandicoot	<i>Perameles gunnii</i>	515413	5405886	2445	3000	Sighting	Present	895201
eastern barred bandicoot	<i>Perameles gunnii</i>	514335	5405684	2490	1340	Sighting	Present	740229
green and gold frog	<i>Litoria raniformis</i>	517112	5406783	2930	5000	Sighting	Present	303270
glossy grass skink	<i>Pseudemoia rawlinsoni</i>	514033	5411440	3311	670	Sighting	Present	607939
eastern barred bandicoot	<i>Perameles gunnii</i>	514033	5411440	3311	1850	Sighting	Present	895452
masked owl	<i>Tyto novaehollandiae</i>	513476	5411441	3440	5000	Sighting	Present	359165
masked owl	<i>Tyto novaehollandiae</i>	513476	5411441	3440	500	Sighting	Present	358422
eastern barred bandicoot	<i>Perameles gunnii</i>	511246	5409594	3580	1850	Sighting	Present	895522
green and gold frog	<i>Litoria raniformis</i>	513412	5411883	3881	1000	Sighting	Present	303581
spotted-tailed quoll	<i>Dasyurus maculatus</i>	514820	5404170	4007	10	Sighting	Present	998708
eastern barred bandicoot	<i>Perameles gunnii</i>	515409	5404036	4223	1850	Sighting	Present	895200
eastern barred bandicoot	<i>Perameles gunnii</i>	510353	5409124	4284	10	Sighting	Present	1238841

green and gold frog	<i>Litoria raniformis</i>	515512	5412783	4720	1000	Sighting	Present	303576
australian grayling	<i>Prototroctes maraena</i>	519381	5407015	4987	20	Sighting	Present	1351183

N.V.A. threatened flora records within 2 km

Scientific Name	Common Name	Easting	Northing	Distance (m)	Accuracy (m)	Observation Type	NVA Observation ID
<i>Brunonia australis</i>	blue pincushion	515006	5408074	486	100	Sighting	300038
<i>Brunonia australis</i>	blue pincushion	515012	5408083	490	100	Sighting	930834
<i>Brunonia australis</i>	blue pincushion	514412	5407683	497	100	Sighting	930757
<i>Brunonia australis</i>	blue pincushion	514412	5407683	497	100	Sighting	300030
<i>Caesia calliantha</i>	blue grasslily	515305	5407570	978	1500	Sighting	931150
<i>Brunonia australis</i>	blue pincushion	514682	5407153	1024	100	Sighting	300034
<i>Hypoxis vaginata</i> var. <i>vaginata</i>	sheathing yellowstar	514012	5409083	1053	400	Sighting	228260
<i>Brunonia australis</i>	blue pincushion	514012	5409083	1053	400	Sighting	228244
<i>Brunonia australis</i>	blue pincushion	514012	5409083	1053	400	Sighting	228245
<i>Senecio squarrosus</i>	leafy fireweed	514012	5409083	1053	400	Sighting	228261
<i>Arthropodium strictum</i>	chocolate lily	514012	5409083	1053	400	Sighting	228246
<i>Brunonia australis</i>	blue pincushion	514012	5409083	1053	400	Sighting	227597
<i>Caladenia patersonii</i>	patersons spider-orchid	514712	5409483	1330	100	Sighting	553014
<i>Caesia calliantha</i>	blue grasslily	514212	5409483	1355	100	Sighting	401736
<i>Brunonia australis</i>	blue pincushion	514212	5409483	1355	100	Sighting	401735
<i>Arthropodium strictum</i>	chocolate lily	514212	5409483	1355	100	Sighting	401741
<i>Brunonia australis</i>	blue pincushion	514512	5409558	1392	100	Sighting	300032
<i>Caladenia patersonii</i>	patersons spider-orchid	514412	5409583	1422	100	Sighting	552988
<i>Brunonia australis</i>	blue pincushion	516112	5407583	1687	100	Sighting	300055
<i>Brunonia australis</i>	blue pincushion	513112	5409183	1744	1200	Sighting	228212
<i>Bolboschoenus caldwellii</i>	sea clubsedge	512859	5407586	1768	10	Sighting	1235898
<i>Juncus amabilis</i>	gentle rush	512799	5407543	1839	10	Sighting	1235899
<i>Arthropodium strictum</i>	chocolate lily	513312	5406783	1842	100	Sighting	345657

<i>Brunonia australis</i>	blue pincushion	515562	5406633	1849	100	Sighting	342834
<i>Brunonia australis</i>	blue pincushion	514637	5410023	1860	100	Sighting	300033
<i>Arthropodium strictum</i>	chocolate lily	512812	5407183	1978	100	Sighting	345681
<i>Senecio squarrosus</i>	leafy fireweed	514012	5410083	1985	1000	Sighting	228262

Appendix G
Traffic Report



Traffic Assessment



Proposed Subdivision

South of Techno Park, Norwood

SUBMITTED BY:

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OCTOBER 2012

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ATTACHMENTS

1. Site Plan

1. Introduction

A proposal is being advanced for a low density residential subdivision with balance area for land to the south of Techno Park, Norwood.

This Traffic Assessment, prepared by Terry Eaton, an experienced traffic engineer, is provided as part of the development submission for the proposed development.

Preparation of the report has included a site visit.

2. The Site

The site of the proposal is an area of land of some 25 hectares with frontage to Poplar Parade and an access strip, minimum width 20 metres connecting to Techno Park Drive.

The land is undulating and generally slopes from the north west to the south east with a relatively steep embankment above Poplar Parade.

The land is undeveloped with use as pasture. Abutting uses include:

- i) Techno Park Commercial / Office uses to the north including a childcare centre just west of the proposed access.
- ii) Residential land, rear of lots fronting Lorne Street, Youngtown.
- iii) Low density residential land to the east and south.

3. The Proposal

The proposal is to subdivide the land in two stages:

Stage 1: 20 low density residential lots with frontage to a west to east cul-de-sac connected to Techno Park Drive with provision for orchard buffer developments on land north and south of the residential lots.

Stage 2: 12 low density residential lots generally to the south west of stage 1 extending from the connecting link to Techno Park Drive as a south side cul-de-sac plus 5 low density residential lots and a 4.2 hectare balance.

The layout indicates future connectivity can be provided by extending stage 2 by a loop road to connect to Loone Street with the potential to extended a street to the north as a return to Techno Park Drive.

This traffic report is provided as an assessment of the proposed residential lots, i.e. lots 1 to 38 and associated orchard developments.



4. Road Access

4.1 Techno Park Drive

This road is constructed as a local access road serving frontage commercial uses. The road extends south from Quarantine Road for a distance of some 280 metres to a round-a-bout with east / west connections for a southern loop.

The north south link is constructed with a sealed pavement some 9.0 metres wide, kerb and channel and grass verges on both sides with a footpath installed along the eastern side.

South of the round-a-bout the loop road layout is constructed with a pavement width of 8.4 metres, rolled kerbs and grass verges with a footpath extending east around the outer edge of the loop from the round-a-bout terminating at the junction to the western most call centre.

The road section profiles are relatively flat, particularly in the vicinity of the proposed access junction for the subdivision.

At the proposed new junction, sight distance is some 100 metres to the east and 90 metres to the west.

4.2 Quarantine Road / Techno Park Drive Junction

At this junction Techno Park Drive is widened to provide for exiting left and right turn lanes with a central median to a widened approach lane (some 4.8 metres). The exit left turn kerb radius is 12 metres, with the left turn entry kerb radius at 10 metres.

Quarantine Road is constructed with one through lane for west bound traffic (some 3.9 metres wide) and one through lane east bound plus a right turn auxiliary lane for the turn to Techno Park Drive (total width 6.0 metre) constructed to provide for off-side passing. The auxiliary turn lane is provided with a 120 metre approach taper and 85 metre storage length.

The eastern approach to Techno Park Drive is widened to provide a left turn auxiliary lane of total length 100 metres.

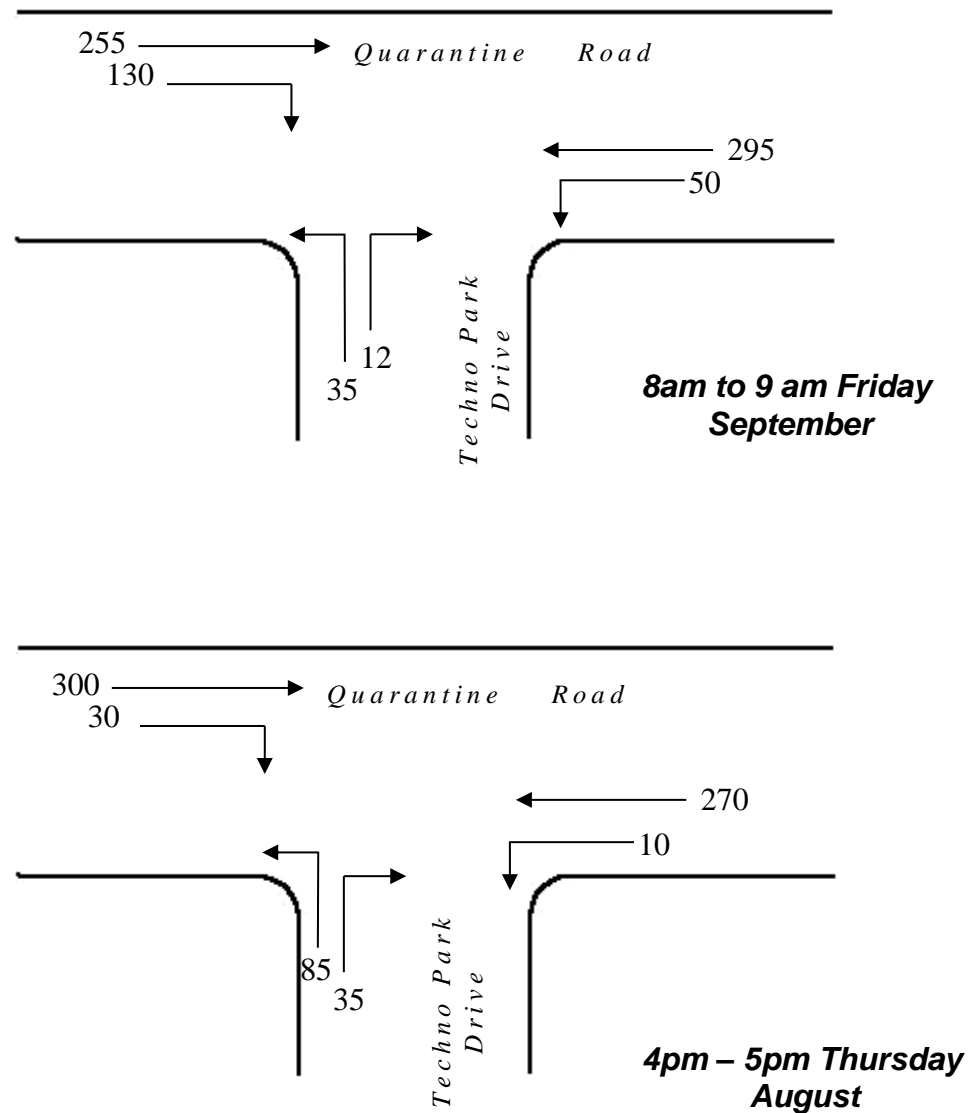
Quarantine Road is straight in proximity to Techno Park Drive with a road profile from the east as an upgrade of some 8% to a crest some 100 metres before the Drive junction then a downgrade at some 3% to a sag curve (low point near the centre line of Techno Park Drive) and then an upgrade of some 8% for some 400 metres further west.

5. Traffic Data

Traffic count data suggests indicative week day volumes for:

- **Quarantine Road**
 - ❖ West of Techno Park Drive 7,500
 - ❖ East of Techno Park Drive 6,500

Peak hour factors at some 9.5% of the week day volume. Turning movements were found to be distributed from site surveys in August/September 2012 as:



Indications are that for major collector/arterial routes in proximity to Launceston traffic growth at some 2% per annum is realistic, i.e. a plus 20 year volume some 1.45 times the present value:

- **Techno Park Drive**

At Quarantine Road – indicative week day volume estimated at some 800 vehicles.

Present development includes 3 residences nearest Quarantine Road, 3 call centre developments (1 vacant), Tasrail Office and a child care centre with 6 large vacant lots sufficient for use as major office developments. Onsite parking use:

	<u>No. of Spaces</u>	<u>Spaces Occupied</u>
- North west building	230	140
- North east building	100	65
- Australian National Railways	173	47
- Western building	150	vacant
- Childcare Centre	27	18
Total	680	270

Discounting the vacant western building indicates some 270 vehicles parked with 530 spaces available, i.e. occupancy at 51%. Indications are that the parking supply provides for shift change overs.

Allowance for take-up of the vacant land and occupancy of the west side building with similar developments to the present suggests extension of the parking supply to a total of some 1,750 spaces with allowance for some 900 vehicles parked. Comparison between the number of vehicles parked and the peak hour movements indicate:

- Morning peak hour arrivals at 70% of number of vehicles parked distributed 70/30 from west/east.
- Morning peak hour departures at 17.5% of number of vehicles parked distributed as per the arrivals.

- Evening departure 45% of number of vehicles parked distributed as per the morning peak hour.
- Evening arrivals 15% of number of vehicles parked distributed as for the morning peak hour.

- **Proposed subdivision (including balance)**

38 lots and orchard areas, allow generation at the adopted residential value of 10 two-way trips per lot, with peak hours at 10% of the daily volume with morning departure distributed 80% leaving and 20% arrival with the reverse for the evening peak hour (total volume 400 vehicles per day).

- **Predicted 2030 Traffic**

- ❖ **Quarantine Road – Through Vehicles**

Average week day – east of Techno Park Drive	9,450
Average weekday peak hour	900
Average weekday West bound	490 *
Average weekday East bound	410 *

* Morning values – reverse for evening

- ❖ **Techno Park Drive at Quarantine Road**

<u>Morning peak hour</u>	<i>Techno Park</i>	<i>Subdivision</i>	<i>Total</i>
From west	440	5	445
From east	190	5	195
To west	110	20	130
To east	50	10	60
	790	40	830

<u>Afternoon peak hour</u>	<i>For Techno Park</i>	<i>For Subdivision</i>	<i>Total</i>
To west	285	5	290
To east	120	5	125
From west	95	20	115
From east	40	10	50
	540	40	580

6. Assessment

6.1 Traffic Safety

- **Subdivision Layout**

The land form and subdivision layout indicates it should be possible to install the subdivision road network to comply with Launceston City Council subdivision road guidelines and standards with adequate sight distance at the proposed junctions.

Stage 1 of the layout includes the link to Techno Park Drive (some 110 metres), a west to east cul-de-sac serving 19 lots plus orchard areas and a section toward the south west (some 50 metres) as connection to future stages, serving 1 lot.

Stage 2 – extension of the south west to lot 30 providing for further staging serving 4 lots plus an east side cul-de-sac some 255 metres long serving 13 lots.

Outline Development Planning – the proposed layout is seen as an extension of the existing Techno Park layout concept and provides for general use by local traffic only, i.e. provides a precinct layout without passage by external traffic, i.e. that is minimises traffic amenity concerns.

Future staging can provide for a connection to Loone Street, Youngtown.

- **Subdivision Junction to Techno Park Drive**

The available sight distance at the new junction (minimum value 90) is in excess of DIER requirements for a 50km/h speed zone and as such is considered satisfactory.



Indications are that the clearance distance between the centre line from the proposed subdivision and the nearest kerb for the exit from the childcare centre will be some 18.6 metres, offsetting the road subdivision centre line some 1.4 metres will provide a 20 metre separation, this separation distance is considered satisfactory.

- **Quarantine Road / Techno Park Drive**

The road provisions at this location with auxiliary turn lanes is considered satisfactory, DIER crash records show no reported crashes at this location and for Techno Park Drive for the last 5 years.

6.2 Traffic Service

- **Proposed Subdivision**

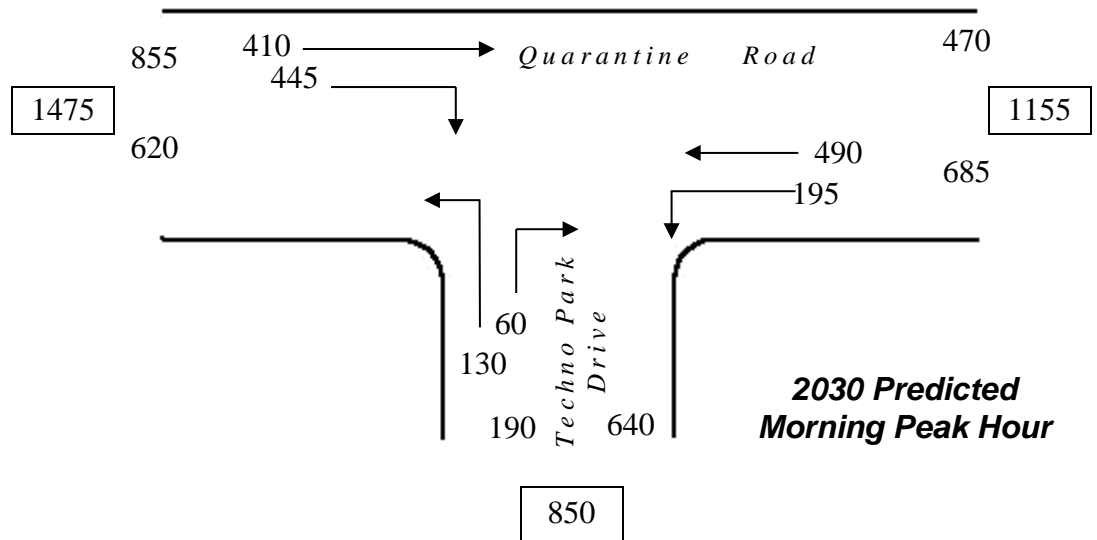
As indicated in the traffic data section of this report stages 1 and 2 are assessed as generating up to 400 vehicles per day at Techno Park Drive, with some 230 vehicles from stage 1 and 170 vehicles for stage 2.

The total traffic volume is well within the Tascord guidelines for traffic use on an access street of 300 – 1,000 vehicles per day. The maximum traffic use for the stage 1 cul-de-sac at some 220 vehicles per day is within the range (up to 300 vehicles per day) for an access place which is the lowest order frontage residential street in the Tascord guidelines.

- **Techno Park Drive / Quarantine Road**

Based on the plus 20 year traffic predictions with allowance for full development of Techno Park with uses similar to the existing indicates:

- **Morning Peak Hour**



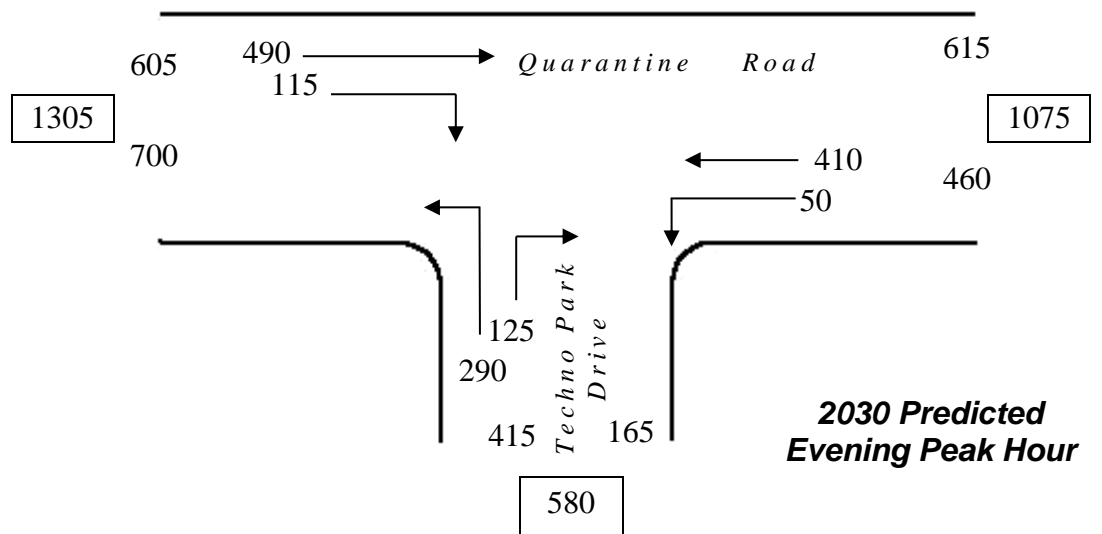
The traffic predictions indicate that stages 1 and 2 of the proposed subdivision contributes less than 5% of the traffic with the majority of the traffic generated by future developments at Techno Park. It can also be noted that the subdivision traffic adds to the counter flow movements at the junction, i.e. exiting rather than the majority entering vehicles.

The highest traffic lane volume (east bound) at 895 vehicles suggests a level of service “D” value for this approach, considered acceptable for an isolated location at peak hour times particularly as diversions are available for access from the eastern street network to Techno Park.

Analysis of the right turn movement to Techno Park Drive as per Austroads Part 5 with 5 second gap and 2 second move up time indicates a practical absorption capacity of some 685 vehicles per hour, utilisation ratio 0.52, average delay 9 seconds with the queue exceeding 4 vehicles for 5% of the peak hour time, suggesting satisfactory operating conditions. The approach storage length provides for 14 vehicles, i.e. well in excess of the 4 vehicle queue.

Assessment for the right turn for Techno Park Drive with allowance for 6 second gap time and 3 second move up time indicates a practical absorption capacity of 175 vehicles with utilisation ratio of 0.28 and average delay 18 seconds level of service B – satisfactory.

➤ **Evening Peak Hour**



The traffic predictions indicate that the stages 1 and 2 of the subdivision account for some 7% of the traffic through the junction.

The traffic volumes on Quarantine Road peak lane volume 615 vehicles is well below the morning peak hour conditions (895 vehicles) suggesting satisfactory operating conditions.

Analysis of the worst case situation, the right turn from Techno Park Drive using similar parameters as for the morning peak hour with 125 vehicles seeking gaps in a through volume of 1015 vehicles indicates a practical absorption capacity of 260 vehicles, utilisation ratio of 0.38 and average delay of 18 seconds, level of service B conditions – satisfactory.

7. Conclusions

A traffic assessment for stages 1 and 2 of a proposed subdivision south of Techno Park indicates the subdivision will generate a minor component of the traffic using Techno Park Drive based on predicted plus 20 year traffic conditions and with full take up of the Techno Park land by developments similar to the existing.

Analysis of the Quarantine Road/Techno Park Drive junction indicates some congestion at morning peak hour times but with a service level comparative to that existing elsewhere on higher order access roads within the Launceston Urban area.

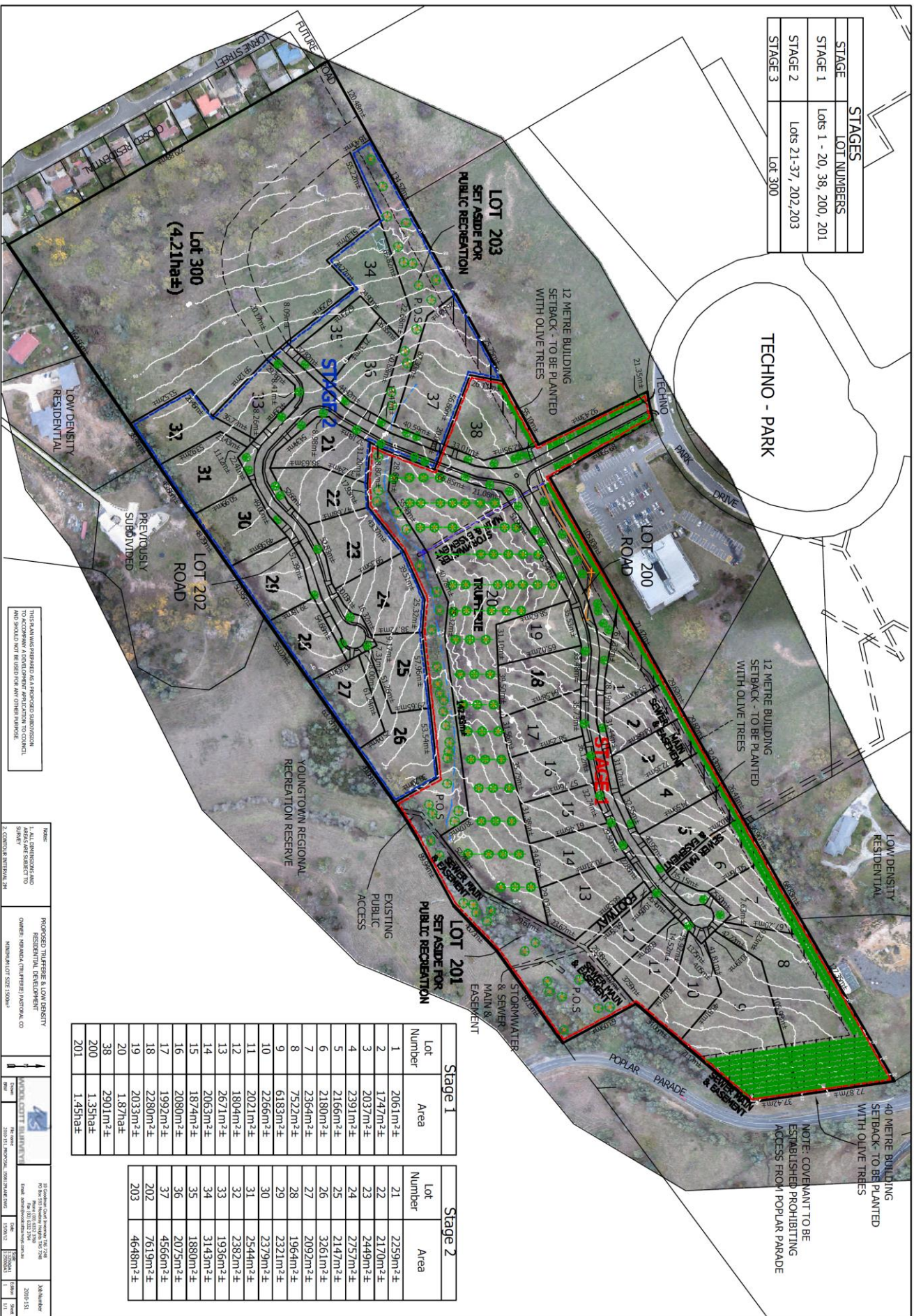
No traffic safety issues have been identified with regard to the subdivision layout and the existing street network in proximity to the development.

Extension of the subdivision by future staging of the western part of the land can allow access to Loone Street, Youngtown to enhance connectivity for both the subdivision and Techno Park.

Terry Eaton

ATTACHMENTS

STAGES	
STAGE	LOT NUMBERS
STAGE 1	Lots 1 - 20, 38, 200, 201
STAGE 2	Lots 21-37, 202, 203
STAGE 3	Lot 300



Stage 1		Stage 2	
Lot Number	Area	Lot Number	Area
1	2061m ² ±	21	2259m ² ±
2	1747m ² ±	22	2170m ² ±
3	2037m ² ±	23	2449m ² ±
4	2291m ² ±	24	2757m ² ±
5	2166m ² ±	25	2147m ² ±
6	2180m ² ±	26	3261m ² ±
7	2364m ² ±	27	2092m ² ±
8	7522m ² ±	28	1964m ² ±
9	6183m ² ±	29	2321m ² ±
10	2266m ² ±	30	2379m ² ±
11	2021m ² ±	31	2544m ² ±
12	1804m ² ±	32	2382m ² ±
13	2671m ² ±	33	1936m ² ±
14	2063m ² ±	34	3143m ² ±
15	1874m ² ±	35	1880m ² ±
16	2080m ² ±	36	2075m ² ±
17	1992m ² ±	202	4566m ² ±
18	2280m ² ±	203	7619m ² ±
19	2033m ² ±		
20	1.87ha±		
38	2901m ² ±		
200	1.35ha±		
201	1.45ha±		

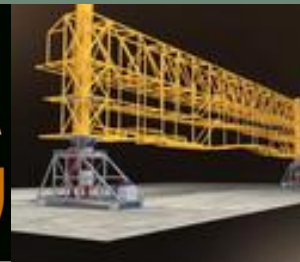
THIS PLAN WAS PREPARED AS A PROPOSED SUBDIVISION AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

PROPOSED ENGINEER & LANDSCAPE ARCHITECT
 HENRIK W. LOT 201 & 203
 HENRIK W. LOT 201 & 203

OWNER: HENRIK W. LOT 201 & 203 INVESTMENT CO
 HENRIK W. LOT 201 & 203 INVESTMENT CO

DATE: 2020-11-17
SCALE: 1:1000
PROJECT NO.: 117

transport infrastructure | community infrastructure | industrial infrastructure | climate change



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