Traders In Purple

Response to the Geo-Environmental Solutions Initial Review of the Agricultural Assessment for the Ridgeside Lane Development

25th February 2019

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Executive summary

This report has been undertaken on behalf of the proponent (Traders In Purple) in response to the Geo-Environmental Solutions (GES) initial review of the agricultural report for the Ridgeside Lane development on the Queenscliff and The Mews properties.

This document provides a number responses to the issues and raised in the GES document and addresses the relevant clauses of the Protection of Agricultural Land (PAL) policy including principles 1, 7 and 8.

The Queenscliff and The Mews properties would not be considered as having any particular importance in terms of agricultural qualities and/or resources that would define it as being of local or broader regional importance due to the lack of prominence of its size, land capability, soils, aspect or potential to constrain access to a waterway or the North Esk Irrigation Scheme.

It is reasonable to consider that the proposed development would involve a number of mitigation measures, and a sensitive approach to the layout and design of the residential development such that the potential for negative impacts and/or constraint on the adjacent agricultural land is minimised.

In the near vicinity of Evandale, a large of residential dwellings that in close proximity to rural resource zoned land which is actively used for agricultural land use activity, and this includes dwellings on the northern, eastern and southern boundary of the town. For the majority of these residential dwellings they are within 20 to 30m of the nearest boundary adjacent to the rural resource zoned land with the buffer distances typically including a fence and variable amounts of vegetation present. These residential dwellings currently co-exist next to the adjacent rural resource zoned land and the associated agricultural land use activity conducted therewith.

1 Response To The PAL Policy Principle 1

The PAL policy principle 1 states:

"Agricultural land is a valuable resource and its use for the sustainable development of agriculture should not be unreasonably confined or restrained by non-agricultural use or development".

1.1 Buffer distances

Section 4 of the "Agricultural Assessment of the Proposed Ridgeside Lane Development" makes a number of comments and considerations on the potential for negative impacts to and from neighbouring agricultural land and outlines the various mitigation measures that the proponent would undertake to alleviate these risks:

"In an effort to minimise the potential for negative impacts and/or constraints on the adjacent agricultural land use activity the proponents have made a significant effort to sensitively design the Ridgeside Lane development, and this includes;

- A 70m wide buffer zone which includes;
    - an 18m wide vegetation corridor that forms the immediate boundary interface that that encompasses the entire development. This vegetation corridor would consist of mixed native species and include bushes, shrubbery and trees.
    - the balance of the buffer zone would consist of a grassland.
- Extensive olive tree plantings over the north western area of the development to provide an enhanced buffer to the nearby vineyard.
- Extensive botanical gardens covering approximately 7 hectares on the central north eastern boundary areas.
- Tree lined avenues and roads, sports fields, various gardens and a number of vegetation corridors that bisect and divide up the development which would mitigate the visual impact and noise emissions generated from the development.
- Graduated development intensity with larger rural "zone A and B" blocks (2.5-3.5 hectares) on the external areas, then low density residential blocks and finally general residential blocks in the centre of the development."

The comment provided in the GES document that a 300m buffer zone is more appropriate in my opinion is excessive and in the vast majority of all buffer zone setbacks between rural resource and residential zone land in Tasmania (including numerous homes in Evandale) are well within this proposed distance provided mitigation measures are included.

It would be reasonable to consider that the proposed 70m wide buffer in conjunction with the extensive 18m wide vegetation corridor and graduated development intensity would be adequate and sufficient in order to limit and prevent the risk of fettering and constraining agricultural land use activity on the adjacent properties.

2 Response To The PAL Policy Principle 7

The PAL policy principle 7 states:

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

2.1 Local considerations for conversion of the agricultural land to non-agricultural use on a district basis

In terms of appreciating and understanding the regional impact of the conversion of agricultural land to non-agricultural associated with the proposed Ridgeside Lane development it would be reasonable to consider how this may affect the amount of agricultural land within the northern midlands district area.

Detailed land capability information relevant to the northern midlands is covered by the South Esk land capability mapping report.

The northern midlands area is included in the South Esk land capability mapping report, and this covers a total area of approximately 216,821 hectares (not including 13,900 hectares of exempt land), table 2 outlines the areas associated with the land capability classes.

Table 1; land capability areas on a district basis

Land Capability*	Area (hectares)	Proportion (%)
3	8,622	3.9
4	122,510	56.6
5	45,524	20.9
6	35,756	16.5
7	4,409	2.1
Total	216,821	100

*the sub classes have been included into the dominant land capability, for example sub class 5+4, 5+6 have been included into the class 5 land

The combined area of the properties in question associated with the Ridgeside Lane development covers a total of 245 ha, and this represents less than 0.2% of the Class 4 land and approximately 0.1% of the total ground on a district basis.

2.2 Regional consideration for conversion of agricultural land to non-agricultural use

In terms of appreciating and understanding the broader regional impact of the conversion of agricultural land to non-agricultural associated with the proposed Ridgeside Lane development it would be reasonable to consider how this may affect the amount of agricultural land within the greater northern midlands, greater Tamar, and Meander Valley areas.

Detailed land capability information included within the greater northern midlands, greater Tamar, and Meander Valley areas is covered by a number of land capability mapping reports:

- Meander
- South Esk
- Tamar
- Pipers

The broader regional area includes the northern midlands, greater Tamar and Meander Valley areas with a total area of approximately 605,165 hectares, table 3 outlines the areas associated with the land capability classes.

Table 2; land capability areas on a broad regional basis

Land Capability*	Area (hectares)	Proportion (%)
1	42	<0.001
2	1,641	0.3
3	32,148	5.3
4	296,403	49.1
5	142,040	23.4
6	116,600	19.2
7	16,291	2.7
Total	605,165	100

*the sub classes have been included into the dominant land capability, for example sub class 5+4, 5+6 have been included into the class 5 land

The combined area of the properties in question associated with the Ridgeside Lane development covers a total of 245 ha, and this represents less than 0.1% of the Class 4 land and less than 0.05% of the total ground on a broader region basis.

2.3 Local and regional prominence of the properties in question

The Queenscliff and The Mews properties associated with the Ridgeside Lane development would not be considered as having any particular prominence and/or importance either on a local district and/or a regional basis.

The Queenscliff and The Mews properties do not have a unique position relative to their value and importance for agricultural land use activities and/or the potential for increased and heightened capacity to negatively impact and/or constrain agricultural land use activities, such as having waterway frontage, access to the NEIS, relative size, soil types, land capability or aspect.

As outlined in section 2.1 and 2.2 of this report the area of land associated with the Ridgeside Lane development overall represents negligible proportion of similar Class 4 land and that of the total land area on a local and broader regional context.

There is no prime agricultural land (land capability <Class 3) on the properties in question nor in the near vicinity, with the nearest prime agricultural land located 7.4 km to the north near White Hills with other prime agricultural land14.2 km further to the west near Longford.

3 Response To The PAL Policy Principle 8

The PAL policy principle 8 states:

"Provision must be made for the appropriate protection of agricultural land within irrigation districts proclaimed under Part 9 of the Water Management Act 1999 and may be made for the protection of other areas that may benefit from broad-scale irrigation development".

3.1 North Esk Irrigation Scheme Considerations

The North East Irrigation Scheme (NEIS) covers land that includes White Hills, Relbia and Evandale, and has a total irrigation allocation capacity of 4,650 ML, covers a total area of 16,545 hectares of irrigable land, with 54 land holders having irrigation rights.

The amount of class 4 land within the NEIS scheme is approximately 11,000 hectares.

The combined irrigation rights associated the properties in question associated with the Ridgeside Lane development is 40 ML, and this represents 0.8% of the total amount of irrigation water available from the NEIS.

The irrigation water rights are fully tradeable within the NEIS scheme and can be permanently sold or leased on a long and/or short term basis, and the water right water currently held by the proponent could be traded accordingly.

Any water trades would need approval from Tasmanian Irrigation, however it is reasonable to consider that the proponents' irrigation water rights could be effectively used by other land holders within the NEIS scheme for agricultural production and therefore this water resource would not be lost.

The NEIS irrigation pipeline, identified as Clarendon 3 pipeline, would not be impacted by the proposed Ridgeside Lane development, and therefore ensures the ongoing delivery of irrigation water to all NEIS irrigators (current and future) on the Clarendon 3 and 4 truck zone and Clarendon A and B spur zone.

3.2 Protection of irrigated land on adjacent properties

As outlined in section 1 as the response to the Protection of Agricultural Land Principles 1 a number of mitigation measures in conjunction with the design and layout of the proposed Ridgeside Lane development would be adequate and sufficient in order to limit and prevent the risk of fettering and constraining agricultural land use activity on the adjacent properties.

The proposed development would not prevent the opportunity for adjacent land holders to engage in broad scale irrigation.

4 References

Noble K.E. 1993, Land Capability Survey of Tasmania, Meander Report, Department of Primary Industry, Tasmania, Australia.

Noble K.E. 1990, Land Capability Survey of Tasmania, Pipers Report, Department of Primary Industry, Tasmania, Australia.

Noble K.E. 1992, Land Capability Survey of Tasmania, Tamar Report, Department of Primary Industries Water and Environment, Tasmania, Australia.

Grose C.J. and Moreton R.M. 1996, Land Capability Survey of Tasmania, South Esk Report, Department of Primary Industry and Fisheries, Tasmania, Australia.

Tasmanian Irrigation. 2016, North Esk Irrigation Scheme District Overview Document, Tasmania, Australia.

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PROJECT NOTE

To:	Brett Robinson	**From:**	Jason Lynch
Date:	April 2019	**Pages:**	1 of 21
Project Code:	18TIP_CONS	**Note Ref:**	
Re:	Traders in Purple: Ridgeside Lane property development responses March 2019, revised 3rd May 2019	**CC:**	

☐ *Urgent* ☐ *Review* ☐ *Comment* ☐ *Reply*

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Potential for land use conflicts with use and development on adjacent land that might arise from the proposed development.

Table 1 ; potential land conflict with use and development on adjacent land that night arise from the proposed development

Potential Conflict from Neighbouring Agricultural Land/Activity	Risk	Mitigation Options
1. Spray drift and dust	Spray drift and dust produced as a result of the application of agricultural chemicals and spreading fertilisers and soil ameliorants on adjacent land.	Risk = low. Proposed extensive shelter belts and separation distances would mitigate the impact of sprays and dust if applied under normal recommended conditions. Aerial spraying is at times practiced in the wider Northern midlands are however ground or spot spraying is a practical and mostly used alternative. Spraying is typically conducted during calm conditions and this inherently minimises the risk of offsite movement of sprays and dusts. Spray events should be communicated in a timely manner to all potentially impacted parties as determined by the Agvet Chemical code of practice, Code of practice for ground spraying.
2. Noise	Sound produced from machinery, irrigation infrastructure (operation of irrigators and pumps), frost fans, bird scaring gas guns, livestock and dogs.	Risk = low. The proposed Ridgeside Lane development is located in a rural area and it is inevitable that sounds associated with farming and primary industry land use activity will be produced on adjacent and nearby properties. Sounds produced in rural areas includes the use of farm machinery when undertaking ground cultivation, feeding of livestock etc..., livestock, dogs, irrigation pumps etc... The proposed 200m setback distance and associated extensive vegetation shelter belts, and internal landscaping would mitigate and diffuse sounds across the land associated with the proposed development area. The residential dwellings on the proposed Ridgeside Lane development would incorporate

		modern design and construction materials and techniques that would minimise the external transmission of sound inside buildings.
3. Irrigation water over residential and rural living property boundary	Opportunity for irrigation water spray to move over residential and rural living property boundary areas,	Risk = low. Irrigation systems are not normally operated in high winds due to excessive evaporative losses and uneven application rates on the ground. The proposed 200m setback distance and extensive vegetation shelter belts would negate the risk of irrigation water over the boundary.
4. Stock escaping and causing damage.	Livestock escaping their host property and having uncontrolled access to adjacent and/or nearby properties and causing damage to infrastructure and disturbing the amenity	Risk = low. Boundary fences must be appropriately designed and maintained in sound condition to be operationally function for the confinement of livestock.
5. Electric fences	Electrified fences have the potential to cause physical harm, albeit it at a low level, to human and potentially pets under their control	Risk = low. Mitigated by the proponent attaching appropriate warning signs on boundary fencing where appropriate.
6. Odour emissions	Smells produced by livestock, certain crops (e.g. onions, broccoli, hemp), agricultural chemicals and. organic fertilisers	Risk = low/moderate. Mitigated by the 200m setback distance surrounding the development, significant vegetation buffer included in the setback and prevailing winds in this area of westerly and therefore with the majority of the agricultural land to the north, east and south of the development there is anticipated to be fewer odour emission sources from the nearby agricultural land to the west.
7. Trespass	Uncontrolled and illegal access by people onto land and interference with crops, livestock and infrastructure	Risk = low. Mitigation measures include maintenance of sound boundary fencing, and appropriate signage to warn inhabitants and visitors about entry onto private land; report unauthorised entry to police.
8. Theft	Criminal theft of agricultural machinery, tools, livestock, crop(s), irrigation infrastructure, vehicles and personal items.	Risk = low. Ensure there is good quality boundary fencing on neighbouring properties and appropriate signage to deter inadvertent entry to property; limit vehicle movements, report thefts to police.
9. Weed infestation	Infestation and uncontrolled management of weeds that can disrupt and impair the normal pastoral	Risk = low. Routine weed control activities and surveillance would be conducted by the proponent.

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	and/or cropping land use activities and create additional weed control costs.	
10. Fire outbreak	Fire moving on pasture land and/or into crops and damaging farm infrastructure and personal property.	Risk = low. Fire risk can be mitigated by careful operation of outside barbeques, disposal of rubbish and abiding by all guidelines and directions provided by the fire brigade and emergency authorities. The vegetation in the setback and associated vegetation buffer would be maintained such that the accumulation of excessive amounts of biomass would be kept to a minimum and maintained as per the vegetation management recommendations provided by the Tasmanian Fire Service "Guidelines for the design of fuel breaks in the urban-rural interface" 2016.
11. Dog menace to neighbouring livestock	Potential for dogs to disturb livestock, in particular sheep, and to chase, maim and kill animals.	Risk = low. Mitigated by ensuring that good communications are established and maintained between the residents and body corporate of the Ridgeside Lane development to secure all dogs and keep them under control, appropriate fencing is maintained within the development and along the boundary fencing and where appropriate self-closing gates installed in the boundary fencing as required.
12. Broad scale irrigation development	Constraining the potential for broad scale irrigation and the opportunity to invest in significant irrigation infrastructure (e.g. underground mains, centre pivot, pumps)	Risk = low. The proposed development is confined to the Mews and Queensliff properties and it is not anticipated that there would be constraints and negative impacts imposed upon the adjacent neighbouring properties associated with a limiting access and/or use of irrigation water or waterways. As outlined previously in point 3, it is anticipated that the potential risk for irrigation water over the boundary of the residential properties will not occur, and therefore adjacent land owners would be free and able to fully irrigate their land without having the risk of interfering with residents of the proposed development.

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13. Water storage development	Constraining the opportunity for build and/or expand the size of water storages, due to a loss access to waterways and the associated water flows and the potential requirement for an increased dam hazard risk rating.	Risk – low. No waterways are present on the property associated with the proposed Ridgeside Lane development (DPIPWE Water Assessment Tool version 1.0.11-0) and therefore it has no impact on issues due to the prevention of the flow of waterways and subsequent opportunity for potential water extraction. The Water Management Act 1999 (WMA) is part of the State's integrated Resource Management and Planning System and provides for the management of Tasmania's freshwater resources. This includes the Water Management (Safety of Dams) Regulations 2015 to ensure owners of existing dams meet their dam safety responsibilities. The WMA does not consider land use change downstream of an existing dam, it is the owner of a dam's responsibility to ensure their dam is maintained in a safe condition and that it meets the Water Management (Safety of Dams) Regulations 2015. This could include a change to the dams' consequence category due to a change downstream of the dam which then becomes the owner of the dam's responsibility to deal with and not the downstream landowner.

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The potential loss of agricultural land from Tasmania's agricultural estate (including but not limited to prime agricultural land and land within irrigation districts.

The proposed Ridgeside Lane development would cover a total area of 245 hectares.

In terms of appreciating and understanding the relative potential loss of agricultural land from Tasmania's agricultural estate it is important to provide detail on the size of the agricultural estate on a local (Northern Midlands), broad regional (Tamar and Meander Valley and Northern Midlands) and statewide basis.

Additionally, as the Ridgeside Lane development is located in a proclaimed irrigation district, as per the North Esk Irrigation Scheme (NEIS) it is appropriate to understand and appreciate the relative potential loss of irrigated agricultural land on a local (as per the NEIS) and statewide basis for all irrigation districts.

Local impact - Northern Midlands agricultural estate

The northern midlands area is included in the South Esk land capability mapping report which covers a total area of approximately 216,821 hectares of agricultural land. Table 1 outlines the total agricultural land available and provide detail on the specific amount of land associated with each of the land capability classes present.

Table 2; land capability areas in the Northern Midlands based on the South Esk land capability report

Land Capability*	Area (hectares)	Proportion (%)
3	8,622	3.9
4	122,510	56.6
5	45,524	20.9
6	35,756	16.5
7	4,409	2.1
Total	216,821	100

*the sub classes have been included into the dominant land capability, for example sub class 5+4, 5+6 have been included into the class 5 land

The combined area of the properties in question associated with the Ridgeside Lane development covers a total of 245 ha, and this represents less than 0.2% of the Class 4 land and approximately 0.1% of the total ground in the Northern Midlands (as per the South Esk land capability mapping area).

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Broad regional impact – Tamar and Meander Valley/Northern Midlands agricultural estate

On a regional basis if the Ridgeside Lane property development is assessed on a broad regional basis that encompasses the Northern Midlands, and Tamar and Meander Valley areas which when combined cover a total area of approximately 605,165 hectares of agricultural land.

The information used to provide detail on the total land area and associated land capability has been obtain from the South Esk, Meander, Pipers and Tamar land capability reports.

Table 2 outlines the areas associated with the land capability classes.

Table 3; land capability areas on a broad regional basis

Land Capability*	Area (hectares)	Proportion (%)
1	42	<0.001
2	1,641	0.3
3	32,148	5.3
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6	116,600	19.2
7	16,291	2.7
Total	605,165	100

*the sub classes have been included into the dominant land capability, for example sub class 5+4, 5+6 have been included into the class 5 land

The combined area of the properties in question associated with the Ridgeside Lane development covers a total of 245 ha, and this represents less than 0.1% of the Class 4 land and less than 0.04% of the total ground on a broader region basis.

Statewide impact on the Tasmanian agricultural estate

The total area of the agricultural estate in Tasmania cover 18,900,000 hectares, which represents 28% of the total land area within the state, and includes all prime and non-prime agricultural land and proclaimed irrigated districts.

The combined area of the properties in question associated with the Ridgeside Lane development covers a total of 245 ha, and this represents and less than 0.0005% of the total agricultural estate in Tasmania.

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Irrigation district impact

North Esk Irrigation Scheme

The North East Irrigation Scheme (NEIS) covers land that includes White Hills, Relbia and Evandale, and has a total irrigation allocation capacity of 4,650 ML, covers a total area of 16,545 hectares of irrigable land, with 54 land holders having irrigation rights.

The amount of class 4 land within the NEIS scheme is approximately 11,000 hectares.

The combined area of the properties in question associated with the Ridgeside Lane development covers a total of 245 ha, and this represents less than 2.2% of the Class 4 land and less than 1.4% of the total irrigable land within the NEIS.

The combined irrigation rights associated the properties in question associated with the Ridgeside Lane development is 40 ML, and this represents 0.8% of the total amount of irrigation water available from the NEIS.

Tasmania's Total Proclaimed Irrigated Land Estate

In Tasmania there are 23 proclaimed irrigation districts, and these cover a combined total area of 758,972 hectares.

The combined area of the properties in question associated with the Ridgeside Lane development covers a total of 245 ha, and this represents and less than 0.0035% of the total area of proclaimed irrigation districts in Tasmania.

References

Noble, K.E, Land Capability Survey of Tasmania Pipers, 1:100,000 map, Department of Primary Industry, Tasmania, Australia, 1990.

Noble, K.E, Land Capability Survey of Tasmania Tamar, 1:100,000 map, Department of Primary Industry, Tasmania, Australia, 1992.

Noble, K.E, Land Capability Survey of Tasmania Meander, 1:100,000 map, Department of Primary Industry, Tasmania, Australia, 1993

Grose, C.J and Moreton R.M, Land Capability Survey of Tasmania. South Esk, 1:100,000 map Department of Primary Industry and Fisheries, Tasmania, Australia, 1996

ABARES, Tasmanian Regional Profiles, Australian Government, ACT, 2017.

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The potential for land use conflicts with adjoining land, such as agricultural land and nearby agricultural activities, taking into account future demand for this land.

Previously in this report an extensive number of potential for land use conflicts with the use and development on adjacent land that might arise from the proposed development have been addressed. The key issues relating to the potential for conflict with agricultural land and its associated use which were addressed included;

- Spray drift
- Irrigation water over property boundaries
- Noise and odor emissions
- Constraint imposed on irrigation scheme development and water storages
- Weed infestation
- Dog menace

The various potential conflicts were addressed and a range of mitigation measures and moderating actions that rendered the risk of these conflicts to be considered low.

Future demand for this land may include expansion and intensification of existing agricultural land use activities and enterprises such as the conversion from dryland to irrigated cropping and pastoral production activities and viticulture, or alternatively the development new enterprises such as dairying, orcharding or protected agriculture, such as polyhouse production of berry fruit and floriculture crops.

It is reasonable to consider that the potential conflicts relating to the current agricultural land use on adjacent and nearby land would be consistent with the conflicts relating to the future demand for land for used for agricultural land use activity and these have been already addressed and considered. It is important to note that the likely key limitations for the potential future demand for land adjacent to and nearby the proposed Ridgeside lane development would be largely determined by access to irrigation water.

Additional irrigation could come from the North Esk Irrigation Scheme (NEIS), however, the NEIS is fully subscribed.

The proponents of the Ridgeside Land development have a 40 ML water right that could be traded away although this realistically offers only a small amount of irrigation water relative to the total demand for any large-scale irrigated agriculture development and/or cop production system. 40 ML of irrigation would be considered sufficient to fully irrigate 8 ha of pasture (used for red meat and/or dairying), 10ha of potatoes, 16 ha of poppies, 20 ha of vines or 8 ha of strawberry polyhouse production.

Other irrigation water resources could come from the Lower South Esk Irrigation Scheme, although this is also fully subscribed and therefore an irrigation water right would have to be bought from existing irrigators.

Privately developed irrigation schemes could be undertaken to extract and store irrigation water from waterways in the area. No waterways flow through the land associated with the Ridgeside Lane development, and therefore access to suitable waterways is not constrained and/or negatively impacted as a result of this development.

Therefore, it is reasonable to consider future agricultural land use activity is likely to constrained in scale and intensity due to the distinct lack of large volumes of irrigation water, that is unless additional water resources can be made available via Tasmanian Irrigation and/or private schemes are developed.

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Considering existing and proposed vineyard plantings on 763 White Hills Road, demonstrate with a setback of less than 200m to sensitive use is appropriate.

The Ridgeside Lane master plan has been revised and now the setback distance of 200m is includes as part of the internal boundary buffer distance for the complete perimeter of the development, and this includes a 200m boundary setback adjacent to the property at 763 White Hills Road.

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Address the potential for frost fans on 763 White Hills Road, and the requirement under the Tasmanian Planning Scheme for an attenuation distance of 2,000m between frost fans and sensitive uses.

Frost fans may be required for the operational requirements of the vineyard at 763 White Hills Road to minimise the incidence and severity of low temperature damage to vines during principally during spring.

Frost fans work by generating an artificial airflow that moves excessively cold air away from the vines and generates sound from the machinery that drives fan blades as well as the air movement.

The proposed development at Ridgeside Lane would result in it being located within a 2,000m attenuation distance of the potential frost fans located on the property at 763 White Hills Road.

Importantly, large sections of the northern and eastern areas of Evandale, with approximately 62% (61 hectares) of the town's general residential zoned land, are also currently located within the 2,000m attenuation zone.

The 2,000m attenuation distance centered on the property at 763 White Hills Road is detailed in Figure 1.

The potential for sound emissions that could negatively impact the proposed Ridgeside lane development would be mitigated by;

- The topographic variation between the two properties means the 763 White Hills property ranges from 10-70m lower in elevation than the location of the Ridgeside Lane property
- The Ridgeside Lane development is located upslope of the 763 White Hills property
- The land associated with entire Ridgeside Land development has a 200m setback from the adjacent properties in all directions and this in conjunction with the extensive vegetation buffer (mixed species ad various heights) would moderate sound transmissions.
- On the north west area of the proposed Ridgeside Land development a landscaped area is proposed, and this includes an extensive planting of olive trees which would further add to the moderation of potential sound transmission from the north.
- The Ridgeside Lane development includes a considerable amount of internal landscaping including trees and shrubbery that would act to diffuse any sound.
- The residential dwellings on the proposed Ridgeside Lane development would incorporate modern design and construction materials and techniques that would minimise the external transmission of sound inside buildings.

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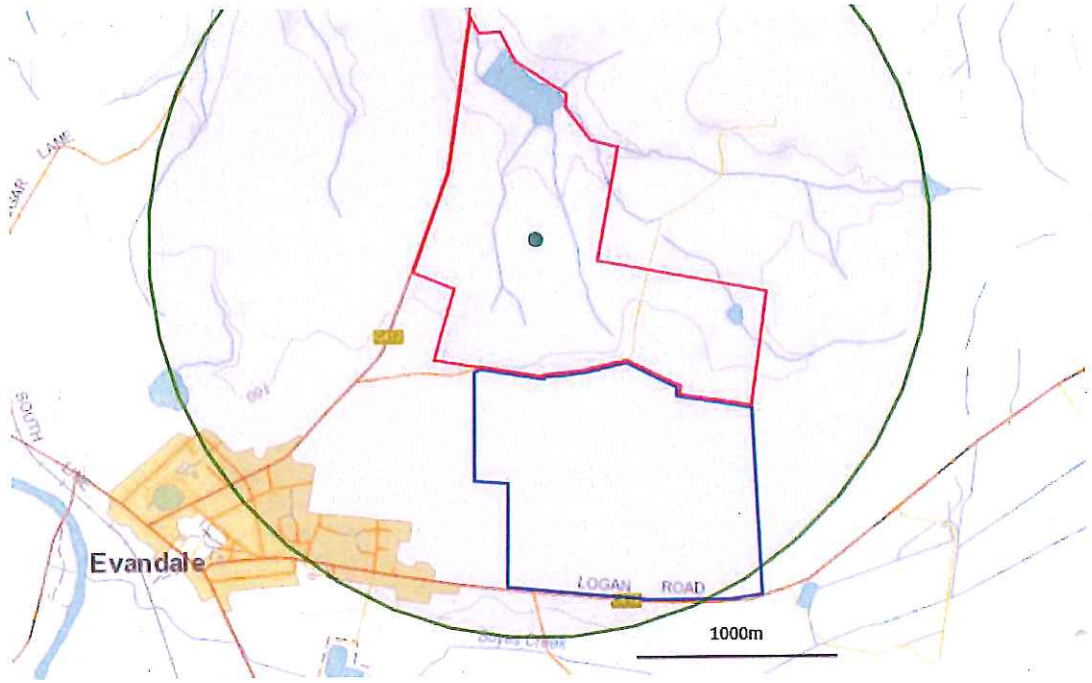

Figure 1; 2000m attenuation distance based on a central point at the 763 White Hills property (marked in red) and the Ridgeside Lane development (marked in blue)

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Address the use of bird scaring devices at the vineyard on 763 White Hills Road and the potential impact that nuisance claims from sensitive uses would have on the operation of the vineyard use.

Bird scaring devices, as per gas guns, may be required for the operational management of the vineyard at 763 White Hills Road to minimise the incidence and severity of bird damage to vines during principally during summer and early autumn to protect the maturing fruit during daylight hours.

Gas guns work by detonating LPG gas which generates an explosion and the sudden sound scares birds and encourages them to move away from the vines. The sound generated by gas guns can be up to 120 decibels and it is recognised they can provide bird scaring protection up to 4 hectares although terrain and vine canopy and layout would influence this potential treatment area.

The potential for sound emissions that could negatively impact the proposed Ridgeside lane development would be mitigated by;

- The topographic variation between the two properties means the 763 White Hills property ranges from 10-70m lower in elevation than the location of the Ridgeside Lane property
- Gas guns are operated within vineyards and not on the boundary of the boundary and hence the sound emissions are progressively diffused towards the edges of the vineyard
- The Ridgeside Lane development is located upslope of the 763 White Hills property
- The Ridgeside Lane development includes a considerable amount of landscaping including trees and shrubbery that would act to diffuse any sound
- The land associated with entire Ridgeside Land development has a 200m setback from the adjacent properties in all directions and this in conjunction with the extensive vegetation buffer (mixed species ad various heights) would moderate sound transmissions.
- On the north west area of the proposed Ridgeside Land development a landscaped area is proposed, and this includes an extensive planting of olive trees which would further add to the moderation of potential sound transmission from the north.
- The Ridgeside Lane development includes a considerable amount of internal landscaping including trees and shrubbery that would act to diffuse any sound.
- The residential dwellings on the proposed Ridgeside Lane development would incorporate modern design and construction materials and techniques that would minimise the external transmission of sound inside buildings.

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Address the impact on surrounding rural uses of the potential increase in dog attacks on sheep and biosecurity risks from the proposed Rural Living lots.

The ability to address the effectively mitigate the risk of dog attacks on sheep on adjacent land would require the establishment and installation of:

1. Dog proof fencing and where appropriate self-closing gates at pedestrian access points would be installed along the entire boundary perimeter of the proposed development and prevent the uncontrolled movement of dogs into and out of the development.
2. The external boundary fencing of the rural living blocks would have appropriate dog proof fencing installed and self-closing gates to prevent the uncontrolled movement of dogs.
3. The body corporate would undertake regular and ongoing inspections and as required maintenance of the dog proof fencing and self-closing gate infrastructure

The potential biosecurity risks associated with the development could potentially include weeds and the transmission of animal, plant and soil borne diseases.

Weed biosecurity risks are associated with the development of weed infestations and the subsequent potential for the spread of weed seeds and the associated loss of productivity and the additional cost of weed control. In order to prevent weed infestations the body corporate would undertake regular and ongoing inspections of the vegetation shelter belts and setback area and undertake appropriate weed control activities, and also work with property owners to undertake effective weed control activities as required.

The keeping of animals and livestock within the Ridgeside Lane development would need to be compliant with the Northern Midlands council interim planning scheme requirements and additionally controlled by the Ridgeside Lane body corporate. It is not anticipated that the Ridgeside lane development would create any additional livestock biosecurity risks.

Trespass onto adjacent properties could result in the uncontrolled movement of soil and the potential for plant material (diseased plants and/or weeds) onto adjacent properties. Appropriate fencing and signage to prevent the trespass of residents on adjacent properties could be considered.

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Address the impact on surrounding rural uses of the potential for noise restrictions for night time pumping and spraying and other day to day farming activities, including the legal requirement not to spray some chemicals within 100m of a residential or industrial property.

It is an accepted part of the Ridgeside Lane development that rural activity would form a normal and everyday part of the agricultural land use activity on the adjacent and surrounding rural resource zoned land.

The key areas for conflict with agricultural land use activity would likely be to the south, north and east in terms of current and potential future land use intensity, enterprise diversity and broad scale irrigation operations.

Potential for noise emission restrictions on adjacent land

A wide range of agricultural activities are typically carried out as part of the daily farming and land management activities that can and do create noise and this includes the use of farm machinery, livestock, irrigation infrastructure (operation of irrigators and pumps), frost fans, bird scaring gas guns and dogs.

The proposed layout of the Ridgeside Lane development includes a setback distance of 200m which is included as part of the external boundary buffer distance for the complete perimeter of the development, and this in conjunction with the extensive shelter belts proposed as part of the boundary setback provides significant mitigation to disperse and soften the sounds generated on the adjacent land.

The prevailing wind is predominantly westerly, however due to the topography of this area of the northern midlands creates northerly and north westerly winds. The wind direction experienced on the proposed site of the Ridgeside Lane development and that of the adjacent properties to the south, north and east would further assist in minimising and moderating the sounds produced from agricultural operational activities.

The residential dwellings on the proposed Ridgeside Lane development would incorporate modern design and construction materials and techniques that would minimise the external transmission of sound inside buildings.

It is not anticipated or requested that due to the proposed Ridgeside Lane development any additional restrictions or constraints would be imposed upon land owners and producers on adjacent land relating to the noise emissions produced during the undertaking of normal and accepted agricultural operations and activities.

Spraying of agricultural chemicals

As outlined in the Agvet chemical code of practice 'Code of practice for ground spraying", as per section 4: property owners and managers, point 21 states "If you are a commercial grower or producer, you should notify occupiers of properties and buildings within 100 metres of any area to be sprayed, of your intention to spray at least one, but preferably two days in advance. The information you provide should include

details of the sprays to be used and the steps that will be taken to minimise drift. Verbal notification is acceptable."

Similar requirements for setback distances are made in the Agvet chemical code of practice 'Code of practice for aerial spraying", as per section 5: exclusion zone point 5b) states "An agricultural chemical product may not be discharged:- within 100 metres of a dwelling or occupied building without permission from the occupants"

As the proposed setback distances on the Ridgeside Lane development would be 200m, the adjacent land owners would not be required to contact the residents of the proposed development, and therefore the ground or aerial spraying activities would not impose additional notification requirements.

It is important to note that the Agvet chemical code of practice and individual agricultural chemical labels approved by the APVMA may describe additional safety measures and practices that must be followed by property owners and spray applicators to minimise the potential risk of environmental harm and to human safety, and this can describe the weather and seasonal conditions at the time of spraying and additional buffer distances to sensitive areas.

It is important to note that the application of agricultural chemicals is conducted when environmental conditions are considered appropriate, and this includes during calm weather and avoiding excessive heat, and therefore the very nature of spraying activities undertaken by producers would provide for an initial low risk profile for chemical trespass due to spray drift.

The prevailing wind is predominantly westerly, however due to the topography of this area of the northern midlands creates northerly and north westerly winds. The wind direction experienced on the proposed site of the Ridgeside Lane development and that of the adjacent properties to the north, south and east would further assist in minimising and moderating the potential spray issues produced from agricultural operational activities.

It is not anticipated that due to the proposed Ridgeside Lane development any additional restrictions or constraints would be imposed upon land owners and producers on adjacent land relating to the application of agricultural chemicals produced during the undertaking of normal and accepted agricultural operations and activities.

References:

DPIPWE, Agvet Chemical code of practice, Code of practice for ground spraying, Tasmanian Government 2001.

DPIPWE, Agvet Chemical code of practice, Code of practice for aerial spraying, Tasmanian Government 2002.

Grose, C.J and Moreton R.M, Land Capability Survey of Tasmania. South Esk report, Department of Primary Industry and Fisheries, Tasmania, Australia, 1996

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Address the impact on surrounding rural uses of the potential for nuisance claims from manure spreading.

The application of manure and other organic soil ameliorants has the potential to generate dust and odor emission.

The potential for the Ridgeside lane development to negative impact and constrain the use of manure and other organic soil ameliorants would be mitigated by a number of factors;

1. Land owners are typically careful and considered when it comes to the application of all fertiliser types including synthetic and manure based and work hard to minimise the offsite movement of these products due to economic and environmental considerations. Therefore fertilisers, including synthetic and manure based, are spread with an appropriate due care and attention to ensure the nutrients applied are targeted to be and retained on the farm land itself and not onto adjacent properties, roadways, waterways and/or other sensitive areas.
2. The Ridgeside land development has a 200m setback distance around the entire boundary area and in conjunction with the vegetation corridor would provide a sufficient buffer distance to prevent the inadvertent off-site non-target movement of manure and diffuse the odor emissions that could move into the residential areas on the development.
3. The prevailing wind is predominantly westerly, however due to the topography of this area of the northern midlands creates northerly and north westerly winds. The wind direction experienced on the proposed site of the Ridgeside Lane development and that of the adjacent properties to the south and west would further assist in minimising and moderating the potential for dust movement and odor issues.

It is not anticipated that due to the proposed Ridgeside Lane development any additional restrictions or constraints as a result of nuisance claims by residents would be imposed upon land owners and producers on adjacent land relating to the application of agricultural chemicals produced during the undertaking of normal and accepted agricultural operations and activities.

References

Dettrick D., McPhee J, Tasmanian Biosolids Reuse Guidelines, Department of Primary Industry, Water and Environment, 1999

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Address potential agricultural uses of the site if it is irrigated.

Irrigated agricultural land use activity

The potential irrigated agricultural land use activities that could be conducted on the site if it was used as rural resource could include;

1. Broadacre cropping, such as for cereals (wheat, barley), canola, grass seed, hemp and poppies
2. Vegetable cropping, such as for broccoli, peas, potatoes
3. Pastoral, such as for background dairy heifers and prime lamb or beef cattle finishing, breeding ewes and cows and agistment of cattle and sheep
4. Horticultural, such as for protected cropping (berry fruit or floriculture), viticulture or olives

If the property in question was utilised for irrigated agriculture the lack of irrigation water resources is a major constraint on the potential scale and intensity of an irrigated land use activity.

No waterways or dams of any significance are present on the property, although it does have a 40 ML water right to the North Esk Irrigation Scheme (NEIS), this amount of water offers a limited amount of irrigated agriculture.

It is important that note that the NEIS is fully allocated and no additional surplus irrigation water allocations are available, although the potential to purchase additional irrigated water could be traded in.

Land use activity		Irrigation Water Use* (ML/ha)	Gross Margin Return* ($/ha)	Frequency of crops
Cropping (broadacre)	Barley	1.5	1,000	1 in 4 years
	Canola	1.2	550	1 in 4 years
	Carrot seed	4	3,250	1 in 7 years
	Grass seed	2	1,500	1 in 4 years
	Hemp	2	1,500	1 in 4 years
	Poppies	2.5	3,000	1 in 4 years
	Wheat	2	2,000	1 in 4 years
Cropping (vegetable)	Broccoli	3	2000	1 in 5 years
	Peas	5	1,150	1 in 5 years
	Potato	5	9,400	1 in 7 years
Pastoral	Prime lamb	4	780	Ongoing
	Beef finishing	4	1,340	Ongoing
Horticulture	Viticulture*	2	16,800	Ongoing
	Hazelnuts*	3.5	9,500	Ongoing
	Olives*	2.5	12,300	Ongoing
	Strawberry	5	82,000	Ongoing

*typically requires 5-6 years before these enterprises are established

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Irrigation agricultural land use activity economics

The agricultural financial returns for the land could be considered under three scenarios:

1. Unlimited irrigation water but cropping use if determined by the land capability of the ground with the balance of the property used for a dryland sheep breeding enterprise
2. Limited irrigation water as per the current 40 ML NEIS allocation that constrains the amount of cropping with the balance of the property used for a dryland sheep breeding enterprise
3. Limited irrigation water as per the current 40 ML NEIS allocation used for the highest possible land use activity, that being strawberry production, with the balance of the property used for a dryland sheep breeding enterprise

Scenario 1

- All land on the property is class 4 ground and based on a potential 2 in 10-year cropping rotation this equates to the potential for approximately 50 hectares (245 x 2 ÷10) of land to be cropped annually. If it is assumed a 2 in 10 year crop rotation includes 3x 50 hectare harvests each of wheat, poppy and grass seed crops and a single harvest of potatoes this would provide an average annual gross margin return of $144,500.
- If the balance of the property not irrigated, covering 195 hectares is used for dryland pastoral land use activities as per a sheep breeding enterprise based on an 18 DSE/ha carrying capacity (with each DSE valued at $45) would provide an annual gross margin return of $157,950.
- Over a 10 year period the potential total agricultural related land use activity gross margin would be $302,450 per annum.

Scenario 2

- Cropping is limited to the use of 40 ML of NEIS irrigation water, and therefore over a 10 year period included 3 harvests each of wheat (20 hectares), poppy (16 hectares) and grass seed crops (20 hectares) and a single harvest of potatoes) this would provide an average annual gross margin return of $42,900.
- If the balance of the property not irrigated, averaging at 230 hectares is used for dryland pastoral land use activities as per a sheep breeding enterprise based on an 18 DSE/ha carrying capacity (with each DSE valued at $45) would provide an annual gross margin return of $186,300.
- Over a 10 year period the potential total agricultural related land use activity gross margin would be $229,200 per annum.

Scenario 3

- Strawberry production is limited to the use of 40 ML of NEIS irrigation water for a total of 8 hectares of production, and therefore over a 10 year period would provide an average annual gross margin return of $656,000.
- If the balance of the property not irrigated, covering at 237 hectares is used for dryland pastoral land use activities as per a sheep breeding enterprise based on an 18 DSE/ha carrying capacity (with each DSE valued at $45) would provide an annual gross margin return of $191,170.

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- Over a 10 year period the potential total agricultural related land use activity gross margin would be $847,970 per annum.

As a baseline comparison if the 245 hectares on the property were used solely for dryland pastoral use, that being as a sheep breeding based on an 18 DSE/ha carrying capacity (with each DSE valued at $45) would provide an annual gross margin return of $198,450.

References:

Grose C.J., Guidelines for the Classification of Agricultural Land in Tasmania, DPIWE, Tasmanian Government 1999.

DPIPWE, crop gross margins – low rainfall 2018

pitt&sherry

Initial Bushfire Assessment

Ridgeside Lane, Evandale

Prepared for
Traders In Purple

Client representative
Brett Robinson

Date
1 May 2019

Rev 01

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Prepared by — Ian Abernethy		**Date** — 01 May 2019
Reviewed by — Leigh Knight		**Date** — 01 May 2019
Authorised by — Andy Turner		**Date** — 01 May 2019

Revision History

Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
00	Report for client	I. Abernathy	L. Knight	A. Turner	23/04/2019
01	Clients Changes	I. Abernethy	L. Knight	A. Turner	01/05/2019

1. Purpose of the Report

The purpose of this report is to provide a high-level Bushfire Risk assessment relating to a development proposal to the east of Evandale township.

The request for a Bushfire Assessment came out of a meeting of the Northern Midland Council of March 2019 where there was a request to amend the Northern Regional Land Use Strategy to allow for consideration of this major development.

DECISION

Cr Goninon/Cr Davis

That the matter be deferred to the 18 April 2019 meeting pending provision of further information.

Carried unanimously[1]

2. Proposal

Traders in Purple have, with the assistance of planning and architectural consultants, have developed a master plan for a mixed use development to the east of the existing Evandale township.

Figure 1: Master Plan Ridgeside Lane (Lange Design)

[1] Page 462 – Minutes of Ordinary Council Meeting March 2019 – Northern Midlands Council

The development is made up of the following components:

- A village comprising a café, restaurant, cellar door specialising in local produce. The village will also include a sustainability centre, education hub and artisan village, with a variety of Green Star buildings accommodating workshops, studios and classroom facilities for sustainable living, backyard growing and small-holder farm courses, culinary arts and art & craft courses
- A 4.5 star 100 room hotel with conference and wedding facilities for 200 guests, restaurant, bar and café. A hotel management education facility will provide training for up to 25 students
- A health and wellbeing retreat in a tranquil setting with accommodation for up to 40 guests
- Eco resort accommodation consisting of 20 villas within a landscaped setting
- A retirement village – Care Centre in a single building
- Large General Residential lots to create opportunities for 160 for affordable housing developments
- 346 x General Residential allotments ranging in size from 450m2 to 669m2
- 46 x Low Density Residential allotments ranging in size from 1,500m2 to 5,500m2
- 27 x Rural Living 'Zone A' lots ranging in size from 1 hectare to 1.95 hectares
- 17 x Rural Living 'Zone B' lots ranging in size from 2 hectares to 2.64 hectares, with private driveways off Logan Road
- Botanical gardens featuring native and exotic species and demonstration gardens, pathways, picnic shelters and seating area
- Neighbourhood parkland providing recreational open space for residents and visitors, with a pathway network connection through to Evandale village
- Neighbourhood demonstration farm and agribusiness facility; and
- Utilities precinct to accommodate the neighbourhoods 'state of the art' sewerage and waste water treatment facility, renewable energy storage facility, recycling centre and green waste composting facility.[2]

To allow the proposed development to be considered an amendment to the Northern Midlands Interim Planning Scheme 2013 is required.

3. Statutory Basis – Planning Scheme Amendment

The Land Use Planning & Approvals Act 1993 requires that an amendment to a planning scheme must be consistent with the relevant regional land use strategy.

The Northern Tasmania Regional Land Use Strategy is the relevant regional land use strategy and it does not identify the land for development as proposed. As such, an amendment to the planning scheme would be inconsistent with the relevant regional land use strategy.

The request is therefore requesting an amendment to the Northern Tasmania Regional Land Use Strategy to include the land within the 'urban growth area' classification under the Strategy. This would allow consideration of an amendment to the planning scheme.

[2] TCG Planning – submission to Northern midlands Council 2018

4. Site

The proposal involves the following land parcels:

Table 1: Site Information

	Property 1	**Property 2**	**Property 3**
Property Address	211 Logan Road, Evandale TAS 7212	98 Ridgeside Lane, Evandale TAS 7212	Logan Road, Evandale TAS 7212
Property ID	1898289	2688486	1898529
Title Reference	106773/1	145763/2	101154/1

The three titles are represented graphically below – outlined in bold:

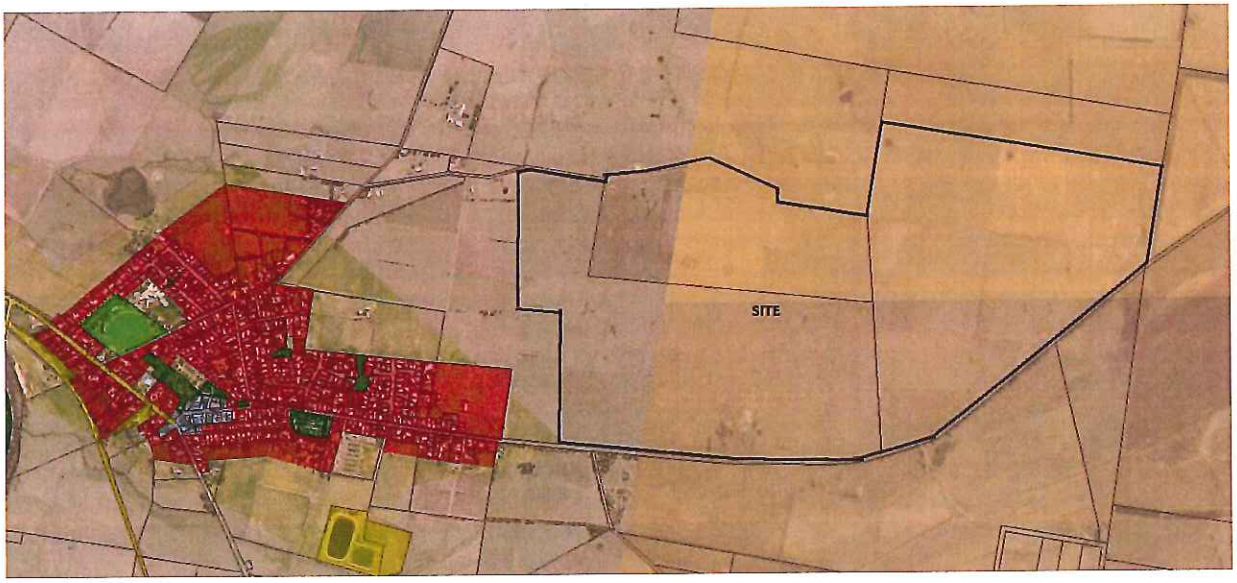

Figure 2: Location of Site

5. Current Land Use

The subject land is currently grazing land.

Figure 3: Grazing Land within the Site

6. Firefighting Capacity within Evandale

There is a local fire station in Evandale located at 15 Arthur St. The station has an allocation of two tankers.

Figure 4: Evandale Fire Station

Whilst there are no Nearby Safe Places identified for Evandale there are a number of sites which could play a role in evacuation centres during a bushfire.

The three most obvious locations are:

- Evandale Primary School
- Morven Park; and
- 2 – 14 Logan Road – the site of the Sunday market.

These sites are shown graphically below:

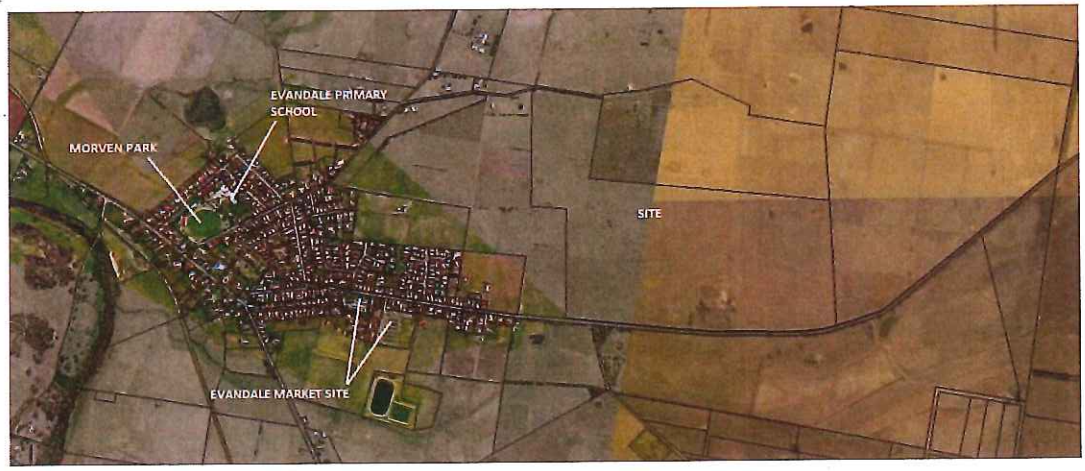

Figure 5: Possible Bushfire Evacuation Sites

7. The Bushfire Code

The Bushfire Code was introduced into all Interim Planning Schemes in 2013. Mapping of Bushfire Prone Areas is currently being rolled out across the State.

The purpose of this code is to ensure that use and development is appropriately designed, located, serviced, and constructed, to reduce the risk to human life and property, and the cost to the community, caused by bushfires.

This code applies to:

a) *Subdivision of land that is located within, or partially within, a bushfire-prone area; and*

b) *A use, on land that is located within, or partially within, a bushfire-prone area, that is a vulnerable use or hazardous use.*

If the development moves to the subdivision stage then a full bushfire risk assessment will be required to support the subdivision.

8. Matters to Consider

In carrying out a Bushfire Risk Assessment on this site there are a suite of matters to consider:

8.1 Access - Public

The site is shown on the Master Plan as being accessed from Ridgeside Lane. Ridgeside Lane is a Council Maintained, sealed/unsealed roadway of 4 to 4.3m width set within a 14.66m road reserve.

To meet the acceptable solution within the Bushfire Prone Area Code the following standards are required to be met:

- Two-wheel drive, all-weather construction
- Load capacity of at least 20t, including for bridges and culverts
- Minimum carriageway width is 7m for a through road, or 5.5m for a dead-end or cul-de-sac road
- Minimum vertical clearance of 4m
- Minimum horizontal clearance of 2m from the edge of the carriageway
- Cross falls of less than 3 degrees (1:20 or 5%)
- Maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads
- Curves have a minimum inner radius of 10m
- Dead-end or cul-de-sac roads are not more than 200m in length unless the carriageway is 7m in width
- Dead-end or cul-de-sac roads have a turning circle with a minimum 12m outer radius; and
- Carriageways less than 7m wide have 'No Parking' zones on one side, indicated by a road sign that complies with Australian Standard AS1743-2001 Road signs-Specifications.

Figure 6: Ridgeside Lane - Access to the Site

Ridgeside Lane may require some upgrading in order to meet these standards.

New roads within the development will be constructed to the above standards in order to meet the requirements of the Code.

In the original design only one access point into a site presented a real Bushfire risk. A single access point restricts choice of escape during a Bushfire; it limits access for fire fighting equipment when tackling fires. The design has been amended to show emergency access points to Logan Road. As such the public and fire fighting access is now compliant.

Figure 7: Logan Road - Where Emergency Access to the Site is Proposed

Can the site meet acceptable solutions in terms of Public Access as defined in the Bushfire Prone Area Code – the

answer is yes. Being a new, green filed development there would be few restrictions on meeting the required standards to reduce bushfire risk.

8.2 Access – Property Access

The Bushfire Code specifies standards required for property access, being:

A – Where an access to a property is less than 30m in length there are no specified design and construction standards.

B – Property access is greater than 30m and access is required for a fire appliance –

- All-weather construction
- Load capacity of at least 20t, including for bridges and culverts
- Minimum carriageway width of 4m
- Minimum vertical clearance of 4m
- Minimum horizontal clearance of 0.5m from the edge of the carriageway
- Cross falls of less than 3 degrees (1:20 or 5%)
- Dips less than 7 degrees (1:8 or 12.5%) entry and exit angle
- Curves with a minimum inner radius of 10m
- Maximum gradient of 15 degrees (1:3.5 or 28%) for sealed roads, and 10 degrees (1:5.5 or 18%) for unsealed roads; and
- Terminate with a turning area for fire appliances provided by one of the following:
  - A turning circle with a minimum outer radius of 10m
  - A property access encircling the building; or
- A hammerhead 'T' or 'Y' turning head 4m wide and 8m long.

C – Property access length is greater than 200m –

- The requirements for B above; and
- Passing bays of 2m additional carriageway width and 20m length provided every 200m.

D – Property access length is greater than 30m, and the access services 3 or more properties –

- Complies with requirements for B above; and
- Passing bays of 2m additional carriageway width and 20m length must be provided every 100m.

Can the site meet acceptable solutions in terms of Property Access as defined in the Bushfire Prone Area Code – the answer is yes. Being a new, green filed development there would be few restrictions on meeting the required standards to reduce bushfire risk.

8.3 Water

The Bushfire Code contains standards for water supply. Currently there is reticulated water at the intersection of Ridgeside Lane and White Hills Road. There is also water in Logan Road servicing the last house in the township. The service stops 300m west of the subject site. Evandale is serviced by fire hydrants – the closest one to the site being 600m west of the subject land.

Whether the site can be serviced by reticulated water or not is outside the scope of this high level study. If it can't then the alternative water supply for fire fighting is tanks. Given the density of development proposed reliance on water tanks for fire fighting water source would pose a higher risk any reticulated water supply.

Assuming there is sufficient water quantity and that adequate water pressure can be secured through the pipes to run hydrants the following standards are required to be met in order to comply with the Code:

A. Distance between building area to be protected and water supply. The following requirements apply:

- The building area to be protected must be located within 120m of a fire hydrant; and
- The distance must be measured as a hose lay, between the fire fighting water point and the furthest part of the building area.

B. Design criteria for fire hydrants. The following requirements apply:

- Fire hydrant system must be designed and constructed in accordance with TasWater Supplement to Water Supply Code of Australia WSA 03 – 2011-3.1 MRWA 2nd Edition; and .
- Fire hydrants are not installed in parking areas.

C. Hardstand A hardstand area for fire appliances must be:

- No more than 3m from the hydrant, measured as a hose lay
- No closer than 6m from the building area to be protected
- A minimum width of 3m constructed to the same standard as the carriageway; and
- Connected to the property access by a carriageway equivalent to the standard of the property access.

Can the site meet acceptable solutions in terms of Reticulated Water Supply as defined in the Bushfire Prone Area Code – the answer is yes, provided Taswater can supply water at the quantity and pressure to allow hydrants to function.

8.4 Hazard Management Areas

A hazard management area means the area, between a habitable building or building area and an area of bushfire prone vegetation, which provides access to a fire front for firefighting, which is maintained in a minimal fuel condition and in which there are no other hazards present which will significantly contribute to the spread of a bushfire.

In calculating the need for Hazard Management Areas there are two factors to consider – slope and vegetation. In regard to slope the steeper the slope the greater the area required to be set aside for hazard Management Areas. In regard to vegetation the distance required for a Hazard Management Are will vary according to the classification of the vegetation.

In regard to the subject land and the surrounding land the predominant bushfire prone vegetation is classed as Grasslands. This is one of the simplest vegetation types to maintain in terms of Hazard Management Areas.

A hazard management area must be maintained in a low fuel condition throughout the bushfire season. This will include a number of strategies such as:

- Removing of fallen limbs, sticks, leaf and bark litter
- Maintaining grass at less than a 100mm height
- Removing pine bark and other flammable mulch (especially from against buildings)
- Thinning out understory vegetation to provide horizontal separation between fuels
- Pruning low-hanging tree branches (<2m from the ground) to provide vertical separation between fuel layers

- Pruning larger trees to maintain horizontal separation between canopies
- Minimize the storage of flammable materials such as firewood
- Maintaining vegetation clearance around vehicular access and water supply points
- Use of low-flammability species for landscaping purposes where appropriate; and
- Clearing out any accumulated leaf and other debris from roof gutters.

Additional site specific fuel reduction or management may be required. An effective hazard management area does not require removal of all vegetation. Rather, vegetation must be designed and maintained in a way that limits opportunity for vertical and horizontal fire spread in the vicinity of the building being protected. Retaining some established trees can even be beneficial in terms of protecting the building from wind and ember attack.

8.5 Bushfire Attack Level

A Bushfire Attack Level (BAL) assessment is an evaluation of the potential bushfire risk to a house or block of land based on conditions in the area immediately surrounding the site. This assessment considers a number of factors including the nature of the surrounding vegetation, its distance to the building area and the slope of the ground under the vegetation. Using this information, the bushfire practitioner is able to determine a Bushfire Attack Level (BAL) for the site. The BAL is a numeric value which relates to heat exposure (radiant heat) on the vertical surfaces of the structure. The BAL is used to determine the required construction standard.3

At this high-level assessment Bushfire Attack Level (BAL) for an individual lot has little relevance. The Code specifies that each new lot in a subdivision must achieve a BAL 19 or better in order to comply with regulation.

The BAL rating for a site is governed by the extent of Hazard Management Area needed when considering the angle of slope across the site and outside the site for a distance of 100m.

[3] Building for Bushfire – Bushfire Attack Level (BAL) – Tasmanian Fire Service

The area outlined in purple (circles and lines) below represents the area outside the site which needs to be assessed as bushfire prone vegetation.

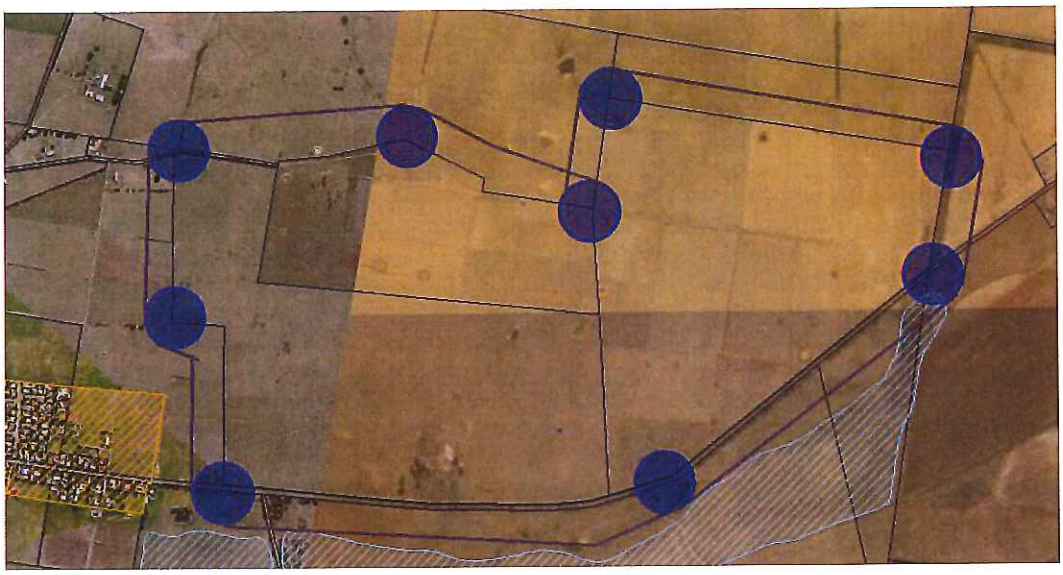

Figure 8: Area Defined for Consideration as being Bushfire Prone Land

In this instance the bushfire threat comes from both within and outside the site. Methods of dealing with this matter are discussed in more detail in section 8.7 below.

8.6 Vulnerable Uses

The requirements for a bushfire risk assessment as outlined within the Code applies to subdivision only, unless the use proposed falls into:

- Vulnerable Use; and
- Hazardous Use.

It is highly unlikely that anything proposed in the development will fall into the category of Hazardous Use. The definition being:

Hazardous Use	**Means a use where:** • The amount of hazardous chemicals used, handled, generated or stored on a site exceeds the manifest quantity as specified in the Work Health and Safety Regulations 2012; or • Explosives are stored on a site and where classified as an explosives location or large explosives location as specified in the Explosives Act 2012.

A Vulnerable use is defined in the Code as being:

Vulnerable Use	**Means a use that is within one of the following Use Classes:** • Custodial Facility • Educational and Occasional Care • Hospital Services; and • Residential if for respite centre, residential aged care home, retirement home, and group home.

Referencing back to the types of development planned for the site we see:

- *A retirement village comprising 80 independent living units, a 25 bed specialist aged care facility and a 20 bed dementia unit.*

This use falls under the definition of Vulnerable Use and as such requires further discussion.

Within the Code Vulnerable uses have their own Use Standards, which states:

A vulnerable use must only be located in a bushfire-prone area if a tolerable risk from bushfire can be achieved and maintained, having regard to:

- *The location, characteristics, nature and scale of the use*
- *Whether there is an overriding benefit to the community*
- *Whether there is no suitable alternative lower-risk site*
- *The emergency management strategy and bushfire hazard management plan; and*
- *Other advice, if any, from the TFS.*

Given the nature and scale of the development it would be argued that the use proposed use is an integral element of a community and as such is desirable in this location. It may be, that with time the Vulnerable Use ends up not being in a bushfire prone area and the requirements are lessened – see section below.

If that scenario doesn't fit with the timing of the development then: an emergency management strategy, endorsed by the TFS or accredited person, that provides for mitigation measures to achieve and maintain a level of tolerable risk that is specifically developed to address the characteristics, nature and scale of the use considering:

- *The nature of the bushfire-prone vegetation including the type, fuel load, structure and flammability*
- *The ability of occupants of the vulnerable use to:*
  - *Protect themselves and defend property from bushfire attack*
  - *Evacuate in an emergency*
  - *Understand and respond to instructions in the event of a bushfire; and*
- *Any bushfire protection measures available to reduce risk to emergency service personnel.*

The required Bushfire Attack Level rating for a Vulnerable use is BAL 12.5 – so the need for hazard Management Areas becomes more stringent for this type of use.

Given the size of the site, where the Vulnerable Use is located within the revised Master Plan and where it ends up in terms of the staging of the development it is highly likely that such a use can meet the requirements of BAL 12.5 and the

other standards for a Vulnerable Use as contained within the Code within the Planning Scheme.

8.7 Staging of Development and Bushfire Risk

Once a lot has been assessed and given a BAL rating will that BAL change?

The answer to that is most likely -- depending on staging.

As a development rolls out so do the requirements for bushfire mitigation. Using the model below as an example:

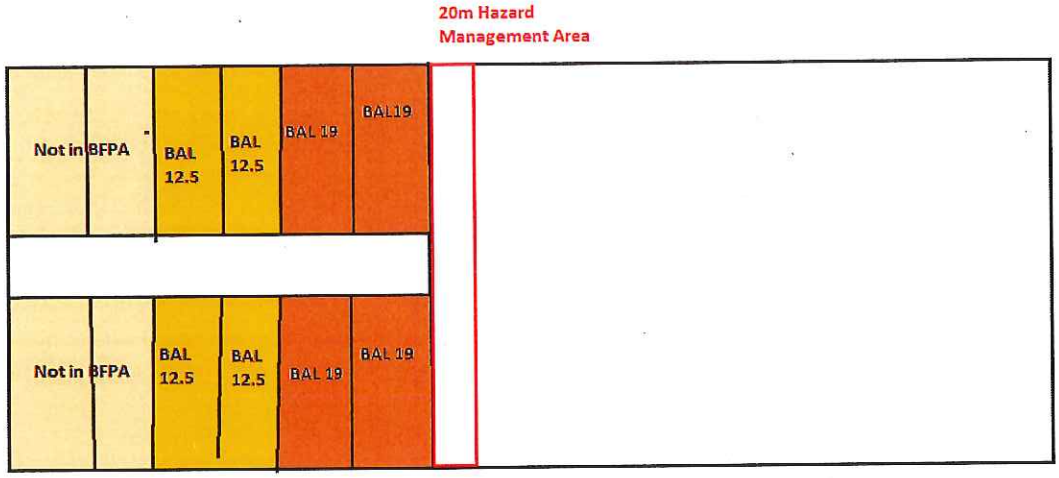

Figure 9: Application of Hazard Management Area in Staged subdivision no1.

In the model above the lots in the first stage of the subdivision need a 20m wide Hazard Management Area to comply with the regulations. This is applied outside of the lots as the owner of the white area is also the developer of the lots (so he has control over the land). The lots closest to the HMA will be rated BAL19. Moving away from the HMA the BAL rating decreases to the point where, because of distance, lots are outside a Bushfire Prone Area (BFPA).

The next stage of the development takes place...

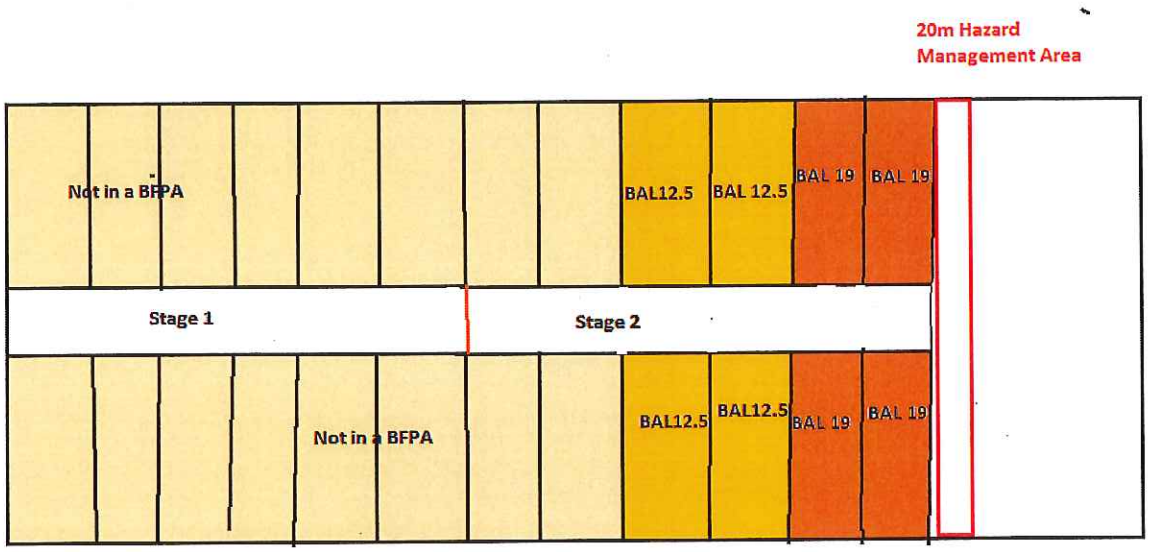

Figure 10: Application of Hazard Management Area in Staged subdivision no2

As the development is expanded so the 20m Hazard Management area moves in the direction of the development – consuming more of the white residual land. Under Stage 1 those lots that attracted a BAL rating are, because of distance, outside the Bushfire Prone Area – so a shift in some cases from BAL19 to exempt.

Given the size of the subject site rolling Bushfire Hazard Management areas will be required/desirable. This is a matter of detail not for this high-level assessment.

9. Strategic Matters

9.1 Regional Land Use Strategy

Within the Regional Land Use Strategy (RLUS) there are issues and policies relative to natural hazards. A strategic direction contained within the RLUS relevant to this report is:

Manage the relationship between development and impacts of natural hazards (for example salinity, land instability, acid sulfate soils, bushfire and flood potential, contamination).

Clearly, on a site of this size the management of the bushfire risk can be achieved with minimal impediment to the proposed development – subject to water availability and suitable alternative access arrangements.

9.2 Greater Launceston Plan

In 2014 the Municipalities around the Tamar Valley jointly formulated the Greater Launceston Plan.

The Greater Launceston Plan (GLP) is a major strategic project to develop a unified and holistic approach to coordinate the long term planning and management of the City and broader greater urban area. The project was initiated by the City of Launceston through the Liveable Cities Program administered through the Commonwealth Department of Infrastructure and Transport and embraces the City of Launceston together with the municipalities of George Town, Meander Valley, Northern Midlands and West Tamar.

The principals of the plan were adopted by all participating Councils and form the basis for long-term strategic planning in the north of the State. As such the GLP becomes a reference document for major developments in the northern region of Tasmania.

The GLP was presented in a Project Based format and thus specific sites and themes were maybe lost in a broader strategic direction. Thus, natural hazard risk was not identified as a subject for the GLP. Therefore, there are no details within the GLP which need to be considered further in regard to bushfire risk reduction.

10. Application of findings to the subject site

Recognising, that this is a broad bush assessment of bushfire risk on this site we can draw the following conclusions form the material outlined above when applied to this site:

- Individual lots within a bushfire prone area will need to achieve a BAL 19 rating or better
- Road access will meet required standards with the proposed emergency access points provided off Logan Road
- Water supply will meet required standards if Taswater can confirm that there is adequate pressure in the system to allow hydrants to function. Otherwise compliance will rely on water tanks on each lot
- A rolling Hazard Management area will be required to relate to stages of the development
- Whilst the site is generally flat each stage will require its own assessment to determine the width of the hazard management area for each stage/lot
- The dominant class of bushfire prone vegetation is grassland/grazing
- The width of a hazard management area to service the site and achieve a BAL 19 rating will be in the range 10 – 14m width for flat sites and 11 – 16m for sites with a slope up to 5 degrees; and
- Vulnerable uses will need to achieve a BAL 12.5 rating and be supported by a Bushfire Emergency Management Plan (Principles only).

11. Conclusion

This is a large greenfield site as such achieving a tolerable bushfire risk is relatively simple provided there is adequate water supply and pressure to operate hydrants.

Revisions to the Master Plan have shown required emergency access points on to Logan Road so the public access arrangements are now compliant.

At this high level there would appear to be few impediments to managing bushfire within tolerable risk levels, recognizing that full assessment of bushfire risk will be required at the subdivision and development stages.

pitt&sherry

Initial Bushfire Assessment

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Natural Values Report:

Traders in Purple Project, Ridgeside Lane Housing and Tourism Sustainable Community, Evandale

J.M.Lyall, 18 April 2019
Natural Environment Services Tasmania

Traders in Purple Project, Ridgeside Lane Housing and Tourism Sustainable Community, Evandale

Contents

Executive summary

The goal of this project being developed by Traders in Purple is to develop an area of approximately 245ha into "a sustainable mixed-use development, which incorporates significant tourism ventures, together with a range of housing types which cater for young families to retirees"
Natural Environment Services Tasmania (NEST) was engaged to provide a Flora and fauna report that complies with the requirements of the Northern Midlands Interim Planning Scheme 2013, as requested by the Northern Midlands Council.
The property was found to be biologically impoverished however there remains a few areas with some natural values that could be protected and rehabilitated to provide habitat and refuge for local and threatened fauna species within the development plan.

Introduction

The stated goal of this project being developed by Traders in Purple (TiP) is to develop a "sustainable mixed-use development, which incorporates significant tourism ventures, together with a range of housing types which cater for young families to retirees". The developers intend incorporating initiatives into the project to allow for a sustainable mixed-use community. As a requirement of the application for a change in land use zoning and planning approvals, the block must be surveyed by an ecologist for the presence of threatened species of fauna and flora, threatened vegetation communities and any natural values of significance.

The Midlands are classed Nationally as a biodiversity hotspot, which includes:

> "10 endemic plant species, two endemic freshwater mussels and endemic freshwater snails and caddisflies. There are 32 nationally threatened species and more than 180 plants and animals listed as threatened at the state level. Twelve wetlands are listed on the Directory of Important Wetlands in Australia and 10 wetlands are of regional significance. Less than 2 per cent of the area is protected"
> (http://www.environment.gov.au/biodiversity/conservation/hotspots/national-biodiversity-hotspots#hotspot4).

The Ridgeside Land development is situated in close proximity to Evandale in the Northern Midlands of Tasmania and as such is a sensitive development which will need social license to be accepted by the local community. To be able to exhibit environmental and landscape outcomes within the development may assist in community perceptions of the project.

Being within a biodiversity hotspot the proposed development and the surrounds provide some potential for this project to contribute to delivering improved habitat outcomes for a range of native species.

The property is currently being grazed by sheep and any habitat features within the property are in a degraded state. A desktop survey indicated some areas that may still retain native vegetation and hence potentially retain flora and fauna of significance to the region.

As outlined in the invitation for Natural Environment Services Tasmania (NEST) to submit a proposal, the Northern Midlands Council requires further information regarding the 'greenfield' development of Ridgeside Lane to determine if there will be impacts on natural values, such as threatened native vegetation communities, threatened flora and fauna species, and wetland and waterway values.

The fauna and flora of this region have been severely impacted by habitat fragmentation and degradation since European settlement and commencement of clearing for agriculture. If incorporated into the development plans, this project has the potential to protect and enhance some areas of habitat to encourage greater biodiversity.

The work was undertaken by Joanna Lyall with technical and field assistance by Jim Lyall of Natural Environment Services Tasmania over 2 days (8th and 9th April 2019). NEST has been working in the environmental sector for 16 years providing natural values assessments, fauna and flora surveys with particular focus on threatened species and providing management plans, reports and recommendations for restoration and rehabilitation works and to minimise adverse impacts on special values where identified.

Objectives

NEST is to ascertain whether there are areas of existing threatened native vegetation communities, threatened flora and fauna species, and wetland and waterway values that should be preserved and where possible incorporated into the planning design of the Ridgeside Land development.

This would comply with the requirements of the Northern Midlands Interim Planning Scheme 2013, Section E8 Biodiversity Code to:

> a) protect, conserve and enhance the region's biodiversity in consideration of the extent, condition and connectivity of critical habitats and priority vegetation communities, and the number and status of vulnerable and threatened species; and
>
> b) ensure that development is carried out in a manner that assists the protection of biodiversity by:
>
> > i) minimising vegetation and habitat loss or degradation; and
> >
> > ii) appropriately locating buildings and works; and
> >
> > iii) offsetting the loss of vegetation through protection of other areas where appropriate.

Methodology

A desktop study of the property was conducted to target potential areas where threatened species of flora and fauna, threatened communities and weeds may be present on the property. In particular we focused on water bodies and any delineated watercourses shown on satellite and LISTmap imagery.

We investigated areas shown in LISTmap as Lowland Grasslands Complex, a nationally listed threatened community as well as areas where remnant vegetation could be seen. We undertook surveys of all identified waterbodies to assess aquatic vegetation and the potential for threatened species such as the Green and gold frog (*Litoria raniformis)* to be present. We checked areas of structural complexity (shrubs, stumps, logs) for signs of activity by native fauna. We noted areas of woody weed infestation. Animal sign and tracks were inspected for evidence of mammal species present (native and introduced).

The Natural Values Atlas report listed several species of plant and animal recorded within 5 km of the property. None was listed as threatened Nationally. *Juncus amabilis* is being considered for delisting. These are shown in Table 1 and Table 2

A satellite image of the property is shown in Figure 1. while Figure 2 shows the property boundary, waterbodies and position of mapped vegetation types

Table 1. Threatened plant species recorded within 5 km of property, when recorded and likelihood of being present

Species	Common Name	State status	Count	Last Recorded	Likelihood of being present
Aphelia gracilis	slender fanwort	r	3	03-Nov-2016	Possible but unlikely, grows in damp, sandy ground and wet places
Aphelia pumilio	dwarf fanwort	r	53	03-Nov-2016	Possible but unlikely, growing in damp conditions, dry open grassland (*Themeda*) and *Eucalyptus viminalis/Eucalyptus amygdalina* dry sclerophyll forest
Bolboschoenus caldwellii	sea clubsedge	r	1	24-May-2002	Present, growing in shallow, standing, water, rooted in heavy mud
Callitriche umbonata	winged waterstarwort	r	2	17-Jan-1993	Possible, semi-aquatic species been recorded from grassy wetlands, soaks in *Eucalyptus* forest and amongst rocks along stream banks around the Midlands
Gratiola pubescens	hairy brooklime	v-r	1	01-Jan-1850	Possible, most commonly located in permanently or seasonally damp or swampy ground, including the margins of farm dams
Haloragis heterophylla	variable raspwort	r	4	05-Oct-2015	Unlikely, it is known from damp *Themeda* grassland and grassy woodland
Hovea tasmanica	rockfield purplepea	r	1	12-Oct-1892	No, found on dry, rocky ridges or slopes (mostly dolerite) in forest and riverine scrub
Juncus amabilis	gentle rush	r?	1	24-May-2002	Possible, occurs in moist situations, generally areas of seepage confined to roadsides. Being considered for delisting.
Lythrum salicaria	purple loosestrife	v	2	17-Jan-1993	No, inhabits swamps, stream banks and rivers mainly in the north and north-east of the State
Mentha australis	river mint	e	1	26-Jan-1894	No, occurs in riparian habitats along the lower reaches of the South Esk River, Lake Trevallyn and the Rubicon River, along the rocky (dolerite) margins of rivers and lakes

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Pimelea curviflora var. gracilis	slender curved riceflower	r	5	21-Jan-2016	No, this species now predominantly occurs in the north of the State in wet sclerophyll forest, especially in disturbed areas.
Pultenaea prostrata	silky bushpea	v	2	20-Nov-1995	No, the species is recorded in the Northern and Southern Midlands, where it grows within grassy woodlands or grasslands
Siloxerus multiflorus	small wrinklewort	r	6	05-Oct-2015	No, it is predominantly found in the north and north-east of the State, on rocks at river mouths, in coastal areas and inland dry forests
Spyridium vexilliferum var. vexilliferum	helicopter bush	r	1	01-Jan-1892	No, found in sandy heaths and on rocky outcrops in the east, north and west of Tasmania
Teucrium corymbosum	forest germander	r	3	03-Nov-2016	No, predominantly found in *Allocasuarina verticillata* coastal and inland woodland, *Eucalyptus viminalis* woodland and native grasslands in the east
Tricoryne elatior	yellow rushlily	v	4	25-Dec-1892	No, grows in grasslands, heaths and open woodland near the coast and inland to approximately 1000 metres altitude in the north-east, the Midlands and the East Coast
Triptilodiscus pygmaeus	dwarf sunray	v	85	13-Nov-2018	No, grows within grasslands, grassy woodlands or rockplates in Northern and Southern Midlands,

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Table 2. Threatened fauna species likely to be present (based on Range Boundaries) and on the survey

Species	Common Name	SS	NS	Potential	Known	Core	Likelihood of being present
Litoria raniformis	green and gold frog	v	VU	1	0	1	Likely in waterbodies to approx. 1.5m with a complex vegetation structure
Pseudemoia pagenstecheri	tussock skink	v		1	0	0	Unlikely. Habitat for the Tussock Skink includes treeless tussock grassland and grassy open woodland at virtually any elevation where native grasses are present
Hydroptila	caddis fly	r		1	0	0	No, the threatened caddis-flies have a limited geographical

scamandra	(upper scamander river)						range. Caddis-flies depend on an aquatic environment in good condition.
Aquila audax* subsp. *fleayi	tasmanian wedge-tailed eagle	e	EN	1	0	0	Present, foraging habitat. Nesting habitat includes patches of mature forest, or forest with mature/old-growth elements, normally greater than 10 ha in area; with nest trees usually tall (25-75 m) mature eucalypts
Galaxias fontanus	swan galaxias	e	EN	1	0	0	No, this species is known from headwater streams in eastern Tasmania in the Swan River and Macquarie River catchments, and between upper St Pauls River in the north and Rocka Rivulet in the south
Tyto novaehollandiae	masked owl	pe	PVU	1	0	1	Possible, habitat for the Tasmanian Masked Owl includes a diverse range of forest, woodland and non-forest vegetation including agricultural and forest mosaics for foraging; nesting habitat is eucalypt forests and woodlands containing old growth trees with suitable hollows for nesting/roosting, but also isolated old growth trees with suitable hollows.
Perameles gunnii	eastern barred bandicoot		VU	1	0	1	Probable, habitat for the Eastern Barred Bandicoot mosaic habitats of pasture and remnant native forest in agricultural districts, often with a significant amount of cover provided by dense-growing weeds such as gorse, blackberry, blackthorn, rose briar, etc; small remnant populations may occur in remnant native grassland and grassy woodland
Dasyurus maculatus	spotted-tail quoll	r	VU	1	0	0	Possible, forest elements such as rainforest and wet and dry eucalypt forest are important components of their habitat. They can also be found in non-forest vegetation types such as coastal scrub and heath, and pastoral areas. The presence of den sites is important including rock crevices, hollow logs, windrows, clumps of vegetation, caves, boulder tumbles, under buildings, and burrows.
Dasyurus viverrinus	eastern quoll		EN	0	0	1	Possible, this species is found in a range of vegetation types including open grassland (including farmland), tussock grassland, grassy woodland, dry eucalypt forest, coastal scrub

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							and alpine heathland. They sleep in dens made under rocks, in underground burrows or fallen logs.
Oecetis gilva	caddis fly (south esk river)	r		1	0	0	No, the threatened caddis-flies have a limited geographical range. Caddis-flies depend on an aquatic environment in good condition.
Sarcophilus harrisii	tasmanian devil	e	EN	1	0	0	Unlikely, as part of its large foraging range. Habitat includes denning habitat for daytime shelter (e.g. dense vegetation, hollow logs, burrows or caves); hunting habitat (open understorey mixed with patches of dense vegetation); breeding den habitat (areas of burrowable, well-drained soil or sheltered overhangs such as cliffs, rocky outcrops, knolls, caves and earth banks, free from risk of flooding; windrows and log piles may also be used)
Accipiter novaehollandiae	grey goshawk	e		1	0	0	No, potential habitat for the grey goshawk is closed native forest with mature elements below 600m altitude, particularly along watercourses.
Prototroctes maraena	australian grayling	v	VU	1	0	0	No, adult Australian Grayling inhabit and breed in rivers and streams, usually in cool waters often with alternating pool and riffle zones; larvae and juveniles inhabit estuaries and coastal seas
Haliaeetus leucogaster	white-bellied sea-eagle	v		1	0	0	Unlikely, the property could be used as foraging habitat. Nesting habitat includes patches of mature forest, or forest with mature/old-growth elements, normally greater than 10 ha in area; with nest trees usually tall (25-75 m) mature eucalypts
Catadromus lacordairei	Green-lined ground beetle	v		1	0	0	Possible, the species occurs in open grassy woodland associated with wetlands at low elevations.

3-458

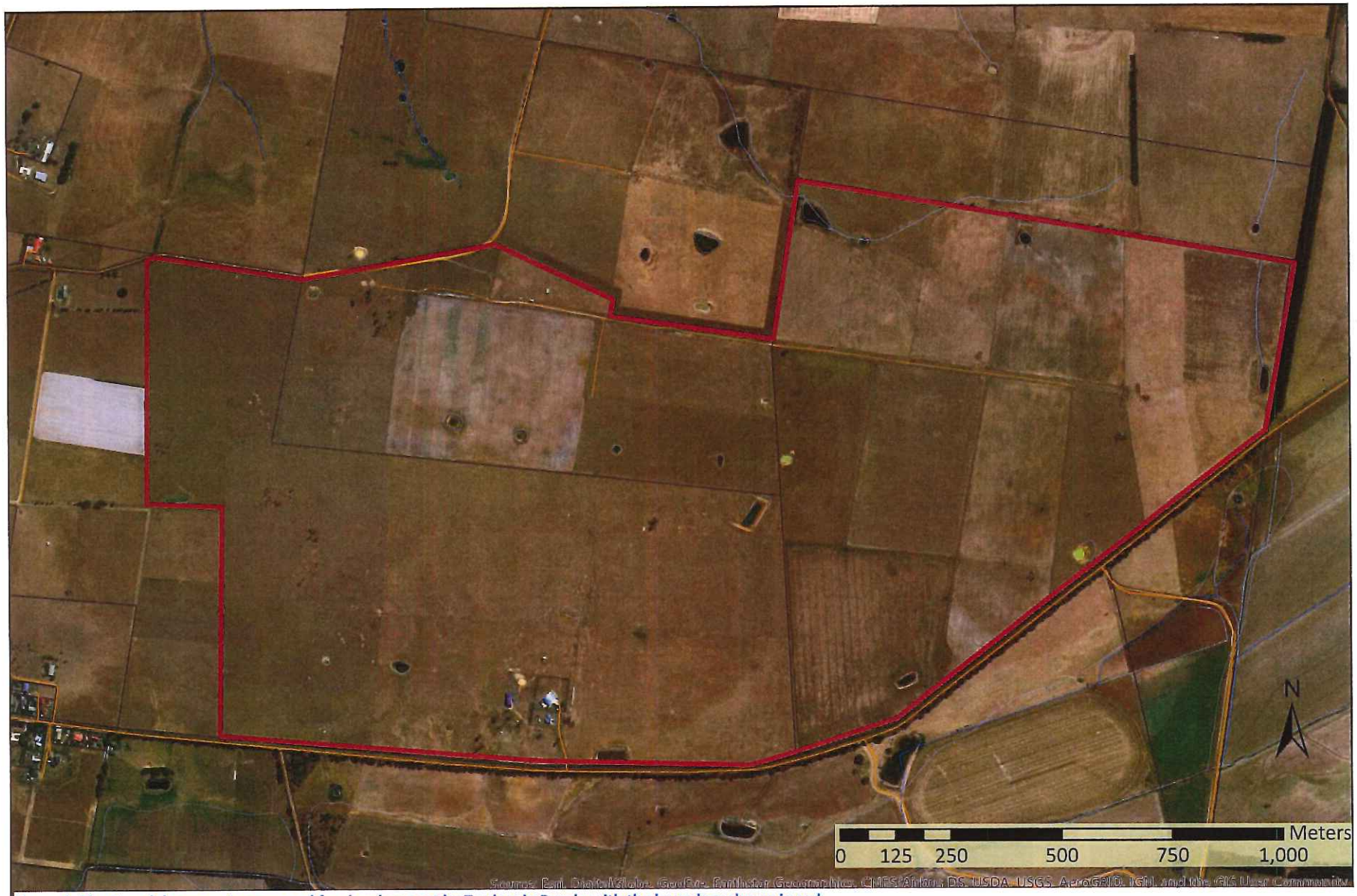

Figure 1. The Evandale property proposed for development by Traders in Purple with the boundary shown in red.

Figure 2. Imagery showing property boundary, waterbodies and position of mapped vegetation types

Results

The limitations of this survey include the heavily grazed pastures which may have resulted in missing some areas where native grasses and herbs may still have been present. The time of year too may contribute to missing some plant species as annual plants may no longer be visible and flowers and fruiting bodies on some herbs and grasses would no longer be present. The survey was conducted during mid-autumn following a very dry summer season. The dam levels were much lower than they would normally be and hence the limited aquatic vegetation on many of these dams has been exposed, leading to drying out and grazing by livestock.

The water bodies varied from recently cleaned out, resulting in little or no marginal vegetation, to a few where the dams and ponds had a healthy fringe of aquatic vegetation which could provide habitat for the Green and gold frog, listed as vulnerable under both the *Threatened Species Protection Act 1995* (TSPA) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA). The rare (TSPA) aquatic plant sea clubsedge (*Bolboschoenus caldwellii)* was found in a few of the dams.

There were claws and carapaces of the introduced pest species, the yabby (*Cherax destructor)* found beside a two of the dams near the residence, indicating a population of this species is present (Figure 3). Active burrows were seen within these dams. A map showing waterbodies with good habitat suitable for Green and gold frogs is shown in Figure 4 and also includes the two dams where yabbies were present.

Figure 3. Carapace and claws of the pest species the yabby found in dams in proximity to the residence.

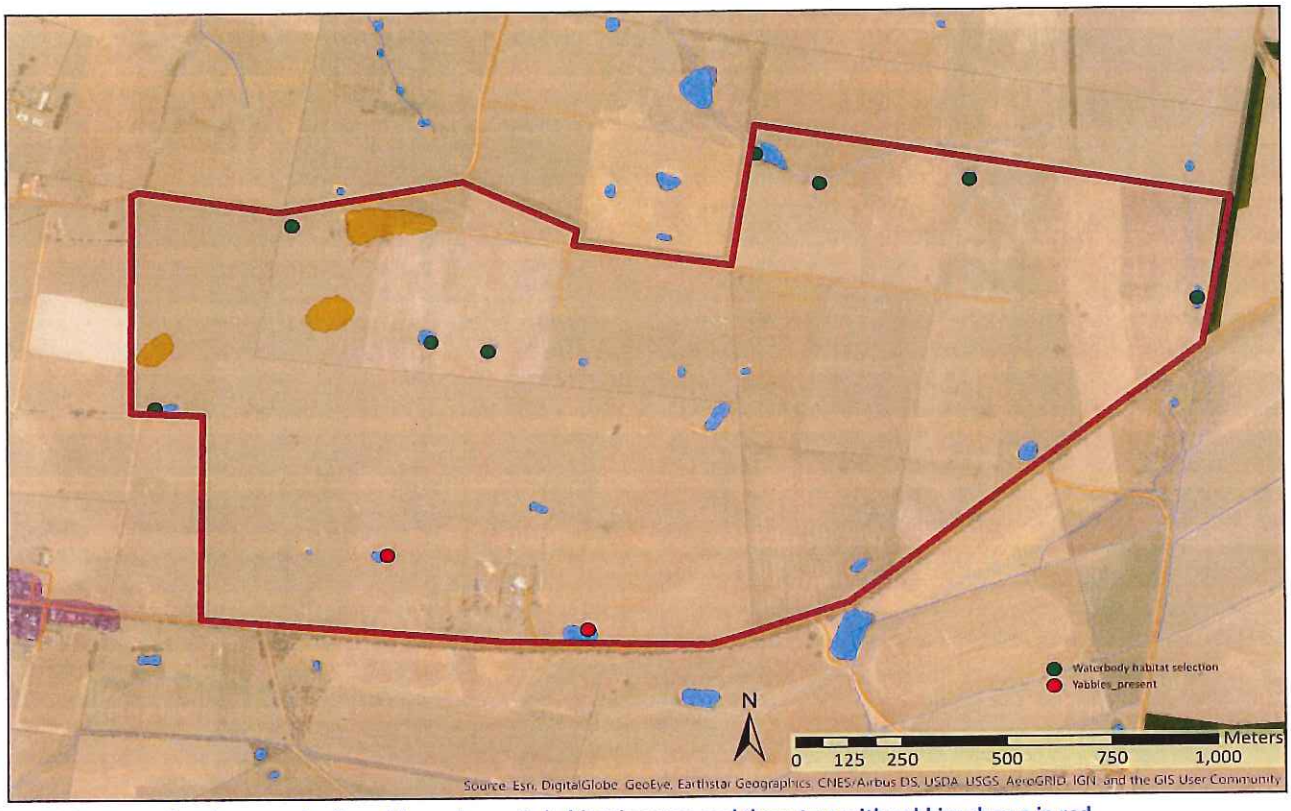

Figure 4. Property showing waterbodies with good aquatic habitat in green and those two with yabbies shown in red

There were no habitat opportunities along the dry watercourses shown on the map. This is now all pasture grasses and pasture weeds with few areas of reeds and rushes.

Terrestrially there was little native vegetation remaining and few habitat opportunities on the property. Although the pastures have been heavily grazed, we endeavoured to locate any remaining areas that could have native grasses surviving but were unable to find any. Pasture improvement including fertilisers, introduced grass species, pasture weed species and heavy grazing have all contributed to the apparent loss of any remnant native grasses and herbs.

The areas of remnant woodland trees were inspected and there were potential habitat opportunities in a few trees for native fauna, such as in trees containing hollows in the trunk and under the roots. A possum was found in one of the tree hollows and there was wombat (*Vombatus ursinus)*, pademelon (*Thylogale billardierii)* and possum (*Trichosurus vulpecula)* sign seen in other areas. Some diggings were found that looked to be consistent with the Eastern Barred bandicoot *(Perameles gunnii)* in a two areas in close proximity to cover from windbreaks or remaining copses of gorse. There were also a few places where there were tree roots, piles of logs or of gorse for instance that would provide some refuge for other native and introduced fauna (Figure 5). Large hollows in a few of the remaining paddock trees may provide nesting and roosting habitat for the endangered Tasmanian masked owl (Figure 6) (TSPA and EPBCA).

Figure 5. Piled material, providing refuge for native mammals, in this case wombat

Figure 6. Tree hollow providing potential nesting opportunity for masked owl

In those few areas of refuge such as the windbreaks on the northern and eastern boundaries, and where there are dense bushes or piles of logs, animal activity could be seen including Wombats, Pademelons and from the sign, Eastern barred bandicoots. A brown goshawk and a pair of Wedge-tailed eagles were seen on the property. The eagles would not nest here but would use the property as part of their foraging territory (Figure 7).

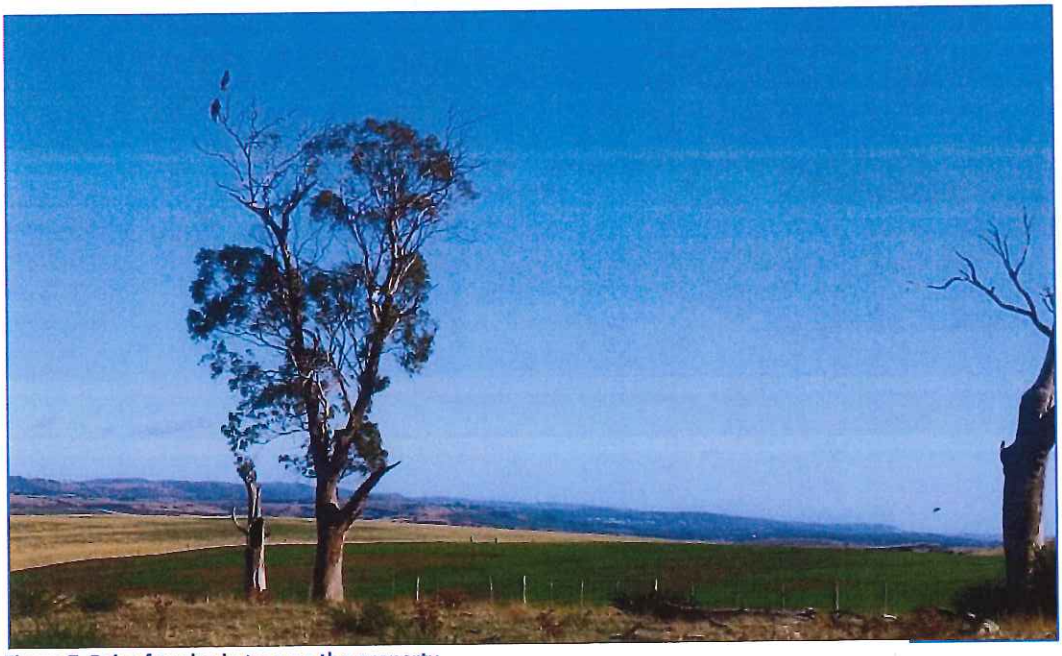

Figure 7. Pair of eagles in tree on the property

Most of the gorse and blackberry, woody weeds of national significance (WoNS), have been controlled, such that there are only a few areas of sparse woody weed infestation across the property. In a barren landscape these patches often provide the only refuge for small marsupials such as the threatened Eastern barred bandicoot, listed as vulnerable (EPBCA).

There is an active culling program on the property wallaby carcases noted in some areas.

Native fauna species observed or signs of presence are shown in Table 3

Table 3. Fauna species observed or signs of presence on property

Common name	Species	Comments
Wedge-tailed eagles	*(Aquila audax subsp. fleayi)*	A pair observed, **endangered under EPBCA and TSPA**
Eastern barred bandicoot	*(Perameles gunnii)*	**vulnerable under EPBCA**
Brush-tailed possum	*(Trichosurus vulpecula)*	
Common wombat	*(Vombatus ursinus)*	
Tasmanian pademelon	*(Thylogale billardierii)*	
Ring-tailed possum	*(Pseudocheirus peregrinus)*	
Brown goshawk	*(Accipiter fasciatus)*	
Brown falcon	*(Falco berigora)*	
Sulphur-crested cockatoo	*(Cacatua galerita)*	**Australian native, Introduced**
Little pied cormorant	*(Microcarbo melanoleucos)*	
Hoary-headed grebe	*(Poliocephalus poliocephalus)*	
Black duck	*(Anas superciliosa)*	
Masked lapwing	*(Vanellus miles)*	
Australian shelduck	*(Tadorna tadornoides)*	
Wood ducks	*(Chenonetta jubata)*	
Australasian pipit	*(Anthus novaeseelandiae)*	
Australian magpie	*(Cracticus tibicen)*	
Noisy miner	*(Manorina melanocephala)*	
Common starling	*(Sturnus vulgaris)*	**Introduced**
Delicate skink	*(Lampropholis delicata)*	
Swamp bluet	*(Coenagrion lyelli)*	

Native plant species were also recorded where present, as well as weed species. The main opportunity for native plants to be established was the edges of the dams and in waterbodies where the impact of livestock was limited. Plant species are shown in Table 4.

Table 4. Plant species observed on the property

Common name	Species	Comments
seaclubsedge	*(Bolobschoenus caldwellii)*	**Rare under TSPA.** Found on edges of some dams
slender spike-rush	*(Eleocharis gracilis)*	Found on edges of dams
tall spike-rush	*(Eleocharis sphacelata)*	Grows in dams
thin pondweed	*(Potamogeton australiensis)*	Grows in dams
clasping leafed pondweed	*(Potomageton perfoliatus)*	Grows in dams
reeds	*(Juncus spp.)*	Edges of dams and poorly drained areas. May include ***Juncus amabilis*-Rare TSPA**
water plantain	*(Alisma plantago-aquatica)*	Edges of dams
toad rush	*(Juncus bufonius)*	Edges of dams and poorly drained areas
tree violet	*(Melicytus dentatus)*	Near stockyards at rear of property
black peppermint	*(Eucalyptus amygdalina)*	Remnants of woodlands
bluegum	*(Eucalyptus globulus)*	Near old shed/yards
blackwood	*(Acacia melanoxylon)*	Near old shed/yards
cumbungi	*(Typha latifolia)*	**Weed: Tall aquatic weed**
gorse	*(Ulex europaeus)*	**Weed (WoNS):** scattered plants. NB may provide refuge when other cover options are absent
hawthorn	*(Crataegus monogyna)*	Weed: a few scattered plants
blackberry	*(Rubus fruticosus aggregate)*	**Weed (WoNS):** scattered plants. NB may provide refuge when other cover options are absent

Discussion

After years of being run as a grazing property, the land is biologically impoverished. Areas that used to be woodland with native grasses have no native grasses remaining and many trees are dead or dying with no regeneration. Where the Black peppermint trees are alive, they are providing habitat for a small range of adaptable species such as the Brush-tailed possum, and probably introduced species such as the Common starling. There is a possibility the endangered Masked owl may find potential nesting sites where these remaining trees have large (>15cm) hollows.

There is greater evidence of native animal activity near to those few areas of refuge such as the windbreaks on the northern and eastern boundaries, and where there are dense bushes or piles of logs. Animals including Wombats, Pademelons and possibly Eastern barred bandicoots would use these areas.

There are many ponds and dams a few of which have good fringing aquatic vegetation, providing potential habitat for the threatened Green and gold frog. No frogs were heard but it was very late in the year for any breeding and temperatures were cool making it less likely we would hear them even if present.

Devils and quolls are known to use the burrows of other species such as wombat holes. It is possible these species may use the wombat burrows and refuge areas on the property.

Recommendations

- To confirm the mammal species using areas of refuge such as the piles of logs and wombat burrows as potential den-sites, it is recommended that motion cameras be set to monitor these potential sites for a minimum of 7 days.
- Other identified areas of potential refuge should also be monitored for Eastern barred bandicoots.
- The waterbodies with the most intact fringing vegetation should be retained as habitat for aquatic fauna, particularly the Green and gold frog.
- The two waterbodies identified as having the pest crustacean the yabby (*Cherax destructor)* should be treated to control this species. Options for treatment include lowering the water level and treating with Rotenone, or filling these dams in if they are not required within the overall plan.
- Where possible the remaining copses of trees should be retained, as potential habitat for hollow dependent species including the endangered Masked owl. These areas should be protected from further degradation and rehabilitated with native grasses and shrubs consistent with the lowlands grass complex and woodlands vegetation types. This would potentially provide habitat for other local and threatened fauna species.
- The waterbodies with cumbungi should be treated to control this aquatic weed without damaging the other aquatic plants present. Use herbicides registered for use on waterways to minimise impact on aquatic fauna.
- Develop some connectivity and structural complexity within the landscape to provide areas of refuge and movement of fauna. This would need to be tied in with the broadscale plans for the site.
- Develop an ecological plan to include rehabilitation of areas that could be restored to provide conservation values with selected plant species for each location. This could be integrated with open spaces and recreational areas.
- Ensure vehicles entering the site are clean to prevent spread of environmental weeds and pathogens.

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pitt&sherry

Stage 1 Preliminary Site Investigation

Ridgeside Lane Mixed Use Development

Prepared for
Traders In Purple (TIP)

Client representative
Brett Robinson

Date
24 June 2019

Rev 01

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Appendices

Prepared by — Daniel Laver		**Date —** 24 June 2019
Reviewed by — Sophie Le Roux		**Date —** 24 June 2019
Authorised by — Sophie Le Roux		**Date —** 24 June 2019

Revision History

Rev No.	Description	Prepared by	Reviewed by	Authorised by	Date
A	Draft report	D. Laver	S. Le Roux	S. Le Roux	30/04/2019
01	Final report incorporating outstanding reports.	D.Laver	S. Le Roux	S. Le Roux	24/06/2019

Executive Summary

This report presents the findings of a desktop preliminary site investigation (PSI) undertaken by pitt&sherry to assess the risks associated with potential contamination in response to a proposed change in site zoning and landuse at 211 Logan Road, Evandale TAS 7212. pitt&sherry was engaged by Traders In Purple (TIP) and at the time of writing the site consisted of agricultural grazing and pastoral land. The proposed development will include mixed use including residential allotments, open public space, a childcare centre, hotel, retirement village and accommodation and education facilities. The PSI considered the human health and ecological risks as they relate to the proposed future landuse, based on the available information.

The assessment consisted of a desktop site history review, including all available site and off-site environmentally relevant information to identify potentially contaminated areas and contaminants of potential concern. A property information report (PIR) and dangerous goods records were requested from Environment Protection Authority (EPA) Tasmania and WorkSafe Tasmania respectively. However, at the time of reporting no response had been received from these authorities. Any records received from these authorities will be included in the report prior to finalisation.

Aerial photographs suggest no significant development has occurred on the site since the earliest reviewed photograph dated 1973. The construction of a residential property and several outbuildings was observed onsite in 2011. The photographs appear to suggest waste may have been buried in two specific areas in the north of the site (Area 1) and to the west of the residential property (Area 2), refer to Appendix D.

Several neighbouring properties including the Evandale Waste Transfer Station, a site with multiple parked vehicles, a cattery / kennels and Evandale Sewerage Treatment Ponds were identified in the vicinity of the site, which have the potential to contaminate soil and groundwater.

WorkSafe Tasmania and Tasmanian EPA did not hold any records of dangerous substances or contamination / potentially contaminating activities on the site. .

Based on the reviewed information, the following potential sources of contamination were identified at the site:

- Contaminated soils from the uncontrolled placement of waste
- Potential tanks and underground infrastructure
- Potential spills / release of agricultural chemicals; and
- Historical use of agricultural chemicals.

The findings of the PSI were used to develop a preliminary CSM, which indicated that contamination may be present which could present a potential human health and / or ecological risk based on the future proposed use of the site. Based on the results of the PSI, a detailed site investigation is required to address the following data gaps:

- The nature and extent of buried waste
- Potential past use of agricultural chemicals
- Potential use and storage of fuel onsite
- Potential above and below ground infrastructure (septic tanks, fuel tanks etc.).

Based on the reviewed information and identified data gaps, in the context of the proposed development a potential risk exists to the following receptors, which requires further investigation:

- Future site users
- Construction workers; and
- Onsite and offsite ecological receptors.

A detailed site investigation is necessary to characterise the nature of potential contamination on the site and delineate its lateral and vertical extent to a sufficient degree to allow an appropriate level of risk assessment. If necessary, this assessment would provide a basis for the development of appropriate remediation or management strategies. Following detailed investigation and the implementation of these provisions, it is considered that the site could be suitable for the proposed development.

1. Introduction

1.1 Background

pitt&sherry was engaged by Traders In Purple (TIP) to prepare a Phase 1 Preliminary Site Investigation (PSI) for a proposed mixed use development located at 211 Logan Road, Evandale TAS 7212, herein referred to as 'the site'. The proposed development would comprise of mixed use living and rural resources landuse and occupy three titles. At the time of writing the site consisted of agricultural grazing and pastoral land. TIP are in the process of submitting an application to Northern Midlands Council (NMC) to amend the regional land use strategy. NMC has requested that risks associated with potential contamination land are assessed in accordance with the Department of Justice, Planning Policy Unit information sheet titled *'Reviewing and Amending the Regional Land Use Strategies'*.

pitt&sherry understand that TIP is in the early stages of planning the proposed development, which is understood to consist of the following components:

- Residential allotments ranging in size from 450 metres square to 2.64 hectares (Ha)
- Botanical gardens incorporating picnic shelters and stormwater retention ponds
- Internal roadways
- Child care centre
- 100 room hotel with conference and wedding facilities
- Retirement village with an 'activity hub'
- Health and wellbeing retreat with activities hub and accommodation; and
- Sustainability Centre, Education Hub and Artisan Village.

A PSI is required to develop an initial conceptual site model (CSM) and determine any data gaps which may require further investigation.

1.2 Objectives

The objectives of the PSI are to assess the likelihood of contamination at the site and determine:

- Potential sources of contamination and contaminants of potential concern (COPC)
- Identify specific areas of potential contamination
- Identify potential human health and ecological receptors; and
- Identify potentially affected media (soil, groundwater, surface water, indoor and ambient air).

1.3 Scope of works

The PSI was carried out in general accordance with the National Protection (assessment of Site Contamination) Measure 1999 ('NEPM' amended 2013). The scope of work included the following:

- Review of available sources of historical information
- Review of available site plans, historical maps and aerial photographs
- A review of title ownership to identify past users of the site to determine historical activities relevant to potential contamination, including those near the site
- Review of site characteristics including site layout, geological and hydrogeological settings in the context of the proposed development; and
- Review of historical environmental records for the site to confirm any incidents that may have given rise to site contamination.

2. Site setting

2.1 Site Identification

The site consists of three titles with a combined area of 246.97 Ha. A Site Location Plan is provided in Figure 1 and site details are summarised in Table 1. At the time of writing the site was accessed from Ridgeside Lane, which intersects While Hills Road to the north west of the site. The site is located approximately 1.5 kilometres (km) east of the Evandale Town Centre. At the time of the investigation one residential brick veneer property with a number of out buildings were located on Title 106773/1 to the south west of the other two titles.

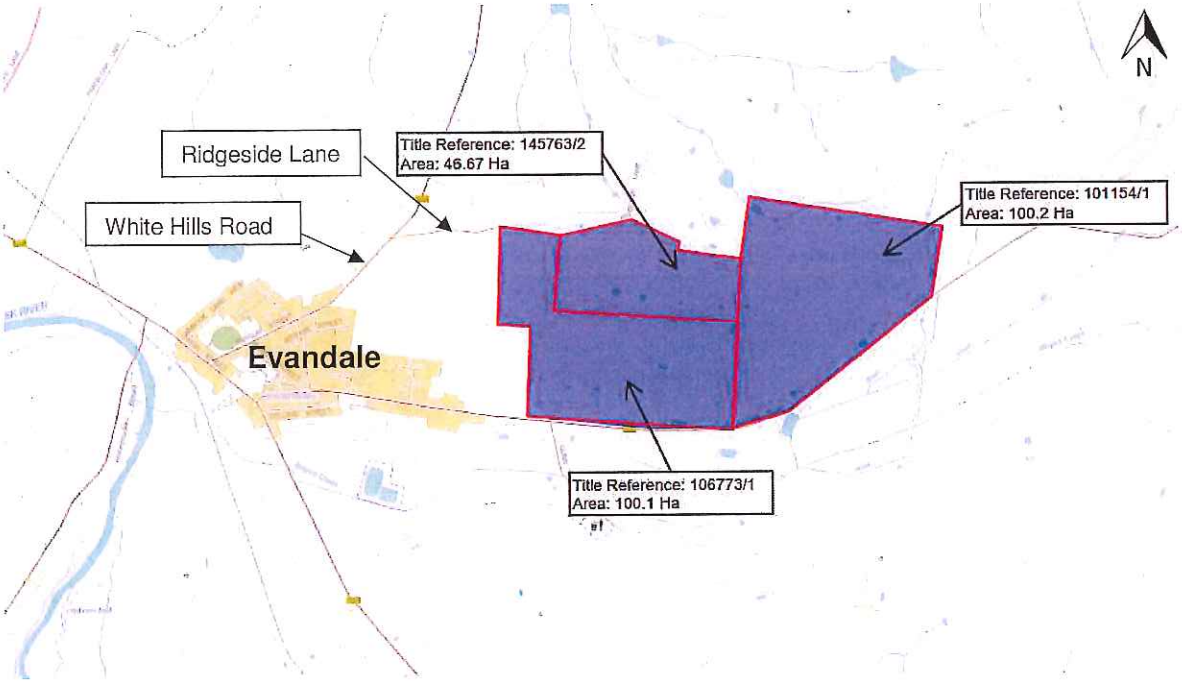

Figure 1: Site location and titles (base map source: https://maps.thelist.tas.gov.au)

Table 1: Site details

	Site details
Street address	211 Logan Road, Evandale TAS 7212
Property IDs	1898289, 2688486, 1898529
Title references	106773/1, 145763/2 and 101154/1
Site area	Approximately 247 Ha
Current owner	TIP 119 Pty Ltd and TIP 120 Pty Ltd
Local government area	Northern Midlands Council (NMC)
Zoning	26.0 – Rural Resource
Current land use	Agricultural – grazing and pastoral use

2.2 Current and Proposed Landuse and Zoning

Under the Northern Midlands Interim Planning Scheme 2013 the site is zoned '*26.0 – Rural Resource*'. It is understood that the proposed development is at a concept master plan stage and a PSI has been requested by NMC in addition to other site assessment studies.

The proposed development would result in a change in landuse from agricultural to mixed use (including residential, parkland and childcare etc.). An indicative master plan provided by TIP is enclosed in Appendix A. The master plan is at the concept stage and therefore subject to change.

2.3 Surrounding Land Use

The land surrounding the site is also designated as *'26.0 – Rural Resource'*. Residential housing within Evandale is zoned *'10.0 General Residential'* and located approximately 183 m to the west of the site.

The site is surrounded by the following:

- **East**: Agricultural arable and grazing land with two residential houses (number 420 and 421) located approximately 349 m from the eastern site boundary.
- **West**: Agricultural arable and grazing land with medium density housing approximately 370 m beyond. The Evandale Sewerage Treatment Plant is located approximately 792 m to the south west of the site.
- **North**: Agricultural arable and grazing land with properties referred to as 'Ridgeside' approximately 998 m beyond; and
- **South**: Logan Road runs parallel with the southern site boundary with Boyes Creek located approximately 345 m from the site. The Evandale Waste Transfer Station and Recycling Centre is located approximately 500 m beyond.

2.4 Geology

The 1:250,000 Geology of Tasmania map indicates that the site consists of dominantly non-marine sequences of gravel, sand, silt, clay and regolith from the Upper Cretaceous period. Undifferentiated Quaternary sediments consisting of sand gravel and mud of alluvial, lacustrine and littoral origin are indicated to the south of the site. The geology on and surrounding the site in shown in Figure 2.

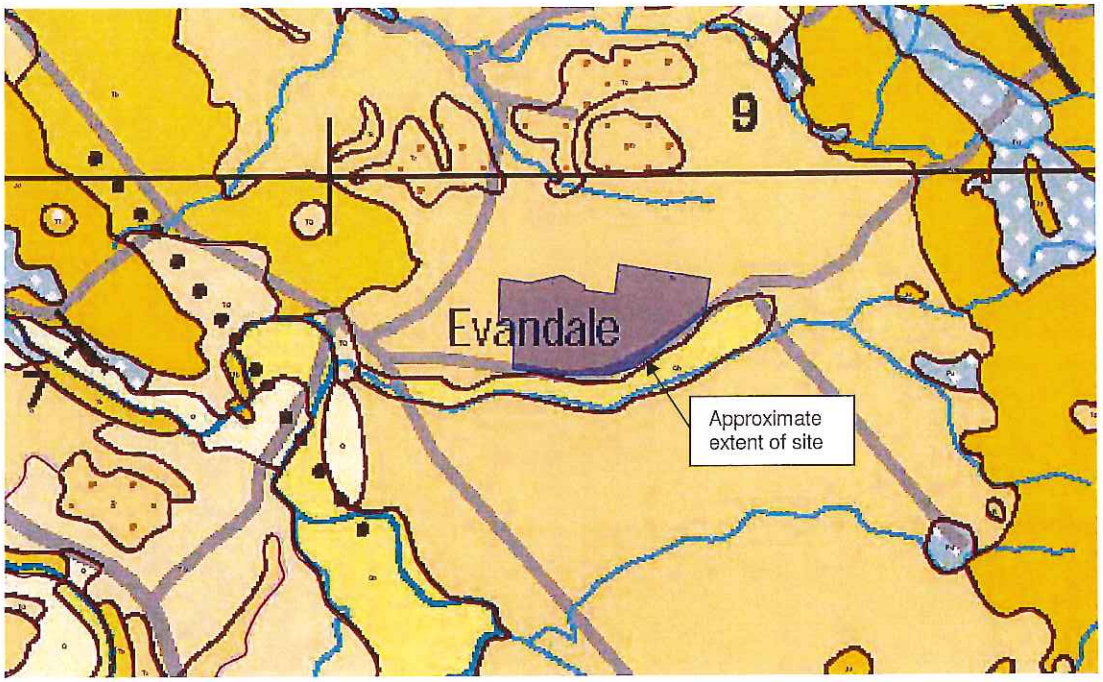

Figure 2: Site geology (source: https://maps.thelist.tas.gov.au)

2.5 Topography and Hydrogeology

The site has an elevation of approximately 170 to 155 meters Australian Height Datum (m AHD). The topography of the site is generally flat and open, and the lowest lying area is in the north of the site where a dam is located.

2.6 Surface Water and Site Drainage

Due to the flat topography across the site significant surface water flow offsite is not anticipated to regularly occur. Surface erosion features observed on aerial photographs suggests that dams in the northern portion of the site periodically overflow into dams on the adjacent property during periods of heavy or prolonged precipitation. Erosion features suggest that surface water flow continues across Ridgeside Lane into numerous dams and eventually discharges into Rose Rivulet approximately 3 km to the north of the site.

Recent aerial photographs indicate multiple dams (approximately 16) were present on the site. Boyes Creek located approximately 318 m to the south of the site is the nearest surface water feature. Recent aerial photographs do not suggest that surface water from the site discharges directly into Boyes Creek.

The ListMap groundwater information data layer indicates the site is located on porous intergranular aquifer consisting of Quaternary sand and gravel Tertiary sediments. The aquifer is reported to be often high yielding where sand and gravel deposits are greater than 5 m thick. Yields may be limited where thick clay deposits exist. The quality is usually suitable for most purposes. The aquifer has a high vulnerability to pollution unless a layer of low permeability material, such as clay overlies the aquifer.

The Tasmania Groundwater Information Access Portal (accessed in April 2019) indicates no registered groundwater bores on the site. Within a 2,000 m radius of the site eight bores were registered. The details of these bores are summarised in Table 2 and a location plan is provided in Appendix B.

Table 2: Registered bores within 2,000 m radius of the site

Reference	Approximate distance / direction from site	Bore depth	Last SWL depth (m)	Final TDS mg/L	Aquifer geology	Last operating status	Last operating status date
3862	0 m east	76.20	15.2	ND	Jurassic Dolerite	functioning	01/01/1985
3801	363 m east	52.50	10.6	3,390	Tertiary Sediments	abandoned	29/06/1970
41599	758 m west	26.00	14	ND	Tertiary Basalt	capped	29/01/2016
3829	532 m west	33.50	9.1	ND	Tertiary Sediments	unknown	23/10/1969
41228	910 m south	46.00	ND	ND	Tertiary Sediments	abandoned	12/12/2006
41084	917 m south	36.00	ND	ND	Tertiary Sediments	abandoned	29/06/2007
41083	658 m south	50.00	ND	ND	Tertiary Sediments	abandoned	30/06/2007
3810	1 km south west	14.00	1.6	1,030	Tertiary Basalt	abandoned	29/06/1970

Notes: SWL – Standing water level
ND – No data
TDS – Total dissolved solids.

Of the eight registered bores, five were reported to be abandoned, one as capped, one with an unknown status, and one as functioning. The functioning bore (3862) appears to be located very close to the eastern side boundary. It is unknown what this bore was used for and the bore status was last updated in 1985, therefore it may not still be functioning.

Groundwater salinity values were only available for two bores, 3801 and 3810 with respective salinities or total dissolved solids (TDS) of 3,390 mg/L and 1,030 mg/L. The significant difference in salinity is likely to be due to the wells intersecting different aquifers, with bore 3801 installed at a depth of around 52 m and bore 3810 installed at 14 m depth. Based on the documented salinity the shallow bore water encountered in bore 3810 would be classified as 'fresh' while the water from the deeper aquifer in bore 3801 would be classified as 'brackish' and likely to be unsuitable for human consumption, but potentially suitable for irrigation (Freeze and Cherry 1979).

2.7 Vegetation

According to TASVEGE 3.0 mapping, the vegetation community group across the majority of the site is classified as '*agricultural, urban and exotic vegetation'* with a vegetation community description as *'agricultural land (FAG)'. Native grassland with a Vegetation Community Description as 'Lowland grassland complex' is indicated* in the north western portion of the site in three small areas. The source date shown for the grassland is 1997. Plantations for silviculture are indicated adjacent to the eastern site boundary.

2.8 Soil Landscape and Acid Sulfate Soils

Soil types on the government LIST database indicates Chrimosol soils over the majority of the site, which developed on flat to gently undulating river terraces. Soil from the Relbia Association consisting of soils developed on deeply dissected Tertiary sediments of the Launceston basin are indicated in two areas on the east and northern portions of the site.

The Australian Soil Resource Information System (ASRIS) database indicates that *'no known occurrence'* of acid sulfate soils over the majority of the site. A small area of approximately 8.3 Ha in the south western corner of the site is indicated to have a *'low occurrence'* of encountering acid sulfate soils. The acid sulfate soils hazard map is shown in Figure 3.

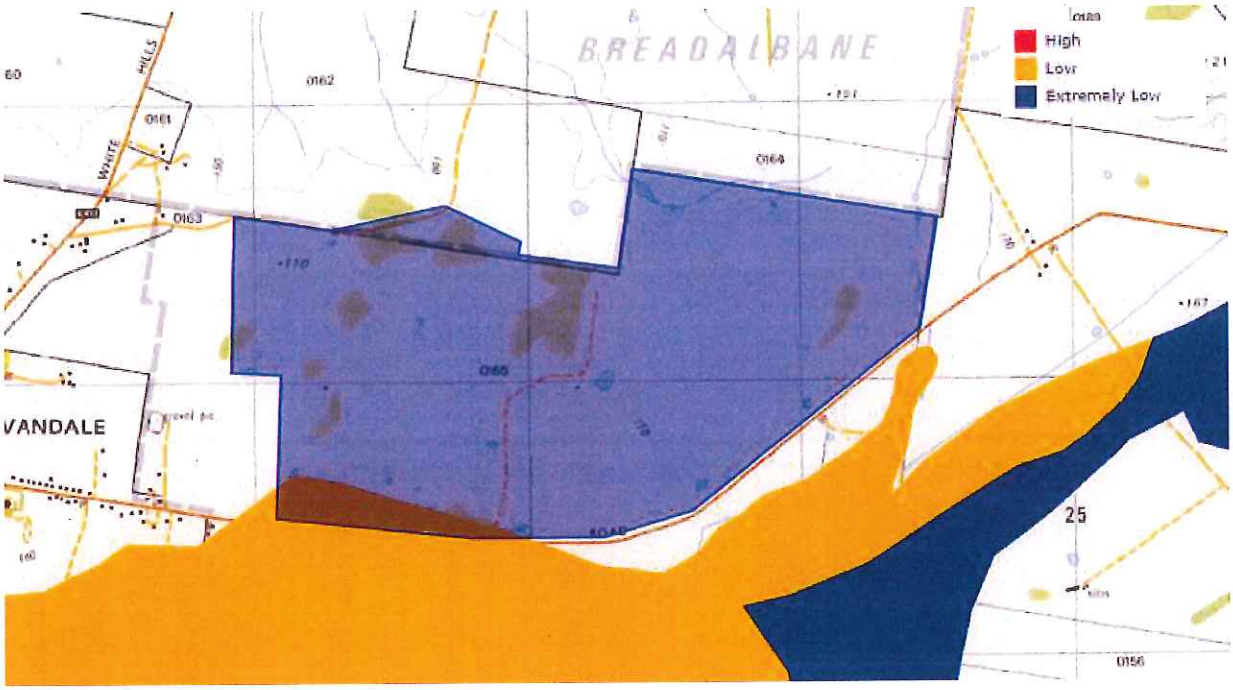

Figure 3: Inland acid sulfate soils (<20m AHS) hazard map (source: https://maps.thelist.tas.gov.au)

3. Historical Review

Information on the history of the site and surrounding land was requested from the following information sources:

- Historical aerial photographs
- Historical property records and certificates of title
- NMC environmental protection infringement notices issued at the site and historical activities; and
- EPA Regulated Premises

In addition to the above, the following was also requested from the applicable institutions:

- Current and historical dangerous goods registered with Workplace Standard Tasmania; and
- Property Information Request (PIR) from the Tasmanian Environment Protection Authority (EPA).

3.1 Property Title Records

A property information report was obtained from the government LIST database in April 2019. All three titles had a registered land use for valuation purposes as *'Primary production grazing / pastoral - not irrigated'*. At the time of writing all three titles were in the ownership of the TIP 119 PTY LTD and TIP 120 PTY LTD, and were acquired from the former owners in 2018. Additional property information is provided in Table 3

Table 3: Property title records

Title reference	Area (Ha)	Improvements	Former owners	From	To
101154/1	100.2	Shed	Andrew Boyton Wilkes R A W Entreprises Pty Ltd	31/07/1998 30/01/1992	21/05/2018 31/07/1998
145763/2	46.67	None listed	Andrew Boyton Wilkes	14/02/2000	21/05/2018
106773.1	100.1	House, x2 sheds	Anna and Robert Fergusson Jeannine Carolyn & Suat Ucdereli Carolyn Valborg Dawe Roderick Ernest Wilkes R A W Enterprise Pty Ltd	09/03/2016 07/02/2005 06/12/2001 31/07/1998 31/01/1992	22/06/2018 09/03/2016 07/02/2005 06/12/2001 31/07/1998

3.2 Satellite Aerial Imagery

A total of 14 aerial photographs were reviewed dated from 1973 to 2018 to determine past activities and land use on and surrounding the site. The photographs reviewed are provided in Appendix B and summarised in Table 5.

Table 4: Summary of historical photographs

Date	Observations
8 Dec 1973	The site is mostly cleared of trees; however, groves of trees remain on the western half of the site and isolated trees over the remainder of the site. A number of dams and access tracks are visible across the site. **Surroundings:** Cleared agricultural land surrounds the site with isolated farm buildings. Residential properties in Evandale are visible to the west.
15 April 1980	The site is largely unchanged with a continuation of agricultural landuse. **Surroundings:** The site surroundings are largely unchanged with continued agricultural use.
03 Feb 1984	The site is largely unchanged with a continuation of agricultural landuse. **Surroundings**: Evandale sewerage settlement ponds have been constructed to the south west of the site. The site surroundings are largely unchanged showing continued agricultural use.
17 Jan 1997	Multiple water retention dams have been excavated across the site and many of the sparsely distributed trees the northern portion of the site appear to have been removed. **Surroundings**: Residential houses have been constructed to the west of the site on the outskirts of Evandale. The remainder of the site surroundings are largely unchanged showing continued agricultural use.
27 Nov 2000	The site is largely unchanged with a continuation of agricultural landuse. The grove of trees in the north western corner of the site appear to have been thinned. **Surroundings**: The site surroundings are largely unchanged showing continued agricultural use.
9 Dec 2004	The site is largely unchanged with a continuation of agricultural landuse. **Surroundings**: The site surroundings are largely unchanged showing continued agricultural use.
21 Dec 2011	A residential house with several outbuildings has been constructed near the southern site boundary adjacent to Logan Road. A dam near the north of the site boundary appears to have been partly infilled with unidentified materials. **Surroundings**: A building and access road has been constructed to the south of the site between the site and the Evandale Waste Transfer Facility. No other significant changes were observed
3 Sep. 2013	The field to the west of the farmhouse appears to have been heavily grazed. No other notable changes are observed. The building to the west of the residential property has been extended to the north. **Surroundings**: The site surroundings are largely unchanged showing continued agricultural use.
7th Oct. 2013	No significant changes observed onsite. **Surroundings**: No significant changes observed.
8th Feb 2015	A dam has been excavated close to the recently constructed property. No other significant changes observed onsite. **Surroundings**: Boundary trees planted offsite adjacent to part of the northern site boundary. No other significant changes observed.
27th Oct. 2015	The light coloured material in the dam near the northern site boundary appears to have been stockpiled.

	Surroundings: No significant changes observed.
9th Jan 2016	No significant changes observed onsite. **Surroundings**: No significant changes observed.
11th Oct. 2018	A dam has been excavated approximately 163 m to the north of the recently constructed property. The dam near the northern site boundary which appeared to have been partly filled with light coloured material appears to have been covered with soil. Several of the dams appear to have been extended. **Surroundings**: No significant changes observed.
29th Oct. 2018	No significant changes observed onsite. **Surroundings**: No significant changes observed.

The historical aerial photographs suggest that little development has occurred on the site since the first available aerial photograph dated 1973. Since 1973 isolated trees have been progressively removed from the site and the current residential building is visible in the 2011 photograph. Some stockpiling and potential infilling of dams with unidentified material appears to be evident in the 2015 aerial imagery.

3.3 High Resolution Aerial Imagery

In addition to the satellite imagery, recent aerial imagery from NearMap Ltd was also reviewed. The high resolution imagery dating from 2011 to 2019 appears to indicate the placement of waste material in two locations on site (Area 1 and Area 2). Area 1 is located in the northern portion of the site and Area 2 is located to the west of the residential property. Imagery of these specific areas is provided in Appendix E.

In Area A the imagery appears to show the placement of light and dark coloured material in a dam in the north of the site. Further investigation is required to confirm the nature of the material; however, a vehicle tire appears to be present in the 2011 photograph. Further infilling appears to have occurred in 2015 and 2017. By November 2017 the material appears to have been covered with soil.

Imagery dating from 2011 appears to show the placement of material in Area B, located to the west of the residential property. More material appears to have been added in 2015 and it then appears to have been covered with soil in 2017.

4. Contamination and Potentially Contaminating Activities

4.1 EPA Property Information Request

A Property Information Request From (PIR) was submitted to the Tasmanian EPA Contaminated Sites Unit on the 11th April 2019. The EPA maintains a database relating to the Environmental Management of Pollution Control (Underground Petroleum Storage Systems) Regulations 2010; industrial sites (which are or have been regulated by the EPA); historic landfills; contamination issues reported to the division; and incidents and complaints that have been recorded relating to historical storage of dangerous goods (prior to 1993).Correspondence from the EPA on 6 May 2019 indicated that they had no records relating to contamination or potentially contaminating activities on the site or on adjacent properties. A copy of the correspondence received from the agency is enclosed in Appendix G.

4.2 EPA Regulated Premises

The Evandale Wastewater treatment plant is the only regulated premises within 2 km of the site. The EPA issued an Environmental Protection Notice (481/1) dated January 2003 in respect of permit number 3609 The permit was issued for the secondary treatment of wastewater at the wastewater treatment plan at Logan Road Evandale. The reported components of the plant were wastewater treatment lagoons. The permit outlines operational requirements in relation to waste, effluent discharge, odour, noise, monitoring and other requirements.

4.3 Dangerous Goods Register

A Dangerous Goods information request was submitted to WorkSafe Tasmania on the 13th April 2019. The agency provided a copy of an Owner Builder Report and Owner Builder Declaration dated 2010. The Dangerous Goods Unit reported that there were no listings on their dangerous substances database or current hazardous chemical site / storage notifications relating to the site. A copy of the correspondence and information provided by WorkSafe is enclosed in Appendix F.

4.4 Northern Midlands Council (NMC)

A property information request was submitted to NMC on the 15th April 2019. An email response stated that Council had no environmental protection, infringement notices or records of potentially contaminating activities at the site.

4.5 Potentially Contaminating activities

Based on historical and current landuse, several properties in the vicinity of the site were associated with past and current regulatory contamination activities. Details of potentially contaminating activities are summarised in Table 6.

Table 5: Potentially contaminating activities surrounding the site

Site	Location	Approximate Distance (m)	Direction from site	Comments
Evandale Waste Transfer Station and Recycling Centre	58 Gunn Street	497	South	Recent aerial imagery appears to indicate stockpiled materials.
Multiple stored vehicles	55 Gunn Street	443	South	Recent aerial imagery appears to indicate up to 14 vehicles and unidentified stockpiled material.
View Bank Cattery and Kennels	825 White Hills Rd	325	North-west	-
Evandale sewerage treatment ponds.	South of Logan Road	875	South-west	Believed to be still operational.

4.6 Previous Environmental Assessments

No known environmental assessments have previously been undertaken at the site.

5. Site Conditions

At the time of writing the site is believed to be used for arable and cattle grazing. The residential property onsite (211 Logan Road) is reported in the property title records to have been constructed in 2006 with at least two outbuildings. The site is covered with numerous water retention dams which are widely distributed across the site.

No site inspection was undertaken by an environmental scientist at the time of reporting, however the site was subject to a landslip / bushfire inspection. Photographs were taken of the two areas (Area 1 and Area 2) where aerial imagery appeared to indicate the placement of waste material.

Comments on the site observations in these specific areas of the site are provided below. No inspection of farm infrastructure or buildings was undertaken. A disused concrete trough and open drain, which may be an abandoned well was observed. Isolated buildings materials were observed in some areas of the site. Photographs are provided in Appendix D.

Area 1 – North of the rectangular dam in the centre of the site

Recently disturbed sparsely vegetated soil was observed, within what is inferred to represent the lateral extent of the former dam. There was evidence of localised subsidence consistent with the covering of previously uncompacted material. No refuse or fill was observed; however, the disturbed soils suggest that the material visible in the aerial photographs may have been buried.

Area 2 – West of the residential dwelling near Logan Road

General building waste material and debris was observed in exposed surface soils. A raised area in this portion of the site may contain buildings materials mixed with domestic refuse.

6. Summary of Potential Contamination

Based on the review of historical aerial photographs, potential infilling of a dam in the north of the site with waste material appears to have occurred. The nature of the potentially buried material could not be confirmed. Construction and domestic waste were observed to the west of the residential dwelling.

Further investigation is necessary to determine the nature and extent of potentially buried waste materials onsite and to determine if the material could represent a potential source of contamination. No inspection of agriculture infrastructure was possible to determine if this could represent a potential source of contamination.

A number of potentially contaminating past and current activities were identified in the vicinity of the site. This included the Evandale Waste Transfer Station, multiple stored vehicles and Evandale sewerage treatment ponds. Potential contaminating activities that have been identified at the site and on adjacent land are summarised in Table 7 and Table 8.

Table 6: Potential sources of onsite contamination

Potential contaminant activity or source	Potential contaminants of concern	Potentially affected media
Potential buried waste placed in a dam in the northern portion of the site (Area 1).	Hydrocarbons, metals, PAH, BTEXN, phenols, asbestos.	Soil, surface water, groundwater

Observed construction and domestic to the west of the residential property (Area 2).	Hydrocarbons, metals, PAH, BTEXN, phenols and asbestos.	Soil, surface water, groundwater
Past use of agricultural chemicals.	Pesticides, herbicides and metals.	Soil, surface water, groundwater
Past storage and use of fuel.	Hydrocarbons, metals, PAH, BTEXN.	Soil, surface water, groundwater
Above and below ground agricultural infrastructure.	Asbestos, lead paint.	Soil
Underground septic tank	Pathogens and nitrification.	Soil, surface water, groundwater

Notes: PAH – Polycyclic aromatic hydrocarbons, BTEXN – benzene, toluene, ethylbenzene, xylene and naphthalene

Table 7: Potential sources of offsite contamination

Potential contaminant source	**Potential contaminants of concern**	**Potentially affected media**
Evandale Waste Transfer Station and Recycling Centre	Hydrocarbons, VOCs, PAHs, BTEX, phenols, PCBs, solvents, metals, asbestos.	Soils and groundwater
Multiple stored vehicles to the south of the site.	Hydrocarbons, VOCs, PAHs, BTEX, phenols, solvents, metals, asbestos	Soils and groundwater
View Bank Cattery and Kennels to the north west of the site.	Exposure to pathogens and nitrification of surface waters.	Soils and groundwater
Evandale sewerage treatment ponds.	Pathogens and nitrification.	Soils and groundwater

Notes: VOCs – Volatile organic compounds, PCBs – Polychlorinated biphenyl.

7. Risk Assessment

7.1 Preliminary Conceptual Site Model

A preliminary conceptual site model (CSM) has been developed based on the reviewed information and pitt&sherry's understanding of the site setting. The assessment considers potential source-pathway-receptor linkages with regards to human health and the environment (Figure 3).

Potential sources of on-site and off-site contamination and potential contaminants of concern have been identified in Table 7 and Table 8. Contaminants in soils, surface water and groundwater onsite which may potentially be present at the site includes:

- Buried domestic and construction waste (Area A and Area B)
- Spills and uncontrolled release of fuels and agricultural chemicals
- Potential septic tank; and
- Use of agricultural pesticides and herbicide chemicals.

Human and ecological receptors identified for the site include:

- Current and future site users
- Construction workers; and
- Flora and fauna.

Off-site ecological receptors:

- Aquatic ecological receptors associated with Rose Rivulet (to the north of the site).

The identified potential pathways by which receptors may be exposed to contaminants are:

- Direct contact (dermal / ingestion) with contaminants in surface soils and/or sub-surface soils (construction workers)
- Inhalation (dust inhalation or hydrocarbon vapours) with contaminants in surface soils and/or sub-surface soils (construction workers); and
- Ingestion of contaminants from contaminated groundwater (all users).

The identified potential pathways by which ecological receptors may be exposed to contaminants are:

- Migration of contaminated surface waters and/or groundwater.

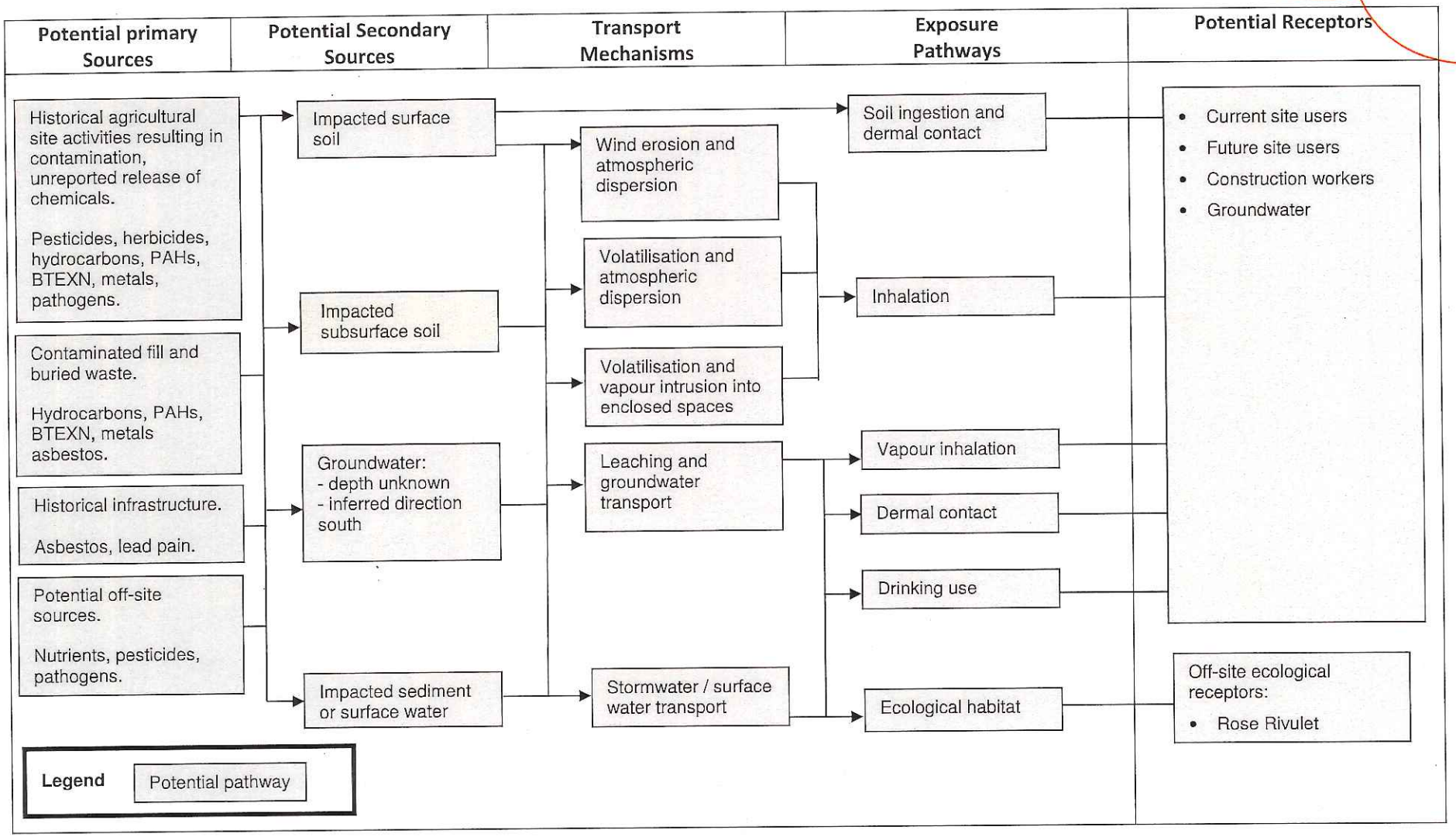

Figure 4: Preliminary conceptual site model

7.2 Preliminary risk evaluation

Based on the information gathered during the Stage 1 PSI and the preliminary CSM, the risk to each of the identified receptors has been assessed as follows:

- **Risk to current and future site users:** Based on the information reviewed the risk to current and future site users associated with buried waste requires further investigation due to the data gaps outlined below. In relation to the proposed change in landuse, there is considered to be a potential human health and ecological risk which requires further investigation.
- **Risk to construction workers:** Workers engaged in any future construction activities may potentially be exposed to contaminants potentially residing in soils, buried waste and groundwater during excavation. Workers may also be potentially exposed to contaminants such as asbestos associated with redundant infrastructure.
- **Risk to ecological receptors:** Contaminate soils, buried waste onsite has the potential to contaminate surface water and groundwater which has the potential to flow offsite.

The PSI indicates that contamination may be present onsite which has the potential to present a human health and ecological risk based on the proposed future use. The information available is insufficient to enable site management strategies to be derived, and a detailed site investigation is required to address the following identified data gaps:

- The nature and lateral extent of buried waste onsite
- The potential past use of agricultural chemicals
- The potential for past and current fuel storage tanks; and
- The potential presence of above and below ground infrastructure (septic tanks, fuel tanks etc.).

A site investigation involving targeted soil sampling and a broad suite of chemical analysis is required to investigate human health and ecological risk in relation to the proposed development and future ongoing use.

8. Conclusions

This report presents the findings of a desktop PSI undertaken by pitt&sherry to assess the risk associated with potential land contamination to support a proposed amendment to the Regional Land Use Strategies at the proposed site. The development will include mixed use including residential allotments, open public space, a childcare centre, hotel, retirement village and accommodation and education facilities. The PSI considered the human health and ecological risks based on the available information and as they relate to the proposed future landuse.

The assessment consisted of a desktop site history review, including all available site and off-site environmentally relevant information to identify potentially contaminated areas and contaminants of potential concern. A property information report (PIR) and dangerous goods records were requested from Environment Protection Authority (EPA) Tasmania and WorkSafe Tasmania respectively. However, at the time of reporting no response had been received from these authorities. Any records received from these authorities will be included in the report prior to finalisation.

Aerial photographs suggest no significant development has occurred on the site since the earliest reviewed photograph dated 1973. The construction of a residential property and several outbuildings was observed onsite in 2011. The photographs appear to suggest waste may have been buried in two specific areas in the north of the site (Area 1) and to the west of the residential property (Area 2), refer to Appendix D.

Several neighbouring properties including the Evandale Waste Transfer Station, a site with multiple parked vehicles, a cattery / kennels and Evandale Sewerage Treatment Ponds were identified in the vicinity of the site, which have the potential to contaminate soil and groundwater.

WorkSafe Tasmania and Tasmanian EPA records did not hold any information on potentially contaminating activities at the site or recorded spills or incidents resulting in potential site contamination.

Based on the reviewed information, the following potential sources of contamination were identified at the site:

- Contaminated soils from the uncontrolled placement of waste
- Potential tanks and underground infrastructure
- Potential spills / release of agricultural chemicals; and
- Historical use of agricultural chemicals.

The findings of the PSI were used to develop a preliminary CSM, which indicated that contamination may be present which could present a potential human health and / or ecological risk based on the future proposed use of the site. Based on the results of the PSI, a detailed site investigation is required to address the following data gaps:

- The nature and extent of buried waste
- Potential past use of agriculture agricultural chemicals
- Potential use and storage of fuel onsite
- Potential above and below ground infrastructure (septic tanks, fuel tanks etc.); and
- Review WorkSafe Tasmania and Tasmania EPA records.

Based on the reviewed information and identified data gaps, in the context of the proposed development a potential risk exists to the following receptors, which requires further investigation:

- Future site users
- Construction workers; and
- Onsite and offsite ecological receptors.

A detailed site investigation is necessary to characterise the nature of potential contamination on the site and delineate its lateral and vertical extent to a sufficient degree to allow an appropriate level of risk assessment. If necessary, this

assessment would provide a basis for the development of an appropriate remediation or management strategy. Following detailed investigation and the implementation of these provisions, it is considered that the site could be suitable for the proposed development.

9. Important Information

9.1 Scope of Services

This report ("the Report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the client and pitt&sherry ("the scope of services"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. The Report may only be used and relied on by the client for the purpose set out in the contract or as otherwise agreed between the client and pitt&sherry. Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties.

9.2 Reliance on Data

In preparing the Report, pitt&sherry has relied upon data, surveys, analyses, designs, plans and other information provided by the client and other individuals and organisations, most of which are referred to in the Report ("the data"). Except as otherwise stated in the Report, pitt&sherry has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the Report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. pitt&sherry does not warrant the accuracy will not be liable in relation to conclusions should any of the data, be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to pitt&sherry.

9.3 Conclusions and Recommendations

The conclusions in this Report are based on conditions encountered and information reviewed at the date of preparation of the Report. pitt&sherry has no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was prepared.

Site Masterplan

Appendix A

pitt&sherry

PLAN LEGEND

Contours
Existing 0.2m contours.

Set Backs
Designated 70m, 100m and 200m setback to provide an agricultural buffer from adjoining land uses.

Residential Allotments
Proposed residential allotments varying from traditional housing to 2.65 ha rural residential lots.

Existing Residential Areas
'The LIST' topographic map.

Internal Roadways
20m (w) Road reserves with ornamental street trees allowing shade in summer and solar access to homes during winter.

Shared Pedestrian / Cycle Paths
2.8m (w) pathway network throughout the neighbourhood to encourage a healthy and active lifestyle.

Open Space Boundary Corridor
10m (w) Native vegetation strip with an open grass area to provide an effective buffer from adjoining land uses.

Water Sensitive Urban Design (WSUD)
Existing and additional water bodies utilised to capture, store and filter storm-water for reuse throughout the parklands.

NUMBER LEGEND

1. **Primary Connector Road** linking the neighbourhood loop road to White Hills Road and beyond. The primary road will be highlighted by an avenue of ornamental trees along the entire loop road to provide seasonal change as well as shade during summer and solar access for the adjoining homes during winter. The primary road will also include separated pedestrian and cycles lanes that connect the boundary walking tracks with the residential and tourism areas.
2. **Broad planting of Chamomile and Lavender with an Olive tree** grove backdrop flank the entry road providing a unique experience entering the neighbourhood.
3. Ridgeside Lane 'Right of way' access to the Ridgeside' Estate to be retained with each side planted with small trees and shrubs to provide additional buffering between adjoining uses.
4. A line of decorative Maple trees commence at the intersection of the entry road and and loop road and meander through the parklands and botanical gardens.
5. Off street car parking areas for the community oval and parklands.
6. **The linear Neighbourhood Parkland extends through the middle** of the residential and tourism areas providing passive and active recreational opportunities for residents and visitors. The parkland includes shared pedestrian/cycle paths, seating and picnic facilities, play and exercise nodes, and feature gardens.
7. **Full size Cricket / AFL Oval** lined with large shade trees, shared pedestrian and cycle path and a traditional white picket fence.
8. **Sustainability, Education and Artisan Hub consisting of Green** Star rated buildings that accommodate a cafe, restaurant and cellar door specialising in local produce. The hub will also consist of studios, workshops and classroom facilities for sustainable living, backyard growing, small-holder farm courses, culinary arts, and art and craft courses.
9. **Demonstration Farm and Agribusiness Facility** including organic vegetable gardens, fruit and nut trees, livestock paddocks, and poly-tunnels set around the main 'Grow Hub' which includes an organic co-op store, 'plant nursery, farm workshops and Cafe.
10. **Child Care Centre** positioned across from the parkland and towards the neighbourhood entry for easy access.
11. Small residential lots with vehicle access restricted to the secondary street only, and arranged around a central driveway to limit garage frontages along the street front.
12. **Small residential lots with parkland frontage provides a frontyard** environment free from vehicle traffic and street infrastructure. Garages along the street frontage will be staggered and presentation controlled to ensure the built forms do not dominate the streetscape.
13. **Ornamental Gardens** with WSUD ponds, reticulated streams, accessible pathways, themed built forms, seating, garden features and ornamental planting.
14. **General Residential** consisting of 345 lots ranging in size from 450m² to 699m² including many with exclusive parkland frontage.
15. Larger **General Residential** lots for the development of up to 160 economically and sustainably designed small affordable housing opportunities (spread across seven Sites).
16. A network of shared pedestrian/cycle pathways provide links throughout the neighbourhood as well as non-vehical access to the Evandale village.
17. 81 x **Low Density Residential** lots ranging from 1,500m² to 6,500m², provide a transition in living opportunities between the general residential areas and the rural living lots.
18. **Native Garden** consisting entirely of Tasmanian native plants, set around stormwater ponds and wetlands.
19. **Primary entry into the Botanical Gardens** consisting of a large car parking area, bus drop-off/pick up lay-by, and Botanical Centre that overlooks the gardens. A central axial path provides access to all gardens and leads to the circular elevated walkway overlooking to WSUD ponds. The gardens will include a large amphitheater, picnic facilities and seating areas.
20. **WSUD Ponds** that captures and store all the stormwater flows coming into and throughout the neighbourhood, as well as regulating outflows into the adjoining farms, to ensure pre-development volumes are maintained.
21. 4.5 star 100 room **Hotel and Conference Centre**, including restaurant, bar and cafe. A hotel management education facility will also provide training for up to 25 students.
22. **Retirement Village Care Centre** including specialist aged care, palliative care and dementia care facilities set within a one building for ease of management and servicing.
23. Retirement Village Hub with lawn bowls court, activities centre, private vegetable gardens, 'Men's shed and 10 x Independent Living Units.
24. 10 x **Independent Living Homes** with private garages, yards and gardens.
25. **Health and Wellbeing Retreat** surrounded by tranquil gardens for quiet rejuvenation, rehabilitation and meditation.
26. **Eco Accommodation** with a central communal hub and 20 various sized villas set within a landscape of native trees, gardens and lawn areas overlooking an open paddock for pelting animals.
27. Low Density Residential lots that Back onto the loop road and Utilities access road shall have a 6m (w) vegetation buffer along the fully length the boundary to provide a visual screen and to prevent secondary vehicle access to these lots.
28. **Utilities Precinct** to accommodate the neighbourhoods recycling centre, green-waste processing and composting facility, renewable energy storage, resident storage sheds, parklands and botanical gardens depot, and small scale sustainable product manufacturing ventures
29. 18m (w) Native vegetation strip with an open grass area to surround the utilities precinct to provide an effective buffer from adjoining land uses.
30. **Sewerage and Waste Water Facility** utilising state-of-the-art treatment technologies to ensure odorless processing activities and natural biological filtration of the secondary treated water for public and private re-use throughout the neighbourhood.
31. 27 x **Rural 'Zone A'** lots ranging in size from 1ha to 1.85ha.
32. 17 x **Rural 'Zone B'** lots ranging in size from 2ha to 2.64ha with exclusive private access off Logan Road.
33. **Emergency Vehicle Access off Logan Road** through the open space corridors.

RIDGESIDE LANE

Ridgeside Lane Evandale Tasmania

Concept Master Plan

NORTH

0 50 100m

27 April 2019
Issue H

TRADERS IN PURPLE

LANGE design

Registered Bores

Appendix B

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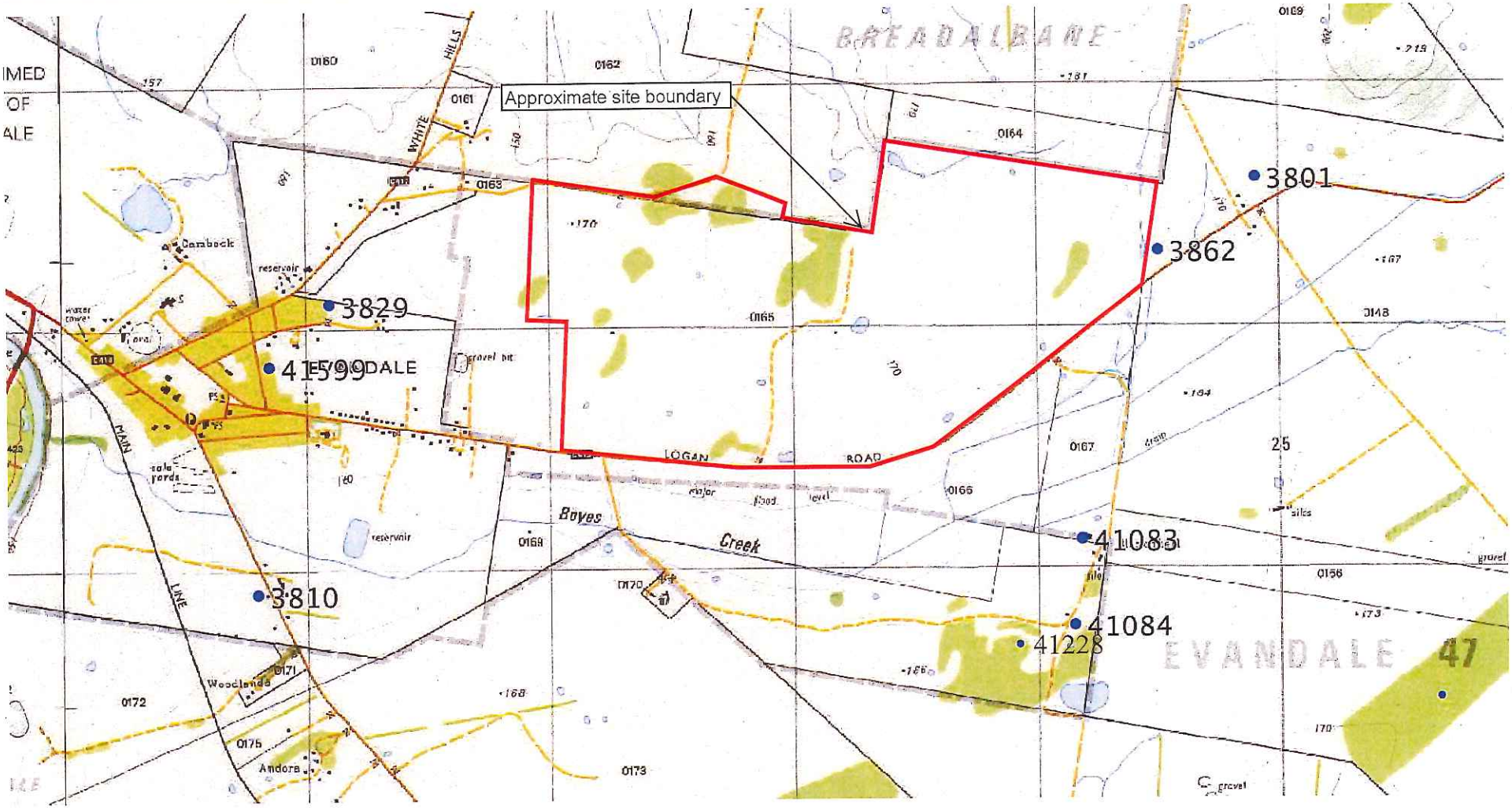

Tasmania
Explore the possibilities

Evandale registered bores — ***Groundwater Feature Detailed Report***

Identification

Feature id: 3801 **Feature type:** Bore

Location

Locality: Evandale
Easting: 525013 **Datum:** GDA94
Northing: 5398783 **Accuracy:** 200
Ground level (m ASL): 178.00

Construction

Date drilled: 29/06/1970
Drilling company: Mines Department (=Tasmania Department of Mines)
Depth (metres): 52.50
Initial yield (L/sec): 1.13
Initial EC (µS/cm):

Bore diameters

From (m)	To (m)	Diameter (mm)	Drilling technique
0.0	52.5	180.00	Rotary (Rotary Mud)

Casings

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
0.0	52.4		152.00	unknown

Screens

From (m)	To (m)	Inlet type
30.5	52.4	slotted casing

Seals

From (m)	To (m)	Material type
NA		

Geological / Hydrogeological Information

Lithological Log

From (m)	To (m)	Lithological description
0.0	1.5	soil and clay
1.5	3.0	clay with concentrations of iron oxide
3.0	12.0	light brown sandy clay
12.0	26.0	light brown plastic clay
26.0	52.0	brown plastic clay with wood fragments
52.0	52.5	"conglomerate" grading to dolerite

Depth to water struck

Date	From (m)	To (m)	Cumulative yield
29/06/1970	30.5		

Main aquifer geology: Tertiary Sediments
Final TDS (mg/L): 3390

Standing Water Levels

Standing water levels

Date	SWL (metres)
29/06/1970	10.60

Current status

Last recorded statuses

Type	Value	Date recorded
function	abandoned	29/06/1970

Identification

Feature id: 3810 **Feature type:** Bore

Location

Locality: Evandale
Easting: 520913 **Datum:** GDA94
Northing: 5397083 **Accuracy:** 200
Ground level (m ASL): 157.00

Construction

Date drilled: 29/06/1970
Drilling company: Mines Department (=Tasmania Department of Mines)
Depth (metres): 14.00
Initial yield (L/sec): 1.58
Initial EC (µS/cm):

Bore diameters

From (m)	To (m)	Diameter (mm)	Drilling technique
0.0	14.0		Rotary (Rotary Mud)

Casings

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
0.0	12.2		152.00	unknown

Screens

From (m)	To (m)	Inlet type
3.6	6.1	slotted casing
9.1	12.2	slotted casing

Seals

From (m)	To (m)	Material type
NA		

Geological / Hydrogeological Information

Lithological Log

From (m)	To (m)	Lithological description
0.0	1.5	soil and brown clay
1.5	3.1	light brown clay
3.1	6.1	weathered rock fragments
6.1	12.2	rock fragments, basalt
12.2	13.0	conglomerate with rounded quartz fragments
13.0	14.0	basalt

Depth to water struck

Date	From (m)	To (m)	Cumulative yield
NA			

Main aquifer geology: Tertiary Basalt
Final TDS (mg/L): 1030

Standing Water Levels

Standing water levels

Date	SWL (metres)
29/06/1970	1.60

Current status

Last recorded statuses

Type	Value	Date recorded
function	abandoned	29/06/1970

Identification

Feature id: 3829 **Feature type:** Bore

Location

Locality: Evandale
Easting: 521213 **Datum:** GDA94
Northing: 5398283 **Accuracy:** 200
Ground level (m ASL):

Construction

Date drilled: 23/10/1969
Drilling company: Mono Pumps Australia Pty Ltd
Depth (metres): 33.50
Initial yield (L/sec): 0.88
Initial EC (µS/cm):

Bore diameters

From (m)	To (m)	Diameter (mm)	Drilling technique
0.0	33.5	114.00	Air Percussion (Rotary air - R)

Casings

From (m)	To (m)	Inside diameter (mm)	Outside diameter (mm)	Material
0.0	16.8		127.00	unknown

Screens

From (m)	To (m)	Inlet type
NA		

Seals

From (m)	To (m)	Material type
NA		

Geological / Hydrogeological Information

Lithological Log

From (m)	To (m)	Lithological description
0.0	19.8	clay
19.8	24.4	coal
24.4	25.0	mudstone
25.0	25.9	soft mudstone
25.9	26.2	quartz
26.2	33.5	mudstone

Depth to water struck

Date	From (m)	To (m)	Cumulative yield
23/10/1969	17.1		

Main aquifer geology: Tertiary Sediments
Final TDS (mg/L):

Standing Water Levels

Standing water levels

Date	SWL (metres)
23/10/1969	9.10

Current status

Last recorded statuses

Type	Value	Date recorded
function	Unknown	23/10/1969