Environmental Effects Report **2018**

'End of Life' Tyre Processing and Storage

8 Cavalry Road, Mowbray

Land Use Planning

Environmental Effects Report 2018

Draft Issue 1

Date	14 December 2017
Project Number	17.005
Project Name	ELT Processing and Storage Environmental Effects Report
Author	Heidi Goess, Land Use Planning Pty Ltd
Recipient	EPA Tasmania

Draft Issue 2

Date	5 January 2018
Project Number	17.005
Project Name	ELT Processing and Storage Environmental Effects Report
Author	Heidi Goess, Land Use Planning Pty Ltd
Recipient	EPA Tasmania

Draft Issue 3

Date	19 January 2018
Project Number	17.005
Project Name	ELT Processing and Storage Environmental Effects Report
Author	Heidi Goess, Land Use Planning Pty Ltd
Recipient	EPA Tasmania

Draft Issue 4

Date	29 January 2018
Project Number	17.005
Project Name	ELT Processing and Storage Environmental Effects Report
Author	Heidi Goess, Land Use Planning Pty Ltd
Recipient	EPA Tasmania

Land Use Planning

PO BOX 7710
LAUNCESTON TAS 7320
enquiries@landuseplanning.com.au

1 Table of Contents

PART A - PROPONENT & CONSULTANT DETAILS

Phoenix Rubber Pty. Ltd. (the Proponent) is a recently formed Tasmanian business that focusses on recycling 'end-of-life tyres' (ELT) in Tasmania. The details of the Proponent are summarised in Table 1.

Land Use Planning Pty Ltd in conjunction with other consultants has prepared the Environmental Effects Report to support this application. The details of Land Use Planning Pty Ltd is summarised in Table 2

Table 1:Proponent Details

Name	***Phoenix Rubber Pty. Ltd.***
CAN	***622 338 578***
Address	***4 Blackwood Drive, Perth, TAS***
Contact	***Mr. Tim Chugg***
Mobile	***0400 692 023***
Email	***chuggset@bigpond.com***

Table 2: Consultants Details

Name	***Land Use Planning Pty Ltd***
ABN	***94 619 739 310***
Address	***PO Box 7710, Launceston, TAS***
Contact	***Heidi Goess***
Mobile	***0438 155 035***
Email	***heidi@landuseplanning.com.au***

PART B – PROPOSAL DESCRIPTION

1.0 Description of proposed activity

1.1 Proposed Activity

The Proponent is seeking approval for delivery, storage, processing of ELT[1] on the land at 8 Cavalry Road, Mowbray (the site). The primary driver for establishing this facility by the Proponent is with the intention of applying a sustainable approach to disposing of ELT waste in Tasmania and converting this waste product into a resource that has many reuse applications.

The Proponent's immediate priority is to establish a shred, crumb and moulding facility to meet demand from various manufacturers or civil contractors for shredded rubber product for reuse in road base, play

[1] *ELT are generated from the replacement of worn tyres with new tyres on passenger vehicles, trucks and farming vehicles.*

equipment, and other civil engineering applications (refer to Appendix A). A secondary priority will be to investigate opportunity for additional moulded products that can be manufactured on the site to meet demand of current or undiscovered markets.

1.1.1 Industry Standards

There is a viable market for recycled rubber products in Tasmania, particularly since the adoption of VicRoads Road Engineering Standard by the Tasmanian Department of State Growth[2] (Appendix A). The recycling facility has capacity to reduce ELT from a shredded material to a fine crumb that complies with this standard.

1.1.2 Storage and Reuse of Waste Tyres

Storage of ELT will continue on the site as approved by temporary planning application DA604/2016. The pod configuration, however, will be modified due to the proposed construction of a building to contain the recycling facility and moulding plant. An estimated 1500 tonnes of ELT will continue to be stored on the site. A small area within the proposed building is set aside for storage. The internal storage has an estimated capacity of 10 tonnes.

This submission is prepared in accordance with the Environmental Effects Guidelines prepared by the EPA for the proposed use and development.

1.1.3 ELT Supply

The supply of ELT for the recycling facility will be sourced from Tyre Recycle Tasmania Pty Ltd (TRT).

TRT provides a collection service of ELT from Tasmanian tyre retailers across Tasmania. TRT has entered into an agreement with the Proponent to provide this supply of ELT to the proposed facility.

TRT are the ideal supplier for the operation as this company holds a stockpile of ELT at Longford. Accordingly, the supply will be sourced from this location as well as new ELT collected from Tasmanian tyre retailers. Supply of ELT may also be provided from other stockpiles established within Tasmania.

TRT is registered as a Controlled Waste Handler for approved Waste Code T140, certificate registration number: CWTEMP054TA. The certificate is contained in Appendix A.

1.1.4 Operation Details

The Proponent intends to construct and operate recycling facility within the proposed building in accordance with the operation details summarised in Table 3 and the proposal plans contained in Appendix B.

[2] ***Department of State Growth, August 2016, Section 421 Bitumen Crumb Rubber Asphalt***

To summarise, the Proponent seeks permission to:

- Install and operate a tyre recycling facility, comprising shredders and granulators;
- Install and operate moulding plant and equipment on the site;
- Construct an industrial type building and associated infrastructure to contain and operate the recycling facility; and
- Continue to deliver and store existing and new ELT on the site in accordance with 15.242 C60.

Table 3: Operation Details

Project	**ELT storage and processing, producing rubber crumb and moulded products**
Location	**8 Cavalry Road, Mowbray**
ELT Delivered	**Estimated up to 2,600 tonnes per annum.**
Delivery of ELT	**Monday to Saturday 6:00am to 6:00pm. No deliveries on Sunday or public holidays.**
Storage of ELT	**Estimated 1500 tonnes (outdoor storage) and 10 tonnes (storage within building)**
Processing	**Estimated 8640 tonnes per annum**
Operation	**Monday to Saturday 6:00am to 6:00pm.** **Tyre recycling plant will not operate before 7:00am.** **No work is intended on Sundays or public holidays.**

1.1.5 Plant and Equipment

The plant and equipment employed by the proposed operation is summarised in Table 4.

It is proposed that ELT will be processed with the Genox Tyre Recycling System or similar to be located within the building of the site (refer to Figures 1& 2). Specifications of the tyre recycling plant are attached in Appendix C. The location of the tyre recycling plant is shown on drawing numbers C61 in Appendix B. The plant and equipment will be housed within a 30m x 50m x 8.645m colorbond shed.

The tyre recycling plant is powered by electrical motors driving the various components of the plant and equipment. ELT are fed to the shredder via a standard in-feed conveyor. This allows the operator to indiscriminately bulk feed.

The Tyre recycling plant will be operated by two employees and supplied with ELT by TRT.

Please note that if this model becomes unavailable from the manufacturer or

an alternative model can be obtained from another manufacturer that is more cost effective or efficient, then this will be purchased. The model proposed is indicative of the output and emissions of the tyre recycling plant that will ultimately be installed.

Figure 1- Site Plan showing ELT storage, Building and Associated Infrastructure

1.1.6 Processing

The Proponent is targeting a throughput of 30 tonnes of ELT per day. This equates to an estimated:

- 180 tonnes per week; or
- 8,640 tonnes per annum.

The tyre recycling plant will operate for an estimated 52 weeks of the year, 6 days per week. The tyre recycling plant will process approximately 8,640 tonnes per annum.

Variation to the targeted daily throughput as stated above may occur for the following reasons:

- Maintenance on plant and equipment is required and the tyre recycling plant;
- Employees are not fit to operate the tyre recycling plant;
- Tyre recycling plant is not operational due to a mechanical fault; or
- Another unexpected event.

In the event the tyre recycling plant is not operational and there is an expected delay in the processing of ELT delivered to the site, the storage area (refer to C60, Appendix B) is set aside as a contingency. This will allow uninterrupted collection of ELT from tyre retailers by TRT. Interruption to the

collection service could see a backlog of ELT stockpiled in urban areas which is not desirable.

Once the tyre recycling plant becomes operational again, the targeted daily throughput of 30 tonnes may be increased to clear the backlog of ELT stored within the temporary storage area.

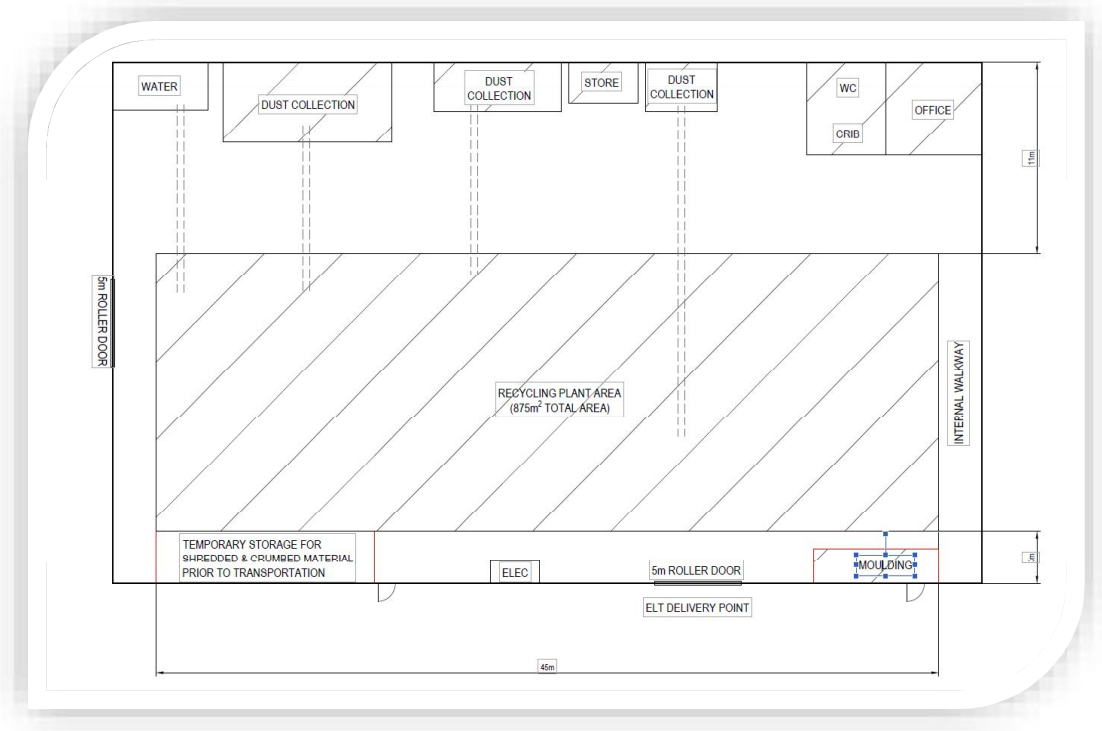


Figure 2: General Internal Arrangement of Building

1.1.7 Stages of Recycling and Processing

ELT stockpile on the site will be processed and new ELT will be delivered to the site from external sources for processing. The stages of the recycling process are broadly outlined below.

Stage 1, Pre-Shredding of ELT

Existing ELT on the site will be collected manually by employees from pods and loaded on to the infeed conveyor. New ELT will be delivered to the site by three trucks as described in Transport Impacts in Part C below. Trucks delivering ELT to the site are unloaded manually usually by two employees and will be directly loaded onto a conveyor belt that will feed the ELT through the primary shredder.

This primary shredding process reduces ELT into approximately 50-60mm chips.

A proportion of primary shreds per week are further processed into granules or fine rubber powder. The volumes processed will be dependent on demand.

The balance of the shredded material will be transported off site for civil construction purposes.

Table 4: Plant and Equipment

Type	Make	Model	Power Rating
Tyre recycling plant	Genox Tyre recycling plant or Similar		
	Tyre Circle Cutting Machine	TC1200 or similar	7.5 kW
	Conveyor	CBR10080 or similar	3 kW
	Two Shaft Shredder (with pressing device)	X1300 or similar	30 + 30 KW 2.2 KW (Hydraulic Power)
	Conveyor	CBR10060 or similar	3 kW
	Conveyor	CBR8060 or similar	2 kW
	Disc Classifier	RS1025 or similar	4 kW
	Conveyor	CBR8080 or similar	3 kW
	2 x Raspers	S1000T or similar	55 + 55 kW
	2 x Screw Conveyor	SC2565 or similar	3 kW
	Vibration Table	VT1040 or similar	1.5 + 1.5 kW
	Overband Magnet	MT10030 or similar	1.1 + 1.1 kW
	Conveyor	CBP6040 or similar	1.5 kW
	Granulator	GXC1200T or similar	132 kW
	Vibration Table	VT1045 or similar	1.5 + 1.5 kW
	Screw Conveyor	LS2545 or similar	0.55 + 2.2 kW
	ZZ – Classifier	GZ800 or similar	3 + 0.55 kW
	Screw Conveyor	LS2540 or similar	0.55 + 2.2 kW
	Silo	GLD10 or similar	1.5 + 2.2 kW
	Feeding system		3 + 0.55 kW
	Miller	GMF450 or similar	45 + 0.55 kW
	Shaking Sieve		4 kW
	Bagging System		3 + 0.55 kW
	Pulse Dedusting System		15+ 18.5+3x0.55 kW
	Automation Control System	Siemens/Schneider/ABB	
	Circulating Cooling System		65 kW
	Sound Proof Housing		
Moulding	High Efficient Frame Vulcanizing Press/Recycle Rubber Tile Moulding Machine	DBL500 or similar	10-20kW
Trucks	Detailed under Traffic Impacts, Part C		
Fire Fighting Equipment	Fire hydrant system with a simultaneous hydrant flows of three outlets (estimated 10l/s)		

Removal of Steel Wire

Each ELT contains steel wire. Steel wire will be removed from the ELT through magnetic separation between Stages 1 and 2. Steel wire, once removed, will be collected in bins as part of the shredding process. Steel wire collected from this process will be transported off-site and sold as a resource.

Stage 2 – Size Reduction of Shreds

The shredded chips are passed through a secondary shredder. This reduces chip size by more than half to allow processing of this material into granules or a rubber powder. The heavy duty Rasper at this stage produces a 12-20mm crumb.

Air Extraction

Textile and dust is removed by a center dedusting & filtration system generally between Stages 1 and 2.

Stage 3 – Granulation of the Rubber

The plant will comprise a granulator that will allow shredded material to be crumbed or converted to high quality 1mm granules.

It is estimated that a proportion of the crumb rubber produced per week is processed to a quality that is suitable for soft fall. The amount will be dependent on market demand.

A proportion of the crumb rubber produced per week will be processed into finer micron suitable for road construction (road spray seal).

This material is bagged and taken off-site to be sold as a resource.

Stage 4 – Milling

Further milling of the crumbed rubber produces a fine powder suitable for moulding.

Stage 5 - Moulding

Moulding of granules or rubber powder for manufacturing of such items as traffic management products.

It is anticipated that a proportion of the granulated rubber will be moulded into various products such as soft-fall matting, traffic management devices or other rubber products. Products will be generally made to order. Rubber products will be transported off-site once per day and delivered directly to a client.

Please note that production rates outlined above are indicative only and may vary depending on market demand.

1.1.8 Delivery of ELT

New deliveries of ELT to the site by TRT will be manually unloaded by the employees of TRT which will be either loaded directly onto the conveyor belt or stacked in accordance with the outdoor pod configuration or within the confines of the building for processing.

An estimated 1,200 ELT per day (estimated at 10 tonnes) can be stored in the proposed 30x50x8m shed.

This will be done without the aid of any equipment. Employees will then directly load ELT on to the conveyor belt for shredding. This part of the operation is completely contained within the building.

1.1.9 Services

The site will be connected to all reticulated services as shown on drawing number C60, Appendix B.

1.1.10 Employee Amenities

Employee amenities will be located within the proposed building as shown on drawing number C21 Appendix B.

1.1.11 Timeframe for Construction and Operation of Tyre recycling plant

The anticipated period for delivery of the tyre recycling plant and moulding equipment is estimated to be 120 days from the date of order. An additional 20 days for the installation/commissioning is required. This equates to a time period of 4-5 months.

The recycling and moulding plant will become operational on the site once construction of the building, equipment and plant is completed. The construction of the building and hardstand will require building approval.

Once the relevant permits are granted, the Proponent intends to order the plant and equipment from an overseas company. A building permit will be obtained, and application will be made to any required service providers not resolved at the planning stage. While it is anticipated that the purchase of the tyre recycling plant and required works can be undertaken in tandem, it is considered a conservative estimate that it will take a period of 6 to 12 months before the tyre recycling plant will be operational.

There are any number of contingencies or challenges that may arise through the construction and installation process, which are not within the Proponent's control. These timeframes cannot therefore be assured.

Please note that if this model becomes unavailable from the manufacturer or an alternative model with similar specifications can be obtained from another manufacturer that is more cost effective or efficient, then this will be purchased.

Within this time, the building, connection to services and other infrastructure requirements can be constructed to reduce timeframes for tyre recycling plant to become operational.

1.1.12 Operation Hours

The operation hours for the ELT deliveries, tyre recycling plant and moulding equipment will be Monday to Saturday between 6:00am and 6:00pm. The tyre recycling plant will not operate before 7:00 am.

The operation of the tyre recycling plant or deliveries of ELT to the site will not be undertaken on Sunday or public holidays.

1.1.13 Employees

An estimated two full-time staff are employed to operate and manage the tyre recycling plant. An estimated two full-time employees will operate the moulding press.

It is estimated that three TRT employees will collect and deliver ELT to the site.

1.1.14 Delivery and Storage of ELT

At present there is an estimated 1500 tonnes of ELT stored on the site. Once the recycling facility becomes operational, it is the intention to turnover ELT stored on the site progressively by processing the existing stockpile along with new arrivals.

TRT will deliver ELT directly from Tasmanian tyre retailers and from the existing storage area at Longford. No other businesses will collect or deliver ELT to the site.

TRT collects up to an estimated 2600 tonnes per annum of ELT from Tasmanian tyre retailers. This figure was extracted from raw data collected by the TRT and then calculated by converting the ELT into an Equivalent Passenger Ratio Unit (EPUs) in accordance with the standard set by the Tyre Stewardship Australia. The weight of an EPU for a new passenger tyre is 9.5 kg with the weight of an EPU for an ELT standardised at 8kg.

TRT intends to deliver ELT to the site with the Proponent storing and processing the delivered ELT. The tyre recycling plant will process new ELT delivered to the site and the existing stockpile. Generally new ELT delivered to the site will be stacked within the proposed building for direct processing by the tyre recycling plant unless the plant and equipment has broken down or is undergoing maintenance, in which case ELT will be stored in accordance with the pod configuration outlined by drawing number C60 A.

ELT are delivered to the site by a total of 3 trucks, their size being 6 tonne, 9 tonne and 13.5 tonne respectively. Vehicle access to the development area is via the existing crossover from Cavalry Road to the site.

Deliveries of ELT will be unloaded by two employees from the abovementioned trucks and stacked by hand either within the building or stacked in accordance with the pod configuration. This will be undertaken without the aid of any equipment. The proposed delivery of ELT will generate an estimate of 12 truck movements per day.

1.1.15 Fire Protection Measures

The site will continue to be managed and operated as approved by the current planning permit DA604.17 and will continue to be implemented to manage the hazard associated with the existing permitted outdoor storage area of the site.

The Fire Protection Measures imposed by the proposal are those recommended by the *South Australian Fire Authorities, Community Safety Department (2014) Built Environs Section Guideline No. 13, General Guidelines for Rubber Tyre Storage.*

Bund

A bund has been established in accordance with the approved planning permit DA660/17. This allows the capture of firefighting water and can hold 30 l/s for 90minutes.

Pod Formation

All new ELT delivered and stored on the site will be stacked in a pod configuration in accordance with drawing number C61, Appendix B. This is in accordance with the *South Australian Fire Authorities, Community Safety Department (2014) Built Environs Section Guideline No. 13, General Guidelines for Rubber Tyre Storage*.

Provision of Water Supply

A water hydrant is located at the south-western corner. This provides flow rates at an estimated 10l/s to the site.

The area immediately surrounding the ELT stockpile will continue to be maintained in a minimal fuel condition.

Accessibility and Security of the Site

The storage of ELT has occurred on the site since February 2017. The site is secured by fencing and is not accessible to the public. The site will receive 3 deliveries a day. The site is in a location that has frequent traffic particularly with vehicle traveling to the Launceston Waste Refuse Area.

Since its operation there have no recorded incidents on the property with respect to fire.

Fire Emergency Plan

The Fire Emergency Plan is included as part of Appendix D.

2.0 Proposal Area

2.1 Details

Table 5: Property Details

Address	***8 Cavalry Road, Mowbray***
Property Owner	***Mr. Steven Orders***
Property ID	***1911017***
Certificate of Title	***128392/1***
Area	***2.029 ha***
Tenure	***Private Property***
Zone	***General Industrial Zone, Launceston Interim Planning Scheme 2015***
Municipality	***City of Launceston***

2.2.1 Site

The site is contained on land identified on Certificate of Title, Volume 128392 Folio 1, comprising an area of 2.029ha. This is held in private ownership by Mr. S. Order and Mrs. V. Orders.

The site is located on the eastern side of Cavalry Road and is an irregular lot approximately 2,029m^2 in area. The site has frontage to Cavalry Road of more than 100m. Vehicle access is obtained from Cavalry Road via the existing crossover located approximately 33m north of the southern lot boundary.

2.2.2 Topography

The topography of the site is illustrated by Figure 9, 10 and 11.

Figure 3: Elevation of the land, showing the cross-section of the site as indicated by the orange line on Figure

5 (source: Google Earth).

Figure 4: Elevation of the land, showing the cross-section of the site as indicated by the yellow line on Figure 5 (source: Google Earth).

Figure 5: Hillshade Basemap (source: the LIST)

2.2.3 Acid Sulfate Soils

There are no acid sulfate soils identified within 1000m of the site.

2.2.4 Vegetation

Other than the Hawthorn Hedge located on the western side of the site, the site is mostly cleared from native vegetation. There is a small area of the site that is identified for containing native vegetation. This is discussed further in Part C.

2.2.5 Land Uses and Zoning

The site is located within the broader Remount Road industrial precinct which is approximately 28ha in area and comprises a range of industrial activities. The industrial precinct offers reasonable buffering from nearby sensitive uses along Vermont Road with the closest sensitive uses being located a minimum of 450m away from the site. There is, however, a sensitive use within this precinct located at 59 Remount Road, Mowbray.

The site is located within the northern half of the industrial precinct and adjoins the following uses:

- Fulton Hogan Industries Pty Ltd to the north at 14-16 Cavalry Road, Mowbray which operates a landscaping supplies business;
- Railway corridor and the Van Diemen Pistol Club Incorporated at 75 Remount Road;
- 59 Remount Road to the south, containing a sensitive use; and
- Fulton Hogan Industries Pty Ltd at 11 Cavalry Road, Mowbray to the west which forms part of the landscaping supplies business; and
- 9 Cavalry Road, Mowbray to the south-west.

The site is within the attenuation buffer of the quarry at 150 Remount Road, Mowbray

The site is currently utilised for the temporary storage of ELTs as approved by Planning Permit DA604/2016. The site is currently used and operated in accordance with the endorsed plan of Planning Permit DA604/2016. The land is kept and maintained in minimal fuel condition.

The site is suitably zoned for the proposed use and development and does not require an amendment to the Launceston Interim Planning Scheme 2015.

2.2.6 Land Use History

The Site Contamination Reports prepared by SEMF Pty Ltd (previous application) and Environmental Service & Design (refer to Appendix E) documents the land use history.

A preliminary review of historical aerial photographs from Google from 2016 back to 2004 shows that several areas of the Site have been used for storage (refer to attached images).

It is assumed, based on visual comparison and similarity with the storage on the land to the south, that the land was used, at least between 2004 and 2007, for the storage of vehicles for scrap.

The owner advises that the land was used for overflow storage of vehicles from the adjacent wrecking yard. No sumps or bowsers were ever on the Site. Prior to that the land was farmland, predominantly for running horse s and possibly related to the nearby racecourse usage" (page 4).

A further site contamination report undertaken by Environmental Service & Design provides further information on this matter (refer to Appendix E).

2.2.7 Nearby Sensitive Receptors

There are many sensitive receptors located within a 2km radius of the development area (refer to Figure 6). The closest sensitive use is located to the south of the site at 59 Remount Road, Mowbray. The sensitive uses adjacent to Vermont Road and north of the Racecourse are located more than 500m from the site.

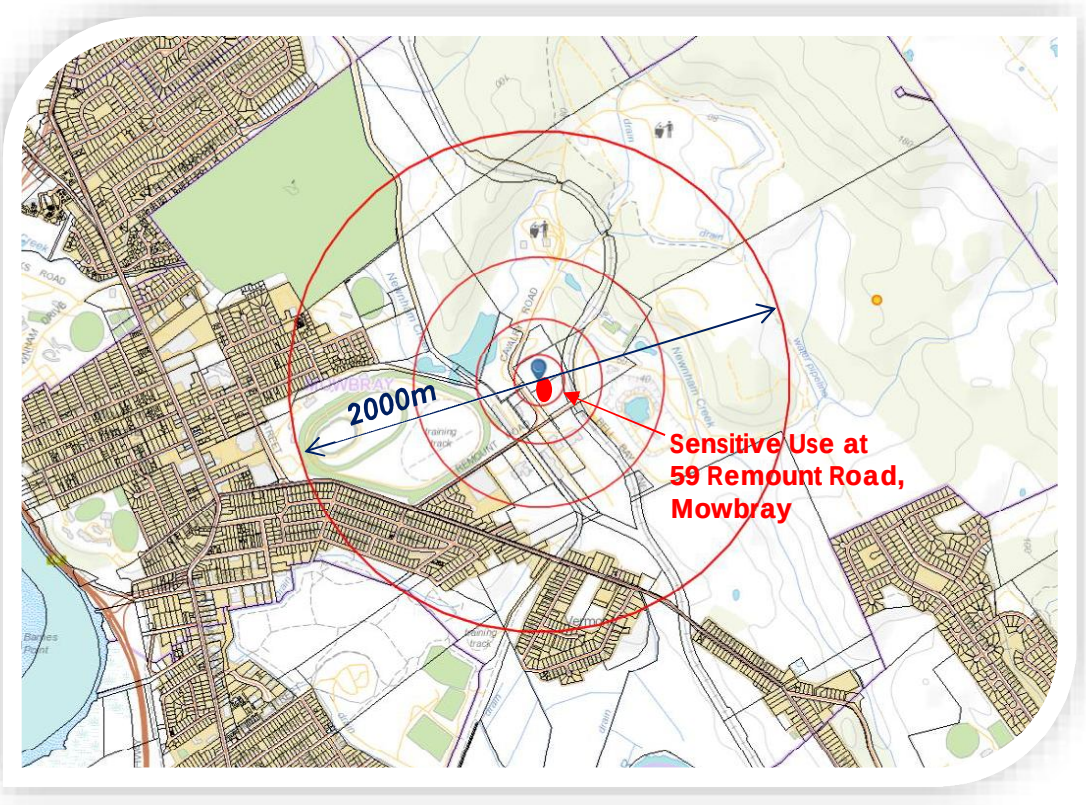


Figure 6: Sensitive receptors within a 2km radius of the site. (source:theLIST)

3.0 Map and Site Plan

The location of the site and development area is shown on Figures 7 and 8.

4.0 Rationale and alternative

Prior to the nominated site being considered, several other locations were explored. These locations did not present a viable proposition either because of the costs associated with securing a site, proximity to residential areas of the site. Additionally, available industrial zoned land within the Northern Tasmanian region was considered but established buildings limited the proposed use and development or there was not sufficient area on the

site to contain ELT storage.

The advantages of this site are both that it is closely connected to transport networks and is within an industrial estate away from main urban areas. Although there is a sensitive receptor on the adjoining property at 59 Remount Road, the site provides opportunity for the tyre recycling plant to establish as well as ELT storage. The site is also highly visible from passing passenger vehicles travelling to the tip which further assists with general surveillance over the site.

The proposal plans provide specific details of the site are attached in Appendix B.

5.0 Planning Information

An application is seeking approval to store and process ELT on the site has been lodged with the City of Launceston and is a discretionary application. The site is zoned General Industrial under the Launceston Interim Planning Scheme 2015.

Accordingly, approval is sought for the following uses to operate from the site on their own accord, pursuant to clause 8.2.5 of the Scheme:

- Recycling and waste disposal: tyre recycling and processing; and
- Manufacturing and processing: tyre by-product manufacturing.

These use classes are listed as permitted in the General Industrial Zone. However, as the application is a Level 2 Activity under the Environmental Management and Pollution Control Act 1992, the application assessed under a discretionary pathway.

6.0 Existing Activity

The site is currently utilised for the temporary storage of ELTs as approved by Planning Permit DA604/2016. The site is currently used and operated in accordance with the endorsed plan of the Planning Permit.

Figure 7: Site location (source: theLIST)

Figure 8: Topographic map and title boundary (source: theLIST)

PART C – POTENTIAL ENVIRONMENTAL EFFECTS

1.0 Flora and Fauna

The property (CT 128392/1) is located within the greater industrial area of Remount Road. The TasVeg 3.0 Dataset (refer to Figure 9) identifies that most of the site is identified to be within the urban miscellaneous area.

An area of approximately 525m² of the site is identified to contain acacia woodland and scrub. This small area is contiguous with the vegetation contained within the railway corridor and on the adjacent property at 19 Cavalry Road, Mowbray which forms part of the title containing the City of Launceston Refuse Area.

A hawthorn hedge is established along the frontage of the site.

A Natural Values Atlas Report was extracted from the Natural Values Website and this is contained in Appendix F. The site does not contain:

- Threatened flora;
- Threatened fauna; and
- Weeds as listed under the Weed Management Act 1999 and its Regulations.

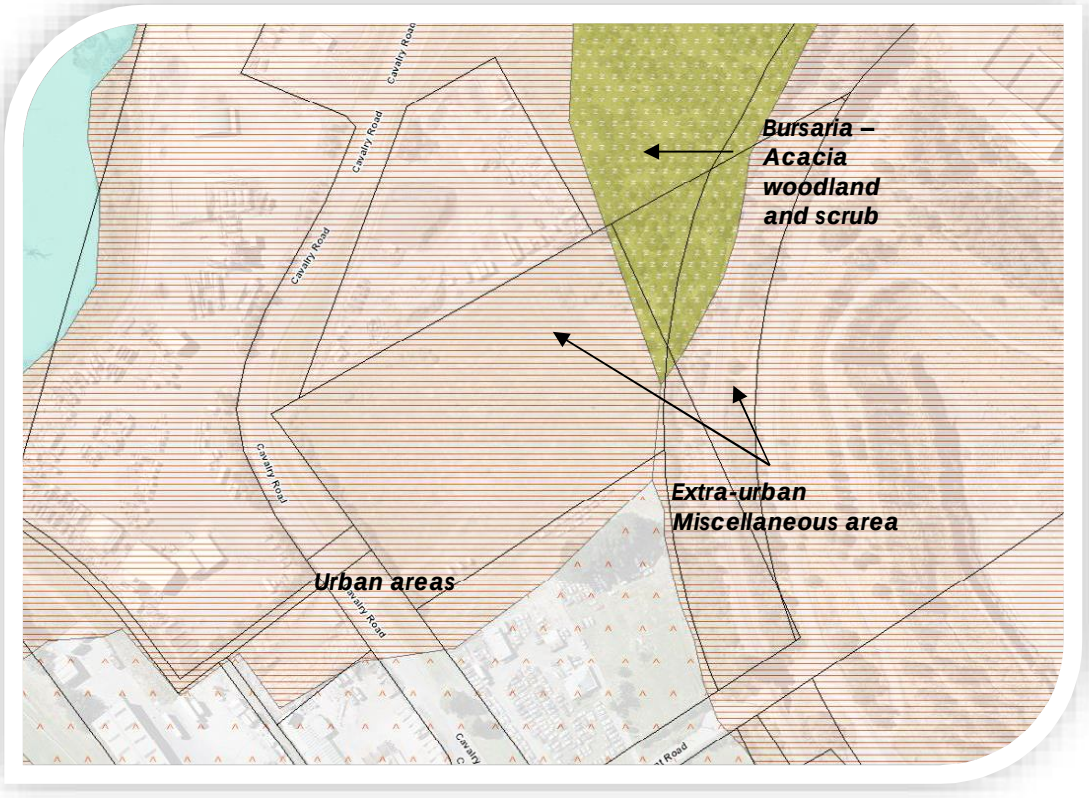


Figure 9: TasVeg 3.0 (source:theList)

Although it is noted that a Raptors nest and sightings to the south of the site is within 500m. It is noted that the site is not considered to contain potential

habitat for raptors.

The site is not identified to contain priority habitat areas on the Launceston Interim Planning Scheme Overlay Maps (refer to Figure 10).

The proposed use and development of land will be setback from the identified acacia woodland and scrub. The development within this industrial land will not remove native vegetation from the site and have negligible impact on threatened fauna species that may forage in the area, no other natural values will be impacted.

As part of the ongoing management of the ELT storage area, weeds generally will be grubbed out by an excavator bi-annually or as required to maintain the site in minimum fuel condition.

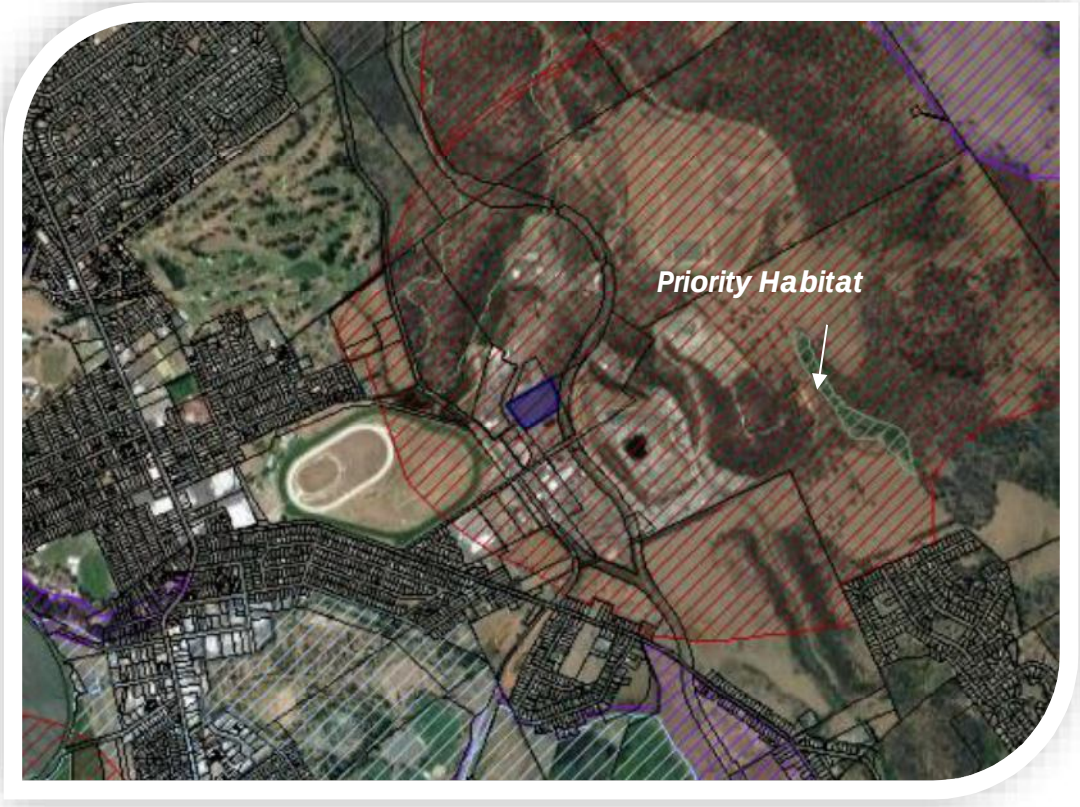


Figure 10: Launceston Interim Planning Scheme Overlay Map (soure:theLIST)

2.0 Rivers, creeks, wetlands and estuaries

The Newnham Creek is located approximately 2km west of the site. There are three freshwater dams within 500m of the site. There is a freshwater dam located within the quarry site (refer to Figure 11).

The tyre recycling plant and moulding equipment will be entirely contained within the proposed building. There will be no trade waste generated from the proposed tyre recycling plant.

Surface run-off from the buildings and the site will drain to the councils

reticulated system.

The main source of potential contamination of surface waters is anticipated to be from water used for firefighting purposes in the event of a tyre fire. To ensure that water utilised for firefighting purposes does not result in contaminated surface water from entering the stormwater system a bund is constructed on the site.

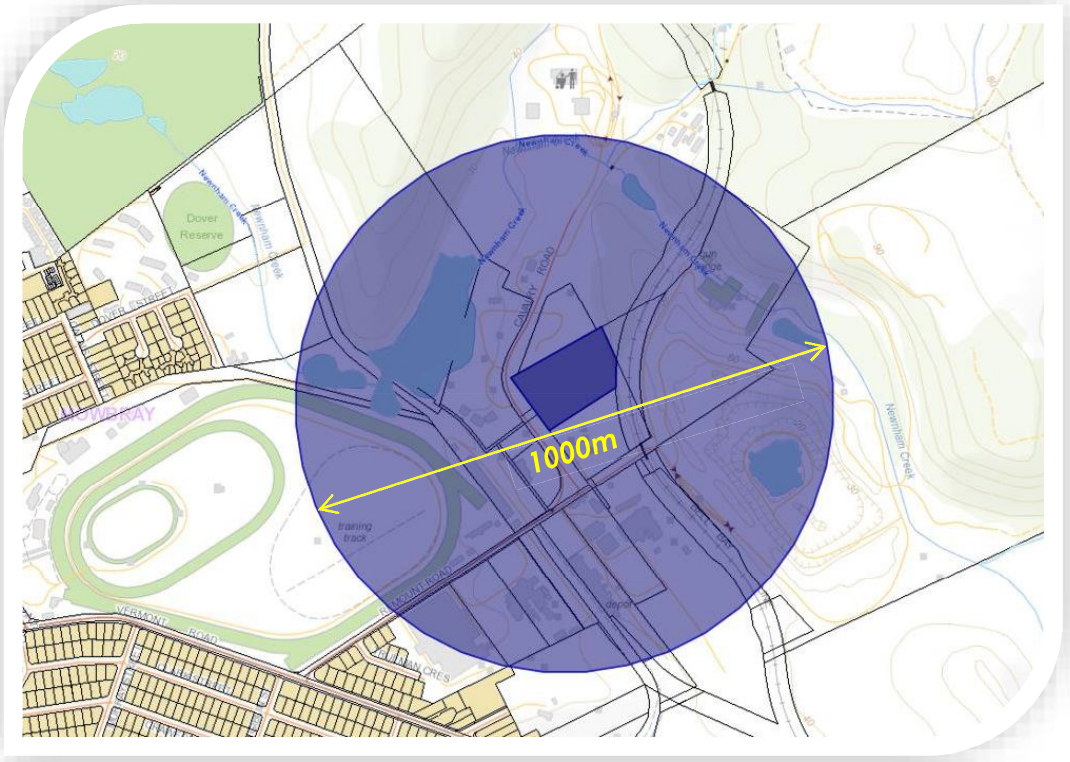


Figure 11: Waterways and dams in proximity to the site (soure:theLIST)

3.0 Air Emissions

Air emissions from the proposal include:

- Dust from the operation of the tyre recycling plant; and
- Odor from the moulding equipment.

The tyre recycling plant and moulding equipment will be contained within a large building on a sealed hardstand area, minimising the potential for generation of dust from the operation.

Dust emissions are minimised using a ducted dust extraction system which forms as detailed in Appendix B and C.

The tyre recycling plant and moulding press is operated within the confines of the proposed building. The moulding press uses a polymer to bind the ground rubber.

There will be no emissions of pollutants to air via any chimneys.

4.0 Liquid Effluent

The main source of liquid effluent that may result from the proposed use and development of the site is from water run-off utilized for firefighting purposes in the event of a tyre fire.

Water run-off utilised for firefighting purposes will be directed into the adjacent bund as described by the fire protection measures detailed in Part B.

In the event of fire, contaminated water will be removed by an accredited waste disposal company. The area that detained contaminated water will be cleaned and scraped by an excavator and if required contaminated soils removed.

There will be no trade waste discharged from the operation and accordingly there has been no trade waste agreement required. The building will be connected to reticulated sewer.

5.0 Solid wastes

The tyre recycling process will generate waste in the form of dust and fibers. Dust and fibers are collected through a ducted dust collection system as detailed in Appendix B and C. Dust is collected generally in bags and will be disposed of by a licensed contractor.

General waste generated from the operation will be disposed into a skip-bin located within the development area. This will be removed by licensed contractor.

Oil and lubricants consumed through the maintenance of plant and equipment will also be disposed of appropriately through a licensed contractor.

6.0 Noise Emissions

The site is contained within the General Industrial Zone under the Launceston Interim Planning Scheme 2015 within the greater Remount Road industrial area. Establishing the tyre recycling plant within the confines of the proposed building will introduce a new noise source to the site. This will be in addition to noise generated by the existing uses and activities carried out on adjacent land within the precinct.

Accordingly, Tarkarri Pty Ltd was commissioned to undertake an Environmental Noise Assessment Report to determine the impact of the proposed Tyre Recycling Plant and Moulding Equipment on the adjoining sensitive receptors.

The Environmental Noise Assessment Report is included as Appendix G. Tarkarri Pty Ltd is a professional acoustic engineering firm appropriately qualified to undertake noise modelling.

The closest sensitive receptor is located at 59 Remount Road, Mowbray which is less than 100m to the south the proposed building and associated infrastructure.

For the purpose of this assessment TarKarri:

- Developed an environmental noise model of the tyre recycling plant from the operation; and

Figure 12: Sensitive Use at 59 Remount Road & Significant areas within a 2.0km radius of the development area (source: theLIST)

- Predicted noise emission levels from the installation of the tyre recycling plant at the site boundary and sensitive noise receiver locations.

Acceptable noise level limits (commercial activity) as advised by the Environment Protection Authority are outlined in Table 6 below.

Table 6:Acceptable noise level limits

Period	Noise level limit
Evening (6pm to 6 am)	40 dBA
Morning (6am to 7 am)	45 dBA
Day (7am to 6pm)	65 dBA

The operation will be generally between 6.00am and 6:00 pm Monday to Saturday. The proposed building includes a barrier wall which comprises three shipping containers. The containers will project from the wall of the building on the southern side and have a minimum height of 6m.

Given the inclusion of a barrier wall, the Investigations undertaken by Tarkarri, predicted that the noise levels at the boundary of the site will not exceed 65 dBA which is within the acceptable limits for a commercial property. It is concluded that the environmental modelling results show that both the commercial/light industrial noise emissions criteria are met.

7.0 Transport Impacts

The estimated vehicle movements generated by the proposal is summarised in Table 7.

Table 7: Estimated Vehicle Movements

	Loads	Movements
VEHICLE MOVEMENTS Pre-Tyre recycling plant		
Deliveries of ELT to the site	**3 per day** 936 pa	**6 per day** 1764 pa
VEHICLE MOVEMENTS TYRE RECYCLING PLANT OPERATIONAL		
ELT collected from current storage sites	**2 per day 624 pa**	**4 per day** 1248pa
Trucks transporting shredded tyre chips off-site	**2 per day**	**4 per day** 1248 pa
Bagged crumbed and shredded material transported off site.	**3 per week**	**6 per week** 312 p**a**
Steel in bins transported off site	**2 per day**	**4 per day** 1,248pa
Moulded products transported off-site	**1 per day**	**2 per day** 624 pa
Private vehicles from all employees,		**22 per day** 6864 pa
Total		13,308p a

The use and development of land will generate approximately 13,308 two-way vehicle movements per annum at maximum production. This includes the

3,744 vehicle movements established by planning permit DA604.17.

On average there will be 6 two-way truck movements per day associated with the delivery and receipt of ELT. The proposed delivery of ELT is estimated to generate 10 vehicle movements per day.

Employees will generate approximately 22 vehicle movements per day (refer to Table 8) or 6,864 per annum.

Table 8: Vehicle Movements of Employees

Time	***Employees***	
	Vehicles In	*Vehicles Out*
6:00am	***7***	
3:00pm	***4***	***4***
5:00pm		***3***
12:00am		***4***
Total	*11*	*11*

Excess shreds removed from the site will generate a further 4 vehicle movements per day.

Bagged crumbed and shredded material will be transported off the site approximately three times per week. This will add a further 6 vehicle movements per week.

Bins containing steel will be transported off-site twice daily, generating 4 vehicle movements per day.

Moulded products will be loaded on to a truck and transported off-site daily. This will generate 2 vehicle movements per day.

The additional vehicle movements will be confined to the main road network. Travel through urban areas will be limited to the collection of ELT and transportation of shredded tyres, rubber granules or powder. The recycled product will be bagged for dispatch.

Noise and dust generated from vehicle movements are not expected to create any environmental nuisance.

8.0 Other off-site impacts

The tyre recycling plant will not operate on Sundays. The Mowbray Racecourse will have sporting events on during the week or on Saturday. The Racecourse is situated approximately 900m from the main buildings of the facility.

The tyre recycling plant will not operate beyond 6pm. The noise modelling results indicate that noise levels from the operation will be in an acceptable range.

9.0 Hazardous substances and chemicals

There will be no hazardous substances or chemicals stored on the site. ELT collected from various retailers across Tasmania may have some contamination that could contain elements of hazardous substances and chemicals. Where contamination of this nature is considered likely, the Proponent will refuse collection.

The tyre recycling plant will be located on a hardstand and contained within the shed. The tyre recycling plant will require minimal oils and lubricants to be handled on-site for the day- to-day maintenance of this plant equipment.

Major maintenance and service of the tyre recycling plant will be undertaken by an external contractor. Oils and lubricants for a major service will provided by the contractor and not stored on-site.

Fueling or maintenance of vehicles associated with the operation is not anticipated to be carried out within the site.

10.0 Fire Risk

The storage of used tyres is an inert activity. However, if these tyres are set alight, there can be adverse impacts on the environment.
These include:

- Contaminated smoke being released from the source of the fire into a surrounding area impacting adversely on air quality; and
- Water used to extinguish a fire of burning tyres becomes contaminated and if released as run-off, could have a detrimental impact on groundwater resources.

There are three probable causes of fire that can threaten the stored tyres on the property. These are:

- Stored tyres have been deliberately or accidently lit on-site by a person or persons.

- A grass or bushfire that breaks out on adjoining land and encroaches into the area where used tyres are stored; and

- A grass fire that breaks out within the property boundaries and spreads to where used tyres are stored.

The Wind Rose charts show the range of wind directions and speeds likely at the site. These charts are obtained from the Bureau of Meteorology (refer to Appendix H) and give indication of the prevailing winds likely to be experienced on site and hence the direction a grass or bushfire may travel.

As there is no weather station located at Remount Road, data was obtained for the closest weather station being the Launceston Airport.

The prevailing wind records from all three sites suggest that the main threat from a grass or bushfire would from the north or north-west. The fire threat is

considerably reduced from this direction given that the land north and north-west of the location of the stored tyres is cleared industrial land and freshwater dams in this direction.

The strategies that will be employed to manage fire risk are as follows:

- Emergency Fire Plan outlining procedure to responding to a fire emergency;
- Maintenance of the existing perimeter of the site and bund;
- Stacking ELT in a pod formation in accordance with the South Australian Fire Authorities, Community Safety Department (2014) Built Environs Section Guideline No. 13, General Guidelines for Rubber Tyre Storage;
- Fire Hydrant providing appropriate flow rates to the site at 10l/s;
- Maintaining land in a minimal fuel condition; and
- Continued surveillance over the site by employees and persons occupying adjoining properties.

The water hydrant provides water directly reticulated mains water system and the required flow rate of approximately 10l/s.

The Emergency Fire Plan (Appendix D) is in will be a red box on site adjacent to the main gate and also within the building.

Copies of this Fire Emergency Plan will also be kept within each vehicle accessing the development area, as part of the operation and the local Tasmania Fire Service.

In the event that a tyre fire occurs within site (which includes the operations area), the bund is designed to collect run-off of water utilised for fire fighting. The bund has been engineered to have a capacity to hold a minimum of 162KL.

Section 5 of the *South Australian Fire Authorities, Community Safety Department (2014) Built Environs Section Guideline No. 13, General Guidelines for Rubber Tyre Storage* relating to the containment of fire fighting water. Section 5 specifies that fire fighting water is to be contained at a rate of 30l/s for 90 minutes. The bund has the capacity to store 162KL.

While it is unlikely for groundwater resources will be affected, localised contamination of the surface soils of a consequent fire may result, given the likely degradation of tyres when lit releasing oily compounds which then permeate into the soils. In the event of a fire, inspection of the localised area will be undertaken. If contamination has occurred, contaminated ground will be excavated and appropriately disposed of at an appropriate waste disposal facility or remediated on site with separate and prior approval of the EPA.

Additionally, the following fire safety precautions are in place:

- There will be no hot work activities such as oxy cutting, welding and grinding undertaken within the operations area;
- Machinery and vehicles will be inspected on a regular basis in relation to potential fires and sparking.
- Smoking will be prohibited within the operations area;
- There will be no storage of flammable or combustible liquids, hazardous waste, or other easily ignitable materials in close proximity of the outdoor storage.

11.0 Historic Site Contamination

The potential site contamination History was undertaken SEMF and Environmental Service & Design. This identifies that the site was used for at least between 2004 and 2007 for the storage of scrap vehicles. Information provided by the property owner confirms that the site was used for running of horses, grazing of sheep and also was used for growing vegetables at a domestic scale (refer to Appendix E).

SEMF prepared a site contamination report in conjunction with DA604.16 approved by the City of Launceston. Site excavation undertaken with the construction of the bund on the site. The construction of the bund indicated that there was no evidence within the soil that the land was contaminated. It is noted that the construction of the building and hardstand will require further excavation on the site.

A further Site Contamination Report was prepared by Environmental Service & Design to support this application and is attached in Appendix E. Excavation and construction of the proposed use and development will proceed in accordance with the recommendations made by this Report.

12.0 Climate change

The recycling of ELT will contribute to greenhouse gas emissions. The placement of the tyre recycling plant within the site means that energy consumption associated with transport costs can be considerably reduced as storage off-site for ELT will be significantly reduced. This means that ELT can be directly transported to the site for processing rather than being transported first to another location for storage prior to processing.

Energy consumption will be minimised by:

- Tyre recycling plant will not be left idling while not in use;
- Vehicles not left running during the unloading of ELT; and
- Regular maintenance and review of equipment to ensure it is operating efficiently.

The conversion of ELT to new product will, however, divert ELT from landfill and has benefits in terms of reduction of fossil fuels wasted, albeit unquantified.

13.0 Sites of Public Interest

The site is within the greater industrial area of Remount Road. There are no sites of high public interest in proximity to the site.

14.0 Rehabilitation

The storage of ELT is an inert activity that will have no long-term impact on the land and can be utilized for an alternative industrial use should the tyre recycling plant cease operation.

There is the potential that once the existing tyre stockpile is removed and the development area is decommissioned, the tyre recycling plant will be removed from the site and relocated elsewhere. If this were to occur, the shed will remain and will be utilised by the property owner for an alternative purpose.

If a tyre fire occurs and there is soil contamination, the Proponent will carry out soil sampling and other work as required to ensure that any contamination can be treated appropriately.

PART D – MANAGEMENT COMMITMENTS

No	Commitment	Frequency	By Whom
1	Emergency Fire Plan stored on site. Copies also provided to the TasFire Service.	Ongoing	Property owner Proponent
2	Review of Emergency Fire Plan	Biannually	TasFire Proponent
3	Grass slashed across the site to ensure that the land is kept in low fuel conditions	Ongoing	Property owner Proponent
4	Weeds within the development area removed.	Biannually	Property owner Proponent
5	Ensure fire hydrant and equipment is in good working order for firefighting.	Current	Property owner Proponent
7	Bund on the site is maintained.	Biannually	Property owner Proponent
8	Soil sampling and analysis undertaken after a fire incident where bund retained water.	On decommissioning	Property owner Proponent
9	Scraping site area after a fire event with an excavator.	Fire Event	Property owner Proponent

PART E – PUBLIC AND STAKEHOLDER CONSULTATION

During the preparation of this application, a number of agencies and stakeholders were consulted. These are as follows:

- Environment Protection Agency;
- Launceston City Council;
- Tasmanian Fire Service; and
- Property owner.

The proposal to establish a tyre recycling plant and the continued storage of ELT on the site processing more than 100 tonnes per year is considered a level 2A Activity under the Environmental Management and Pollution Control Act 1994. This application must be assessed by the Board of the Environment Protection Authority and pursuant to Section 57 of the Land Use Planning Approvals Act 1993. The application will be placed on public notification as part of the assessment of the Section 57 application.

Appendix A

Ultimate Play

Department of State Growth Bitumen Standard

Waste Control Handler Certificate

Ultimate Play

Playground Installers of Tasmania

ABN: 42 559 336 415

3rd th November 2016

To whom it may concern,

Ultimate Play is a rapidly growing Tasmanian company specialising in playground design, sales, installation and soft-fall surfacing.

The Directors and staff of Ultimate Play have been involved in the playground industry for in excess of *15 years*. Over this time, they have had to source their refined granulated rubber products from various suppliers on the mainland of Australia and also from overseas. At time purchasing 20-foot shipping containers of granulated rubber products from international manufactures and unfortunately sending hard earned Australian dollars overseas.

Ultimate Play prides itself on employing local staff and supporting the local economies wherever possible. We understand the flow on benefits that keeping as much of the money in the local economic system as possible. Everyone benefits, from the local take away shops providing food for workers, to the management positions that are kept productive by utilising locally sourced value added products. Every dollar spent in the local economy has a multiplier effect associated to it. At Ultimate Play we wish to see business of all sizes benefit from the utilisation of local suppliers.

We see a fantastic opportunity to work with Tyre Recycle Tasmania. A local company, value adding what would otherwise be a waste product into a viable, locally available valuable resource. Currently we spend nearly as much on freight charges as we do on raw product. This in turn has a detrimental effect on the selling price of our final product and thus a negative impact on the amount of product that we are able to sell.

By being able to decrease costs associated with freight charges we envisage being able to reduce the final finished product pricing to our customers and as a result increase volumes and sales of our wet pour rubber surfacing. This would be of significant benefit to Ultimate Play, Tyre Recycle Tasmania and all of Tasmania, creating a win-win situation both economically and environmentally.

tony@ultimateplay.com.au
0455 336 646

peter@ultimateplay.com.au
0407 293 113

belinda@ultimateplay.com.au
0408 833 384

COROCORD The Spacenet Inventors

KOMPAN

RoSPA The Royal Society for the Prevention of Accidents

rpii

Ultimate Play

Playground Installers of Tasmania

ABN: 42 559 336 415

We also see great opportunities of being an exporter of the value added granulated products into the mainland markets. The increased awareness of playground safety and Australian Standards associated with attenuating surfacing being brought to the fore, the demand for wet pour rubber surfacing will only increase over the coming years. What a great opportunity exists for a local Tasmanian owned and operated company to establish itself in this evolving market space.

The prospect of being able to source our rubber for both soft-fall and wet-pour applications from a Tasmanian producer is very exciting and something that we have hoped for since we started operation. Ultimate Play intend to utilise locally produced materials made available from Tyre Recycle Tasmania as soon as they are able to produce them. We are excited to contemplate the new products and services that we may be able to provide to our Tasmanian schools, community groups, not-for-profit organisations and local councils. Turning what may have been once a waste product and lost resource into fantastic opportunities.

We urge all Tasmanians and businesses to support this fantastic initiative from a Tasmanian owned and operated company and our hope is that this self-funded venture is able to be supported and progressed as soon as possible so that we all may benefit from the venture.

Kind Regards,

Peter Davey

Managing Director

tony@ultimateplay.com.au
0455 336 646

peter@ultimateplay.com.au
0407 293 113

belinda@ultimateplay.com.au
0408 833 384

COROCORD The Spacenet Inventors

KOMPAN

RoSPA The Royal Society for the Prevention of Accidents

rpii

SECTION 421 - BITUMEN CRUMB RUBBER ASPHALT

##This section cross-references Section 407.
If Section 407 is relevant, it should be included in the specification.
If Section 407 is not included in the specification, all references to it should be struck out, ensuring that the remaining text is still coherent:

421.01 GENERAL

This section is a supplement to Standard Section 407 - Asphalt and covers special requirements for Bitumen Crumb Rubber Asphalt that are in addition to, or override the requirements of Section 407.

421.02 DESCRIPTION

Bitumen Crumb Rubber Asphalt is asphalt which contains crumb rubber obtained from tyre shredding to improve flexural and elastic recovery properties of an asphalt layer.

421.03 AGGREGATES

Unless otherwise specified, properties of the aggregates used in Bitumen Crumb Rubber Asphalt shall comply with the requirements specified in Clause 407.03.

421.04 FILLER

Added filler shall be hydrated lime.

421.05 GRANULAR CRUMB RUBBER

(a) General Requirement

Granular crumb rubber shall consist of synthetic rubber from car tyres or natural rubber from truck tyres or a mixture of both and shall be free from cord, wire, fluff and other deleterious material.

(b) Grading and Particle Size

The grading shall comply with Table 421.051 and shall not contain particles greater than 3 mm in length.

Table 421.051

Sieve Size AS (mm)	1.18	0.600	0.150
Percentage Passing (by mass)	100	80 - 100	0 - 20

(c) Bulk Density

The maximum bulk density shall not exceed 350 kg/m3 as determined by the ARRB Transport Research test method described in AIR 286-3.

421.06 MIX DESIGN REQUIREMENTS

(a) Mix Design

The asphalt mix proposed for use shall be registered in accordance with Clause 407.06.

The Contractor shall also submit Marshall Stability and Marshall Flow properties.

(b) Grading

Unless otherwise specified, the grading of aggregate with added filler after mixing but before compaction, and the proportions of aggregate, added filler, granular crumb rubber and bitumen in the mix shall comply with Tables 421.061 and 421.062.

Table 421.061 Grading of Aggregate with Added Filler

Sieve Size AS (mm)	Percentage Passing (by Mass)	
	Mix Size 14	Mix Size 10
19.0	100	-
13.2	90 – 100	100
9.5	65 – 75	90 - 100
6.7	40 – 50	64 – 74
4.75	30 – 40	36 – 46
2.36	15 – 25	20 – 30
1.18	10 – 19	12 – 22
0.600	7 – 15	8 – 17
0.300	5 – 10	6 – 11
0.150	4 – 8	4 – 8
0.075	3 – 5	3 – 5

Table 421.062 Proportions of Aggregate, Added Filler, Granular Crumb Rubber and Bitumen

Sieve Size AS (mm)	Percentage Passing (by Mass)	
	Mix Size 14	Mix Size 10
Aggregate	86 - 89	86 – 89
Added Filler	1.0 - 2.0	1.0 - 2.0
Granular Crumb Rubber	2.5 - 3.0	2.5 - 3.0
Bitumen	7.5 - 9.0	7.5 - 9.0

(c) Marshall Test Properties

The Marshall cylinder test properties of the mix shall comply with Table 421.063.

Table 421.063

Size	Stability (kN) (min)	Flow (mm)	Air Voids (%)	Voids in Mineral Aggregates (min) (%)	Bitumen Film Thickness (microns)
14	3.0	3.0 - 5.5	5.0 - 6.5	27	19 - 25
10	2.5	3.0 - 5.5	5.0 - 6.5	27	19 - 25

Notes: 1. For purposes of calculation of Voids in Mineral Aggregates, granular crumb rubber is not considered as part of the aggregates.

2. Bitumen film thickness shall be calculated as bitumen distributed over the surface of the aggregates including granular crumb rubber.

421.07 MIXING AND MIXING TEMPERATURES

(a) Granular crumb rubber is added to the mix before the binder (Dry Mixing).

A pugmill batch mixing plant shall be used.

The temperature limits shall be 20°C higher than those shown in Table 407.081.

Following discharge of aggregate and filler into the mixer, the required quantity of granular rubber shall be added and dry mixed for a minimum period of 10 seconds.

Following addition of bitumen, the whole mixture shall be mixed for a minimum of 60 seconds or until the whole of the mix is homogeneous and proper digestion of the rubber into the bitumen has occurred.

(b) Granular crumb rubber / bitumen binder has been pre-blended prior to being added to the mix (Wet Mixing).

The mixing plant may be a drum plant or a pugmill batch plant.

The crumb rubber bitumen mixture shall not contain carrier oils, cutters or flux oils.

The temperature limits shall be 20°C higher than those shown in Table 407.081.

421.08 AMBIENT CONDITIONS FOR PLACING

Bitumen Crumb Rubber Asphalt shall not be placed when the pavement temperature is less than 15°C.

ENVIRONMENT PROTECTION AUTHORITY

SCANNED

CONTROLLED WASTE HANDLER CERTIFICATE OF REGISTRATION

Issued under regulation 10 of the *Environmental Management and Pollution Control (Controlled Waste Tracking) Regulations 2010*

S.E Chugg & T.D Chugg

Trading As
Tyre Recycle Tasmania

ABN No. 27 138 386 022

Controlled waste handler registration no. CWTEMP054TA

The above entity is registered as a:

controlled waste transporter; and

controlled waste agent.

The above entity is authorised to handle the following controlled waste categories:

Waste code	Waste category
T140	Tyres

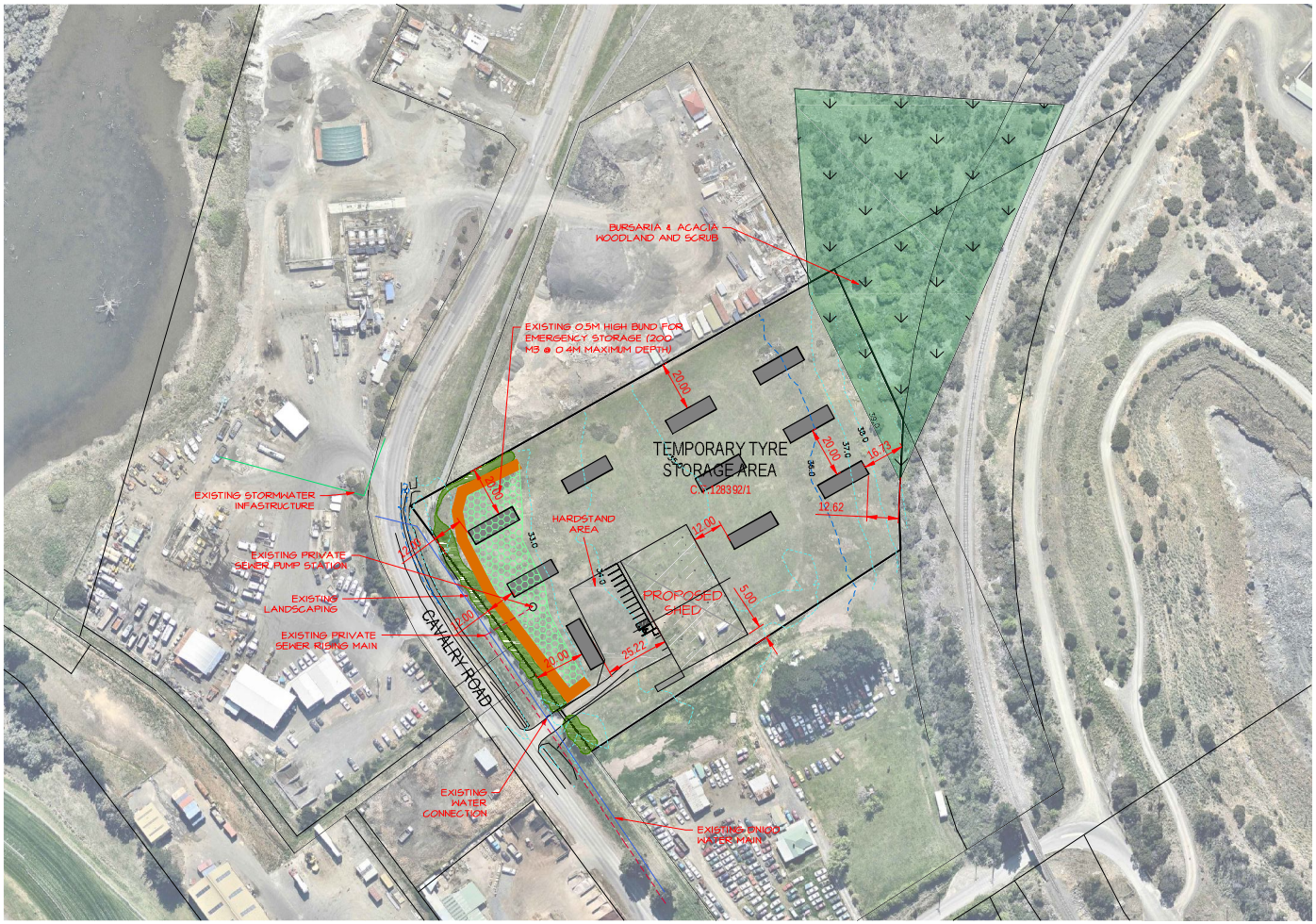
The registration of the controlled waste handler is subject to the conditions specified on attachment A to this certificate.

A/Director, Environment Protection Authority

13/4/2010
Date

Appendix B

Proposal Plans



BUND STORAGE - TYPICAL SECTION
SCALE 1:100

6ty°

Postal Address
PO Box 63
Riverside
Tasmania 7250
W 6ty.com.au
E admin@6ty.com.au

6ty Pty Ltd
ABN 27 011 609 950

Architectural
ABP No. CC48/41
Structural / Civil
ABP No. CC1633

Tamar Suite 103
The Charles
287 Charles Street
Launceston Tasmania
P (03) 6332 3300

57 Best Street
Devonport Tasmania
P (03) 6424 7161

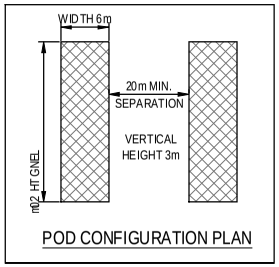
Lloyds ISO 9001 Approved Company

CARPARK

CARPARK IS TO BE FORMED AND PAVED WITH A COMPACTED GRAVEL PRODUCT TO CREATE AN IMPERVIOUS ALL WEATHER SEAL

- STORMWATER IS TO BE DIRECTED TO THE RETICULATEDPUBLIC DRAINAGE SYSTEM IN CALVARY ROAD
- EACH PARKING SPACE IS TO BE 5.4m x 2.6m AND CLEARLY MARKED WITH A TIMBER POST AT THE END OF EACH BAY
- THE AISLE WIDTH BETWEEN PARKING BAYS SHALL BE 6.0m WIDE

ISSUE	DATE	ISSUED FOR	REV.
01	7.12.16	INFORMATION	A
02	11.12.17	INFORMATION	B



POD CONFIGURATION PLAN

N

DIMENSIONS ARE IN METRES. DO NOT SCALE. CHECK AND VERIFY ALL DIMENSIONS ON SITE. REFER DISCREPANCIES TO THE SUPERINTENDENT. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH: APPLICABLE AUSTRALIAN STANDARDS & LOCAL AUTHORITY REQUIREMENTS.

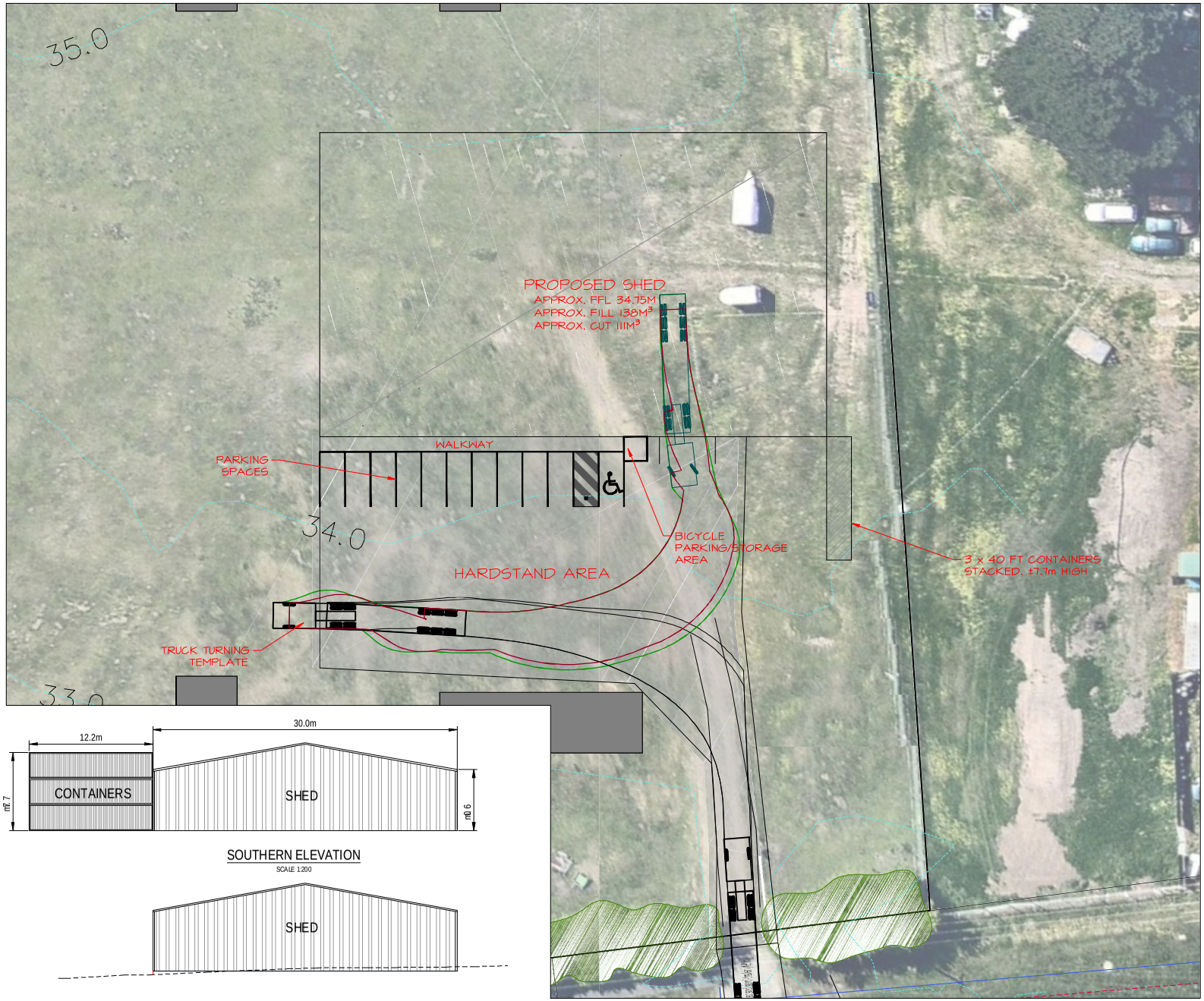
PROJECT: PHOENIX RUBBER PTY LTD
PROJECT: RECYCLING AND PROCESSING
AT: 8 CAVALRY ROAD
AT: MOWBRAY
FOR:

DRAWING: SITE PLAN

DESIGNED: H.M.G. DRAWN: M.C.V. CHECKED: P.M.W.

SCALES: 1:1000 AT A1 SIZE DRAWING SHEET

PROJECT No 15.242 DRAWING No. C60 REV. B



SOUTHERN ELEVATION
SCALE 1:200

TYPICAL CUT/FILL SECTION
SCALE 1:200

6ty°

Postal Address
PO Box 63
Riversie
Tasmania 7250
W 6ty.com.au
E admin@6ty.com.au

6ty Pty Ltd
ABN 27 014 609 900

Architectural
ABP No. CC48/41
Structural / Civil
ABP No. CC1633

Tamar Suite 103
The Charles
287 Charles Street
Launceston Tasmania
P (03) 6332 3300

57 Best Strcet
Devonport Tasmania
P (03) 6424 7161

Lloyds ISO 9001 Approved Company

CARPARK

CARPARK IS TO BE FORMED AND PAVED WITH A COMPACTED GRAVEL PRODUCT TO CREATE AN IMPERVIOUS ALL WEATHER SEAL

- STORMWATER IS TO BE DIRECTED TO THE RETICULATED PUBLIC DRAINAGE SYSTEM IN CALVARY ROAD
- EACH PARKING SPACE IS TO BE 5.4m x 2.6m AND CLEARLY MARKED WITH A TIMBER POST AT THE END OF EACH BAY
- THE AISLE WIDTH BETWEEN PARKING BAYS SHALL BE 6.0m WIDE

ISSUE	DATE	ISSUED FOR	REV.
01	11.12.17	INFORMATION	A

DIMENSIONS ARE IN METRES. DO NOT SCALE. CHECK AND VERIFY ALL DIMENSIONS ON SITE. REFER DISCREPANCIES TO THE SUPERINTENDENT. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH: APPLICABLE AUSTRALIAN STANDARDS & LOCAL AUTHORITY REQUIREMENTS.

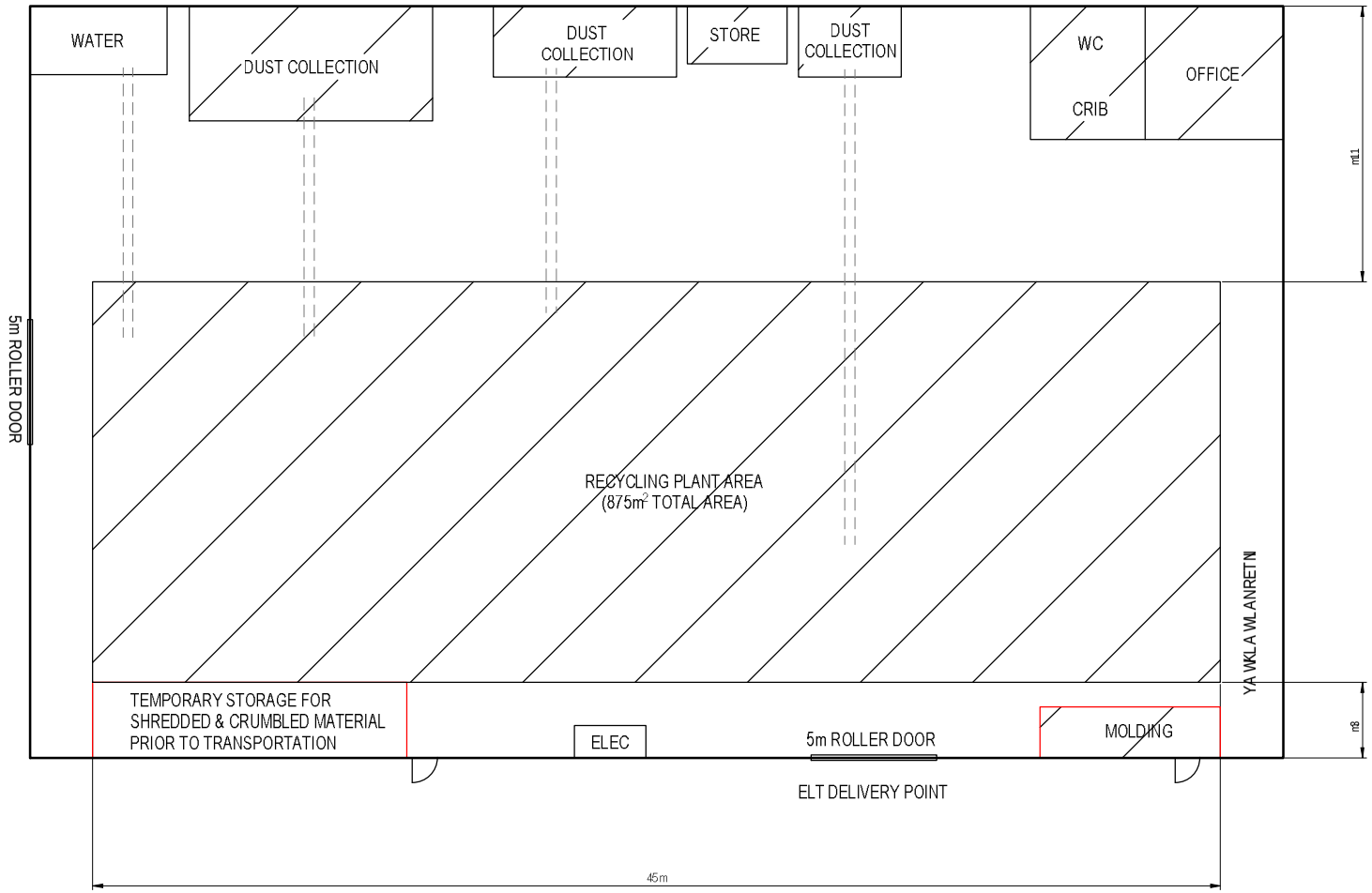
PROJECT: PHOENIX RUBBER PTY LTD
PROJECT: RECYCLING AND PROCESSING
AT: 8 CAVALRY ROAD
AT: MOWBRAY
FOR:

DRAWING: BUILDING PLAN

DESIGNED: H.M.G. DRAWN: M.C.V. CHECKED: P.M.W.

SCALES: 1:200 AT A1 SIZE DRAWING SHEET

PROJECT No 15.242 DRAWING No. C62 REV. A



SHED INTERNAL LAYOUT PLAN

SCALE 1:200

6ty°

Postal Address
PO Box 63
Riversie
Tasmania 7250
W 6ty.com.au
E admin@6ty.com.au

6ty Pty Ltd
ABN 27 014 609 950

Architectural
ABP No. CC48/41
Structural / Civil
ABP No. CC1633

Taimar Suite 103
The Charles
287 Charles Street
Launceston Tasmania
P (03) 6332 3300

57 Best Strcet
Devonport Tasmania
P (03) 6424 7161

Approved Company

ISSUE	DATE	ISSUED FOR	REV.
01	7.12.16	INFORMATION	A
02	11.12.17	INFORMATION	B

DIMENSIONS ARE IN METRES. DO NOT SCALE. CHECK AND VERIFY ALL DIMENSIONS ON SITE. REFER DISCREPANCIES TO THE SUPERINTENDENT. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH: APPLICABLE AUSTRALIAN STANDARDS & LOCAL AUTHORITY REQUIREMENTS.

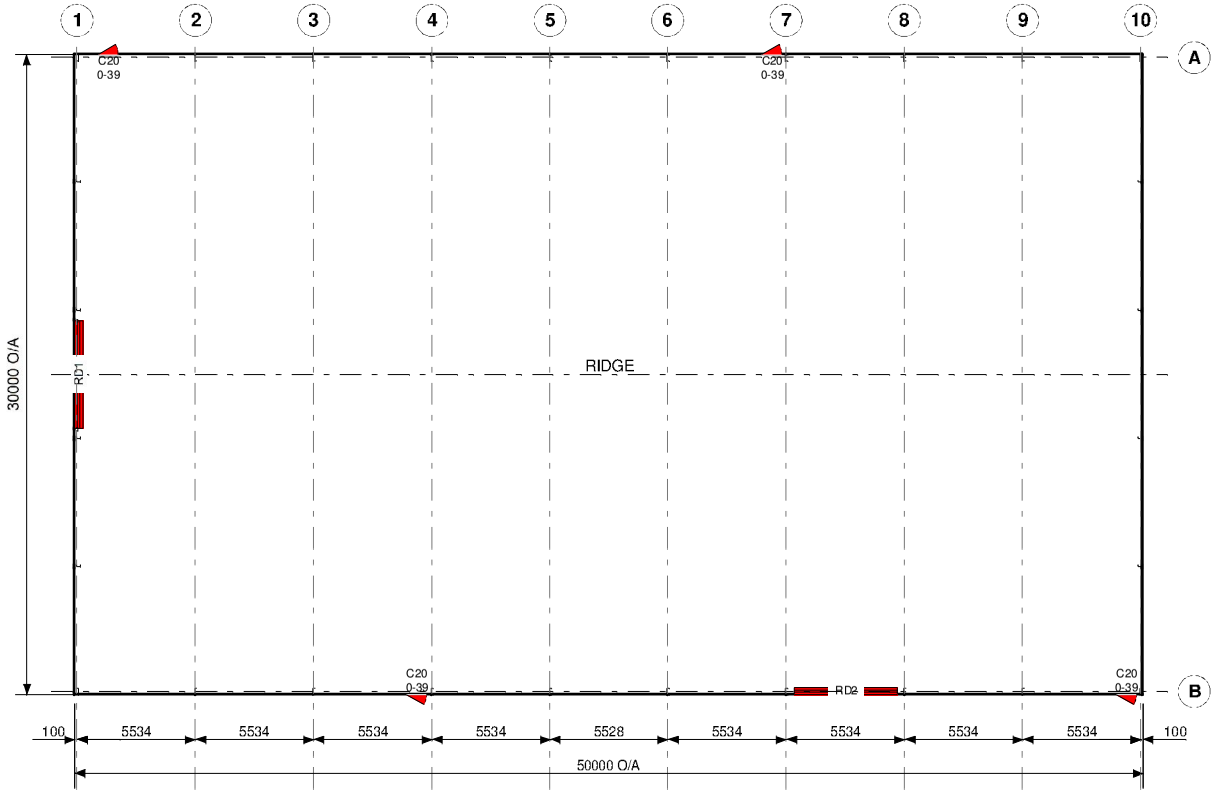
PROJECT: PHOENIX RUBBER PTY LTD
PROJECT: RECYCLING AND PROCESSING
AT: 8 CAVALRY ROAD
AT: MOWBRAY
FOR:

DRAWING: SHED PLAN
INTERNAL LAYOUT PLAN

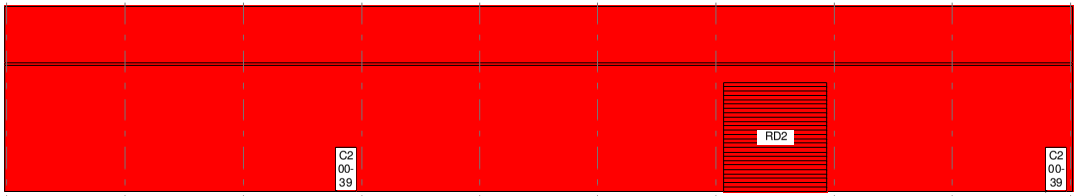
DESIGNED: H.M.G. DRAWN: M.C.V. CHECKED: P.M.W.

SCALES: 1:1000 AT A1 SIZE DRAWING SHEET

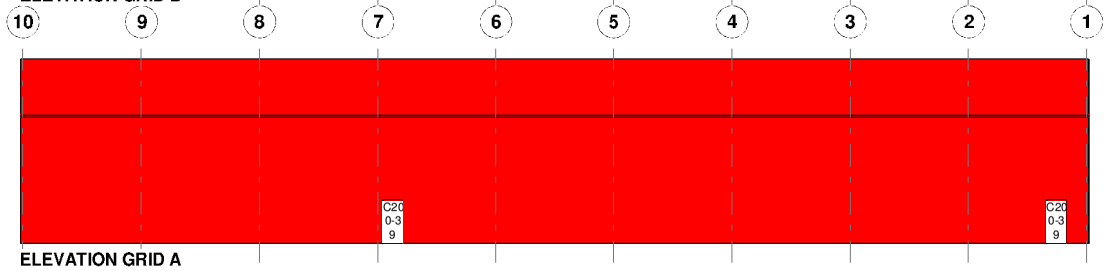
PROJECT No. 15.242 DRAWING No. C61 REV. B



GROUND FLOOR PLAN



ELEVATION GRID B



ELEVATION GRID A

Cont. on page 2

RANBUILD
Better sheds. Bigger choice.

CLADDING

ITEM	PROFILE (min)	FINISH	COLOUR
ROOF	CUSTOM ORB 0.42 BMT	CB	AA
WALLS	TRIMDEK 0.42 BMT	CB	AA
CORNERS	-	CB	AA
BARGE	-	CB	AA
GUTTER	HI-QUAD	CB	AA

0.35bmt=0.40tct; 0.42bmt=0.47tct; 0.48bmt=0.53tct

ACCESSORY SCHEDULE & LEGEND

QTY	MARK	DESCRIPTION
1	RD1	B&D, Roll-A-Door R.D, Indust. "R2I", 5025 high x 5000 wide Clear Opening C/B
1	RD2	B&D, Roll-A-Door R.D, Indust. "R2I", 5025 high x 4808 wide Clear Opening C/B
4	C200-39	Larnec Door & Frame Kit, 200/47W, Std. 2040 x 920 C/Bond

ARCHITECTURAL DRAWING ONLY, NOT FOR CONSTRUCTION USE

WIND DESIGN

IMPORTANCE LEVEL	REGION	TERRAIN	Ms
2	A	2	1.0

CLIENT
John Talbot

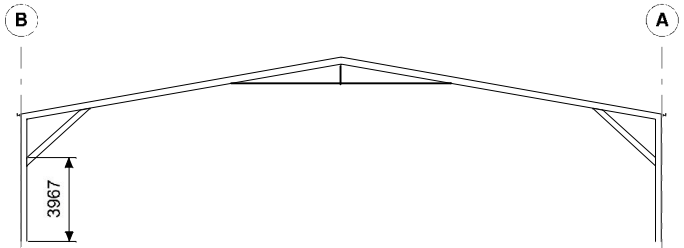
SITE
Cavalry Road
MOWBRAY TAS 7248

BUILDING
COVERMASTER (CEE)
30000 SPAN x 6000 EAVE x 50000 LONG

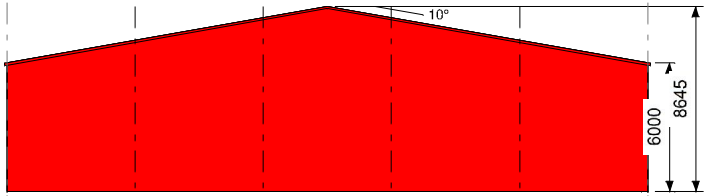
TITLE
GENERAL ARRANGEMENT

LICENSE NO: CC2747G

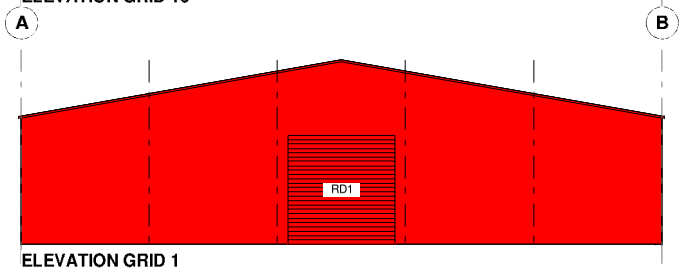
SCALE	DRAWING NUMBER	PAGE
A3 SHEET 1:250	LAUNC2-3625.01	1/2



SECTION GRID 2, 3, 4, 5, 6, 7, 8, 9



ELEVATION GRID 10



ELEVATION GRID 1

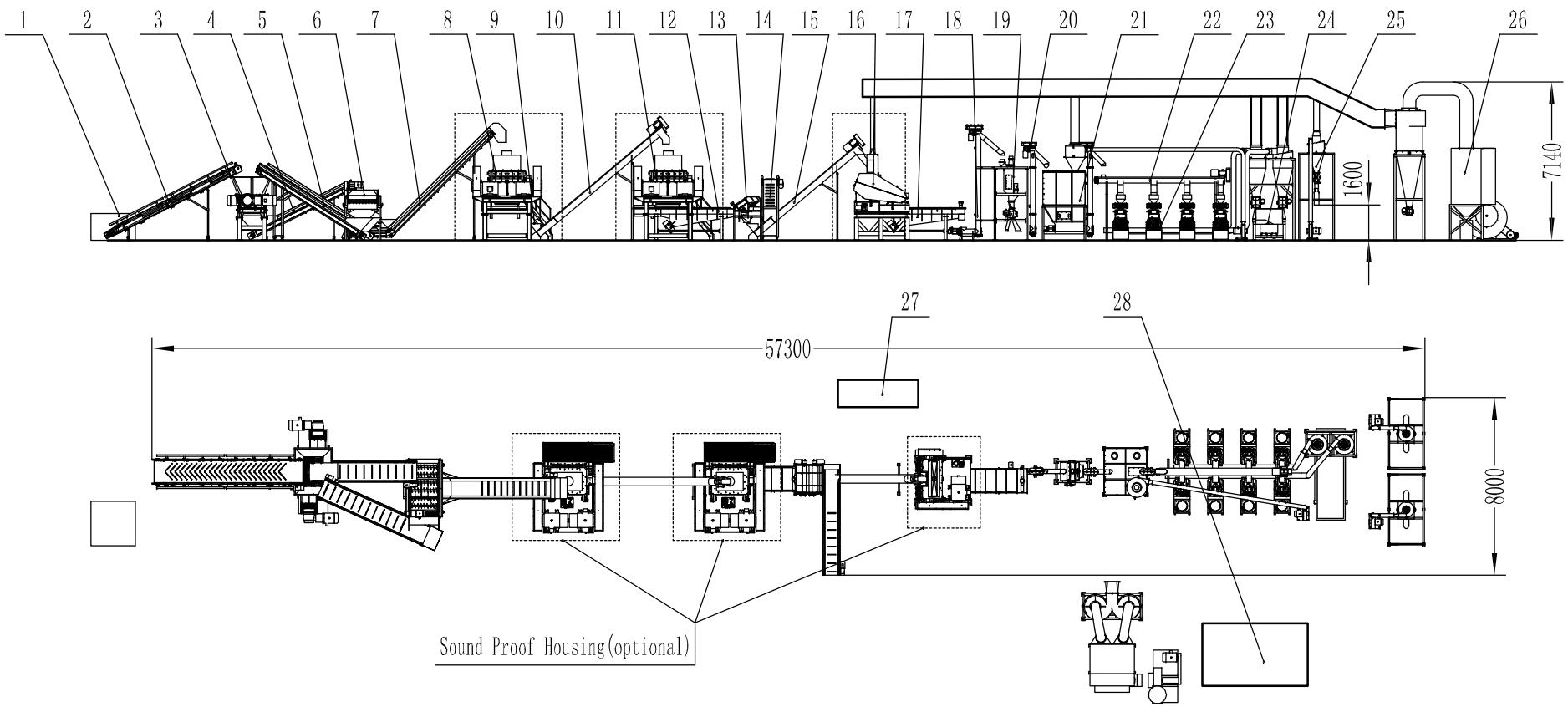
Cont. on page 1

RANBUILD
Better sheds. Bigger choice.

SCALE
A3 SHEET 1:250

DRAWING NUMBER
LAUNC2-3625.
01

PAGE
2/2



28		Circulating Cooling System	1	65kW	16	GXC1200T	Granulator	1	132kW
27		Automation Control System	1		15	SC2560	Screw Conveyor	1	3kW
26		Pulse Dedustor System	1	15+18.5+3X0.55kW	14	CBP6040	Conveyor	1	1.5kW
25		Bagging System	2	3+0.55kW	13	MT10030	Magnet System	1	(1.1+1.1)kW
24		Shaking Sieve	1	4kW	12	VT1040	Vibration Table	1	(1.5+1.5)kW
23	GWF450	Rubber Mill	8	(45+0.55)kW	11	S1000T	Rasper	1	(55+55)kW
22		Feeding System	1	(3+0.55)kW	10	SC2565	Screw Conveyor	1	3kW
21	GLD10	Silo	1	(1.5-2.2)kW	9	SC2525	Screw Conveyor	1	2.2kW
20	LS2540	Screw Conveyor	1	(0.55-2.2)kW	8	S1000T	Rasper	1	(55+55)kW
19	GZ800	ZZ-Classifier	1	(3+0.55)kW	7	CBR8080	Conveyor	1	3kW
18	LS2545	Screw Conveyor	1	(0.55-2.2)kW	6	RS1025	Disc Classifier	1	4kW
17	VT1045	Vibration Table	1	(1.5-1.5)kW	5	CBR8060	Conveyor	1	3kW

4	CBR10060	Conveyor	1	3kW
3	X1300	Two Shaft Shredder	1	(22-22+2.2)kW
2	CBR10080	Conveyor	1	3kW
1	TC1200	Tire Circle cutting Machine	1	7.5kW
NO.	Model	Item	QTY	Power

Figure 1

GENOX

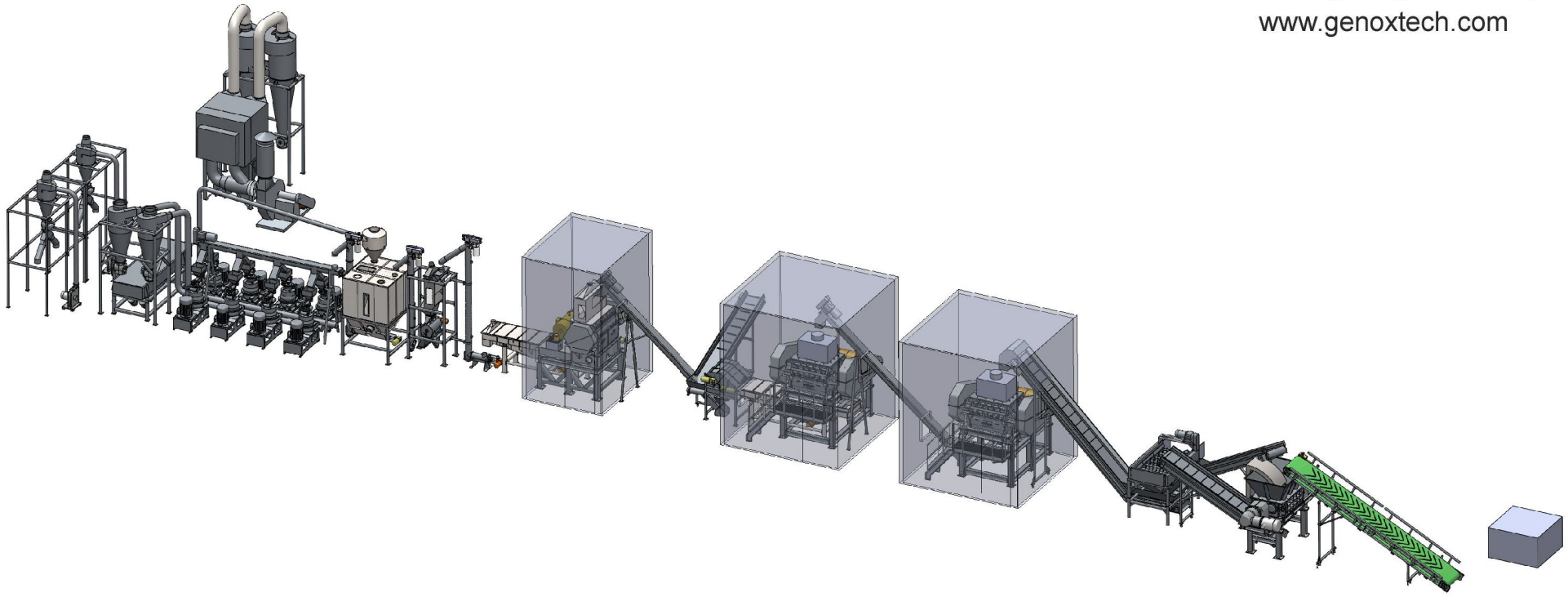
Recycling Line Layout Plan

QTY	WEIGHT	SCALE
1		1:250

170518

Figure 2
Reycling Line 3D Layout

Genox Recycling Tech Co.,Ltd
www.genoxtech.com



Specification

1.Throughput: 2000kg/h(On Average)
2.Installed Capacity: 931.55kW
3.Power Consumption: 730～760kW.h
4.Output size: ⩾20mesh
5.Water Consumption: 25～35kg/h

Appendix C

Specifications of Tyre Recycling Plant

2000kg/hr.

TYRE RECYCLING PLANT QUOTATION

- Application: ≤φ1200mm diameter wasted radius tire；
- Throughput: 2000kg per hour Output rubber crumb: 1200kg per hour
- Output product size: 30-40mesh
- Rubber purity：less than 0.02% steel, less than 0.5% fiber；
- Steel purity: less than 0.5% rubber on the steel
- De-dusting requirement: high efficiency de-dusting unit is applied, dust consistency after processing is under 8mg/m3, conforming to national standard GB/Z2.1-2007
- Noise: less than 85 dB with 1 meter to the machine by integrating “option: sound-insulation”.
- Working environment: solid foundation, without chilling water and magnetic interference. Working temperature -5℃~ 40℃, Moisture: 50 ~ 90%

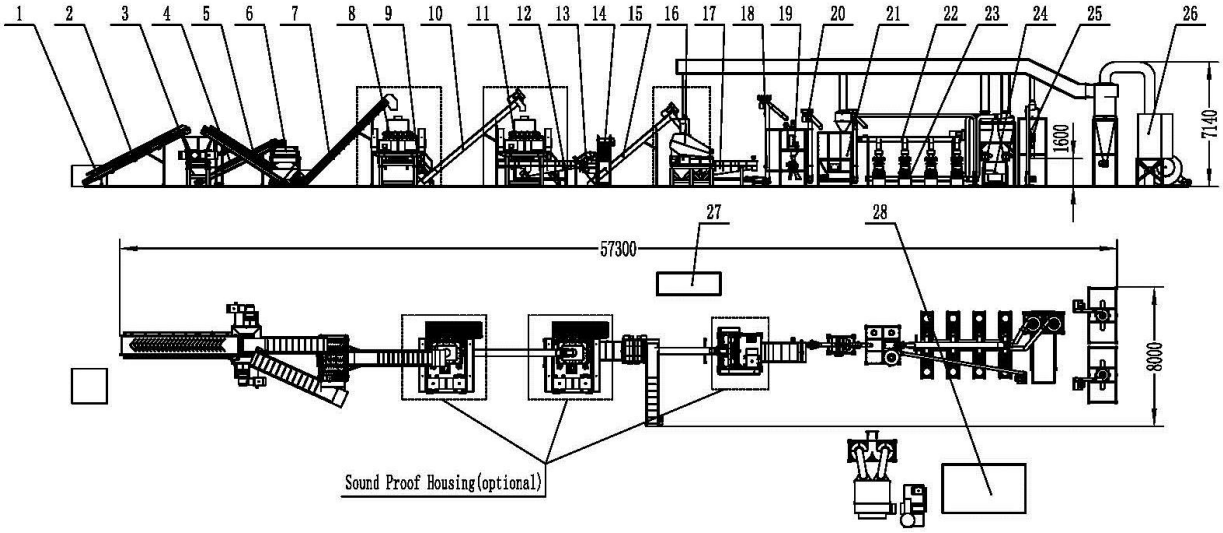
Tire Recycling System

The Tire Recycling Plants are high performance, heavy duty systems designed for recycling of car, truck and OTR tires. These systems are ideal for the production of clean rubber crumb and the separation of steel and textiles. Using normal temperature and non-chemical processing technology, these recycling systems are cost effective and don't create secondary pollution. The heavy-duty shredders utilized in these systems are capable of shredding whole tires including the thick steel reinforcing bead wires enabling fully automatic operation. These plants are intended for customers who require high capacity, tire recycling systems with a capacity between 1000-10,000kg/hr.

The correct combination and sizing of the above listed equipment will provide a reliable, efficient tire recycling system that will produce a high-quality rubber granulate, clean textile and steel ideal for sale, or for use in further processing equipment.

Document Set ID: 3775158
Version: 1, Version Date: 10/04/2018

Tire Recycling System ▪▪▪ Specification



1. Tire Circle cutting Machine TC1200

Power：7.5 kW

Rotation Speed：15 r/min

Throughput：40～45 pcs/h

Quantity：1 set

2. Conveyor CBR10080

Power：3 kW

Belt Length：8000 mm

Belt Width：1300 mm

Speed：4 m/s

Belt Material：Rubber

Belt Thickness：10 mm

Quantity：1 set

3. Two Shaft Shredder X1300 (With Pressing Device)

Power：30+30 kW

Hydraulic Power：2.2 kW

Chamber Dimension：1300X515 mm

Cutting Circle：515 mm

Blades Number：26 pcs

Document Set ID: 3775158
Version: 1, Version Date: 10/04/2018

Blades Thickness：50 mm

Throughput：2000 kg/h (On Average)

Weight：10300kg

Quantity：1 set

4. Conveyor CBR10060

Power：3 kW

Belt Length：6000 mm

Belt Width：1000 mm

Speed：4 m/s

Belt Material：Rubber

Belt Thickness：10 mm

Quantity：1 set

5. Conveyor CBR8060

Power：3 kW

Belt Length：6000 mm

Belt Width：800 mm

Speed：4 m/s

Belt Material：Rubber

Belt Thickness：10 mm

Quantity：1 set

6. Disc Classifier RS1025

Power：4 kW

Working Length：2500 (mm)

Working Width：1000 (mm)

Rotation Speed：150 r/min

Quantity：1 set

7. Conveyor CBR8080

Power：3 kW

Belt Length：8000 mm

Document Set ID: 3775158
Version: 1, Version Date: 10/04/2018

Belt Width：800 mm

Speed：4 m/s

Belt Material：Rubber

Belt Thickness：10 mm

Quantity：1 set

8. Rasper S1000T

Power：55+55 kW

Hydraulic Power: 2.2 kW

Cutting Circle：660 mm

Rotor Knives：24 pcs

Fix Knives：26 pcs

Knives Material：D2

Rotor Length：1000 mm

Rotation Speed: 180 r/min

Throughput：2000 kg/h (On Average)

Screen: Φ25 mm

Quantity：1 set

9. Screw Conveyor SC2525

Power：2.2 kW

Screw Length：2500 mm

Screw Diameter：250 mm

Rotation Speed：120 r/min

Quantity：1 set

10. Screw Conveyor SC2565

Power：3 kW

Screw Length：6500 mm

Screw Diameter：250 mm

Rotation Speed：120 r/min

Quantity：1 set

Document Set ID: 3775158
Version: 1, Version Date: 10/04/2018

11. Rasper S1000T

Power：55+55 kW

Hydraulic Power: 2.2 kW

Cutting Circle：660 mm

Rotor Knives：24 pcs

Fix Knives：26 pcs

Knives Material：D2

Rotor Length：1200 mm

Rotation Speed: 180 r/min

Throughput：2000 kg/h (On Average)

Screen: Φ14 mm

Quantity：1 set

12. Vibration Table VT1040

Power：1.5+1.5 kW

Working Length：4000 mm

Working Width：1000 mm

The Amplitude：3～8 mm

Quantity：1 set

13. Overband Magnet MT10030

Power：1.1+1.1 kW

Magnet Length：1400 mm

Magnet Diameter：400 mm

Magnetic Intensity: 2000 Gs

Quantity：1 set

14. Conveyor CBP6040

Power：1.5 kW

Belt Length：4000 mm

Belt Width：600 mm

Speed：4 m/s

Document Set ID: 3775158
Version: 1, Version Date: 10/04/2018

Belt Material：PU

Belt Thickness：6 mm

Quantity：1 set

15. Screw Conveyor SC2560

Power：3 kW

Screw Length：6000 mm

Screw Diameter：250 mm

Rotation Speed：120 r/min

Quantity：1 set

16. Granulator GXC1200T

Power：132 kW

Cutting Circle：660 mm

Rotor Knives：21pcs

Fix Knives：6pcs

Knives Material：D2

Rotor Length：1200 mm

Rotation Speed: 520 r/min

Throughput：1300 kg/h (On Average)

Screen: Φ4 mm

Quantity：1 sets

17. Vibration Table VT1045

Power：1.5+1.5 kW

Working Length：4500 mm

Working Width：1000 mm

The Amplitude：3～8 mm

Quantity：1 set

18. Screw Conveyor LS2545

Power：0.55+2.2 kW

Screw Length：4500 mm

Screw Diameter：250 mm

Rotation Speed：120 r/min

Quantity：1 set

19. ZZ-Classifier GZ800

Power：3+0.55 kW

Working Width：800 mm

Throughput：1500 kg/h (On Average)

Quantity：1 set

20. Screw Conveyor LS2540

Power：0.55+2.2 kW

Screw Length：4000 mm

Screw Diameter：250 mm

Rotation Speed：120 r/min

Quantity：1 set

21. Silo GLD10

Power：1.5+2.2 kW

Screw Length：4000 mm

Screw Diameter：250 mm

Rotation Speed：120 r/min

Storage Volume: 10 m3

Quantity：1 sets

22. Feeding System

Power：3+0.55 kW

Quantity：1 sets

23. Miller GMF450

Power：45+0.55 kW

Millstone Diameter：450 mm

Rotor Millstone: 1pcs

Fix Millstone: 1pcs

Appendix D

Fire Emergency Plan

1. **DETERMINE WHAT TYPE OF INCIDENT**

   On arriving on site establish the type and location of incident.

   - **GRASS FIRE ON OR ADJOINING PROPERTY** - **A** grass fire is burning on the property or an adjoining property with potential to threaten the tyre storage area.
   - **MINOR FIRE** - There are 1 or 2 tyres alight at the edge of one of the tyre pods.
   - **LARGE FIRE** - >2 tyres alight or inaccessible due to location in pods.
   - **MAJOR FIRE** - Tyre pods fully alight.

2. **CONTACT TASMANIA FIRE SERVICE**

   IN ALL CIRCUMSTANCES, irrespective of the type of incident contact the **TASMANIA FIRE SERVICE** - **DIAL 000.**

   If a mobile phone service is not available, please go to **Dennis Jones** or **Rhodes Homestead** to notify emergency services.

   WHEN SPEAKING TO TASMANIA FIRE SERVICE, ALWAYS INCLUDE THE FOLLOWING:

What Type of Incident:	Grass fire
	Minorfire
	Large fire
	Major fire
Where:	8 Cavalry Road, Mowbray
Who:	Persons currently on site attending to fire.

3. **CONTACT PROPERTY OWNER, TYRE RECYCLE TASMANIA & PHOENIX RUBBER**

   After emergency services have been contacted, contact the following persons:

   - **STEVEN ORDERS** 0418135688 (property owner)
   - **TIM CHUGG,** TYRE RECYCLE TASMANIA & PHEONIX RUBBER 0400 692 023.

PROCEDURE FOR A MINOR FIRE

After taking the above actions, the following procedure should be followed for a minor fire.

1. Assess the location of the fire and if burning tyres can be removed from pod.
2. Remove tyres from stack with tools such as a shovel or a rake where tyres are accessible and the risk of injury is low.
3. Smother the tyres with dirt or hand held extinguisher.

4. Monitor the smothered tyres and pods to ensure that the fire has been extinguished.
5. If fire is not extinguished, block outlet pipe of collection ponds prior to any water being utilised for fire-fighting purposes.
6. Wait for Tasmania Fire Service to arrive for further instructions.

PROCEDURE FOR A LARGE FIRE AND MAJOR FIRE

After the Tasmania Fire Service has been contacted, the following procedure should be followed for a large fire.

1. Avoid radiant heat and smoke.
2. Where risk to injury is low, remove tyres from unengaged portions of the stack with farm equipment to reduce available fuel.
3. Consider use of earthmoving machinery such as an excavator to remove fuel from burning stack or to smother with excavated soil.
4. Utilise fire hoses and hydrant and dampen tyres in adjacent pods.
5. With Tasmania Fire Service Crew, extinguish if possible or prevent the spread of fire to adjoining tyre piles.
6. Monitor fire with Tasmania Fire Service until fire is extinguished.

PROCEDURE FOR A GRASS FIRE ON THE PROPERTY OR ADJOINING PROPERTY.

After the Tasmania Fire Service has been contacted, the following procedure should be followed for a grass fire.

1. Re-assess the extent of the grass fire and the direction it is moving.
2. Check firebreak for debris that may allow fire to cross the road. If risk to injury is low, remove debris.
3. Where risk of injury is low, defend perimeter of the site to contain fire.
4. Check for windblown ambers and extinguish if possible.
5. Continue to fight fire with the Tasmania Fire Service Crew until it is extinguished.

Appendix E

Site Contamination Report

Environmental Service & Design

ABN: 97 107 517 144

15 January 2018

Carmel Parker
Johnstone, McGee and Gandy Pty Ltd
49-51 Elizabeth Street
Launceston TAS 7250

Dear Carmel,

RE: Preliminary Site Investigation, 8 Cavalry Road, Mowbray 7248

Environmental Service and Design (ES&D) has investigated the site at 8 Cavalry Road, Mowbray 7248, in relation to any potentially contaminating activities formerly conducted thereon, including risk to potential receptors and other potential environmental issues which may arise due to development activities.

The assessment was guided by the principles and requirements contained within the National Environmental (Assessment of Site Contamination) Measure, 1999 (as amended) (NEPM) according to its status as a state policy.

The investigation comprised a Preliminary Site Investigation as defined in NEPM Schedule B2, Section 2.1:

"Preliminary site investigations (PSIs) usually include a desktop study to collect basic site information and identify the site characteristics (site location, land use, site layout, building construction, geological and hydrogeological setting, historical land uses and activities at the site), a site inspection and interviews with current and past owners, operators and occupiers of the site and nearby sites.

The preliminary investigation should be sufficient to:

- identify potential sources of contamination and determine potential contaminants of concern;
- identify areas of potential contamination;
- identify potential human and ecological receptors;
- identify feasible pathways by which contaminants and receptors may be linked;
- identify potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air)
- identify environmental issues which may arise because of development activities, or due to the change of use (increased disturbance due to increase in human activity).

With respect to contamination, if thorough preliminary investigation shows a history of non-contaminating activities and there is no other evidence or suspicion of contamination, further investigation is not required."

Based on the site history which indicated potentially contaminating activities have occurred on the sites, the site is potentially contaminated and therefore may present a risk to potential receptors identified in the Conceptual Site Model (CSM). The CSM included potential offsite contamination.

As part of the PSI a judgmental soil sampling program was completed to determine risk as part of the development and based on the proposed usage soil sampling provided "background" conditions to the client.

Based on these results, site history and observations from two separate site visits, it is concluded the site is suitable for the proposed construction and use as a tyre storage facility.

As there is potential for dermal contact during excavation works of potentially contaminated land we need to ensure there is no adverse impact on human health or the environment, so the following development standards are applied (E2.6.2):

(a) an environmental site assessment that demonstrates there is no evidence the land is contaminated; or

(b) an environmental site assessment that demonstrates that the level of contamination does not present a risk to human health or the environment; or

(c) **a plan to manage contamination and associated risk to human health and the environment that includes:**

(i) an environmental site assessment;

(ii) any specific remediation and protection measures required to be implemented before excavation commences; and

(iii) a statement that the excavation does not adversely impact on human health or the environment.

The investigation is documented in the following pages

Yours sincerely,

Rod Cooper

Principal Consultant and SCPA Certified Practitioner

Preliminary Site Investigation

8 Cavalry Road, Mowbray 7248

Project No: 6093
December 2017

ABN: 97 107 517 144
80 Minna Rd
Heybridge TAS 7320
Ph: (03) 6431 2999

ACN: 107 517 144
PO Box 651
Burnie TAS 7320
Fax: (03) 6431 2933

Document Control

Prepared & Published by:	ES&D
Version:	Final
File:	6093
Contact:	Rod Cooper
Phone No:	(03) 6431 2999
Prepared For:	Carmel Parker

Version:			Date:
DRAFT 1	S Smith	ES&D	11/01/2018
FINAL	R Cooper	ES&D	15/01/2018

Contents

List of Tables

List of Figures

1 Introduction

Environmental Service and Design (ES&D) were commissioned their client Johnstone, McGee and Gandy to undertake a Preliminary Site Investigation (PSI) on the proposed development at 8 Cavalry Road, Mowbray 7248. The aim of the PSI to establish whether activities have occurred on or near the site which may result in contamination of the land and if so, whether the level of risk will increase with the proposed development. The PSI will also outline potential environmental issues associated with the development.

The Launceston Interim Planning Scheme 2015 specifies that environmental site assessments in relation to potentially contaminating activities must be prepared by a suitably qualified person. Council indicated that suitably qualified persons include Site Contamination Practitioners Australia (SCPA) certified practitioners. Consequently, Mr Rod Cooper of Environmental Service and Design (SCPA certification no. 15020) was engaged to perform the assessment and completed a site inspection on the 14th of December 2017.

Under the Launceston Interim Planning Scheme 2015 the proposed development will need to satisfy the Contaminated Land Code E2.0. This is primarily site contamination but;

E2.6 Excavation:

To ensure that works involving excavation of potentially contaminated land does not adversely impact on human health or the environment.

Excavation does not adversely impact on health and the environment, having regard to:

(a) an environmental site assessment that demonstrates there is no evidence the land is contaminated; or

(b) an environmental site assessment that demonstrates that the level of contamination does not present a risk to human health or the environment; or

(c) **a plan to manage contamination and associated risk to human health and the environment that includes:**

(i) **an environmental site assessment;**

(ii) **any specific remediation and protection measures required to be implemented before excavation commences; and**

(iii) **a statement that the excavation does not adversely impact on human health or the environment.**

In this circumstance this report will focus on E2.6 focusing on a plan to manage potential contamination and associated risk to human health and the environment.

2 Scope of Works

The scope of works included:

- examination of the site's history, including
    - oral history;
    - a search of WorkSafe Tasmania's (WST) general records management system, which holds information pertinent to potentially contaminating activities on land in Tasmania, including storage of dangerous goods (fuel storage), Environment Protection Authority (EPA) Environmentally Relevant Land Use Register, and Council database information;
- a site visit to check for any visual evidence that may indicate contamination of the site (addressed above), and an investigation of nearby properties.
- identification of potential human and ecological receptors and consideration of risks to identified receptors;
- construction of a preliminary Conceptual Site Model (CSM);
- conclusions and recommendations

3 Basis for Assessment

As a State Policy for the purposes of State policies and Procedures Act 1993, the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (NEPM) was the guideline used for the assessment.

The assessment included elements of a Preliminary Environmental Site Assessment as defined in NEPM Schedule B2. NEPM advises that if a thorough preliminary investigation shows a history of non-contaminating activities and there is no other evidence or suspicion of contamination, further investigation is not required (Schedule B2 and Section 2.1).

4 Site Details

4.1 Ownership and Location

Street Address	Property ID	Title Reference	Site Owner	Approximate Area (m2)
8 Cavalry Road, Mowbray	1911017	128392/1	Stephen John Orders & Vivienne Mary Orders	20460

Property Information sourced from thelist.com.au (December 2017)

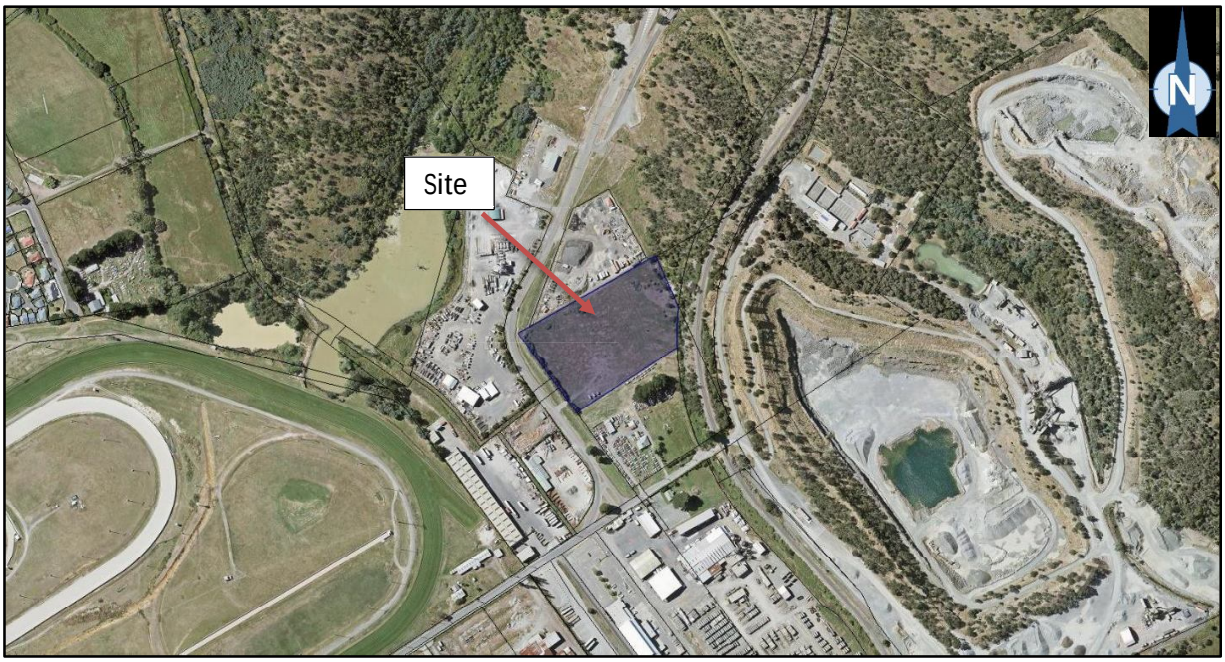


Figure 1 - Site Plan

4.2 Zoning

The site is currently zoned "General Industrial" (Launceston Interim Planning Scheme 2015, Figure 2) and is largely surrounded by "Rural Resource" to the east, "Utilities" to the north, "General Industrial" to the south, with "General Residential" to east.

The current zoning will not change as part of the proposed development and therefore the site has been assessed accordingly.

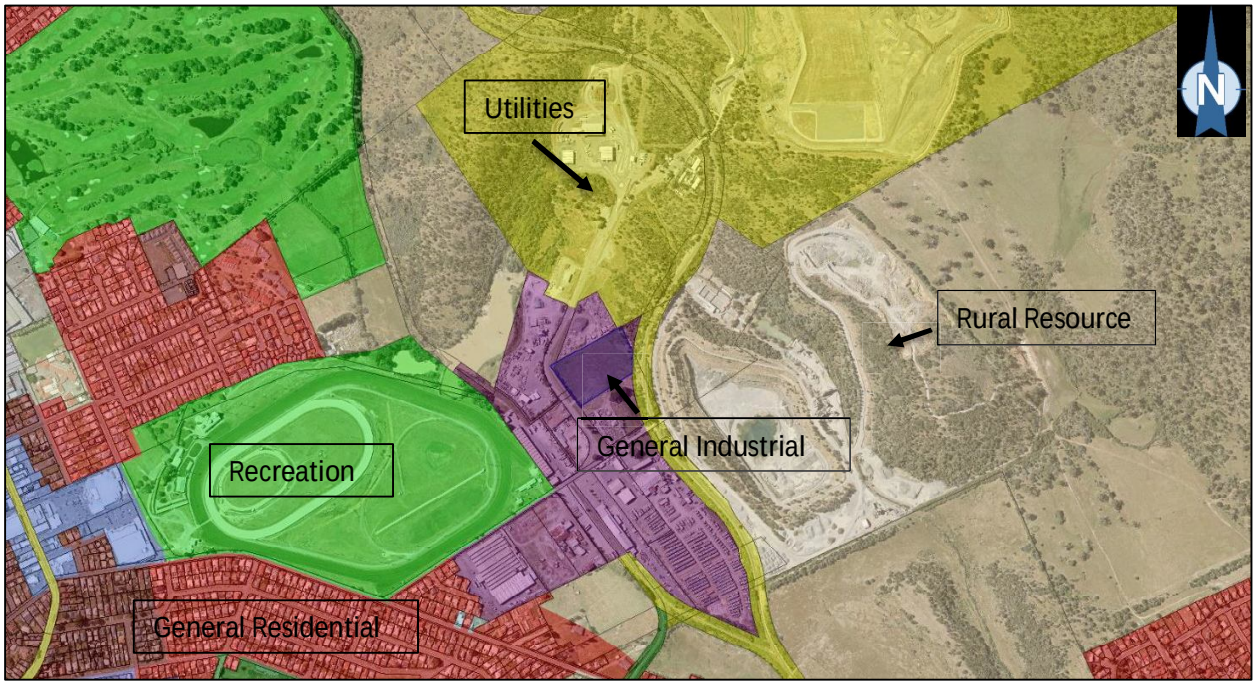


Figure 2 - Zoning – General Industrial

5 Site Description

8 Cavalry Road, is in a general industrial area in Mowbray. The site is predominantly cleared with a hedge remaining along Cavalry Road and some trees to the east and north on the site. The site is bound by Cavalry Road to the west, Remount Road to the East and Commercial properties to the north and south.

A DA was approved for the construction of a bund for the emergency storage of water as part of the development. Carmel Parker of Johnstone, McGee and Gandy visited the site in February 2017 as part of the DA construction and conducted PID readings. She noted that clay pockets within the soil showed black staining, however, there was no odour or VOC detected.

The land was utlised as an overflow for storage of vehicles from the adjacent wrecking yard for a short period of time between approximately 1997 and 2008. Prior to this the land was farmland, predominantly used for running horses, possibly related to the nearby racecourse usage.

The site is proposed for construction of up to twelve (12) pods of tyres, 20m long by 6m wide and 3m high, situated 20m apart. Additionally, a shed and hardstand area will be constructed along the south-west boundary.

5.1 Surrounding Land Use

North – Fulton Hogan offices with refuse area (inert waste) beyond

East – Railway line with Pistol Club and quarry beyond

South – Scrap yard with commercial properties beyond

West – Concrete batching plant

6 Geology, Hydrology and Hydrogeology

6.1 Topography

The site slopes gently to the west of the site. A review of Google Earth indicates elevations range from 41m AHD to 33m AHD.

6.2 Surface Water

The nearest surface water body is a dam located 120m to the west of the site, which is on the course of Newnham Creek. Newnham Creek flows into the River Tamar.

6.3 Regional Geology

Review of the LIST (Land Information System Tasmania) indicates that the eastern section of the site is underlain with Jurassic dolerite rocks while the western portion is underlain with undifferentiated cenozoic sequences.

6.4 Regional Hydrogeology

Groundwater flow is likely to travel to the west towards the dam, which is on the course of Newnham Creek (Figure 3). Reference to the Department of Primary Industries, Parks, Water and Environment (DPIPWE) Groundwater Information Access Portal indicates there are no registered bores within 500m of the site. Groundwater is not extracted for drinking purposes in the area, water is supplied to the area from TasWater infrastructure.

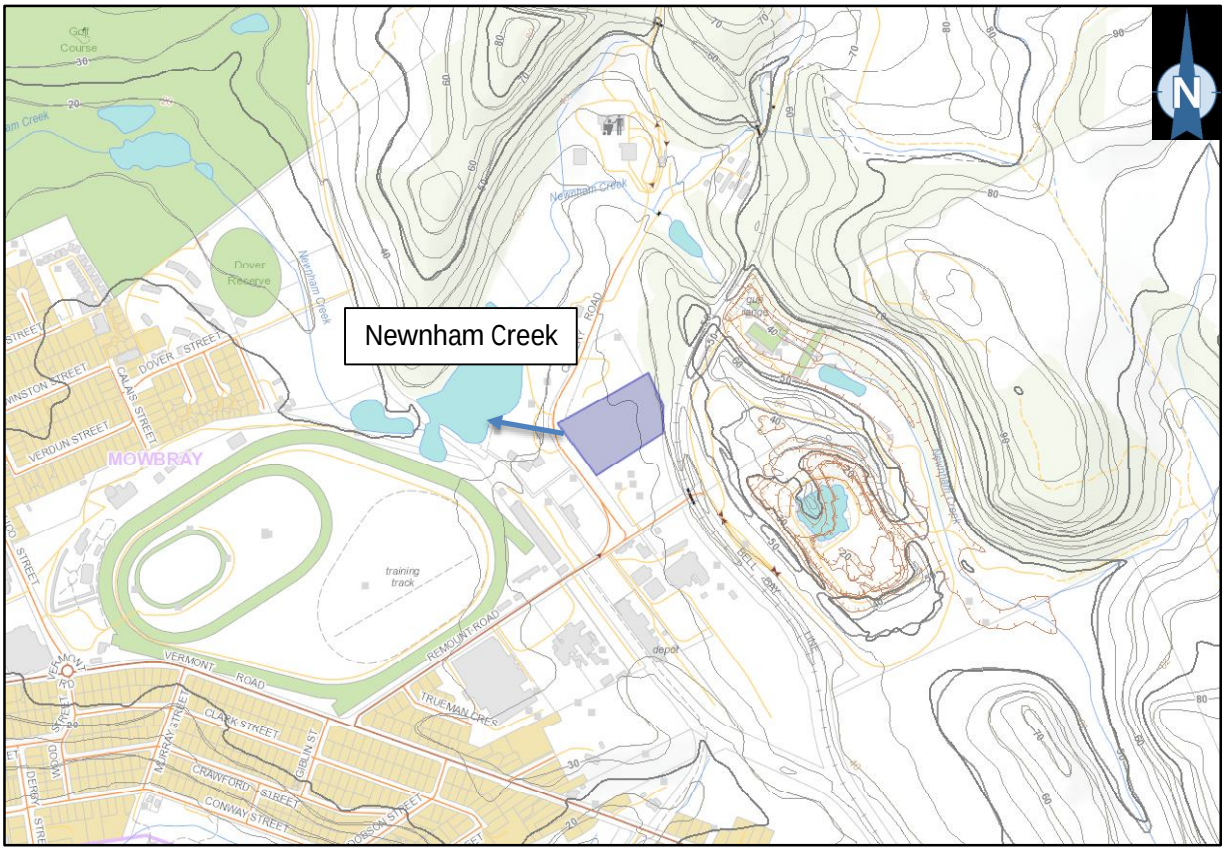


Figure 3 - Inferred groundwater flow direction

6.5 Acid Sulfate Soils

Review of the LIST (Land Information System Tasmania) indicates that the sites has no identified potential containing acid sulfate soils based on the elevation (>5m).

7 Site History

The following information has been reviewed to determine the historical land uses and likelihood of contamination as a result.

7.1 Aerial Photograph Review

A review of aerial photographs on record on the LIST and were examined. Photos were available from 1950's, 1960's, 1979, 1990's and post 2004 on Google Earth.

Figure 4 - Aerial 1976

Figure 5 - Aerial 1984

Figure 6 - Aerial 1994

Figure 7 - Aerial 1997

Figure 8 - Aerial 2003

Figure 9 - Aerial 2006

7.2 WorkSafe Tasmania Dangerous Good Licenses

A search of the WorkSafe Tasmania Dangerous Goods Licenses was requested for the subject site. No licenses were identified at the site. E-mail correspondence attached as Appendix 1. Neighbouring Boral quarry to the east has a dangerous goods file only for the storage of explosives.

7.3 EPA Contaminated Land Register

A search of the EPA Tasmania's contaminated land register was conducted and determined the site has not been regulated, had any incidents/complaints nor been listed as potentially contaminated.

8 Site History Summary

Based on the review of the site, the site history is as follows

Period	Site
Prior to 1997	Vacant land
1997-2008	Scrap cars stored on site
2008-Curent	Vacant land

9 Potential Site Contamination

9.1 Storage of Vehicles

Previous environmental report and historical imagery details the site was occupied by vehicles for scrap, as an overflow from the site to the south. COPC include:

- Heavy metals (predominantly lead)
- Total Petroleum Hydrocarbons (TPH)
- Total Recoverable Hydrocarbons (TRH)
- Semi Volatile Organic Carbons (SVOC)
- Volatile Organic Carbons (VOC)
- Polyaromatic Hydrocarbons
- Glycol
- BTEXN

9.2 Offsite Sources

Based on the inferred groundwater flow direction, potentially contaminated groundwater may migrate from offsite sources. A dangerous goods file was requested from WorkSafe Tasmania for neighboring properties. 150 Remount Road to the east has a licence to store explosives on the site (Appendix 1), which does not impact the development. Potential impacts from scrap yard operations to the south, airborne contaminants from railway and cargo, the Boral quarry and storage of waste from council landfill operations are considered. It is considered unlikely that the groundwater would be contaminated from the landfill due to the design of the clay cells. Even so the geology in the area suggests solid rock for 15 meters and the boral quarry has groundwater in the base of the quarry at 20 meters AHD. Any groundwater contamination from the landfill would report to the quarry that is 15 meters lower than The Site. As a precaution vapour checks and soil checks did not detect landfill gas on The Site.

10 Site Visits

Carmel Parker of Johnstone, McGee and Gandy visited the site in February 2017 as part of the construction of an emergency bund. Clay pockets of soil showed black staining/streaks, however, no odour was noted. Volatile organic compounds were measured using a photoionization detector throughout the earthworks and no vapours were detected. No other signs of visible contamination were witnessed on the site.

Carmel again visited the site on the 4th of January 2018 to collect soil samples as part of the DA for the construction of the shed, hardstand and tyre pods. Samples were collected on a judgmental basis, focusing on potential receptors as part of the shed construction. As no visible staining was evident, or any other potential contamination, representative samples were collected across the remainder of the property.

Figure 10 – From site entrance facing north

Figure 11 – Top north-eastern corner of site with scrap yard at 59 Remount Rd

Figure 12 – Constructed bund completed on 20th February 2017

11 Potential Receptors

A preliminary Conceptual Site Model (CSM) (Table 2) was developed after consideration of risks to potential human receptors as outlined below.

Risks to human health from storage of vehicles can arise via the inhalation route or by direct contact with contaminated soil, surface water or groundwater (e.g., ingestion, dermal contact, ocular or oral).

Future workers involved in the construction of the development were considered in the preliminary CSM, along with subsurface workers and Commercial/Industrial usage

12 Basis for Assessment

Health Screening Levels (HSLs) and Health Investigation Levels (HILs) provided in the *National Environmental protection (Assessment of Site Contamination) Measure* 1999, as amended April 11, 2013 (NEPM) were the designated criteria for assessing potential human health risks from contamination of soil from the storage of vehicles as applicable.

Soil screening / investigation levels considered are given in Table 1.

Table 1 Soil Assessment Criteria, Health Screening Levels / Health Investigation Levels

Land Use Units – mg/kg	*Commercial / Industrial*
HSLs - Derived from NEPM Schedule B1, Table 1A(3)	HSL-D
	SAND
	0-1m
Chemical	
Naphthalene	NL
C_6-C_{10} (F1)	260
>C_{10}-C_{16} (F2)	NL
Benzene	3
Toluene	NL
Ethylbenzene	NL
Xylenes	230
HILs – Derived from NEPM Schedule B1, Table 1A(1)	
Arsenic	3000
Beryllium	500
Boron	300 000
Cadmium	900
Chromium	3600
Cobalt	4000
Copper	240 000
Lead	1500
Manganese	60 000
Nickel	6000
Selenium	10 000
Zinc	400 000
Mercury	730

Table 2 Preliminary Conceptual Site Model

Contamination Source	COPC	Pathway	Receptor
Vehicle storage	• Heavy metals (predominantly lead) • Total Petroleum Hydrocarbons (TPH) • Total Recoverable Hydrocarbons (TRH) • Semi Volatile Organic Carbons (SVOC) • Volatile Organic Carbons (VOC) • Polyaromatic Hydrocarbons • Glycol • BTEXN	Vapour inhalation of COPC in surface soils	• Future site building users • Subsurface workers • Surrounding site users
	• Heavy metals (predominantly lead) • Total Petroleum Hydrocarbons (TPH) • Total Recoverable Hydrocarbons (TRH) • Semi Volatile Organic Carbons (SVOC) • Volatile Organic Carbons (VOC) • Polyaromatic Hydrocarbons • Glycol	Dermal contact/ingestion of COPC in surface soils	• Future site building users • Subsurface workers

	• BTEXN		
	• Heavy metals (predominantly lead) • Total Petroleum Hydrocarbons (TPH) • Total Recoverable Hydrocarbons (TRH) • Semi Volatile Organic Carbons (SVOC) • Volatile Organic Carbons (VOC) • Polyaromatic Hydrocarbons • Glycol • BTEXN	Migration into soil and groundwater and subsequent ingestion/dermal contact or inhalation of COPC	• Future site building users • Subsurface workers • Surrounding site users • Newnham Creek

13 Analytical and Sampling Plan

Contaminants of potential concern (COPC) from the storage of vehicles that could be reasonably expected to disperse to the environment were included in the analytical plan. These comprised of Heavy metals, Petroleum Hydrocarbons, Glycol and BTEXN.

QC/QA samples included one field duplicate sample. The sampling and analytical plan is summarised in Table 3 and shown as figure 13. As per the preliminary CSM, the potential risk, albeit very minor, is from leaking oils and remnant fuels from the storage of vehicles.

Table 3 Sample Information

Location	*Number of samples*	*Number of duplicates*	*Total*	*TPH/TRH*	*Heavy metals*	*BTEXN*
Samples at proposed location of shed	2	0	2	X	X	X
Samples across site	4	1	5	X	X	X

Soil samples were collected directly from the drill auger and handled according to the documented QA/QC procedures. Samples were immediately placed into an esky with ice bricks, after collection, and were dispatched by overnight airfreight to the analytical laboratory. The analytical laboratory used for all samples was NATA certified Australian Laboratory Services (ALS), Springvale, Victoria. The sampling plan was developed and is shown in Appendix 3.

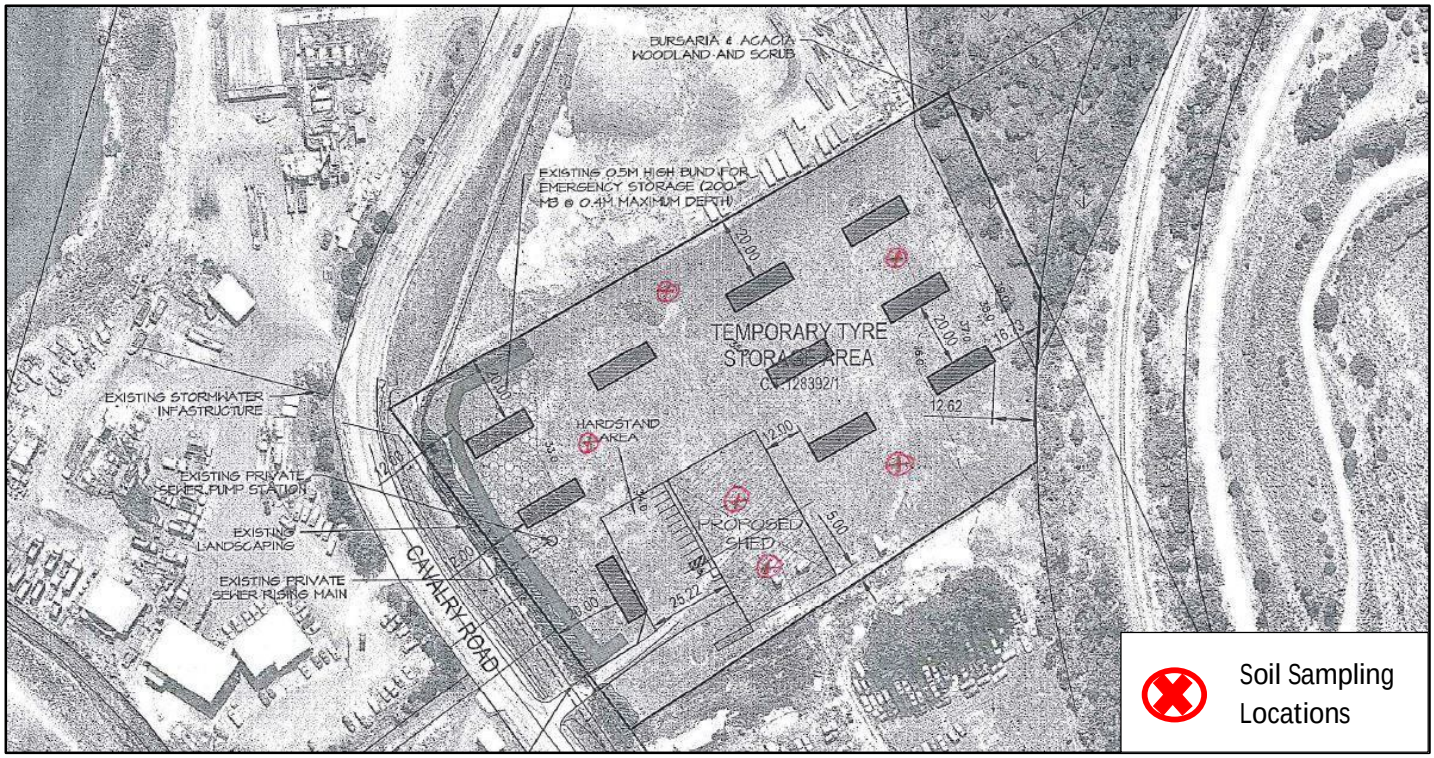


Figure 13 – Soil sampling locations

14 Sampling Information

Laboratory Certificates of Analysis (COA) for all samples are attached in Appendix 2. Sampling QA/QC protocols and QC results are presented below.

15 Sampling guidelines, standards and techniques

- NEPM Schedule B (2), *Guideline on Site Characterisation;* judgmental sampling
- AS 4482.1 (2005) Guide to the Sampling and Investigation of Potentially Contaminated Soil - Part 1: Non-Volatile and Semi Volatile Compounds
- AS 5667.1 (1998) Guidance on the design of sampling programs, sampling techniques and the preservation and handling of sampling

Soil samples were taken directly from the hand auger after digging to moist soil.

15.1 QA/QC

ALS Laboratory supplies a full QC report covering laboratory QA/QC activities with each COA. Field duplicates were collected as described above in Section 13.

Techniques used to prevent cross contamination of samples and ensure the integrity of samples were as follows:

- Samples were collected using a new pair of disposable gloves for each sample;
- The auger used for collection of soil samples was cleaned between samples by thoroughly rinsing with a solution of Decon 90, tap water and demineralised water; and
- All samples were immediately collected into ALS supplied analyte appropriate bottles, individually labelled, placed in an Eski with freezer packs and dispatched for overnight delivery to the Laboratory with an accompanying chain of custody document.

AS 4482.1 (2005) suggests that typical Measurable Data Quality Indicators (MDQI) should be ≤50% Relative Percentage Difference (RPD), and this was the adopted MDQI for all samples.

All primary and duplicate sample results and RPD calculations are "100%" as all results tested were below detection limits, so it was not deemed necessary to produce a table.

16 Results

The data is presented in Table 4 together with assessment criteria. Values above LORs are highlighted in bold black text; those above assessment criteria are highlighted in bold red text.

Table 4 Soil Sampling Results

Analyte		Units	SB1-0.1m	SB2-0.2m	SB3-0.1m	SB4-0.1m	SB5A-0.2m	SB5B-0.2m	SB6-0.3m	SB1-0.1m	NEPM HIL/HSL D 0-1m
Arsenic		mg/kg	**5**	<5	----	----	<5	----	----	<5	3000
Beryllium		mg/kg	**1**	<1	----	----	<1	----	----	<1	500
Boron		mg/kg	**50**	<50	----	----	<50	----	----	<50	300000
Cadmium		mg/kg	**1**	<1	----	----	<1	----	----	<1	900
Chromium		mg/kg	**2**	**17**	----	----	**38**	----	----	**43**	3600
Cobalt		mg/kg	**2**	**2**	----	----	**3**	----	----	**20**	4000
Copper		mg/kg	**5**	**5**	----	----	**16**	----	----	**28**	240000
Lead		mg/kg	**5**	**13**	----	----	**8**	----	----	**12**	1500
Manganese		mg/kg	**5**	**168**	----	----	**32**	----	----	**655**	60000
Nickel		mg/kg	**2**	**3**	----	----	**6**	----	----	**11**	6000
Selenium		mg/kg	**5**	<5	----	----	<5	----	----	<5	10000
Zinc		mg/kg	**5**	**12**	----	----	<5	----	----	**9**	400000
Mercury		mg/kg	**0.1**	<0.1	----	----	<0.1	----	----	<0.1	730
C6 - C10 Fraction minus BTEX (F1)		mg/kg	10	<10	<10	<10	<10	<10	<10	<10	260
>C10 - C16 Fraction		mg/kg	50	<50	<50	<50	<50	<50	<50	<50	
>C16 - C34 Fraction		mg/kg	100	110	140	130	<100	140	150	<100	
>C34 - C40 Fraction		mg/kg	100	<100	<100	<100	<100	<100	<100	<100	
>C10 - C40 Fraction (sum)		mg/kg	**50**	**110**	**140**	**130**	<50	**140**	**150**	<50	
>C10 - C16 Fraction minus Naphthalene (F2)		mg/kg	50	<50	<50	<50	<50	<50	<50	<50	NL
Benzene		mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	3
Toluene		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Total Xylenes		mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	230
Naphthalene		mg/kg	1	<1	<1	<1	<1	<1	<1	<1	

17 Conclusions and Recommendations

The results of the preliminary site investigation, based on the site history, site assessment and desktop assessment, indicate vehicles were stored on the property in the 1990's and 2000's, which is considered a potentially contaminating activity.

A preliminary CSM (table 2) was constructed. A risk assessment was then conducted according to the principles and methodology contained within the NEPM and found risk to human health receptors may increase due to the development or previous activities on the site. The sampling plan was developed based on the CSM. Offsite sources were considered unlikely to be a source of contamination due to geology, the quarry being next door and site testing removing landfill gas as a risk.

The CSM found that there is potential risk to future workers from contact with soil, ingestion of soil. Subsurface workers and construction workers could also be exposed to the same risk in the future or during the implementation of the project.

ES&D considered the risk to residents, construction workers and subsurface workers from the proposed development and proposed a basic sampling program to determine likelihood of contamination and risk to receptors. Additionally, as the proposed DA is potentially contaminating soil samples collected prior to the development determined "background" conditions, which will enable the client to accurately assess the current levels of contamination and the influence of the activity over time.

Based on the soil sampling results, site history, neighboring operations and visual observations it is concluded that there is no vapour pathway and therefore no risk to future workers at the site.

Preliminary gas vapour assessment also determined that there were no vapours detected on site, confirming also that offsite contaminants (if any) are not impacting the groundwater or vapour on the site.

However, based on the potential for minor hydrocarbon and glycol spills to have occurred in the area proposed for the shed construction there is potential for subsurface workers to have dermal contact with contaminated soil. Therefore, specific protection measures are required to be implemented to protect subsurface workers during excavation and disposal of soil needs to be controlled:

- Protective clothing is required to prevent dermal contact – boots, gloves and disposable suits.

- Visual and odour assessment by the site supervisor should be conducted and if any odour or discolouration detected, a PID meter should be used to confirm that vapour levels are below the OH&S alarm limits (The PID will alarm if this occurs).

- All soil removed from site must be disposed of under the EPA waste tracking system.

A final CSM (table 5) was constructed. As there is potential for minor hydrocarbon contamination to be present where the shed in constructed, risk to subsurface receptors from the dermal contact pathway remains and must be managed during the construction phase. There is no ongoing risk to commercial occupants. Requirements under section (E2.6.2) of the Launceston *Interim Planning Scheme 2015* are met, ES&D propose the development proceed with the manage measures to protect the subsurface workers so the excavation can proceed. There is acceptable risk to human health and the environment with these measures in place.

It is noted that the soil sampling program is not considered a full site assessment and was only undertaken to determine the suitability of the site for its proposed use. Any additional developments or change of use will require an additional risk assessment.

Rod Cooper.

Certified Site Contamination Practitioner

Table 5 Final Conceptual Site Model

Contamination Source	COPC	Pathway	Receptor
Vehicle storage	• Heavy metals (predominantly lead) • Total Petroleum Hydrocarbons (TPH) • Total Recoverable Hydrocarbons (TRH) • Semi Volatile Organic Carbons (SVOC) • Volatile Organic Carbons (VOC) • Polyaromatic Hydrocarbons • Glycol • BTEXN	Vapour inhalation of COPC in surface soils.	No contamination
	• Heavy metals (predominantly lead) • Total Petroleum Hydrocarbons (TPH) • Total Recoverable Hydrocarbons (TRH) • Semi Volatile Organic Carbons (SVOC) • Volatile Organic Carbons (VOC)	Dermal contact/ingestion of COPC in surface soils	Subsurface workers

	• Polyaromatic Hydrocarbons • Glycol • BTEXN		
	• Heavy metals (predominantly lead) • Total Petroleum Hydrocarbons (TPH) • Total Recoverable Hydrocarbons (TRH) • Semi Volatile Organic Carbons (SVOC) • Volatile Organic Carbons (VOC) • Polyaromatic Hydrocarbons • Glycol • BTEXN	Migration into soil and groundwater from off site and subsequent ingestion/dermal contact or inhalation of COPC	**No contamination**

18 Limitations

ES&D has prepared this report in accordance with the care and thoroughness of the consulting profession for Johnstone, McGee and Gandy Pty Ltd. It was based on accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined.

This report was prepared during December 2017 and January 2018 and is based on the conditions encountered and information reviewed at the time of preparation. ES&D disclaims the responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for any use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice.

Subsurface conditions can vary across a site and cannot be explicitly defined by these investigations. It is unlikely therefore that the results and estimations expressed in this report will represent the extreme conditions within the site.

The information in this report is accurate at the date of issue and is in accordance with conditions at the site at the dates sampled.

This document and the information contained herein should only be regarded as validly representing the site conditions at the time of the investigation unless otherwise explicitly stated in a preceding section of the report.

No warranty or guarantee of property conditions is given or intended.

References

Launceston City Council Interim Planning Scheme 2015

National Environmental Protection (Assessment of Site Contamination) Measure, *Guideline on the Investigation Levels for Soil and Groundwater*, Schedule B (1), (1999) as amended 2013

Land Information System Tasmania (the List): www.thelist.tas.gov.au

Department of Primary Industries, Parks, Water and Environment (DPIPWE) Groundwater Information Access Portal: http://wrt.tas.gov.au/groundwater-info/

Appendices

Appendix 1 – E-mail from WorkSafe

Case, Lorraine (DoJ) <Lorraine.Case@justice.tas.gov.au>

Dangerous goods search - 8 Cavalry Road and 59 and 150 Remount Road Mowbray

Hi Sam

Nothing for Cavalry Road and, so far, only a DS file for 150 Remount (Boral) but at first glance of our database it seems to be only for storage of explosives.

I'll do a more thorough check tomorrow.

Lorraine Case
Administrative Officer
Right to Information & Privacy Unit
Department of Justice

Ph (03) 6166 4680 Fax (03) 6173 0206
PO Box 56 Rosny Park TAS 7018
Lorraine.Case@justice.tas.gov.au

Hi Sam

Confirming that WorkSafe Tasmania holds no information regarding past or present dangerous goods storage at 8 Cavalry Road, Mowbray.

I've had a look at the DG site file (9054) for Launceston Quarries (later Boral Construction Materials Group Ltd) and can confirm that only explosives were stored at the property on 150 Remount Road, Mowbray. The EPA's ERLUR database lists only an old Mines file (L2) for Remount Road - Launceston Quarries – date range 1955-59 – explosives magazine only.

Regards,
Lorraine

Lorraine Case
Administrative Officer
Right to Information & Privacy Unit
Department of Justice

Ph (03) 6166 4680 Fax (03) 6173 0206
PO Box 56 Rosny Park TAS 7018
Lorraine.Case@justice.tas.gov.au

Appendix 2 – ALS Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1801098**	Page	: 1 of 7
Client	: **JOHNSTONE MCGEE & GANDY PL**	Laboratory	: Environmental Division Melbourne
Contact	: CARMEL PARKER	Contact	: Customer Services EM
Address	: 49-51 ELIZABETH STREET LAUNCESTON TAS 7250	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 6334 5548	Telephone	: +61-3-8549 9600
Project	: J179003EL	Date Samples Received	: 05-Jan-2018 11:20
Order number	: J179003EL	Date Analysis Commenced	: 08-Jan-2018
C-O-C number	: ----	Issue Date	: 09-Jan-2018 14:08
Sampler	: CARMEL PARKER		
Site	: ----		
Quote number	: EN/222/17		
No. of samples received	: 7		
No. of samples analysed	: 7		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Lu	VOC Section Supervisor	Melbourne Organics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB1-0.1m	SB2-0.2m	SB3-0.1m	SB4-0.1m	SB5A-0.2m
				Client sampling date / time	04-Jan-2018 00:00	04-Jan-2018 00:00	04-Jan-2018 00:00	04-Jan-2018 00:00	04-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1801098-001	EM1801098-002	EM1801098-003	EM1801098-004	EM1801098-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		5.2	11.1	6.6	9.8	9.7
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	<5	----
Barium	7440-39-3	10	mg/kg		30	----	----	20	----
Beryllium	7440-41-7	1	mg/kg		<1	----	----	<1	----
Boron	7440-42-8	50	mg/kg		<50	----	----	<50	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	<1	----
Chromium	7440-47-3	2	mg/kg		17	----	----	38	----
Cobalt	7440-48-4	2	mg/kg		2	----	----	3	----
Copper	7440-50-8	5	mg/kg		5	----	----	16	----
Lead	7439-92-1	5	mg/kg		13	----	----	8	----
Manganese	7439-96-5	5	mg/kg		168	----	----	32	----
Nickel	7440-02-0	2	mg/kg		3	----	----	6	----
Selenium	7782-49-2	5	mg/kg		<5	----	----	<5	----
Vanadium	7440-62-2	5	mg/kg		99	----	----	156	----
Zinc	7440-66-6	5	mg/kg		12	----	----	<5	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	<0.1	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	100	100	<100	110
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	100	100	<50	110
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		110	140	130	<100	140
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		110	140	130	<50	140
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB1-0.1m	SB2-0.2m	SB3-0.1m	SB4-0.1m	SB5A-0.2m
				Client sampling date / time	04-Jan-2018 00:00	04-Jan-2018 00:00	04-Jan-2018 00:00	04-Jan-2018 00:00	04-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1801098-001	EM1801098-002	EM1801098-003	EM1801098-004	EM1801098-005
					Result	Result	Result	Result	Result
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**92.9**	**81.7**	**85.2**	**87.9**	**82.4**
Toluene-D8	2037-26-5	0.2	%		**98.3**	**86.8**	**89.7**	**92.9**	**86.2**
4-Bromofluorobenzene	460-00-4	0.2	%		**121**	**108**	**113**	**119**	**109**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SB5B-0.2m	SB6-0.3m	----	----	----
			Client sampling date / time	04-Jan-2018 00:00	04-Jan-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1801098-006	EM1801098-007	------	------	------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	10.0	20.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	----	----
Barium	7440-39-3	10	mg/kg	----	120	----	----	----
Beryllium	7440-41-7	1	mg/kg	----	<1	----	----	----
Boron	7440-42-8	50	mg/kg	----	<50	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	43	----	----	----
Cobalt	7440-48-4	2	mg/kg	----	20	----	----	----
Copper	7440-50-8	5	mg/kg	----	28	----	----	----
Lead	7439-92-1	5	mg/kg	----	12	----	----	----
Manganese	7439-96-5	5	mg/kg	----	655	----	----	----
Nickel	7440-02-0	2	mg/kg	----	11	----	----	----
Selenium	7782-49-2	5	mg/kg	----	<5	----	----	----
Vanadium	7440-62-2	5	mg/kg	----	182	----	----	----
Zinc	7440-66-6	5	mg/kg	----	9	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	120	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	120	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	150	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	150	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB5B-0.2m	SB6-0.3m	----	----	----
				Client sampling date / time	04-Jan-2018 00:00	04-Jan-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1801098-006	EM1801098-007	------	------	------
					Result	Result	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**76.0**	**77.8**	----	----	----
Toluene-D8	2037-26-5	0.2	%		**78.9**	**85.2**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**97.1**	**107**	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

True ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1801098**	Page	: 1 of 6
Client	: **JOHNSTONE MCGEE & GANDY PL**	Laboratory	: Environmental Division Melbourne
Contact	: CARMEL PARKER	Contact	: Customer Services EM
Address	: 49-51 ELIZABETH STREET LAUNCESTON TAS 7250	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 6334 5548	Telephone	: +61-3-8549 9600
Project	: J179003EL	Date Samples Received	: 05-Jan-2018
Order number	: J179003EL	Date Analysis Commenced	: 08-Jan-2018
C-O-C number	: ----	Issue Date	: 09-Jan-2018
Sampler	: CARMEL PARKER		
Site	: ----		
Quote number	: EN/222/17		
No. of samples received	: 7		
No. of samples analysed	: 7		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Lu	VOC Section Supervisor	Melbourne Organics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1356541)									
EM1801097-001	Anonymous	EA055: Moisture Content	----	1	%	6.6	7.8	17.8	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1356529)									
EM1801097-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	350	300	16.8	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	44	38	15.6	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	20	19	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	66	60	10.7	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	39	35	10.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	50	43	15.9	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	126	128	1.80	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	304	261	15.1	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	53	50	5.71	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	447	439	1.86	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1356530)									
EM1801097-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.3	0.4	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1356521)									
EM1801097-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1356523)									
EM1801097-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	270	280	4.39	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	160	170	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1356523) - continued									
EM1801097-001	Anonymous	EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	430	450	4.54	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1356521)									
EM1801097-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1356523)									
EM1801097-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	380	400	4.42	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	380	400	5.13	No Limit
EP080: BTEXN (QC Lot: 1356521)									
EM1801097-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1356529)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	101	79	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	81.2	79	110
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	90.2	85	120
EG005T: Boron	7440-42-8	50	mg/kg	<50	33.2 mg/kg	99.4	82	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.2	85	109
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	99.4	83	109
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16 mg/kg	83.0	78	112
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	78.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.3	78	106
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	84.4	82	107
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	85.5	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.0	93	109
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	83.9	80	109
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	82.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1356530)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.3	77	104
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1356521)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	104	70	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1356523)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	96.8	80	120
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	98.2	84	115
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	94.5	80	112
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1356521)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	104	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1356523)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	96.1	83	117
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	99.0	82	114
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	96.0	73	115
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN (QCLot: 1356521)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	109	74	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	104	77	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 1356521) - continued								
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	110	73	125
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	110	77	128
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	110	81	128
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	104	66	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1356529)							
EM1801097-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.8	78	124
		EG005T: Barium	7440-39-3	50 mg/kg	93.9	71	135
		EG005T: Beryllium	7440-41-7	50 mg/kg	100	85	125
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.3	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	95.6	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	98.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	92.0	76	124
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	68	136
		EG005T: Nickel	7440-02-0	50 mg/kg	111	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	84.3	71	125
		EG005T: Vanadium	7440-62-2	50 mg/kg	93.8	76	124
		EG005T: Zinc	7440-66-6	50 mg/kg	80.9	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1356530)							
EM1801097-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	86.2	76	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1356521)							
EM1801097-002	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	75.2	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1356523)							
EM1801098-001	SB1-0.1m	EP071: C10 - C14 Fraction	----	806 mg/kg	98.2	53	123
		EP071: C15 - C28 Fraction	----	3006 mg/kg	98.0	70	124
		EP071: C29 - C36 Fraction	----	1584 mg/kg	94.9	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1356521)							
EM1801097-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	79.8	39	129

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1356523)							
EM1801098-001	SB1-0.1m	EP071: >C10 - C16 Fraction	----	1160 mg/kg	96.7	65	123
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	99.0	67	121
		EP071: >C34 - C40 Fraction	----	313 mg/kg	98.3	44	126
EP080: BTEXN (QCLot: 1356521)							
EM1801097-002	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	99.0	50	136
		EP080: Toluene	108-88-3	2 mg/kg	106	56	139

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1801098**	Page	: 1 of 5
Client	: **JOHNSTONE MCGEE & GANDY PL**	Laboratory	: Environmental Division Melbourne
Contact	: CARMEL PARKER	Telephone	: +61-3-8549 9600
Project	: J179003EL	Date Samples Received	: 05-Jan-2018
Site	: ----	Issue Date	: 09-Jan-2018
Sampler	: CARMEL PARKER	No. of samples received	: 7
Order number	: J179003EL	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1801097--002	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
SB1-0.1m, SB2-0.2m, SB3-0.1m, SB4-0.1m, SB5A-0.2m, SB5B-0.2m, SB6-0.3m	**04-Jan-2018**	**----**	----	----	**08-Jan-2018**	18-Jan-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
SB1-0.1m, SB4-0.1m, SB6-0.3m	**04-Jan-2018**	**08-Jan-2018**	03-Jul-2018	✓	**08-Jan-2018**	03-Jul-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
SB1-0.1m, SB4-0.1m, SB6-0.3m	**04-Jan-2018**	**08-Jan-2018**	01-Feb-2018	✓	**08-Jan-2018**	01-Feb-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
SB1-0.1m, SB2-0.2m, SB3-0.1m, SB4-0.1m, SB5A-0.2m, SB5B-0.2m, SB6-0.3m	**04-Jan-2018**	**08-Jan-2018**	18-Jan-2018	✓	**08-Jan-2018**	18-Jan-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
SB1-0.1m, SB2-0.2m, SB3-0.1m, SB4-0.1m, SB5A-0.2m, SB5B-0.2m, SB6-0.3m	**04-Jan-2018**	**08-Jan-2018**	18-Jan-2018	✓	**08-Jan-2018**	18-Jan-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
SB1-0.1m, SB2-0.2m, SB3-0.1m, SB4-0.1m, SB5A-0.2m, SB5B-0.2m, SB6-0.3m	**04-Jan-2018**	**08-Jan-2018**	18-Jan-2018	✓	**08-Jan-2018**	18-Jan-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Appendix 3 - Sample Points

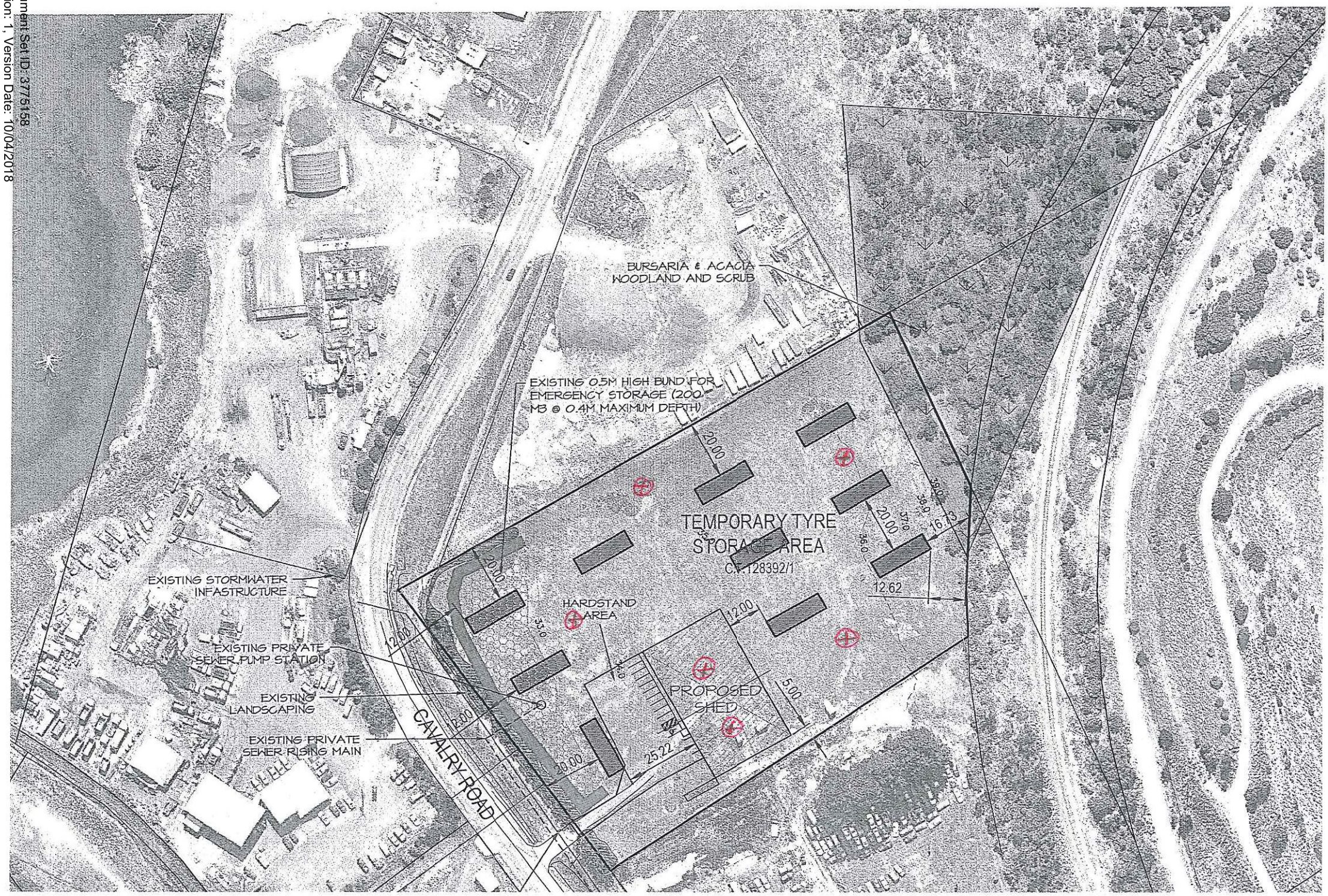


Photo 1 - SB2 located in vicinity of proposed shed

Photo 2 - SB3 located approx. 30 metres from the southern boundary

Photo 3 - SB4 located near the western boundary in a recently disturbed area

Photo 4 - SB5 located near the north eastern corner of the site. The ground surface had less grass coverage and signs of disturbance

Photo 5 - SB6 located in the north western corner of the site.

REF: JF

Project #: 4020.003

10 January 2017

C/- Dobson Mitchell Allport
59 Harrington Street
Hobart Tas 7000

Attention: Ms Nicole Sommer

Via email: Nicole.Sommer@doma.com.au

Dear Nicole,

RE: 8 CAVALRY ROAD, MOWBRAY – POTENTIALLY CONTAMINATED LAND – ENVIRONMENTAL MANAGEMENT PLAN (SOILS)

1 BACKGROUND

Dobson Mitchell Allport (DOMA) is acting for the Tyre Recycle Tasmania, via the applicant 6ty Pty Ltd regarding DA0604/2016 for the temporary storage of used tyres at 8 Cavalry Road, Mowbray (the Site) (refer to attached Site Plan). The proposed works on site are fire mitigation measures comprising a bund around the tyre storage area. This storage facility is for temporary use in the interim while TRT seeks, obtains approval and develops a permanent processing facility to service the north and north west regions of Tasmania

SEMF have prepared this Environmental Management Plan (EMP) for the purpose of managing potential land contamination impacts to human health and the environment during soil excavation and earthworks associated with the development of a bund on site. It is noted that ongoing activities (storage of tyres) is not likely to significantly disrupt soils, however has been considered in this EMP. It is considered that the implementation of this EMP will mitigate any risks to ensure the health and safety of persons likely to be impacted.

The earthworks comprise movement of material from onsite only to form a bund as shown in the figure attached. The EMP details management measures required to ensure appropriate management of potentially contaminated soils located at the site which may be encountered during excavation and earthworks.

The construction of the proposed bund will require earthworks to be undertaken on the Site, which trigger the *Potentially Contaminated Land Code* (PCLC) under Section E2.0 of the Launceston Interim Planning Scheme (Interim Planning Scheme) as more than 1m^2 of land will be disturbed.

The purpose of the PCLC is to 'ensure that use or development of potentially contaminated land does not adversely impact on human health or the environment.' No intrusive soil investigation has been conducted on the site, therefore a limited soil assessment is proposed within this EMP.

A letter report was issued by SEMF on 23 December 2016, outlining the known former land uses: primarily storage of vehicles for scrap (between at least 2004 and 2007) and grazing. As an intrusive site assessment (sampling and analysis of soils) has not as yet been conducted, it is not known whether the Site is contaminated or not (considered in the interim as potentially contaminated land).

2 OBJECTIVES

The primary objective is to ensure the health and safety of persons, primarily contractors, however also including offsite impacts to human health and the environment.

The responsible parties must ensure that this plan is implemented and that effective and appropriate action will be taken immediately after the identification of any hazardous materials or conditions, and that known or potentially contaminated material will be handled in accordance with the EMP.

The objectives of the EMP are to:

- Minimise risk to all site users associated with construction activities which may come into contact with contaminated soil during excavation works on site and additionally use of the site for storage of tyres.
- Provide this EMP to employees and conduct supervision of employees as necessary to ensure that this EMP is implemented.
- Management of soils on site, or if appropriate ensure that contaminated material is disposed of, in accordance with relevant regulatory requirements.
- Ensure the risk of environmental damage associated with the handling of any identified contaminated soil during works on the site is minimised,
- Compliance with relevant guidelines and legislation.

3 RESPONSIBLE PERSONS

Key roles and responsibilities for the redevelopment works are the responsibility of:

Person: _____ (TO BE COMPLETED PRIOR TO ANY WORKS COMMENCING)

Contact details. _____ (TO BE COMPLETED PRIOR TO ANY WORKS COMMENCING)

Responsibilities include the following:

- The site owner has overall responsibility for the implementation and maintenance of the EMP. During construction works, it is the owner's responsibility to inform all contractors and subcontractors of the potential hazards and control measures to be adopted prior to the commencement of any works.
- Works are to be conducted in accordance with the Work Health and Safety Act 2012, the Work Health and Safety Regulations 2012 and any other relevant legislation.
- The site owner must have a site assessment conducted to determine whether soils are contaminated in relevant areas of the site. Suitably qualified and experienced consultants must be engaged to conduct these works.
- If contamination has the potential to impact nearby land owners/residents, they must be notified in writing.
- Compliance with the guidance within this EMP must be followed by all parties involved in works or other activities at the site that may result in the disturbance and / or excavations of soils.
- This EMP is limited to the movement of soils on site only. If soils are to be disposed offsite, soil classification will be required.

4 BACKGROUND

4.1 Site Information

Information currently available is provided in the table below.

Item	Details
Certificate of Title	Volume 128392 folio 1
Owner	Steven John Order and Vivienne Mary Orders
Proponent	Tyre Recycle Tasmania (TRT) is proposing to lease the land from the owner
Land area	2.029 hectares (ha)
Proposed use	Waste transfer and temporary storage of 'end-of-life' tyres
Proposed operations	Controlling loads in and out, movement of heavy vehicles, in and out, stockpiling of tyres

Item	Details
Proposed site arrangements	Establishment of up to twelve (12) pods (or mounds of tyres), nominally 20m long by 6m wide and 3m high, placed 20m away from the next pod. Establishment of site parking, and maintenance and enhancement of vegetation landscaping buffer. In addition, a bund (comprising approximately 100m^3 material) is to be established as part of the proposed fire-fighting management measures.
Land zoning	General Industrial under the Launceston Interim Planning Scheme
Current site condition	The land is predominantly cleared of vegetation, except for a hedge along the road, and some trees in the rear and south of the land. Horses currently graze the land.
Previous site usage	The review and compilation of previous site usage has not be exhaustive and further work may need to be undertaken. A preliminary review of historical aerial photographs from Google from 2016 back to 2004 shows that several areas of the Site have been used for storage (refer to attached images). It is assumed, based on visual comparison and similarity with the storage on the land to the south, that the land was used, at least between 2004 and 2007, for the storage of vehicles for scrap. The owner advises that the land was used for overflow storage of vehicles from the adjacent wrecking yard. No sumps or bowsers were ever on the Site. Prior to that the land was farmland, predominantly for running horses and possibly related to the nearby racecourse usage.
Surrounding zoning	Zoning to the north includes General Industrial and Utilities; to the east Utilities and Rural Resources; to the south General Industrial, Utilities and Rural Resource; and to the west General Industrial and Recreation. The nearest residential area is around 450 metres to the southwest.

Item	Details
Surrounding site uses (current)	Preliminary review shows that: • a vehicle scrap yard is situated on the adjacent land to the south; • the Bell Bay railway line marks the eastern boundary of the Site, and beyond it a quarry is located; • a soil and demolition waste stockpile storage facility is situated on the adjacent land to the north, • Cavalry Road marks the western boundary of the Site, and • Venarchie Civil Contracting laydown and possible concrete batch plant is situated on the opposite site of Cavalry Road.
Surrounding site uses (past)	To be determined.
Topography	General slope of the land on the site and immediate surrounds is to the west. Up-gradient properties and uses are interpreted to be predominantly the railway line and the quarry.
Drainage line and Surface water body	There is no apparent waterbody on the site, or on adjacent sites. No visible natural surface drainage line flows through the site. The closest surface water is a dam, around 100m west of the Site, behind the Venarchie compound. The dam is situated on the course of Newnham Creek which captures water from both the Remount Road Landfill area northeast of the site and the quarry area east of the Site.
Geology (the List, 25K)	The eastern end of the Site is underlain by Jurassic-age dolerite, and the remainder of the site by undifferentiated Cenozoic-age sequences
Groundwater	The depth to groundwater is not known. It is estimated that groundwater would be encountered at around 6-8 m depth at the Site, based on the level of surrounding water bodies. However it is possible that perched aquifers may occur within the Cenozoic sequences.

5 POTENTIAL FOR CONTAMINATION

5.1 Onsite Soil Contamination

No intrusive soil assessment has been conducted to date, therefore the potential contaminants of concern have been based on the known former land use: storage of vehicles for scrap purposes and grazing.

Scrap yards are listed in Table E2.2 Potentially Contaminating Activities under the Interim planning scheme. The main contaminant sources include: oils, lubricating fluids, coolants, acids, solvents, asbestos from brake shoes and clutches, hydrocarbon fuels, lead and other heavy metals from vehicle parts. Several other contaminants may also occur. Potential contaminants associated with grazing may be herbicides and pesticides

It is considered likely that contamination impacts would have occurred on the land, in particular on surface soils where scrap vehicles were stored, due to leaking oils and remnant fuels, disintegrating tyres, etc. The extent of impact would depend on how the vehicle liquid wastes were handled prior to the vehicles being scraped and stored.

It appears that storage of scrap vehicles ceased on most of the site, except for the southern edge, in around 2007. This suggests that any impacts from hydrocarbon-based contaminants may have biodegraded to some degree. Contamination from metals and other contaminants have differing persistence in the environment. The persistence and exposure of contaminants during surface earthworks onsite during development and use of the tyre storage facility have potential to cause adverse impact on human health.

5.2 Offsite Considerations

Contamination from offsite may include:

- Impacts from scrap yard wastes from the operation to the south;
- Airborne potentially contaminated particulates (dust) from the railway and cargo;
- Dust from the quarry; and
- Dust from the storage of loose materials, soils, etc. to the north, and west.

Any potential impacts from the neighbouring scrap yard would be similar to those expected on site and outlined above. Potential impacts from dust blown from other current neighbouring activities are not known, but are likely to be of a more minor nature, albeit more dispersed and widespread.

Consideration may also need to be given to potentially contaminated groundwater and ground-gas migrating beneath the site from neighbouring uses.

6 ASSESSMENT OF SOILS

Any risks will be established following an intrusive soil assessment. It is recommended that the soil assessment is limited to the soils being excavated and relocated to the bund, and analysis based primarily on the contaminants of concern noted above.

Soil sampling must be conducted in accordance with *National Environment Protection (Assessment of Site Contamination) Measure (NEPM), Amendment to NEPM,* May 2013. Note that this document states that the site assessor should exercise professional judgement to select and develop an appropriate sampling design, based on accurate and reliable site-specific information as far as practicable to obtain sufficient representative data to address the data quality objectives.

Based on the understanding of works at the site, it is likely that the soil assessment will occur at the commencement of works on site. Management measures outlined in this EMP will protect persons working at the site and on adjacent land during any intervening period, that is, prior to the completion of the soil assessment.

7 CONTROL MEASURES

Control measures are recommended to reduce any risk as far as reasonably practicable. Control measures in order of effectiveness are:

- Isolation
- engineering controls
- administrative controls
- personal protective equipment and clothing (PPE).

A combination of measures may be used.

8 ROUTES OF CONTAMINANT EXPOSURE AND ENTRY

Major routes of potential contaminant exposure to personnel during site works have been identified as:

a) Ingestion of contaminated soils

Significant ingestion of contaminated soils will only result if Personal Hygiene requirements (eg. Washing hands prior to easting) and the wearing of Personal Protective Equipment (PPE) are not effectively carried out.

b) Skin Absorption from contact with contaminated soils

The effective use of PPE should effectively minimise any risk.

c) Inhalation of airborne contaminated soils/vapours

These can be in the form of particles, dust, fibres or fumes/vapours. Control procedures to prevent inhalation should be implemented, i.e., appropriate PPE and management of dust.

9 OFF–SITE SOIL DISPOSAL

It is understood that no soils will be disposed of offsite. However if so, soils must be classified in accordance with the EPA publication: *Classification and Management of Contaminated Soil for Disposal* and approval sought as deemed to be required.

10 MANAGEMENT OF SOILS

It is highly recommended that soil movement from insitu to bunds is placed in defined locations. That is, in the event that contaminated material is located, the material will be more easily managed. As such, material tracking documentation on soil movement must be maintained. Material tracking documentation should clearly show locations where soil was excavated, the volume excavated, where it was relocated on site.

Where any contamination is identified, the surface materials must be managed to ensure minimisation of dust and surface runoff during rainfall. The management measure may be vegetation or another form of appropriate barrier. If significant contamination is identified, offsite disposal of soils is likely to be required.

10.1 Importation of Fill Material

All fill imported to the site must meet relevant EPA Tasmanian guidance requirements. A suitably qualified environmental consultant must conduct sampling and analysis to confirm that materials are classified as clean fill material, or otherwise a report must be provided providing sufficient evidence of classification and suitability for use.

10.2 Excavation of soils

The following procedures must be adhered to during excavation/earthworks:

- Any excavation of soils must minimise dust.
- Personnel operating excavation machinery and dump trucks should avoid the inhalation of contaminated soil dusts during excavation works (eg. use of PPE).
- Personnel as far as reasonably practicable should remain in vehicle cabins with doors and windows closed to avoid inhalation of dusts.
- Appropriate hygiene measures must be implemented (eg. washing of hands).
- During excavation, soil should be excavated and used to form the bund in distinct areas.

10.3 Dust and odour control

To minimise health risk or loss of amenity due to emission of dust/odours to the environment while excavating and moving contaminated material the following measures are to be adopted:

- Generation of dust should be minimised during construction works by minimising vehicular movement in the works area and by the use of water sprays to ensure dust suppression.
- Dust should be controlled by maintaining the soil in a damp condition during excavation works.
- Where vehicle movements are offsite to public spaces, including roads, efforts should be made to ensure that the trucks leave the site in a clean condition, such that they are not depositing soil on to adjoining land or roadways.
- Under particularly dry, windy conditions dust monitoring may be considered necessary.
- A dust mask should be worn, if levels of dust are visible, or if directed by a responsible person or supervisor based on the soil assessment results from a consultant.
- Use of odour suppressants, as required.

Following the completion of earthworks, vehicle movement on site must also consider requirements for dust reduction.

10.4 Stormwater management

In addition to the generation of airborne dust, there is the potential for run-off from exposed (potentially contaminated) soil surfaces to impact on stormwater when the surface soil is disturbed and remain exposed. The following controls should be adopted for any identified contaminated soils:

- Cover exposed soils to minimise the potential for the creation of contaminated run-off from the stockpiles during rain events;
- Provide appropriate bunding (i.e. hay bales) around the perimeter of the bund to contain any run off;
- If possible, locate stockpiles/bund away from stormwater drains;
- Provide sediment traps / barriers around existing stormwater drains; and
- Ensure that excessive water is not used for dust suppression, as this can generate excessive run-off.

11 GROUNDWATER MANAGEMENT

Due to the depth, it is unlikely that groundwater will be encountered during site works. However, if encountered it could potentially be contaminated, and must therefore not be disposed of in a manner that could contaminate stormwater. In the event that impacted groundwater has to be pumped offsite, the disposal of groundwater must be conducted in accordance with an appropriate trade waste agreement or an appropriately licensed disposal facility. This will include the requirement for sampling and analysis of water.

If any odour is detected, or the groundwater rises where body contact is possible, works within the immediate area should cease and a suitably qualified consultant should be contacted to assess the water for hazardous contaminants.

12 NOISE AND VIBRATION

Contractors must effectively manage noise and vibration impacts to offsite receptors. Noise and vibration generated during the redevelopment of the site shall be kept to a minimum using best practical means inlcuding:

- Regular maintenance of equipment in order to keep it in good working condition.
- Use of the quietest plant and equipment that can practically and reasonably undertake the work.
- Adjacent residents will be notified prior to any atypical noise event outside working hours.
- Best available work practices will be employed on site to minimise occupational noise levels.
- Reducing noise where possible and appropriate by using low noise equipment, acoustic barriers and other noise abatement devices.

13 PERSONAL PROTECTIVE EQUIPMENT

PPE requirement for works involving direct contact with soils is dependent on the type and amount of any contaminants identified, the nature of the work, expected/potential exposure levels, route of entry of contaminants into the body, and actual performance of PPE. Recommended PPE includes, but is not limited to:

- Long pants & long sleeved shirt.
- Safety boots.
- Latex or nitrile gloves must be worn when in direct contact with soil.
- Dust mask.
- Protective eyewear.
- Fluorescent outer clothing (eg. vest).

Other PPE including, but not limited to, a hard hat and ear plugs must be available to all staff while on site. PPE should be inspected on a daily basis to ensure that it is in good condition and should be stored on site in a manner that it is unlikely to become contaminated.

14 INDUCTIONS

All construction personnel must attend an induction which outlines the occupational hazards and risks associated with potential for soil contamination to ensure that no harm is caused to themselves or others. Training must include:

- Review and location (availability) of the EMP,
- Visual identification of potentially contaminated soils (odour, staining, waste material).
- Results of the soils assessment (when complete),
- Use and training in the use of PPE,
- Personal Hygiene practices, and
- First aid and emergency procedures.

Ongoing training and meetings for review of work practices and safety issues should be conducted as required.

15 PERSONAL HYGIENE

Contaminated soil can be transferred from hand to mouth during activities such as smoking and eating. It is therefore important to maintain a high level of personal hygiene to reduce this route of exposure.

Good personal hygiene must be practiced at all times. Smoking, eating, or drinking within the work area is prohibited. Protective clothing must be removed and hand/face thoroughly washed with soap and water prior to eating, drinking, smoking or attending the toilet.

The following rules should be adhered to:

- No smoking or eating without washing hands.
- Washing hands with antibacterial soap wash at every work break and at the completion of the work day.
- Following the completion of daily work which involves contact with potentially contaminated soil, soiled clothing and footwear must be removed before entering the meals area or vehicles.
- Adequate wash facilities must be provided on site at all times during works.
- Potentially contaminated clothing should be removed prior to leaving the site.
- Machinery must be washed in an appropriate location (not causing contamination) prior to removal from the site.

16 IDENTIFICATION OF UNEXPECTED CONTAMINATION

In the event that unexpected contamination is identified on site (i.e. odours or stained soil, waste material eg. Building rubble, asbestos waste), the following procedures shall be adhered to:

- Worker to report finding to Supervisor or Health & Safety Officer.
- Work shall cease in the immediate affected area, signage or suitable barricades shall be installed to prevent unauthorised entry.
- Establish whether an imminent environmental hazard has occurred.
- An appropriately qualified and experienced consultant must be contacted to assess the contamination.
- In the event that asbestos material are found on site, contact an appropriately qualified and experienced consultant for appropriate control measures to be implemented.

17 SITE SECURITY

Where near surface contamination has been identified as a potential harm to human health, site entry must be restricted with fences or other barriers to protect members of the public.

18 EMERGENCY PROCEDURES

Specific procedures must be developed to ensure appropriate and effective response will be provided for a range of potential emergency situations. The site induction should cover both first aid and emergency procedures.

18.1 Emergency Events

Emergency events may include response to:

- Fire,
- Explosion,
- Medical Emergency,
- Accidents,
- Chemical spillages,
- Equipment/vehicle related accidents.

Emergency contact details: 000

19 SUMMARY

The available information is currently insufficient to be able to state whether the Site is contaminated or not. There is potential for contamination to have occurred due to the likely storage of scrapyard vehicles on the site (refer to attachment), and possibly from other earlier and neighbouring activities.

As such, it is a requirement that this EMP is implemented.

If you have any queries, please contact Jane Foster on 0385450434 or 0439633951.

Yours truly,

JANE FOSTER
Team Leader - Environment

Attachment – Site Plan

20 REFERENCES

AS 4482.1-2005, *Guide to the sampling and investigation of potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*, Standards Australia, 2005.

AS 4482.2-2005, *Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile compounds*, Standards Australia, 2005.

Environmental Management and Pollution Control (Waste Management) Regulations 2010.

Information Bulletin No. 105 *Classification and Management of Contaminated Soil for Disposal*, Environment Protection Authority Tasmania, November 2012 (IB105).

National Environment Protection (Assessment of Site Contamination) Measure, 1999 made by the National Environment Protection Council under the National Environment Protection Act 1994 (Commonwealth), amended in May 2013 (ASC NEPM).

Work Health and Safety Act 2012, WorkSafe, Tasmanian Government

Work Health and Safety Regulations 2012, WorkSafe, Tasmanian Government

BUND STORAGE - TYPICAL SECTION
SCALE 1:100

6ty°

Postal Address
PO Box 63
Riverside
Tasmania 7250
W 6ty.com.au
E admin@6ty.com.au

6ty Pty Ltd
ABN 27 014 609 900

Architectural
ABP No. CC48/41
Structural / Civil
ABP No. CC1633

Tamar Suite 103
The Charles
287 Charles Street
Launceston Tasmania
P (03) 6332 3300

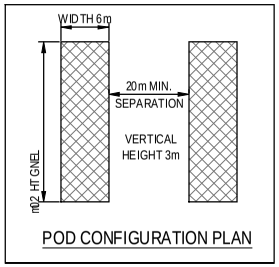
57 Best Street
Devonport Tasmania
P (03) 6424 7161

CARPARK

CARPARK IS TO BE FORMED AND PAVED WITH A COMPACTED GRAVEL PRODUCT TO CREATE AN IMPERVIOUS ALL WEATHER SEAL

- STORMWATER IS TO BE DIRECTED TO THE RETICULATEDPUBLIC DRAINAGE SYSTEM IN CALVARY ROAD
- EACH PARKING SPACE IS TO BE 5.4m x 2.6m AND CLEARLY MARKED WITH A TIMBER POST AT THE END OF EACH BAY
- THE AISLE WIDTH BETWEEN PARKING BAYS SHALL BE 6.0m WIDE

ISSUE	DATE	ISSUED FOR	REV.
01	7.12.16	INFORMATION	A



POD CONFIGURATION PLAN

N

DIMENSIONS ARE IN METRES. DO NOT SCALE. CHECK AND VERIFY ALL DIMENSIONS ON SITE. REFER DISCREPANCIES TO THE SUPERINTENDENT. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH: APPLICABLE AUSTRALIAN STANDARDS & LOCAL AUTHORITY REQUIREMENTS.

PROJECT: TYRE RECYCLE TASMANIA
PROJECT: RECYCLING AND WASTE
AT: 8 CALVARY ROAD
AT: MOWBRAY
FOR:

DRAWING: SITE PLAN

DESIGNED: H.M.G. DRAWN: M.C.V. CHECKED: P.M.W.

SCALES: 1:1000 AT A1 SIZE DRAWING SHEET

PROJECT No 15.242 DRAWING No. C60 REV. A

Appendix F

Natural Values Report

Natural Values Atlas Report

Authoritative, comprehensive information on Tasmania's natural values.

Reference:
Requested For: Land Use Planning
Report Type: Summary Report
Timestamp: 07:07:07 PM Monday 27 November 2017

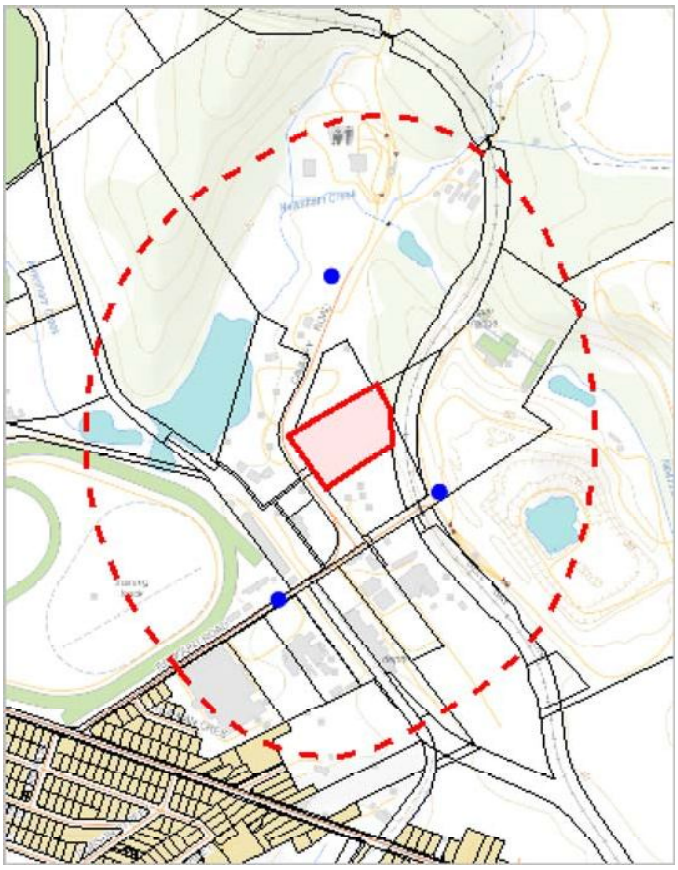
Threatened Flora: buffers Min: 500m Max: 5000m
Threatened Fauna: buffers Min: 500m Max: 5000m
Raptors: buffers Min: 500m Max: 5000m
Tasmanian Weed Management Act Weeds: buffers Min: 500m Max: 5000m
Priority Weeds: buffers Min: 500m Max: 5000m
Geoconservation: buffer 1000m
Acid Sulfate Soils: buffer 1000m
TASVEG: buffer 1000m
Threatened Communities: buffer 1000m
Fire History: buffer 1000m
Tasmanian Reserve Estate: buffer 1000m
Biosecurity Risks: buffer 1000m

The centroid for this query GDA94: **512439.0, 5416586.0** falls within:

Property: 1911017

Threatened flora within 500 metres

513051, 5417383



511802, 5415790

Please note that some layers may not display at all requested map scales

Threatened flora within 500 metres

Legend: Verified and Unverified observations

Legend: Cadastral Parcels

Threatened flora within 500 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Austrostipa bigeniculata	doublejointed speargrass	r		n	1	17-Jun-1996
Calystegia sepium	swamp bindweed	r		n	1	01-Jan-1880
Pultenaea prostrata	silky bushpea	v		n	1	01-Nov-1921

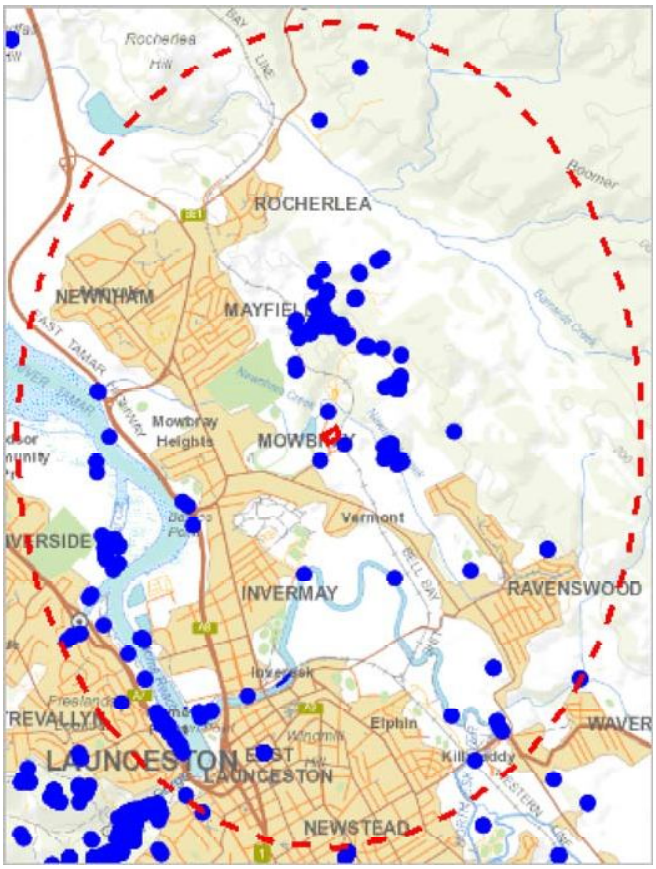
Unverified Records

No unverified records were found!

For more information about threatened species, please Threatened Species Enquiries.
Telephone: (03) 6165 4340
Email: ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Threatened flora within 5000 metres

516428, 5421886



508410, 5411287

Please note that some layers may not display at all requested map scales

Threatened flora within 5000 metres

Legend: Verified and Unverified observations

- Point Verified
- Point Unverified
- Line Verified
- Line Unverified
- Polygon Verified
- Polygon Unverified

Legend: Cadastral Parcels

Threatened flora within 5000 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Acacia siculiformis	dagger wattle	r		n	1	16-Jul-1996
Alternanthera denticulata	lesser joyweed	e		n	14	15-Feb-2015
Aphelia gracilis	slender fanwort	r		n	1	18-Nov-2011
Aphelia pumilio	dwarf fanwort	r		n	8	06-Nov-2009
Austrostipa bigeniculata	doublejointed speargrass	r		n	1	17-Jun-1996
Bolboschoenus caldwellii	sea clubsedge	r		n	15	20-Jan-2010
Brunonia australis	blue pincushion	r		n	36	21-Nov-2016
Caesia calliantha	blue grasslily	r		n	4	27-Oct-2016
Caladenia filamentosa	daddy longlegs	r		n	1	01-Oct-1841
Caladenia patersonii	patersons spider-orchid	v		n	1	30-Sep-1946
Callitris oblonga subsp. oblonga	south esk pine	v	EN	e	2	12-Sep-1953
Calocephalus lacteus	milky beautyheads	r		n	1	24-Dec-1844
Calystegia sepium	swamp bindweed	r		n	43	17-Feb-2017
Carex gunniana	mountain sedge	r		n	2	15-Dec-2009
Damasonium minus	starfruit	r		n	1	10-Apr-2000
Deyeuxia lawrencei	lawrences bentgrass	x	EX	ex	1	01-Jan-1831
Dianella amoena	grassland flaxlily	r	EN	n	6	16-Feb-2010
Diuris palustris	swamp doubletail	e		n	1	09-Oct-1843
Epacris exserta	south esk heath	e	PEN	e	4	21-Aug-1938
Epilobium pallidiflorum	showy willowherb	r		n	2	12-Dec-2009
Euphrasia scabra	yellow eyebright	e		n	1	21-Nov-1887
Gynatrix pulchella	fragrant hempbush	r		n	1	01-Oct-1994
Gyrostemon thesioides	broom wheelfruit	r		n	4	18-Nov-2011
Haloragis heterophylla	variable raspwort	r		n	19	14-Nov-2012
Hovea tasmanica	rockfield purplepea	r		e	1	15-Sep-1911
Hypolepis muelleri	harsh groundfern	r		n	1	10-Mar-1981
Juncus amabilis	gentle rush	r		n	20	18-Nov-2011
Lycopus australis	australian gypsywort	e		n	12	15-Feb-2015
Lythrum salicaria	purple loosestrife	v		n	9	15-Feb-2015
Mentha australis	river mint	e		n	1	01-Dec-1886
Parietaria debilis	shade pellitory	r		n	1	01-Jan-1896
Persicaria subsessilis	bristly waterpepper	e		n	7	15-Feb-2015
Pilularia novae-hollandiae	australian pillwort	r		n	1	01-Jan-1990
Poa mollis	soft tussockgrass	r		e	3	23-Jan-2017
Prostanthera cuneata	alpine mintbush	x		x	2	03-Feb-1840
Pultenaea prostrata	silky bushpea	v		n	1	01-Nov-1921
Rumex bidens	mud dock	v		n	3	18-Jan-2009
Schenkia australis	spike centaury	r		n	2	29-Nov-1990
Schoenoplectus tabernaemontani	river clubsedge	r		n	4	17-Feb-2017
Scutellaria humilis	dwarf skullcap	r		n	1	28-Dec-1937
Senecio campylocarpus	bulging fireweed	v		n	5	21-Mar-2011
Senecio squarrosus	leafy fireweed	r		n	3	06-Nov-2001
Spyridium eriocephalum var. eriocephalum	heath dustymiller	e		n	3	20-Oct-1880
Spyridium vexilliferum var. vexilliferum	helicopter bush	r		n	3	27-Nov-1938
Tetratheca ciliata	northern pinkbells	r		n	1	01-Jan-1896
Teucrium corymbosum	forest germander	r		n	19	08-Dec-2011
Utricularia australis	yellow bladderwort	r		n	2	01-Jan-1962
Veronica plebeia	trailing speedwell	r		n	3	18-Nov-2011
Vittadinia gracilis	woolly new-holland-daisy	r		n	1	01-Jan-1868
Xerochrysum bicolor	eastcoast paperdaisy	r		n	1	01-Nov-1863

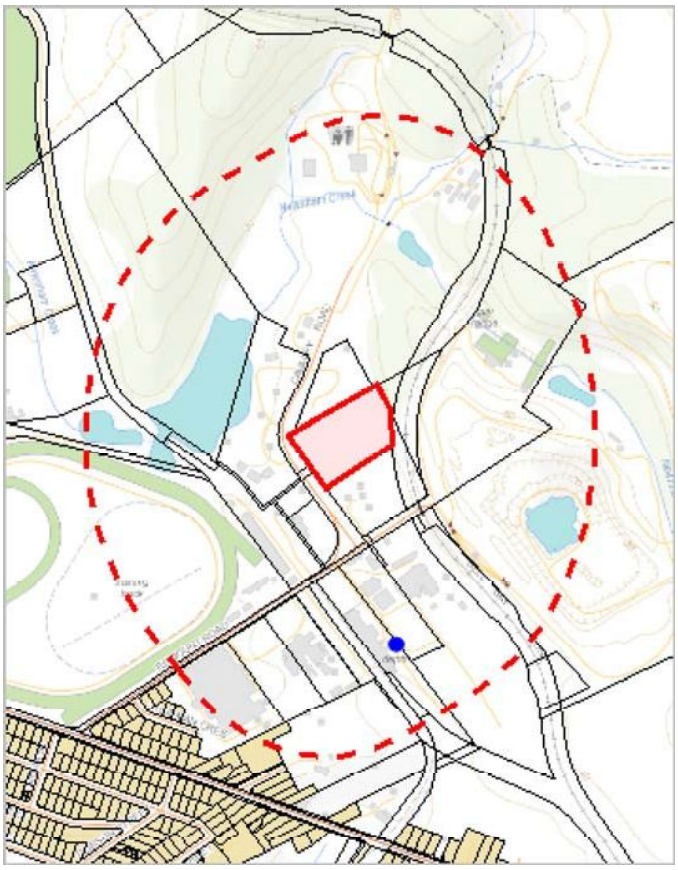
Unverified Records

No unverified records were found!

For more information about threatened species, please Threatened Species Enquiries.
Telephone: (03) 6165 4340
Email: ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Threatened fauna within 500 metres

513051, 5417383



511802, 5415790

Please note that some layers may not display at all requested map scales

Threatened fauna within 500 metres

Legend: Verified and Unverified observations

- Point Verified
- Point Unverified
- Line Verified
- Line Unverified
- Polygon Verified
- Polygon Unverified

Legend: Cadastral Parcels

Threatened fauna within 500 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	1	29-Mar-2017

Unverified Records

No unverified records were found!

Threatened fauna within 500 metres

(based on Range Boundaries)

Species	Common Name	SS	NS	BO	Potential	Known	Core
Litoria raniformis	green and gold frog	v	VU	n	1	0	1
Pseudemoia pagenstecheri	tussock skink	v		n	1	0	0
Dasyurus maculatus	spotted-tailed quoll	r	VU	n	1	0	0
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	1	0	0
Limnodynastes peroni	striped marsh frog	e		n	1	0	0
Aquila audax	wedge-tailed eagle	pe	PEN	n	1	0	0
Tyto novaehollandiae	masked owl	pe	PVU	n	1	0	1
Perameles gunnii	eastern barred bandicoot		VU	n	1	0	1
Dasyurus viverrinus	eastern quoll		EN	n	0	0	1
Prototroctes maraena	australian grayling	v	VU	n	1	0	0
Sarcophilus harrisii	tasmanian devil	e	EN	e	1	0	0
Accipiter novaehollandiae	grey goshawk	e		n	1	0	0
Haliaeetus leucogaster	white-bellied sea-eagle	v		n	2	0	0
Pasmaditta jungermanniae	snail (cataract gorge)	v		e	1	0	0

For more information about threatened species, please Threatened Species Enquiries.

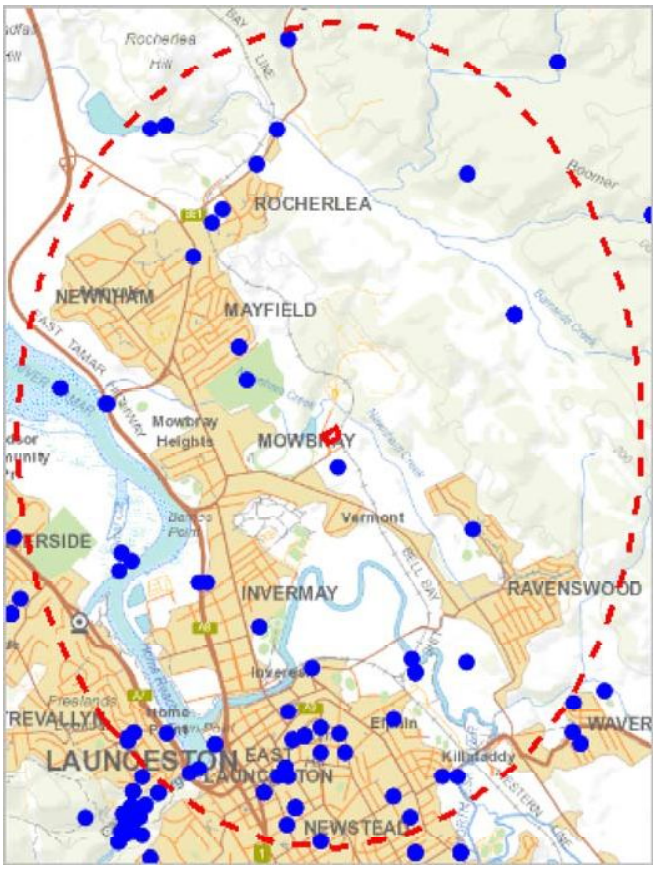
Telephone: (03) 6165 4340

Email: ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Threatened fauna within 5000 metres

516428, 5421886



508410, 5411287

Please note that some layers may not display at all requested map scales

Threatened fauna within 5000 metres

Legend: Verified and Unverified observations

- Point Verified
- Point Unverified
- Line Verified
- Line Unverified
- Polygon Verified
- Polygon Unverified

Legend: Cadastral Parcels

Threatened fauna within 5000 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Accipiter novaehollandiae	grey goshawk	e		n	6	24-May-2017
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	17	29-Mar-2017
Botaurus poiciloptilus	australasian bittern		EN	n	1	30-Apr-1999
Dasyurus maculatus subsp. maculatus	spotted-tailed quoll	r	VU	n	4	06-Feb-2017
Dasyurus viverrinus	eastern quoll		EN	n	6	21-May-1996
Eagle sp.	Eagle	e	EN	n	2	14-Oct-2004
Haliaeetus leucogaster	white-bellied sea-eagle	v		n	8	23-Sep-2017
Lathamus discolor	swift parrot	e	CR	mbe	16	10-Sep-2011
Litoria raniformis	green and gold frog	v	VU	n	7	08-Nov-2014
Migas plomleyi	spider (cataract gorge) or Plomley's trapdoor spider	e			3	08-May-2001
Perameles gunnii	eastern barred bandicoot		VU	n	3	15-Oct-2015
Prototroctes maraena	australian grayling	v	VU	n	3	05-Dec-2001
Pteropus poliocephalus	grey-headed flying-fox		VU	n	2	05-May-2010
Sarcophilus harrisii	tasmanian devil	e	EN	e	9	16-Feb-2017
Thylacinus cynocephalus	thylacine	x	EX	ex	1	02-Jun-1972
Tyto novaehollandiae	masked owl	pe	PVU	n	5	01-Dec-1999

Unverified Records

No unverified records were found!

Threatened fauna within 5000 metres

(based on Range Boundaries)

Species	Common Name	SS	NS	BO	Potential	Known	Core
Litoria raniformis	green and gold frog	v	VU	n	1	0	1
Migas plomleyi	spider (cataract gorge) or Plomley's trapdoor spider	e			1	0	0
Pseudemoia pagenstecheri	tussock skink	v		n	1	0	0
Dasyurus maculatus	spotted-tailed quoll	r	VU	n	1	0	0
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	1	0	0
Limnodynastes peroni	striped marsh frog	e		n	1	0	0
Aquila audax	wedge-tailed eagle	pe	PEN	n	1	0	0
Antipodia chaostola	chaostola skipper	e	EN		1	0	0
Galaxiella pusilla	eastern dwarf galaxias	v	VU	n	1	0	0
Galaxias fontanus	swan galaxias	e	EN	e	1	0	0
Tyto novaehollandiae	masked owl	pe	PVU	n	1	0	1
Perameles gunnii	eastern barred bandicoot		VU	n	1	0	1
Dasyurus viverrinus	eastern quoll		EN	n	0	0	1
Pseudemoia rawlinsoni	glossy grass skink	r		n	0	0	1
Beddomeia launcestonensis	hydrobiid snail (cataract gorge)	e		e	0	1	0
Prototroctes maraena	australian grayling	v	VU	n	2	0	0
Sarcophilus harrisii	tasmanian devil	e	EN	e	1	0	0
Accipiter novaehollandiae	grey goshawk	e		n	1	0	0
Haliaeetus leucogaster	white-bellied sea-eagle	v		n	2	0	0
Catadromus lacordairei	Green-lined ground beetle	v		n	1	0	0
Pasmaditta jungermanniae	snail (cataract gorge)	v		e	1	1	0

For more information about threatened species, please Threatened Species Enquiries.

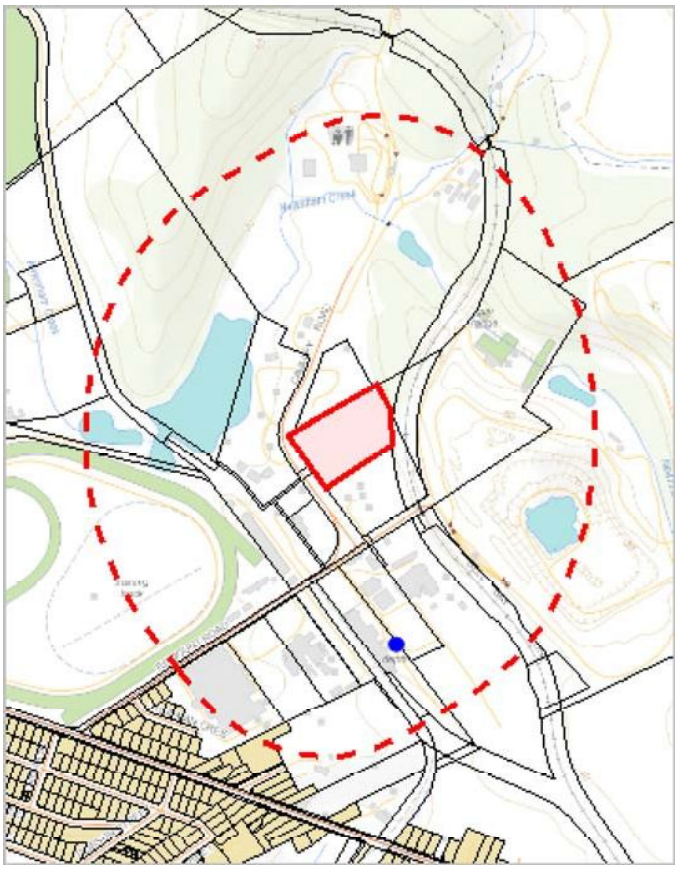
Telephone: (03) 6165 4340

Email: ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Raptor nests and sightings within 500 metres

513051, 5417383



511802, 5415790

Please note that some layers may not display at all requested map scales

Raptor nests and sightings within 500 metres

Legend: Verified and Unverified observations

Legend: Cadastral Parcels

Raptor nests and sightings within 500 metres

Verified Records

Nest Id/Location Foreign Id	Species	Common Name	Obs Type	Observation Count	Last Recorded
	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Sighting	1	29-Mar-2017

Unverified Records

No unverified records were found!

Raptor nests and sightings within 500 metres

(based on Range Boundaries)

Species	Common Name	SS	NS	Potential	Known	Core
Aquila audax	wedge-tailed eagle	pe	PEN	1	0	0
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	1	0	0
Tyto novaehollandiae	masked owl	pe	PVU	1	0	1
Haliaeetus leucogaster	white-bellied sea-eagle	v		2	0	0
Accipiter novaehollandiae	grey goshawk	e		1	0	0

For more information about raptor nests, please contact Threatened Species Enquiries.

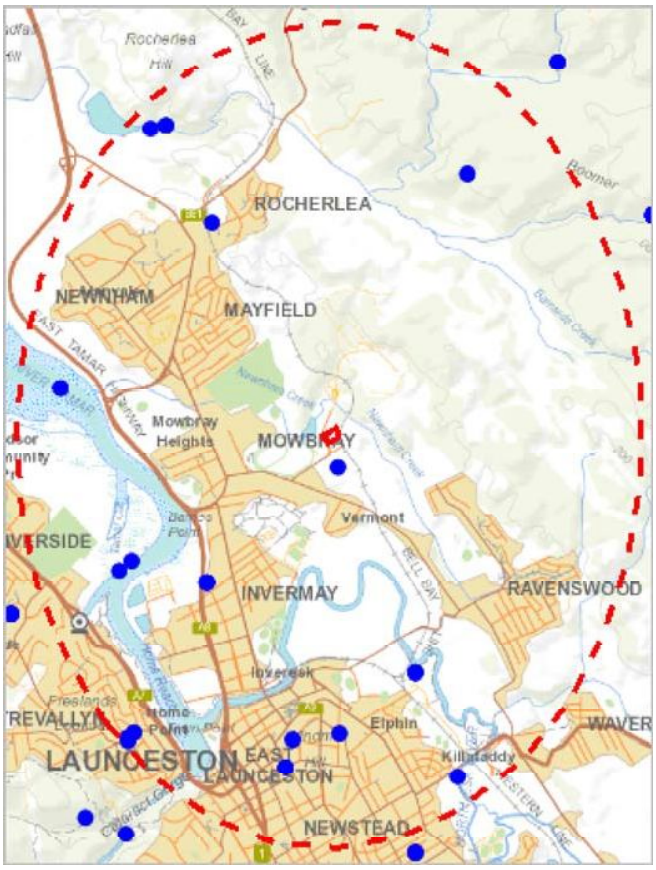
Telephone: (03) 6165 4340

Email: ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Raptor nests and sightings within 5000 metres

516428, 5421886



508410, 5411287

Please note that some layers may not display at all requested map scales

Raptor nests and sightings within 5000 metres

Legend: Verified and Unverified observations

- Point Verified
- Point Unverified
- Line Verified
- Line Unverified
- Polygon Verified
- Polygon Unverified

Legend: Cadastral Parcels

Raptor nests and sightings within 5000 metres

Verified Records

Nest Id/Location Foreign Id	Species	Common Name	Obs Type	Observation Count	Last Recorded
1175	Eagle sp.	Eagle	Nest	2	14-Oct-2004
1648	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Nest	2	15-Dec-2008
1801	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Nest	1	14-Sep-2009
1802	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Nest	2	25-Jun-2015
1803	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Nest	1	25-Jun-2015
2150	Haliaeetus leucogaster	white-bellied sea-eagle	Nest	1	15-Jun-2014
2260	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Nest	1	10-Sep-2015
877	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Nest	8	25-Jun-2015
	Accipiter novaehollandiae	grey goshawk	Carcass	1	15-Nov-2015
	Accipiter novaehollandiae	grey goshawk	Sighting	5	24-May-2017
	Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	Sighting	2	29-Mar-2017
	Falco longipennis	australian hobby	Sighting	2	02-Nov-1995
	Haliaeetus leucogaster	white-bellied sea-eagle	Sighting	7	23-Sep-2017
	Tyto novaehollandiae	masked owl	Sighting	5	01-Dec-1999

Unverified Records

No unverified records were found!

Raptor nests and sightings within 5000 metres

(based on Range Boundaries)

Species	Common Name	SS	NS	Potential	Known	Core
Aquila audax	wedge-tailed eagle	pe	PEN	1	0	0
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	1	0	0
Tyto novaehollandiae	masked owl	pe	PVU	1	0	1
Haliaeetus leucogaster	white-bellied sea-eagle	v		2	0	0
Accipiter novaehollandiae	grey goshawk	e		1	0	0

For more information about raptor nests, please contact Threatened Species Enquiries.

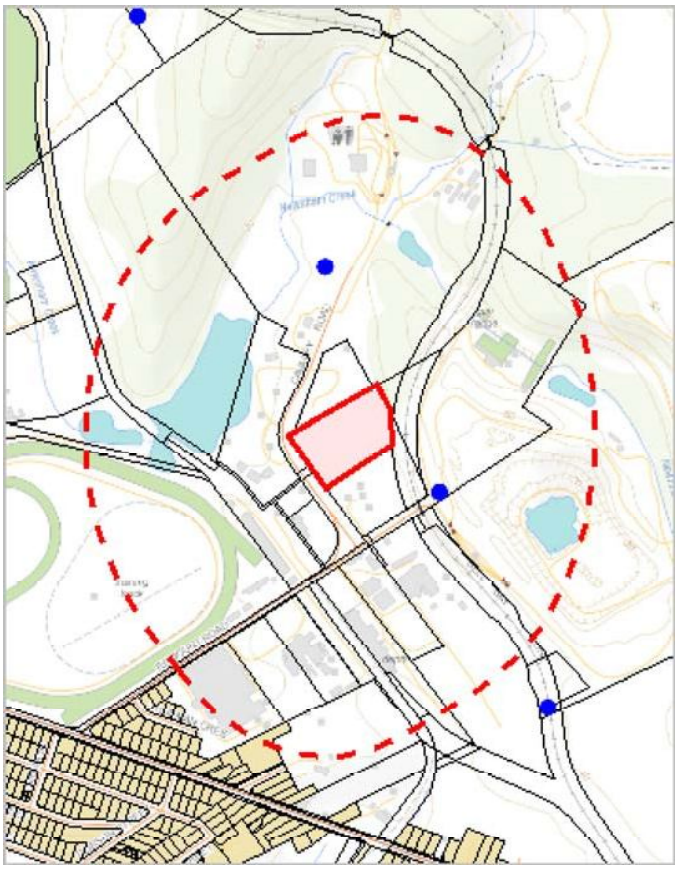
Telephone: (03) 6165 4340

Email: ThreatenedSpecies.Enquiries@dpipwe.tas.gov.au

Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Tas Management Act Weeds within 500 m

513051, 5417383



511802, 5415790

Please note that some layers may not display at all requested map scales

Tas Management Act Weeds within 500 m

Legend: Verified and Unverified observations

- Point Verified
- Point Unverified
- Line Verified
- Line Unverified
- Polygon Verified
- Polygon Unverified

Legend: Cadastral Parcels

Tas Management Act Weeds within 500 m

Verified Records

Species	Common Name	Observation Count	Last Recorded
Datura ferox	longspine thornapple	1	01-Feb-2005
Foeniculum vulgare	fennel	1	01-Feb-2005
Rubus fruticosus	blackberry	1	17-Jun-1996
Ulex europaeus	gorse	1	17-Jun-1996

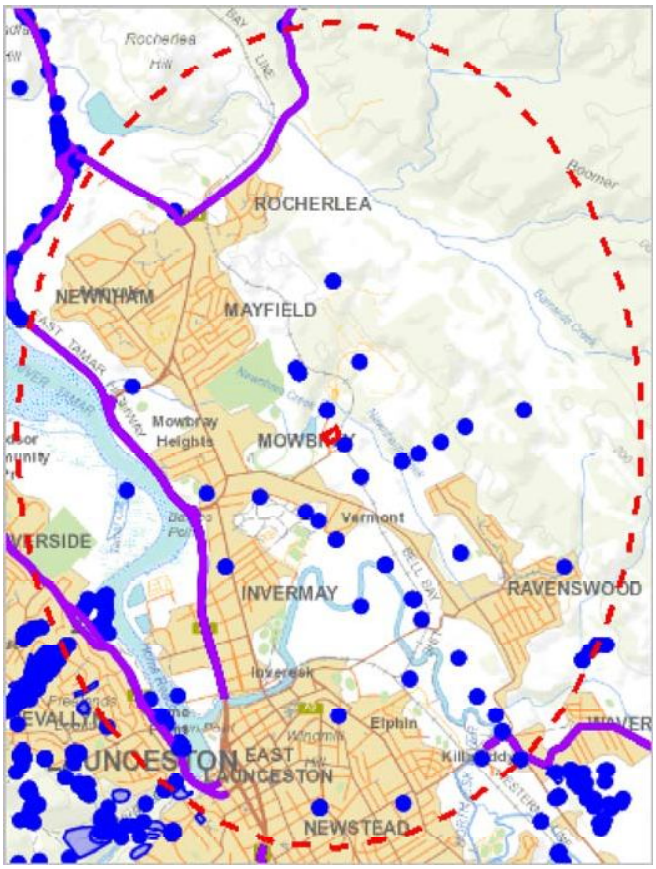
Unverified Records

For more information about introduced weed species, please visit the following URL for contact details in your area:

http://dpipwe.tas.gov.au/invasive-species/weeds

Tas Management Act Weeds within 5000 m

516428, 5421886



508410, 5411287

Please note that some layers may not display at all requested map scales

Tas Management Act Weeds within 5000 m

Legend: Verified and Unverified observations

- Point Verified
- Point Unverified
- Line Verified
- Line Unverified
- Polygon Verified
- Polygon Unverified

Legend: Cadastral Parcels

Tas Management Act Weeds within 5000 m

Verified Records

Species	Common Name	Observation Count	Last Recorded
Anthemis cotula	stinking chamomile	1	29-Apr-2010
Asparagus asparagoides	bridal creeper	6	01-Jun-2008
Asphodelus fistulosus	onion weed	1	20-Jun-2001
Carduus pycnocephalus	slender thistle	3	12-Jul-2011
Carduus tenuiflorus	winged thistle	1	05-Nov-2009
Chrysanthemoides monilifera subsp. monilifera	boneseed	46	13-Apr-2011
Cortaderia jubata	pink pampasgrass	2	08-Jan-1995
Cortaderia selloana	silver pampasgrass	5	12-Jul-2011
Cortaderia sp.	pampas grass	1	10-Feb-2016
Cytisus scoparius	english broom	4	10-Jun-2010
Datura ferox	longspine thornapple	1	01-Feb-2005
Datura stramonium	common thornapple	2	06-Mar-2015
Echium plantagineum	patersons curse	2	17-Nov-2016
Echium vulgare	vipers bugloss	1	01-Jan-1878
Erica lusitanica	spanish heath	3	01-May-2008
Foeniculum vulgare	fennel	3	01-May-2008
Genista monspessulana	montpellier broom	6	14-Jan-2010
Lepidium draba	hoary cress	1	12-Nov-1963
Marrubium vulgare	white horehound	1	03-Mar-2009
Rubus fruticosus	blackberry	89	12-Jul-2011
Salix x fragilis nothovar. fragilis	crack willow	24	27-Oct-2009
Salix x sepulcralis nothovar. chrysocoma	golden weeping willow	1	20-Nov-2006
Senecio jacobaea	ragwort	5	12-Jul-2011
Ulex europaeus	gorse	66	12-Jul-2011
Xanthium spinosum	bathurst burr	1	29-Mar-2000

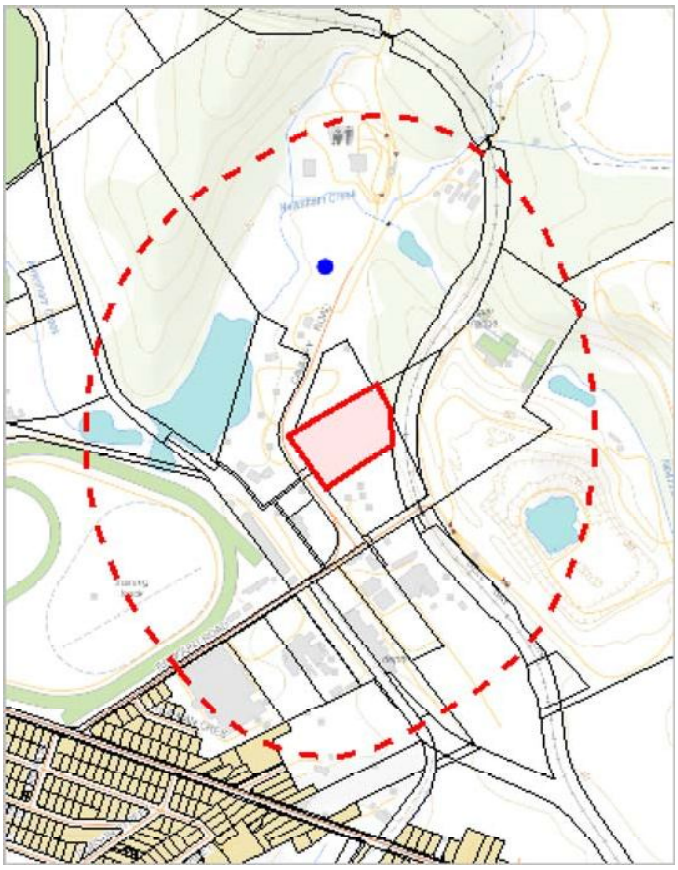
Unverified Records

For more information about introduced weed species, please visit the following URL for contact details in your area:

http://dpipwe.tas.gov.au/invasive-species/weeds

Priority Weeds within 500 m

513051, 5417383



511802, 5415790

Please note that some layers may not display at all requested map scales

Priority Weeds within 500 m

Legend: Verified and Unverified observations

Legend: Cadastral Parcels

Priority Weeds within 500 m

Verified Records

Species	Common Name	Observation Count	Last Recorded
Dipsacus fullonum	wild teasel	1	01-Feb-2005

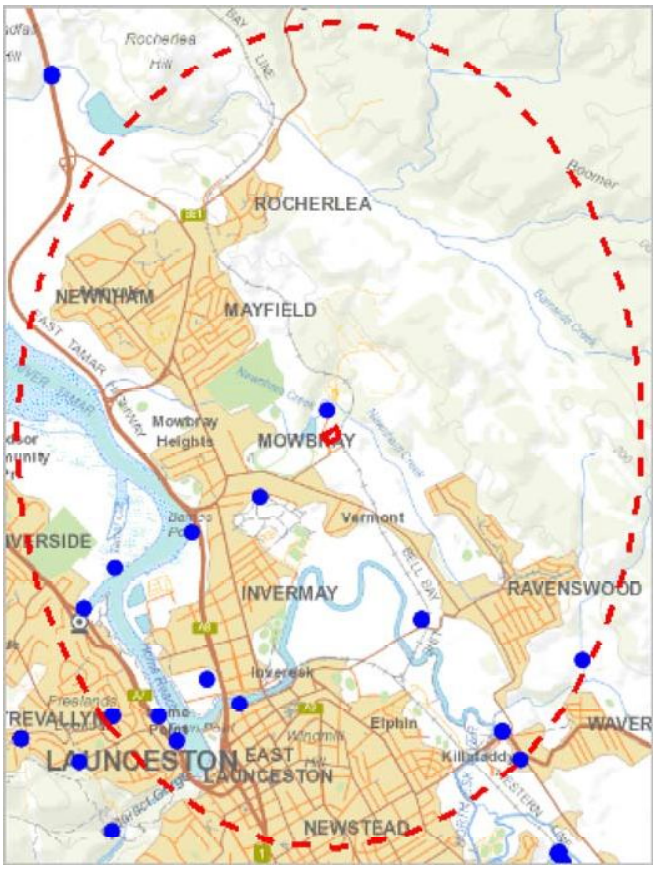
Unverified Records

For more information about introduced weed species, please visit the following URL for contact details in your area:

http://dpipwe.tas.gov.au/invasive-species/weeds

Priority Weeds within 5000 m

516428, 5421886



508410, 5411287

Please note that some layers may not display at all requested map scales

Priority Weeds within 5000 m

Legend: Verified and Unverified observations

Legend: Cadastral Parcels

Priority Weeds within 5000 m

Verified Records

Species	Common Name	Observation Count	Last Recorded
Acacia baileyana	cootamundra wattle	4	10-Jun-2010
Achillea millefolium	yarrow	1	01-Feb-1971
Dipsacus fullonum	wild teasel	2	29-Apr-2010
Iris pseudacorus	yellow flag iris	1	14-Dec-2010
Juncus acutus	sharp rush	1	18-Jan-2009
Prunus laurocerasus	cherry laurel	1	13-Feb-2009
Rumex obtusifolius	broadleaf dock	1	29-Apr-2010
Spartina anglica	common cordgrass	3	13-Feb-2009
Tradescantia fluminensis	wandering creeper	2	12-Feb-2002
Verbascum thapsus	great mullein	2	10-Jun-2010
Watsonia meriana var. bulbillifera	bulbil watsonia	1	01-Nov-2015

Unverified Records

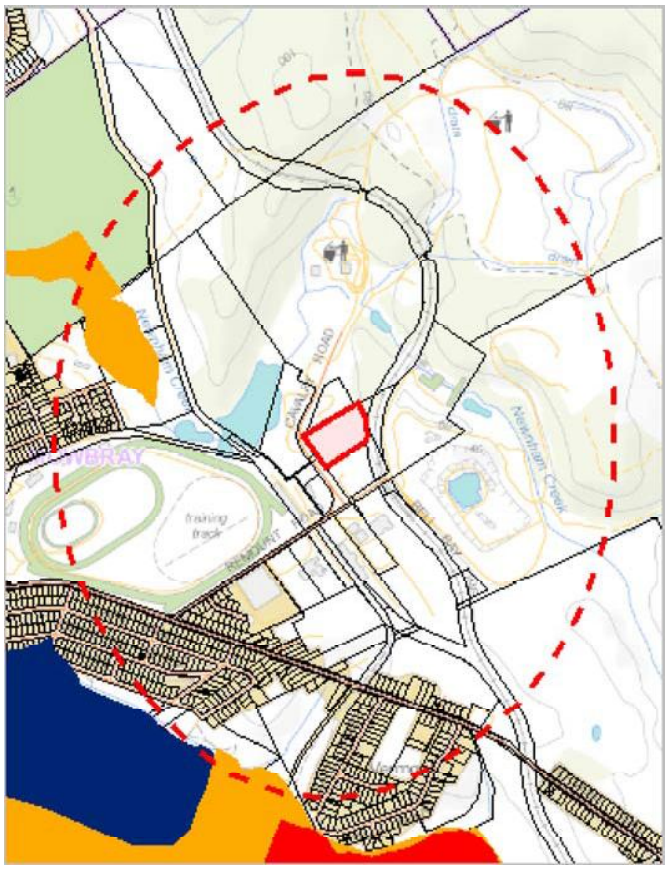
For more information about introduced weed species, please visit the following URL for contact details in your area:

http://dpipwe.tas.gov.au/invasive-species/weeds

***** No Geoconservation sites found within 1000 metres. *****

Acid Sulfate Soils within 1000 metres

513426, 5417884



511425, 5415290

Please note that some layers may not display at all requested map scales

Acid Sulfate Soils within 1000 metres

Legend: Coastal Acid Sulfate Soils (0 - 20m AHD)

High | Low | Extremely Low

Legend: Inland Acid Sulfate Soils (>20m AHD)

High | Low | Extremely Low

Legend: Marine Subaqueous/Intertidal Acid Sulfate Soil

High (Intertidal) | High (Subtidal)

Legend: Cadastral Parcels

Acid Sulfate Soils within 1000 metres

Dataset Name	Acid Sulfate Soil Probability	Acid Sulfate Soil Atlas	Description
Coastal Acid Sulfate Soils	Extremely Low	Cx(p3)	Extremely low probability of occurance (1-5% of mapping unit). with occurences in small areas. Disturbed ASS terrain, ASS material present below urban development, or present in former tidal zones inside bund walls e.g dredge spoil etc. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.
Coastal Acid Sulfate Soils	Low	Bg(p3)	Low probability of occurance (6-70% chance of occurrence in mapping unit). Floodplains >4m AHD, ASS generally below 3m from the surface.generally forests. Includes plains and levees. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.
Coastal Acid Sulfate Soils	Low	Bi(p3)	Low probability of occurance (6-70% chance of occurrence in mapping unit). Sandplains and dunes 2-10m AHD, ASS generally below 1m from the surface. Heath, forests. Holocene or Pleistocene. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.
Coastal Acid Sulfate Soils	Low	Bx(p3)	Low probability of occurance (6-70% chance of occurrence in mapping unit). Disturbed ASS terrain, ASS material present below urban development, or present in former tidal zones inside bund walls e.g dredge spoil etc. Potential acid sulfate soil (PASS) = sulfidic material (Isbell 1996 p.122). No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments.

For more information about Acid Sulfate Soils, please contact Land Management Enquiries.

Telephone: (03) 6777 2227

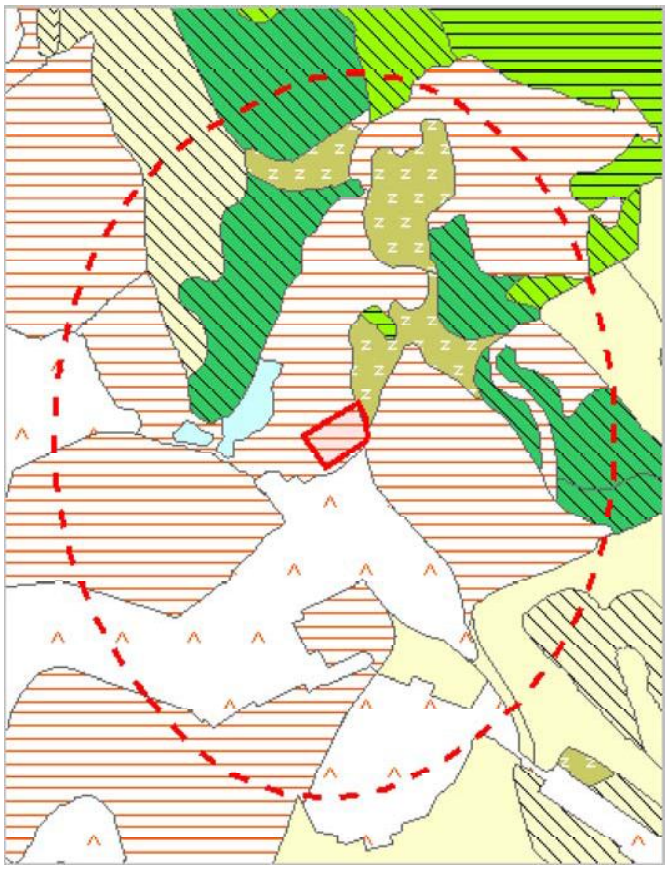
Fax: (03) 6336 5111

Email: LandManagement.Enquiries@dpipwe.tas.gov.au

Address: 171 Westbury Road, Prospect, Tasmania, Australia, 7250

TASVEG 3.0 Communities within 1000 metres

513426, 5417884



511425, 5415290

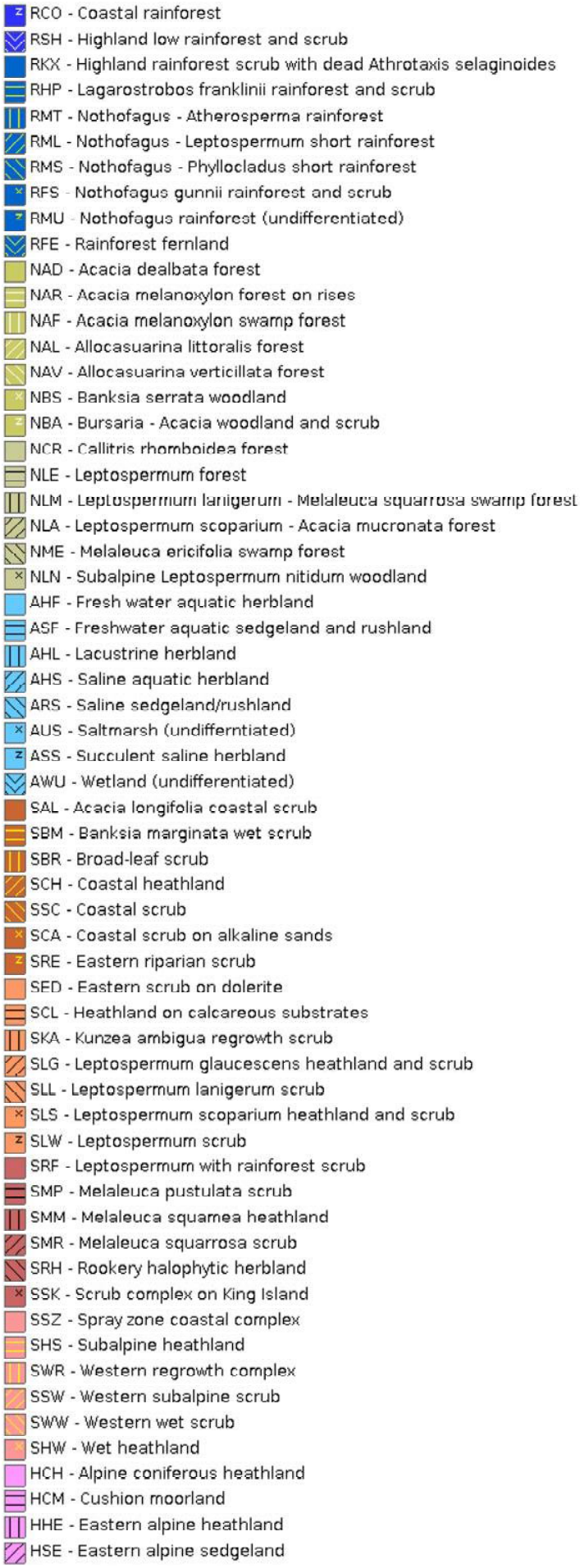
Please note that some layers may not display at all requested map scales

TASVEG 3.0 Communities within 1000 metres

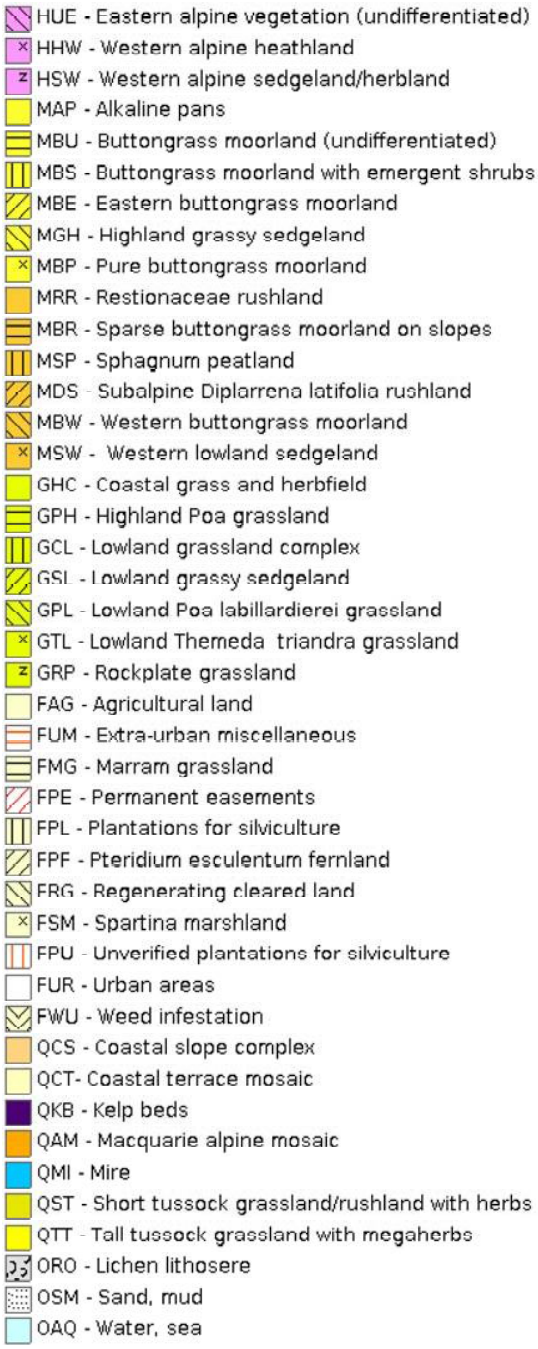
Legend: TASVEG 3.0

- DAC - Eucalyptus amygdalina coastal forest and woodland
- DAD - Eucalyptus amygdalina forest and woodland on dolerite
- DAS - Eucalyptus amygdalina forest and woodland on sandstone
- DAM - Eucalyptus amygdalina forest on mudstone
- DAZ - Eucalyptus amygdalina inland forest and woodland on Cainozoic deposits
- DSC - Eucalyptus amygdalina - Eucalyptus obliqua damp sclerophyll forest
- DBA - Eucalyptus barberi forest and woodland
- DCO - Eucalyptus coccifera forest and woodland
- DCR - Eucalyptus cordata forest
- DDP - Eucalyptus dalrympleana - Eucalyptus pauciflora forest and woodland
- DDE - Eucalyptus delegatensis dry forest and woodland
- DGL - Eucalyptus globulus dry forest and woodland
- DGW - Eucalyptus gunnii woodland
- DMO - Eucalyptus morrisbyi forest and woodland
- DNI - Eucalyptus nitida dry forest and woodland
- DNF - Eucalyptus nitida Furneaux forest
- DOB - Eucalyptus obliqua dry forest
- DOV - Eucalyptus ovata forest and woodland
- DOW - Eucalyptus ovata heathy woodland
- DPO - Eucalyptus pauciflora forest and woodland not on dolerite
- DPD - Eucalyptus pauciflora forest and woodland on dolerite
- DPE - Eucalyptus perriniana forest and woodland
- DPU - Eucalyptus pulchella forest and woodland
- DRI - Eucalyptus risdonii forest and woodland
- DRO - Eucalyptus rodwayi forest and woodland
- DSO - Eucalyptus sieberi forest and woodland not on granite
- DSG - Eucalyptus sieberi forest and woodland on granite
- DTD - Eucalyptus tenuiramis forest and woodland on dolerite
- DTG - Eucalyptus tenuiramis forest and woodland on granite
- DTO - Eucalyptus tenuiramis forest and woodland on sediments
- DVF - Eucalyptus viminalis Furneaux forest and woodland
- DVG - Eucalyptus viminalis grassy forest and woodland
- DVC - Eucalyptus viminalis - Eucalyptus globulus coastal forest and woodland
- DKW - King Island Eucalypt woodland
- DMW - Midlands woodland complex
- WBR - Eucalyptus brookeriana wet forest
- WDA - Eucalyptus dalrympleana forest
- WDL - Eucalyptus delegatensis forest over Leptospermum
- WDR - Eucalyptus delegatensis forest over rainforest
- WDB - Eucalyptus delegatensis forest with broad-leaf shrubs
- WDU - Eucalyptus delegatensis wet forest (undifferentiated)
- WGK - Eucalyptus globulus King Island forest
- WGL - Eucalyptus globulus wet forest
- WNL - Eucalyptus nitida forest over Leptospermum
- WNR - Eucalyptus nitida forest over rainforest
- WNU - Eucalyptus nitida wet forest (undifferentiated)
- WOL - Eucalyptus obliqua forest over Leptospermum
- WOR - Eucalyptus obliqua forest over rainforest
- WOB - Eucalyptus obliqua forest with broad-leaf shrubs
- WOU - Eucalyptus obliqua wet forest (undifferentiated)
- WRE - Eucalyptus regnans forest
- WSU - Eucalyptus subcrenulata forest and woodland
- WVI - Eucalyptus viminalis wet forest
- RPF - Athrotaxis cupressoides - Nothofagus gunnii short rainforest
- RPW - Athrotaxis cupressoides open woodland
- RPP - Athrotaxis cupressoides rainforest
- RKF - Athrotaxis selaginoides - Nothofagus gunnii short rainforest
- RKP - Athrotaxis selaginoides rainforest
- RKS - Athrotaxis selaginoides subalpine scrub

TASVEG 3.0 Communities within 1000 metres



TASVEG 3.0 Communities within 1000 metres



Legend: Cadastral Parcels

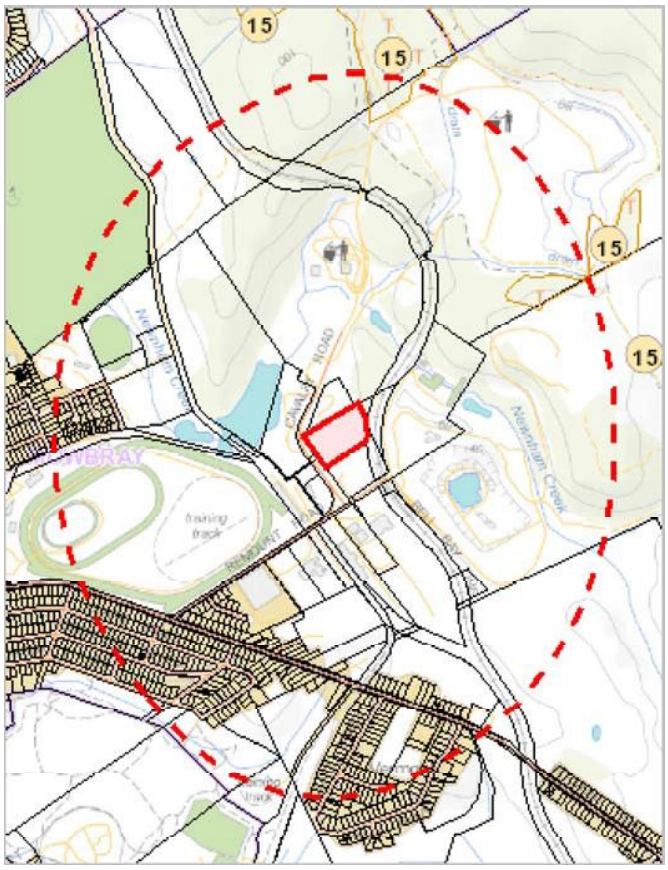
TASVEG 3.0 Communities within 1000 metres

Code	Community	Emergent Species
DAD	(DAD) Eucalyptus amygdalina forest and woodland on dolerite	
DAZ	(DAZ) Eucalyptus amygdalina inland forest and woodland on Cainozoic deposits	
DVG	(DVG) Eucalyptus viminalis grassy forest and woodland	
FAG	(FAG) Agricultural land	EV
FAG	(FAG) Agricultural land	
FRG	(FRG) Regenerating cleared land	
FUM	(FUM) Extra-urban miscellaneous	
FUR	(FUR) Urban areas	
NBA	(NBA) Bursaria - Acacia woodland and scrub	
OAQ	(OAQ) Water, sea	

For more information contact: Coordinator, Tasmanian Vegetation Monitoring and Mapping Program.
Telephone: (03) 6165 4320
Email: TVMMPSupport@dpipwe.tas.gov.au
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Threatened Communities (TNVC 2014) within 1000 metres

513426, 5417884



511425, 5415290

Please note that some layers may not display at all requested map scales

Threatened Communities (TNVC 2014) within 1000 metres

Legend: Threatened Communities

- 1 - Alkaline pans
- 2 - Allocasuarina littoralis forest
- 3 - Athrotaxis cupressoides/Nothofagus gunnii short rainforest
- 4 - Athrotaxis cupressoides open woodland
- 5 - Athrotaxis cupressoides rainforest
- 6 - Athrotaxis selaginoides/Nothofagus gunni short rainforest
- 7 - Athrotaxis selaginoides rainforest
- 8 - Athrotaxis selaginoides subalpine scrub
- 9 - Banksia marginata wet scrub
- 10 - Banksia serrata woodland
- 11 - Callitris rhomboidea forest
- 13 - Cushion moorland
- 14 -Eucalyptus amygdalina forest and woodland on sandstone
- 15 - Eucalyptus amygdalina inland forest and woodland on cainozoic deposits
- 16 - Eucalyptus brookeriana wet forest
- 17 - Eucalyptus globulus dry forest and woodland
- 18 - Eucalyptus globulus King Island forest
- 19 - Eucalyptus morrisbyi forest and woodland
- 20 - Eucalyptus ovata forest and woodland
- 21 - Eucalyptus risdonii forest and woodland
- 22 - Eucalyptus tenuiramis forest and woodland on sediments
- 23 - Eucalyptus viminalis - Eucalyptus globulus coastal forest and woodland
- 24 - Eucalyptus viminalis Furneaux forest and woodland
- 25 - Eucalyptus viminalis wet forest
- 26 - Heathland on calcareous substrates
- 27 - Heathland scrub complex at Wingaroo
- 28 - Highland grassy sedgeland
- 29 - Highland Poa grassland
- 30 - Melaleuca ericifolia swamp forest
- 31 - Melaleuca pustulata scrub
- 32 - Notelaea - Pomaderris - Beyeria forest
- 33 - Rainforest fernland
- 34 - Riparian scrub
- 35 - Seabird rookery complex
- 36 - Sphagnum peatland
- 36A - Spray zone coastal complex
- 37 - Subalpine Diplarrena latifolia rushland
- 38 - Subalpine Leptospermum nitidum woodland
- 39 - Wetlands

Legend: Cadastral Parcels

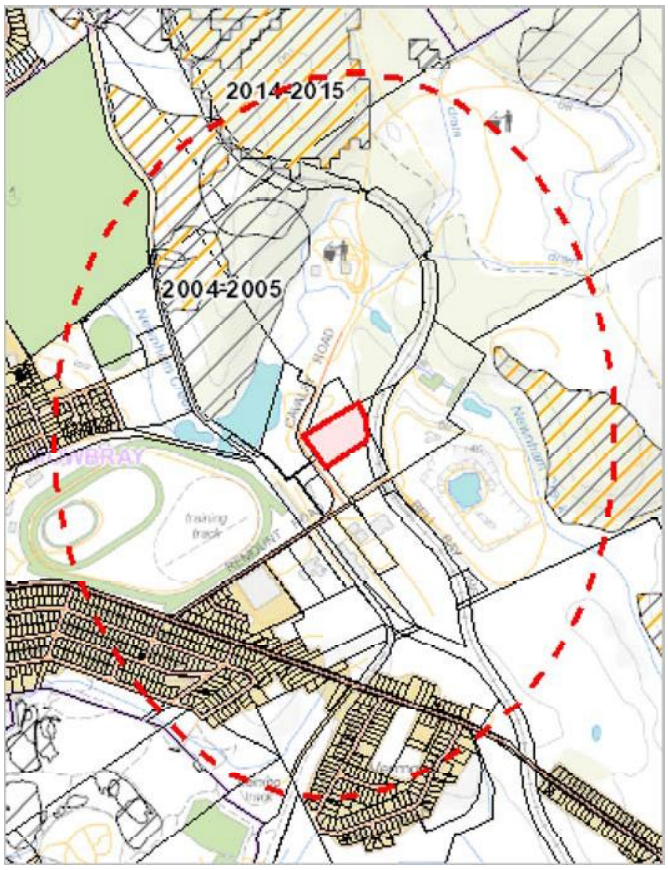
Threatened Communities (TNVC 2014) within 1000 metres

Scheduled Community Id	Scheduled Community Name
15	Eucalyptus amygdalina inland forest and woodland on cainozoic deposits

For more information contact: Coordinator, Tasmanian Vegetation Monitoring and Mapping Program.
Telephone: (03) 6165 4320
Email: TVMMPSupport@dpipwe.tas.gov.au
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Fire History (All) within 1000 metres

513426, 5417884



511425, 5415290

Please note that some layers may not display at all requested map scales

Fire History (All) within 1000 metres

Legend: Fire History All

Bushfire-Unknown Category

Bushfire

Completed Planned Burn

Legend: Cadastral Parcels

Fire History (All) within 1000 metres

Incident Number	Fire Name	Ignition Date	Fire Type	Ignition Cause	Fire Area (HA)
	LFB_880H	03-Feb-2015	Planned Burn	Planned Burn	22.86
235716	Dover Street	10-Jan-2016	Bushfire	Undetermined	0.44564988
235893	Dover Street	14-Jan-2016	Bushfire	Undetermined	6.48246337
TTL812BU	Launceston Northern Suburbs 12AP	07-Oct-2015	Planned Burn	Planned Burn	14.72998032
TTL823BU	Launceston Northern Suburbs 07AP West	12-Oct-2015	Planned Burn	Planned Burn	4.34933812
	LFB_920H	14-Nov-2014	Planned Burn	Planned Burn	8.62605812
	Old Rail Trail	01-Feb-2005	Bushfire	Deliberate	17.66832266

For more information about Fire History, please contact the Manager Community Protection Planning, Tasmania Fire Service.

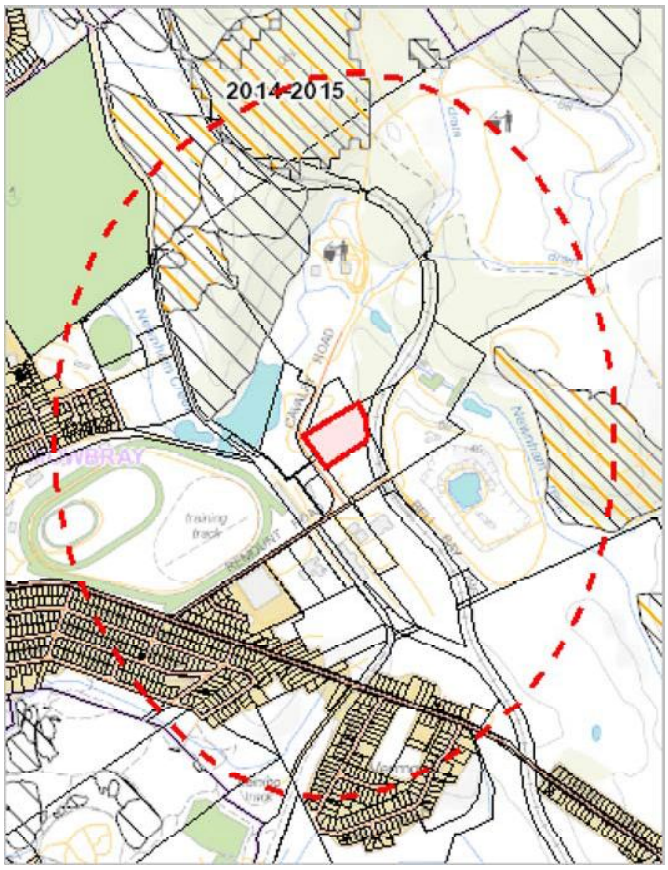
Telephone: 1800 000 699

Email: planning@fire.tas.gov.au

Address: cnr Argyle and Melville Streets, Hobart, Tasmania, Australia, 7000

Fire History (Last Burnt) within 1000 metres

513426, 5417884



511425, 5415290

Please note that some layers may not display at all requested map scales

Fire History (Last Burnt) within 1000 metres

Legend: Fire History Last

Bushfire-Unknown category

Bushfire

Completed Planned Burn

Legend: Cadastral Parcels

Fire History (Last Burnt) within 1000 metres

Incident Number	Fire Name	Ignition Date	Fire Type	Ignition Cause	Fire Area (HA)
	LFB_880H	03-Feb-2015	Planned Burn	Planned Burn	22.86
235716	Dover Street	10-Jan-2016	Bushfire	Undetermined	0.44564988
235893	Dover Street	14-Jan-2016	Bushfire	Undetermined	6.48246337
TTL812BU	Launceston Northern Suburbs 12AP	07-Oct-2015	Planned Burn	Planned Burn	14.72998032
TTL823BU	Launceston Northern Suburbs 07AP West	12-Oct-2015	Planned Burn	Planned Burn	4.34933812
	LFB_920H	14-Nov-2014	Planned Burn	Planned Burn	8.62605812
	Old Rail Trail	01-Feb-2005	Bushfire	Deliberate	17.66832266

For more information about Fire History, please contact the Manager Community Protection Planning, Tasmania Fire Service.

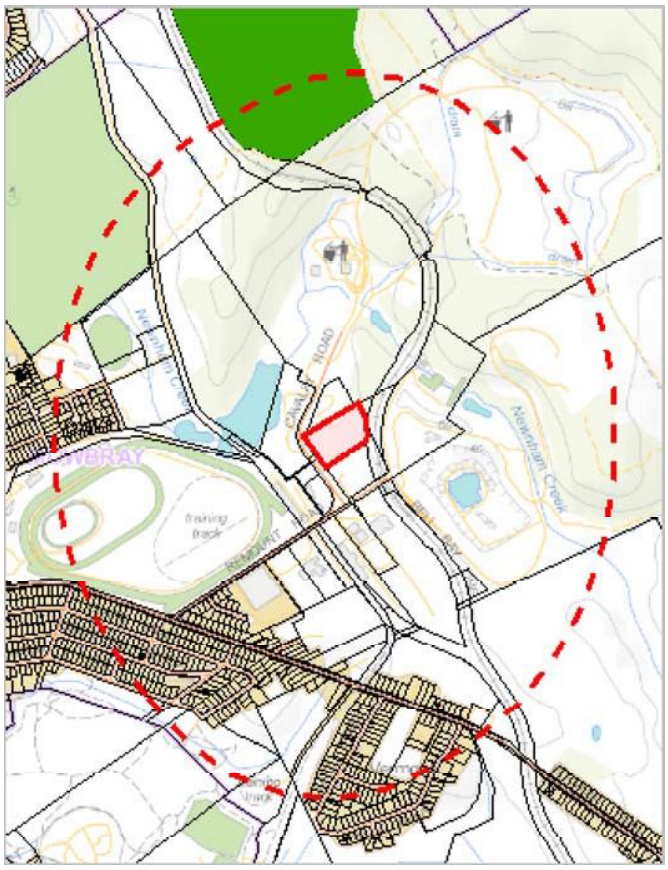
Telephone: 1800 000 699

Email: planning@fire.tas.gov.au

Address: cnr Argyle and Melville Streets, Hobart, Tasmania, Australia, 7000

Reserves within 1000 metres

513426, 5417884



511425, 5415290

Please note that some layers may not display at all requested map scales

Reserves within 1000 metres

Legend: Tasmanian Reserve Estate

- Conservation Area
- Game Reserve
- Historic Site
- Indigenous Protected Area
- National Park
- Nature Reserve
- Nature Recreation Area
- Regional Reserve
- State Reserve
- Wellington Park
- Public authority land within WHA
- Future Potential Production Forest
- Informal Reserve on State Forest or Forestry Tas. managed land
- Informal Reserve on other public land
- Conservation Covenant (NCA)
- Private Sanctuary
- Private land within WHA
- Management Agreement
- Management Agreement and Stewardship Agreement
- Stewardship Agreement
- Part 5 Agreement (Meander Dam Offset)
- Other Private Reserve

Legend: Cadastral Parcels

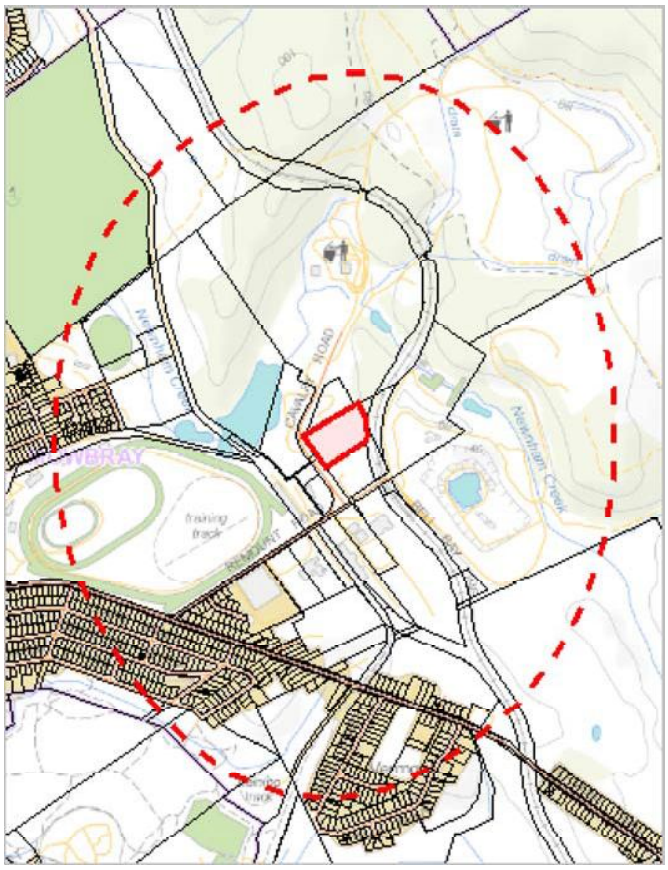
Reserves within 1000 metres

Name	Classification	Status	Area (HA)
	Conservation Covenant (NCA)	Private Reserve (Perpetual)	37.133

For more information about the Tasmanian Reserve Estate, please contact the Sustainable Land Use and Information Management Branch.
Telephone: (03) 6777 2224
Email: LandManagement.Enquiries@dpipwe.tas.gov.au
Address: GPO Box 44, Hobart, Tasmania, Australia, 7000

Known biosecurity risks within 1000 meters

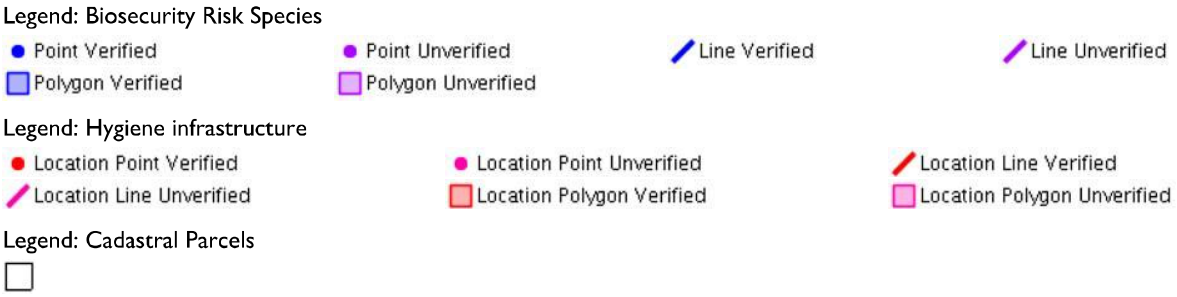
513426, 5417884



511425, 5415290

Please note that some layers may not display at all requested map scales

Known biosecurity risks within 1000 meters



Known biosecurity risks within 1000 meters

Verified Species of biosecurity risk

No verified species of biosecurity risk found within 1000 metres

Unverified Species of biosecurity risk

No unverified species of biosecurity risk found within 1000 metres

Generic Biosecurity Guidelines

The level and type of hygiene protocols required will vary depending on the tenure, activity and land use of the area. In all cases adhere to the land manager's biosecurity (hygiene) protocols. As a minimum always Check / Clean / Dry (Disinfect) clothing and equipment before trips and between sites within a trip as needed http://dpipwe.tas.gov.au/invasive-species/weeds/weed-hygiene/keeping-it-clean-a-tasmanian-field-hygiene-manual

On Reserved land, the more remote, infrequently visited and undisturbed areas require tighter biosecurity measures.

In addition, where susceptible species and communities are known to occur, tighter biosecurity measures are required.

Apply controls relevant to the area / activity:

- Don't access sites infested with pathogen or weed species unless absolutely necessary. If it is necessary to visit, adopt high level hygiene protocols.
- Consider not accessing non-infested sites containing known susceptible species / communities. If it is necessary to visit, adopt high level hygiene protocols.
- Don't undertake activities that might spread pest / pathogen / weed species such as deliberately moving soil or water between areas.
- Modify / restrict activities to reduce the chance of spreading pest / pathogen / weed species e.g. avoid periods when weeds are seeding, avoid clothing/equipment that excessively collects soil and plant material e.g. Velcro, excessive tread on boots.
- Plan routes to visit clean (uninfested) sites prior to dirty (infested) sites. Do not travel through infested areas when moving between sites.
- Minimise the movement of soil, water, plant material and hitchhiking wildlife between areas by using the Check / Clean / Dry (Disinfect when drying is not possible) procedure for all clothing, footwear, equipment, hand tools and vehicles http://dpipwe.tas.gov.au/invasive-species/weeds/weed-hygiene
- Neoprene and netting can take 48 hours to dry, use non-porous gear wherever possible.
- Use walking track boot wash stations where available.
- Keep a hygiene kit in the vehicle that includes a scrubbing brush, boot pick, and disinfectant http://dpipwe.tas.gov.au/invasive-species/weeds/weed-hygiene/keeping-it-clean-a-tasmanian-field-hygiene-manual
- Dispose of all freshwater away from natural water bodies e.g. do not empty water into streams or ponds.
- Dispose of used disinfectant ideally in town though a treatment or septic system. Always keep disinfectant well away from natural water systems.
- Securely contain any high risk pest / pathogen / weed species that must be collected and moved e.g. biological samples.

Hygiene Infrastructure

No known hygiene infrastructure found within 1000 metres

Appendix G

Noise Emmission Assessment

Land Use Planning

8 Cavalry Rd, Mowbray tyre recycling plant environmental noise assessment

Report No. 5072_AC_R

TARKARRI ENGINEERING PTY LTD
PO Box 506
Kings Meadows TAS 7249

December 2017

Tarkarri Engineering

Air Quality • Acoustics • Environment • Vibration

DOCUMENT CONTROL

LAND USE PLANNING
8 CAVALRY RD, MOWBRAY, TYRE RECYCLING PLANT ENVIRONMENTAL NOISE ASSESSMENT

Report No. 5072_AC_R	Library Code AC
Prepared for Land Use Planning PO Box 7710 Launceston Tasmania 7250	Prepared by Tarkarri Engineering Pty Ltd PO Box 506 Kings Meadows Tasmania 7249
Contact Ms Heidi Goess ☎ Mobile +61(0)438 155 035 Email heidi@landuseplanning.com.au	Contact Dr Alex McLeod ☎ +61 3 6343 2077 Mobile +61(0)439 357 297 Email alex.mcleod@tarkarri.com

Author	Alex McLeod Director / Principal Consultant	Date: 4 December 2017

Revision History

Revision No.	Date Issued	Reason/Comments
1	19/1/2018	additional information

Distribution

Copy No._____	Revision No.	Location
1	1	Project/Client File
2	1	Client
3	1	Tarkarri Engineering Library

Keywords environmental noise, dBA, L_{Aeq}, building radiated.

Table of Contents

List of figures

List of tables

References

[1] SoundPLAN Acoustic modelling software - Braunstein & Berndt GmbH.

[2] CONCAWE The oil companies' international study group for conservation of clean air and water – Europe (est. 1963) report 4/81.

Executive Summary

Tarkarri Engineering was commissioned to undertake an environmental noise assessment a proposed tyre recycling plant at 8 Cavalry Rd, Mowbray.

Ambient noise data was measured at the southern boundary of the site and from this and the project specific EER guidelines noise emission criteria for the project were developed.

An environmental noise model of the site was developed from process data provided to Tarkarri Engineering and Tarkarri Engineering library data.

Environmental noise modelling results show that both the commercial/light industrial noise emission criteria and residential criteria are complied with.

1 Introduction

Tarkarri Engineering was commissioned by Land Use Planning (LUP) to undertake an environmental noise assessment of a proposed tyre recycling plant at 8 Cavalry Rd, Mowbray.

Project specific guidelines for an Environmental Effects Report were issued by the Tasmanian EPA with the section relevant to noise provided below:-

6. Noise emissions

- Will the activity include fixed or mobile equipment that emits noise? If yes, provide details of the noise sources including size, power ratings, noise attenuation and hours of operation.
- Show the expected locations of the noise sources on the site plan and the locations of nearby residences and other noise sensitive premises on the area map (see Part B).
- Potential impacts from noise generated by the activity must be described.
- A suitably qualified acoustic consultant is to be engaged to provide estimates of the resulting sound pressure levels at the site boundary and at any nearby noise sensitive areas, including residences. This is to be based on measurements made of the shredder processing tyres.
- The location of the residence, approximately 200 metres (from to the south of the proposed shredder location (**NB**: *The residential building is approx. 80 m from the proposed shredder shed under the site configuration assessed here*), within an industrial/commercial area provides the potential for noise to be assessed against acceptable commercial noise levels during day time hours, but acceptable residential levels would apply at night time.
- Mitigation measures are to be considered and discussed in the EER.

2 Site description

The site proposed for the tyre recycling plant is located on Cavalry Rd, Mowbray. The site is surrounded by light industrial and commercial properties with a single residential property located on the southern boundary of the land. Other residential properties are located to the southwest and west at distances in excess of 500 m.

The proposal is to house a tyre shredding system with capacity to reduce the tyres to shreds with further processing into granules. The granules would then be moulded into rubber products. The plant would operate between 0600 and 1800 hrs on weekdays.

Figure 2.1 provides an aerial view of the site and surrounds with the land for the proposed tyre recycling centre marked in red. The location of the closest residence is marked while residential zones to the south-west and west are shaded in blue.

Figure 2.2 provides a site plan of the proposed plant while figure 2.3 shows a 3D schematic of the process line equipment to be located within the proposed shed shown in figure 2.2.

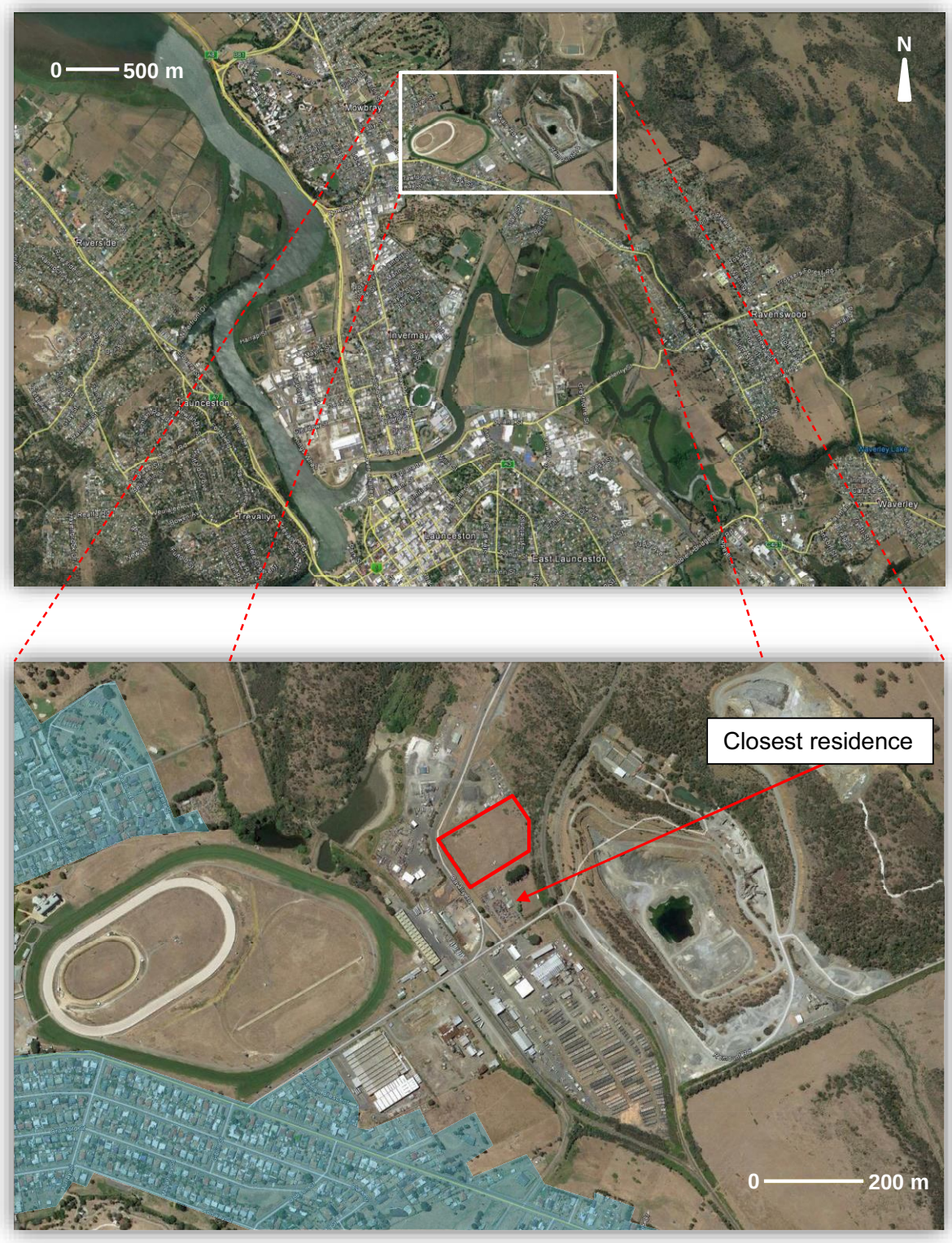


Figure 2.1 – Aerial view of the proposed site and surrounds.

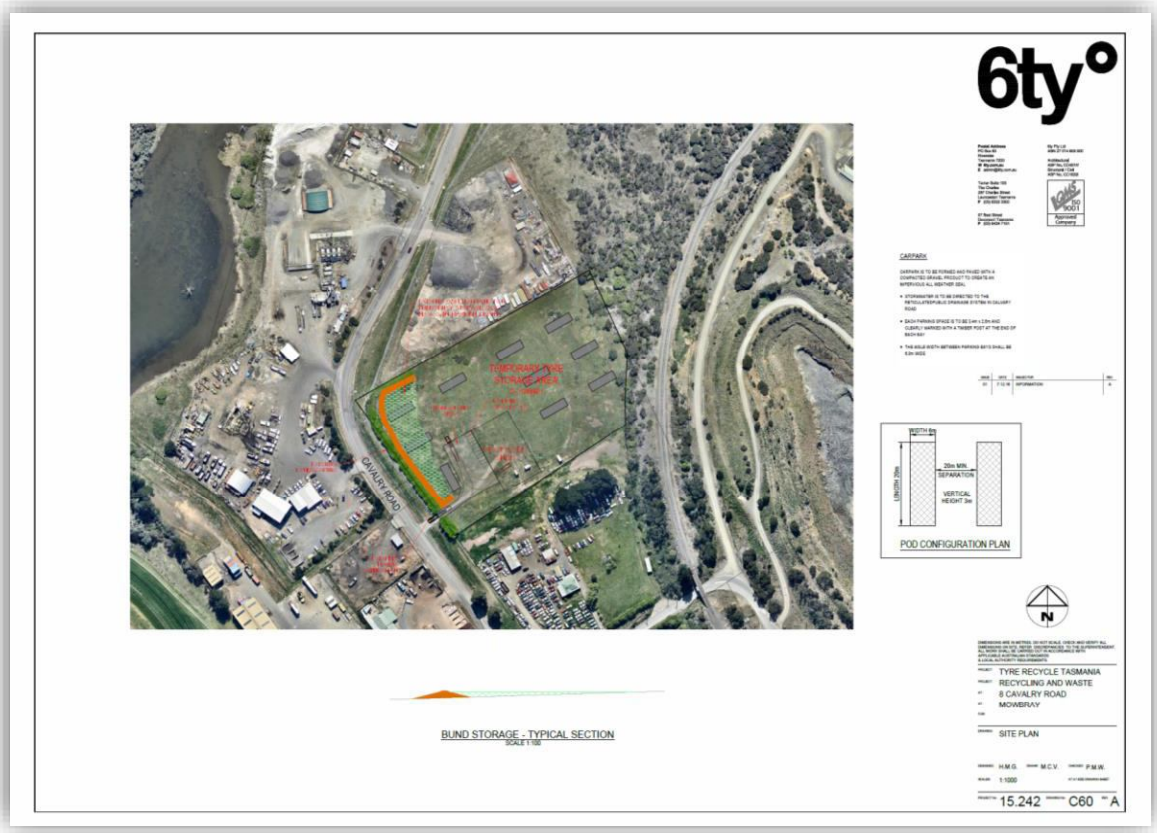


Figure 2.2 – Tyre recycling plant site plan (provided by LUP).

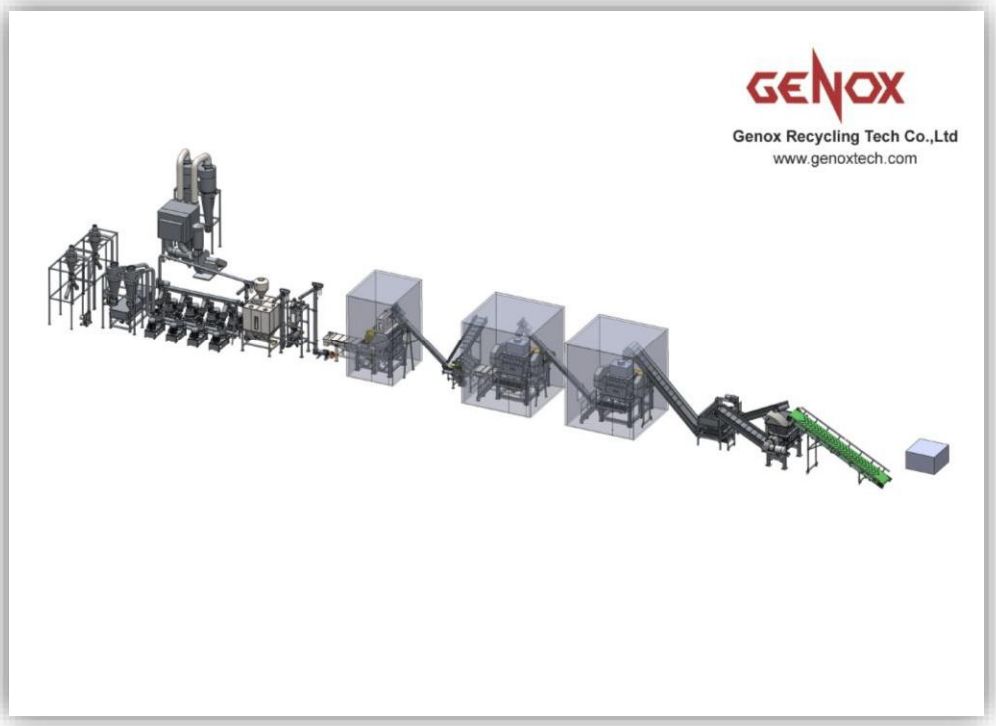


Figure 2.3 – Tyre recycling plant site plan 3D schematic of process line (provided by LUP).

3 Ambient noise monitoring

All measurements were carried out in general accordance with the *Tasmanian Noise Measurements Procedures Manual*.

A logging sound level meter (SLM) was placed at the southern boundary of the proposed site between 1 and 9 November 2017 with relevant 10-minute Ln-statistics recorded.

Figure 3.1 shows the location of the SLM during the monitoring period.

Figure 3.1 – SLM location.

3.1 Monitoring results and discussion

The monitoring data is presented graphically in figure 3.2 with selected 10-minute statistical data provided as follows:-

- L_{Aeq}
- L_{A10}
- L_{A90}
- L_{Amax}

For sake of clarity the other 4 data sets are not shown in these graphs. Data between 0500 and 1900 hrs on weekdays is shown in the graph with data outside of these periods not presented as they are outside of the proposed operating times of the plant.

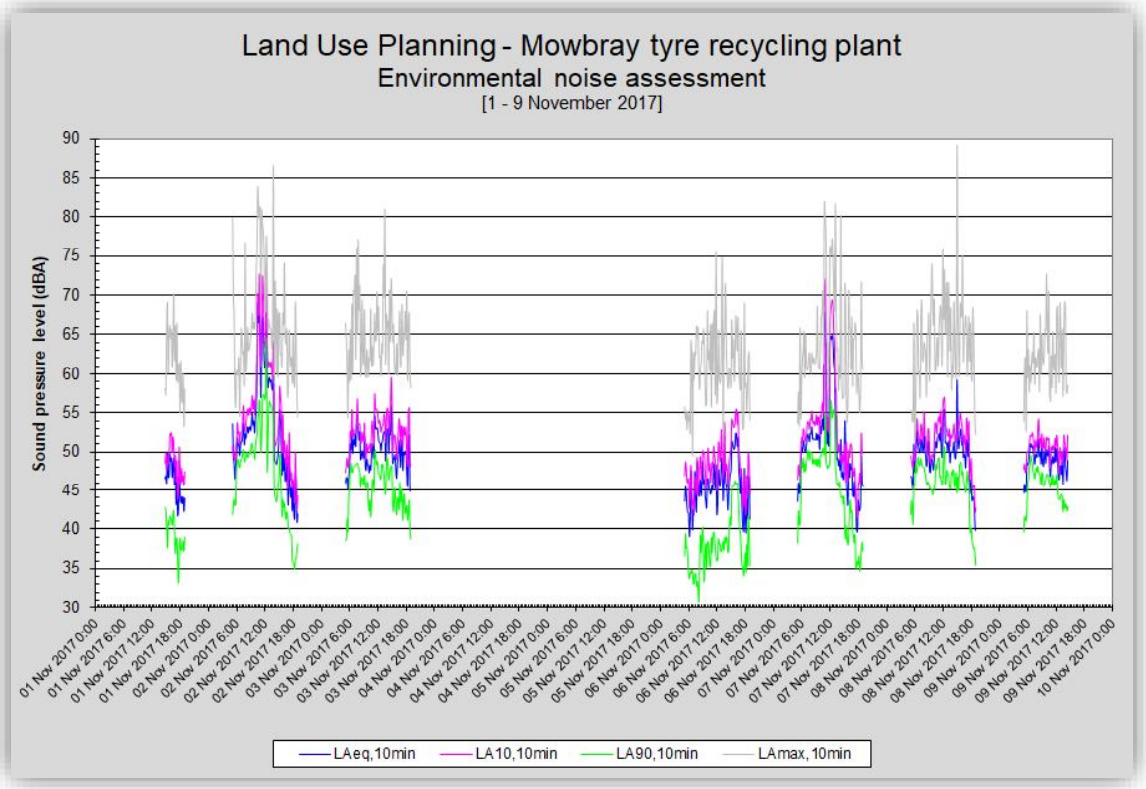


Figure 3.2 – Noise monitoring results.

From the above:-

- L_{Aeq} levels are typically between 45 and 55 dBA through the day period (0600 – 1800 hrs) with L_{A10} levels tracking L_{Aeq} levels. This suggests that transient noise sources such as traffic are significant at this location. This is also indicated by the separation of L_{A90} levels from L_{Aeq} and L_{A10} levels at times during the monitoring period.
- L_{Amax} levels were typically above 60 dBA and were likely to have been generated by traffic pass-by.

4 Assessment criteria

The following is noted from the project specific EER guidelines:-

> The location of the residence, approximately 200 metres to the south of the proposed shredder location (**NB**: *The residential building is approx. 80 m from the proposed shredder shed under the site configuration assessed here*), within an industrial/commercial area provides the potential for noise to be assessed against acceptable commercial noise levels during day time hours, but acceptable residential levels would apply at night time.

Given that planned operations are for the day period only (0600 – 1800 hrs) then a commercial noise emission criteria applies. Guidance is taken here from the NSW Industrial Noise Policy amenity criteria, as shown below highlighted in red, for commercial premises

Table 2.1. Amenity criteria

Recommended L_{Aeq} noise levels from industrial noise sources

Type of Receiver	Indicative Noise Amenity Area	Time of Day	Recommended L_{Aeq} Noise Level, dB(A) *(see Note 8 in Section 2.2.1)*	
(see Notes in Section 2.2.1)			Acceptable *(See Note 11)*	Recommended Maximum *(See Note 11)*
Residence	Rural	Day	50	55
		Evening	45	50
		Night	40	45
	Suburban	Day	55	60
		Evening	45	50
		Night	40	45
	Urban	Day	60	65
		Evening	50	55
		Night	45	50
	Urban/Industrial Interface – for existing situations only	Day	65	70
		Evening	55	60
		Night	50	55
School classroom—internal	All	Noisiest 1-hour period when in use	35 *(See Note 10)*	40
Hospital ward —internal —external	 All All	 Noisiest 1-hour period Noisiest 1-hour period	 35 50	 40 55
Place of worship—internal	All	When in use	40	45
Area specifically reserved for passive recreation (e.g. National Park)	All	When in use	50	55
Active recreation area (e.g. school playground, golf course)	All	When in use	55	60
Commercial premises	All	When in use	65	70
Industrial premises	All	When in use	70	75

This results in a noise emission criteria for surrounding commercial/ light industrial premises, including the nearest residential property to the south, as follows:-

- **65 dBA**, measured as an $L_{Aeq,10min}$, at the boundary of any commercial/light industrial property in other ownership.

NB: For residential properties, other than the closest premises to the south of the site, a criteria of **45 dBA**, measured as an $L_{Aeq,10min}$, is applied.

5 Environmental noise modelling

SoundPLAN[1] software was used for carrying out detailed noise emission spectra and contour modelling. This program allows the use of the CONCAWE[2] calculation method for modelling atmospheric attenuation/amplification of noise. Parameters influencing sound propagation and attenuation include:

- Source type (point, line, plane).
- Relative source and receiver height.
- Topography and barriers.
- Industrial buildings as sources and/or barriers.
- Ground absorption.
- Distance attenuation.
- Atmospheric conditions (Pasquill stability, temperature, humidity and vector wind speed).
- Reflecting surfaces.
- Source directivity.

As all propagation and attenuation parameters are frequency dependent, all input source data has been based on 1/1-octave band sound power spectra.

Geo-referenced topographic, transport, building and hydrologic data was obtained from Department of Primary Industry, Parks, Water and Environment. This provided contours at 10 m intervals; residential locations; road layouts; and river and stream courses for the areas modelled.

All source and geodata is referenced to the Map Grid of Australia (MGA).

5.1 Model input data

Input sound power (SWL) spectra were determined for potential noise sources from; process information provided LUP; and Tarkarri Engineering library data.

Figure 5.1 shows a process layout of the equipment to be located within the shed, see figure 2.2 for the shed location.

Noise emission data for the equipment shown in figure 5.1 was not available from the manufacturer. Given this Tarkarri Engineering library data for, as far as practically possible, similar equipment was utilised. From this an internal reverberant sound pressure level spectrum was calculated and building envelope transmission loss determined and applied.

NB: Some equipment would be housed in enclosures within the shed (see numbers 8, 11 and 16 in figure 5.1). These enclosures would be constructed of cool store panelling (i.e. polystyrene sandwich panel with steel outer skin) and this was considered in determining the internal reverberant sound pressure level spectrum.

Table 5.1 provides the overall sound power level (SWL) radiated by the shed (including an open roller door in the western facade) and details relating to the determination of the SWL level. Table 5.2 provides the 1/1-octave band SWL spectrum for the shed.

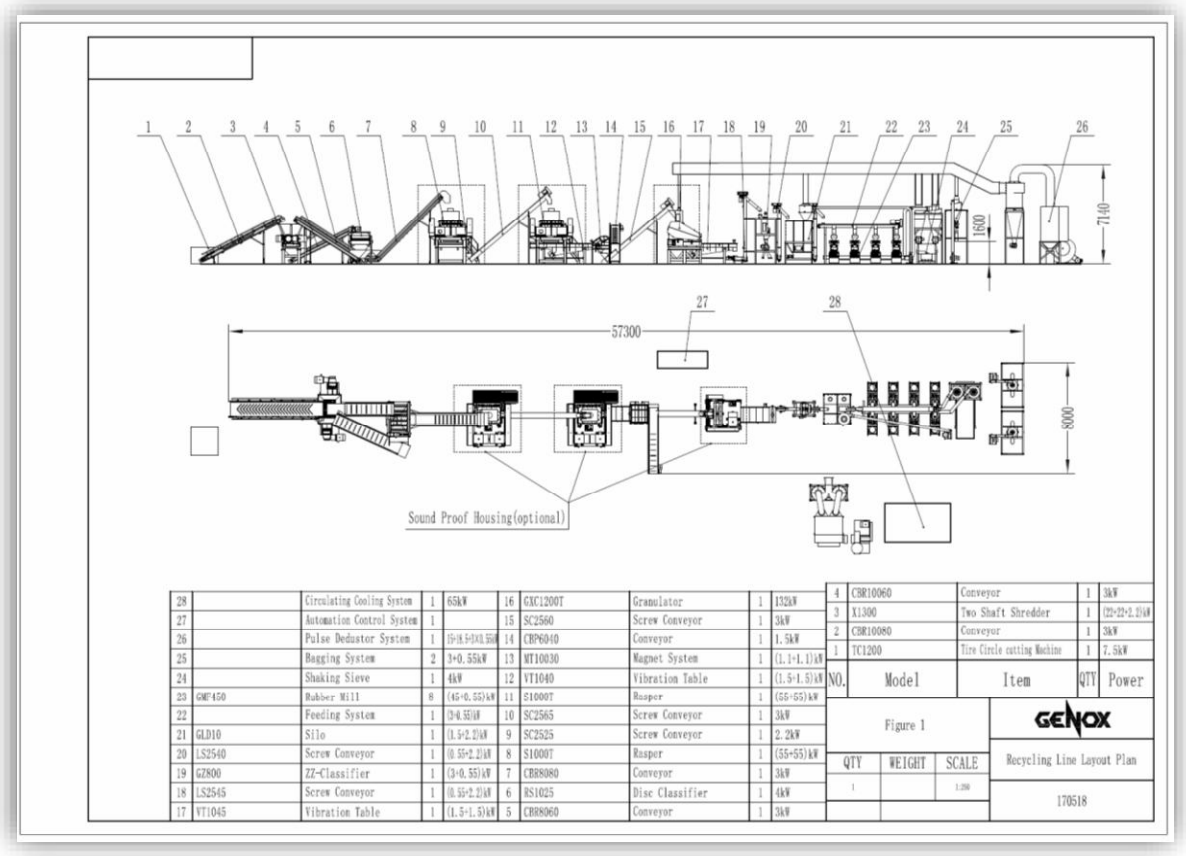


Figure 5.1 – Tyre recycling plant process layout (provided by LUP).

Overall sound power level (dBA)		
Area	SWL	Comment
Tyre recycling plant shed	103	Building radiated noise from the metal deck shed with a building blanket lining to underside of roof. Internal reverberant sound pressure level spectrum developed from Tarkarri Engineering library data for the following equipment: Granulator, conveyors (approx. 50 m length), vibrating feeder, vibrating screen, and de-dust fan drawing air and discharging inside the building.

Table 5.1 – Sound power level.

NB: The building radiated sound power spectrum developed for the model was based on an internal reverberant sound pressure level spectrum with an overall level of approx. 85 dBA.

1/1-octave band sound power levels spectrum (dBA)										
Source	Frequency (Hz)									Total
	31.5	63	125	250	500	1k	2k	4k	8k	
Tyre recycling plant shed	82	93	96	99	93	91	88	94	86	**103**

Table 5.2 – 1/1-octave band sound power level spectrum.

5.2 Atmospheric conditions

SoundPLAN[1], via the CONCAWE[2] prediction algorithm, models atmospheric attenuation using Pasquill stability indices in combination with vector wind speed and direction to determine appropriate frequency dependent attenuation/amplification. In this study the following propagation condition was considered:-

- **Worst case propagation**: This condition considers all receiver points to be downwind with a Pasquill stability class F and a vector wind speed of 2 m/s. Under these conditions noise contours will represent the highest predicted noise levels at any location.

5.3 Model scenario

Figure 5.2 shows a model plan view of the tyre recycling plant overlaid onto aerial photographic coverage and the site plan shown in figure 2.2 while figure 5.3 shows a wire frame model view. The shed walls are 7 m high (**NB**: actual shed would have 6 m high walls with pitched roof to a pitch height of 8 m) and an open roll door is present on the western facade. A barrier wall has been included along the southern edge of the hardstand area projecting from the wall of the shed 10 m with a height of 6 m. This is to provided attenuation of noise emissions from the open roll door to the southern boundary of the site.

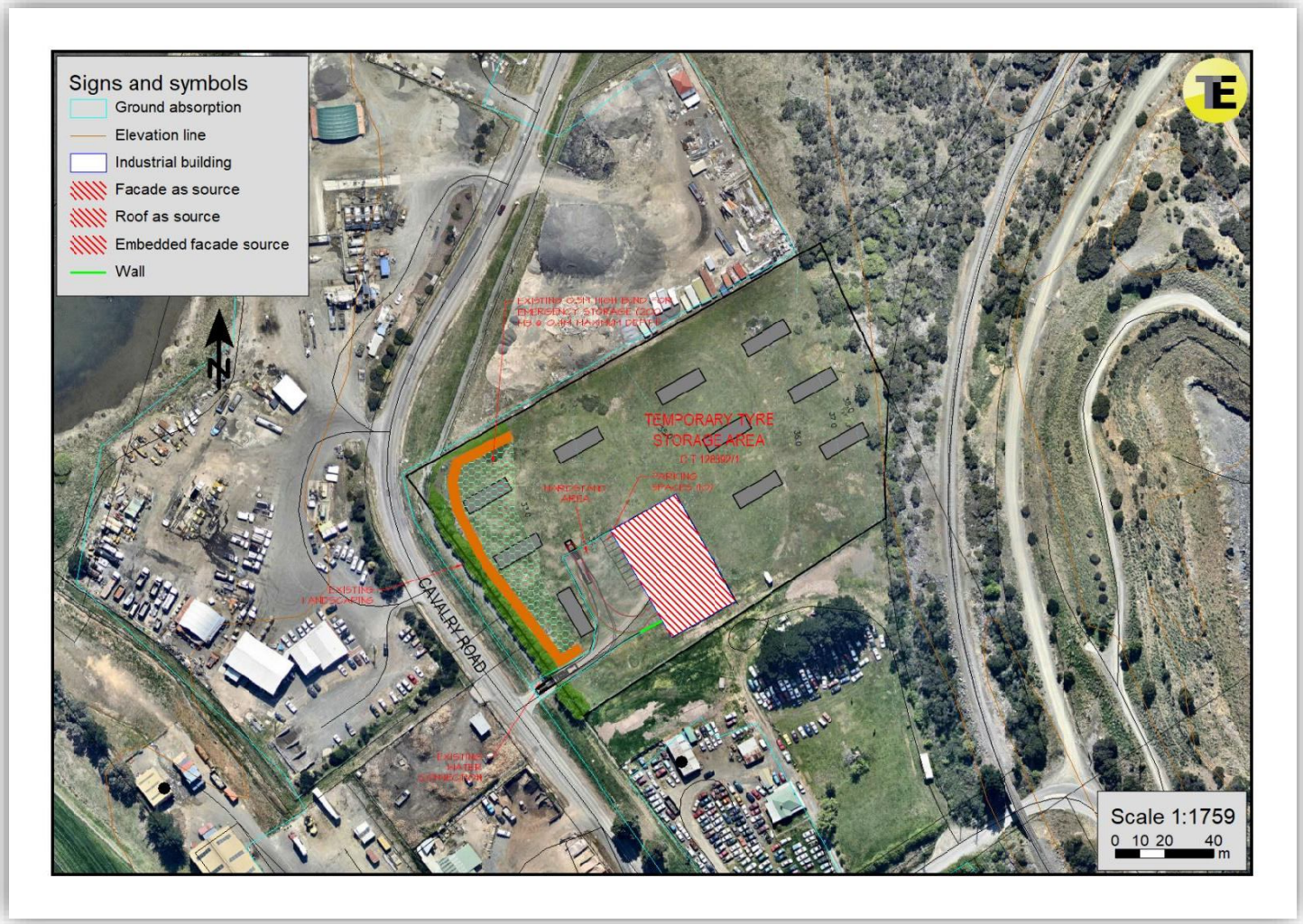


Figure 5.2 – Model plan view of the tyre recycling plant.

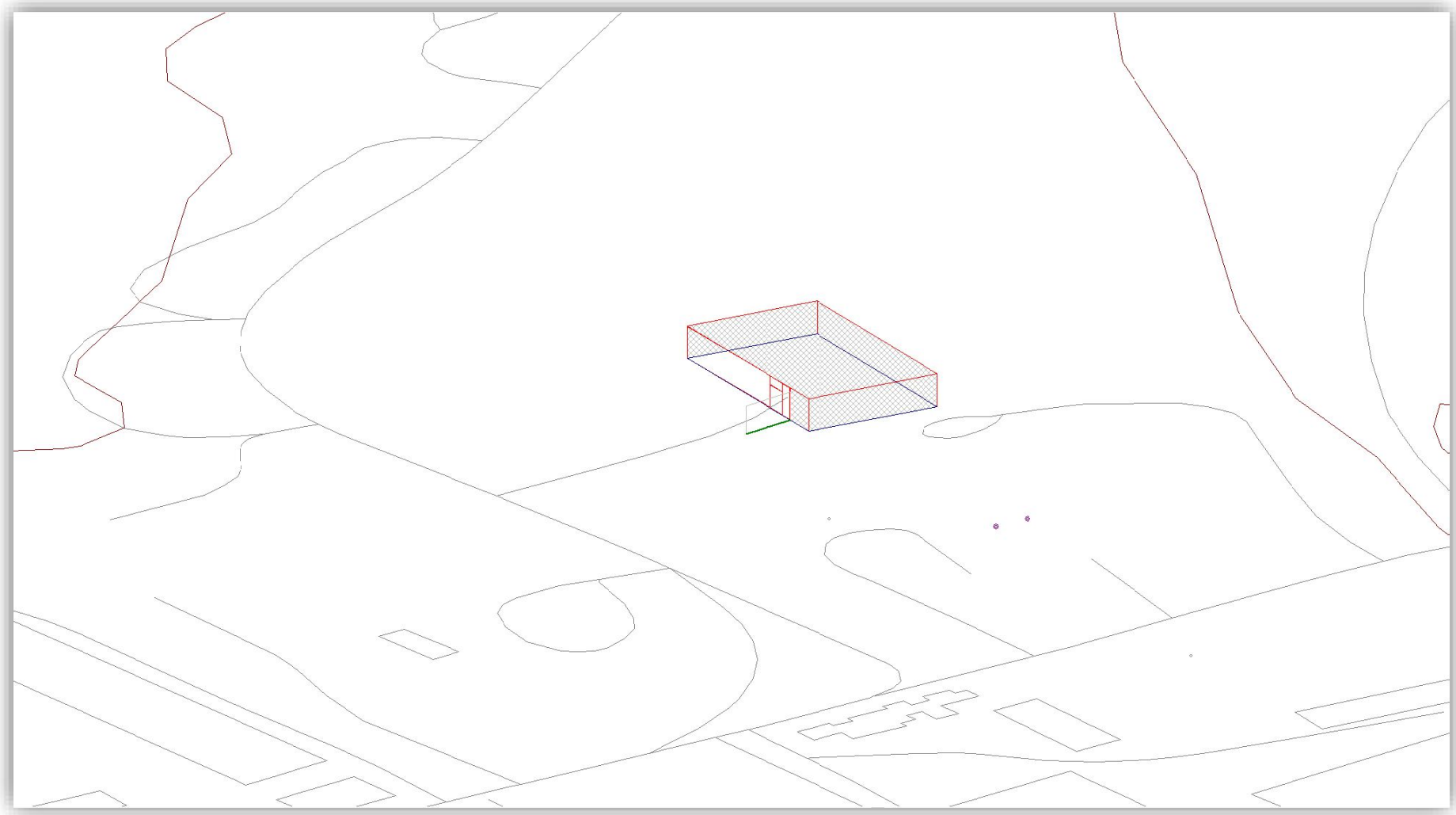


Figure 5.3 – Wire frame model view of the tyre recycling plant, view from the south.

5.4 Modelling results and discussion

Using the environmental noise model noise contour maps were generated to assist in the visualisation of noise propagation to the surrounding environment as follows:-

- Far-field, contour extent encompassing residential properties to the south-west and west.
- Near-filed, contour extent encompassing site boundary and adjacent commercial/light industrial properties.

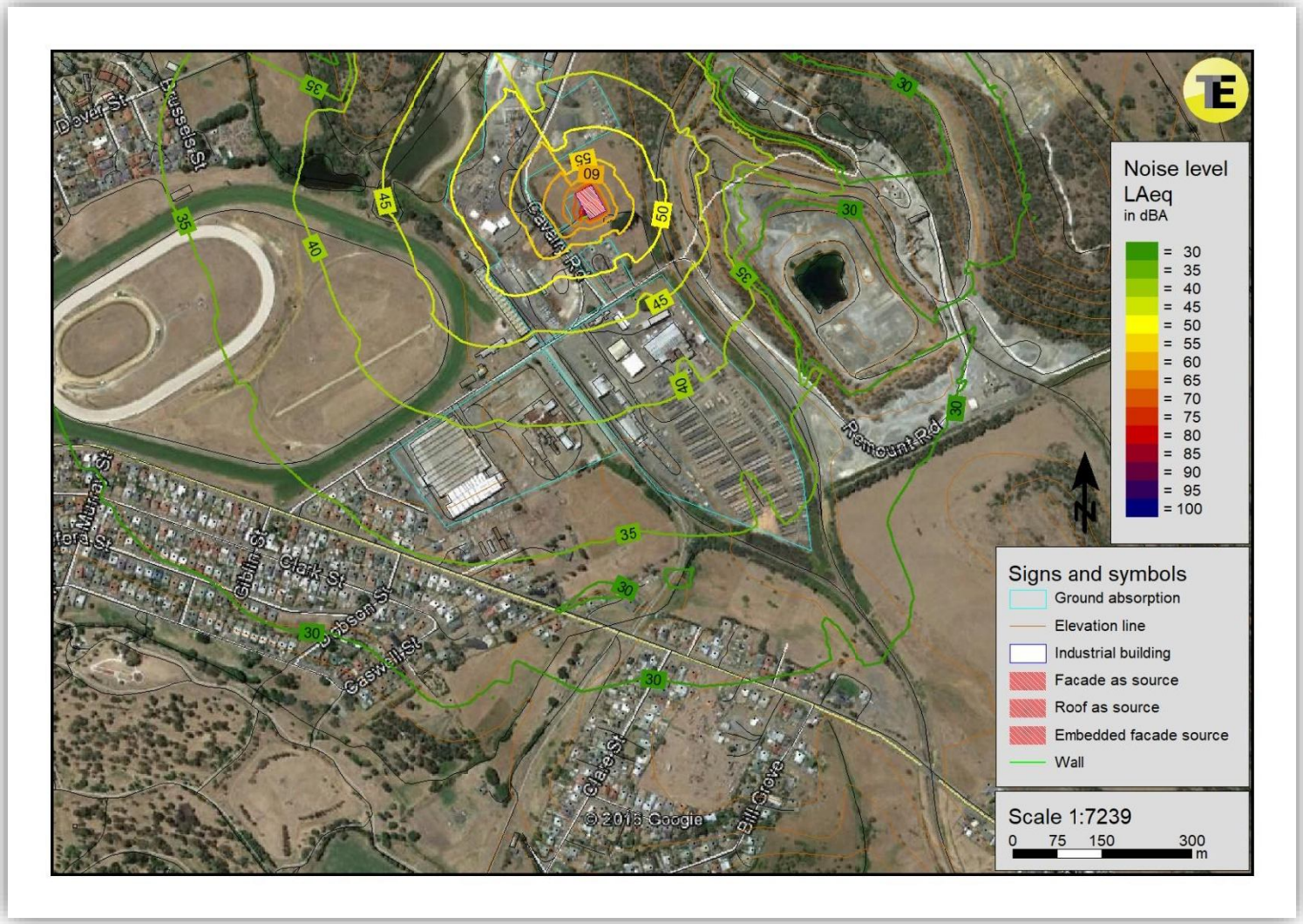


Figure 5.4 – Predicted noise emission contours, far-field.

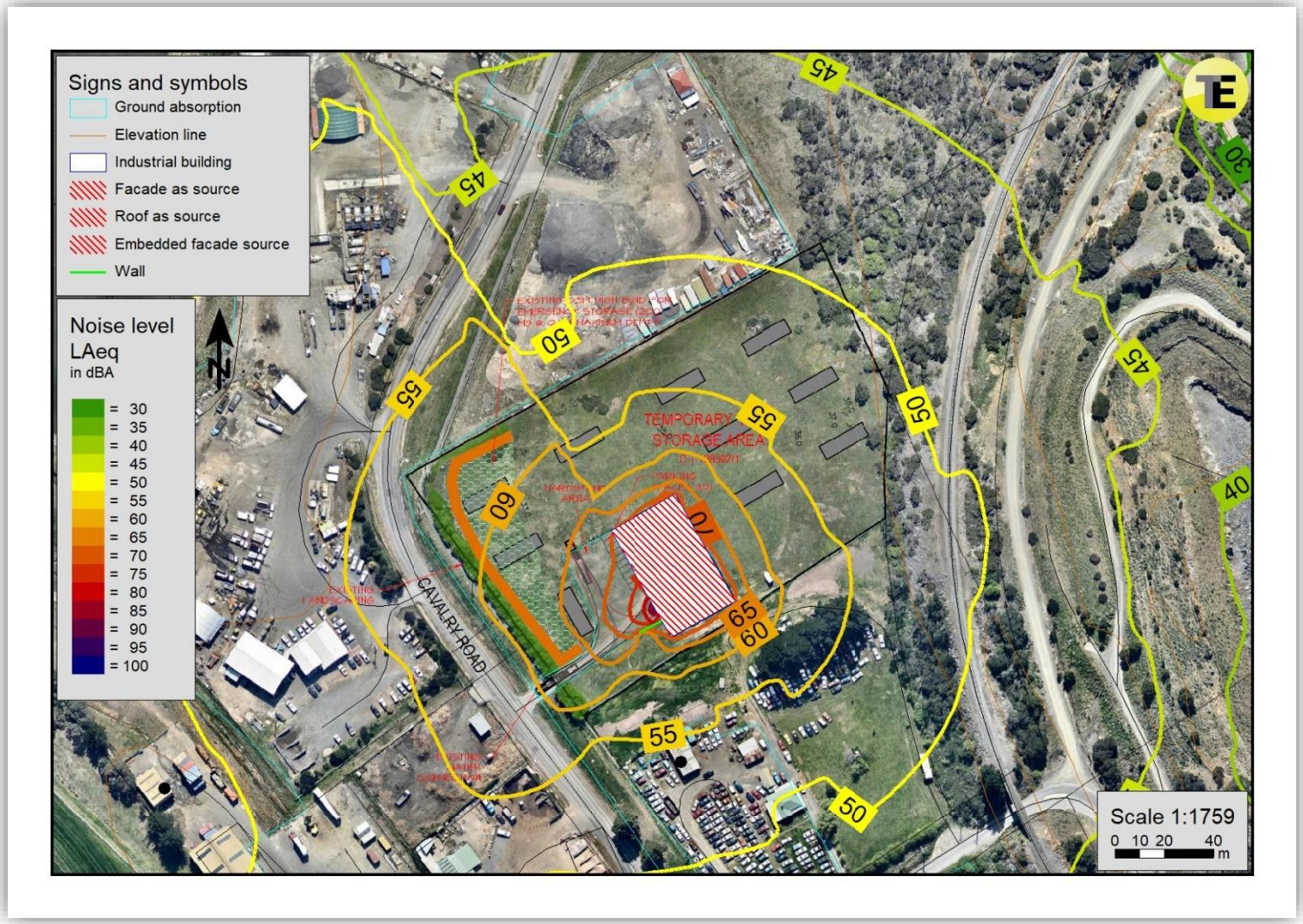


Figure 5.5 – Predicted noise emission contours, near-field.

From the above:-

- The 65 dBA contour doesn't extend beyond the boundary of the site meeting the commercial/light industrial criteria for the project.
- Predicted noise emission levels at residential premises to the south-west and west are below the project criteria of 45 dBA by more than 5 dBA.

NB: Analysis of single point data suggests there may be a potential for the emission high levels of low frequency noise. However, in selecting noise emission data from the Tarkarri Engineering library conservative decision were made regarding the equipment types from which noise emission spectra were chosen and the level of low frequency acoustic energy modeled here is unlikely in reality. Other intrusive noise characters such as tonality (providing adequate control of noise emission from the de-dust fan), impulsiveness and modulation are considered unlikely.

6 Conclusions

- Tarkarri Engineering have conducted an environmental noise assessment of a proposed tyre recycling plant at 8 Cavalry Rd, Mowbray.
- Ambient noise data was measured at the southern boundary of the site and from this and the project specific EER guidelines noise emission criteria for the project were developed.
- An environmental noise model of the site was developed from process data provided to Tarkarri Engineering and Tarkarri Engineering library data.
- Environmental noise modelling results show that both the commercial/light industrial noise emission criteria and residential criteria are met.

NB: A stack of three shipping containers has been proposed for the construction of the noise barrier discussed in section 5.3 of this report. This would provide the required dimensions such that adequate diffraction loss is likely while also providing a level of transmission loss that would allow for the full diffraction loss to be realised.

21 December 2017

Land Use Planning
PO Box 7710
Launceston TAS 7250

5072a_AC_R
AJM

Attn: Ms Heidi Goess

Dear Madam,

RE: 8 Cavalry Rd, Mowbray, tyre recycling plant environmental noise assessment addendum.

1. INTRODUCTION

Land Use Planning commissioned Tarkarri Engineering to provide a report addendum to Tarkarri report 5072_AC_R. The addendum is to address comments from the Tasmanian EPA regarding a draft Environmental Effects Report (EER) for the a proposed tyre recycling plant at 8 Cavalry Rd, Mowbray. The addendum specifically addresses the following comment:-

> 'Demonstrate the activity can meet the noise emission criteria … at the nearest sensitive receptor … including vehicle movements.'

To address the above Tarkarri Engineering conducted three additional model runs to represent the following:-

- A single truck entering the site and backing to the shed roll door.
- 4 light vehicles (LV) arriving during operations.
- 4 LVs arriving prior to operations (between 0600 and 0700 hrs).

NB: for further details regarding model settings please see Tarkarri Engineering report 5072_AC_R.

2. ENVIRONMENTAL NOISE MODELLING

2.1 Input data

Table 1 provides overall sound power levels (SWL) for a teuck and LV at low speed and details relating to the scaling of the SWLs used in the three model runs. Table 2 provides the 1/1-octave band SWL spectra for the truck and LV.

Overall sound power level (dBA)		
Area	SWL	Comment
Truck entering site	96	For L_{Aeq} modelling scaled in model to represent 30 seconds operation in 10-minute period.
Light vehicle entering site	92	For L_{Aeq} modelling scaled in model to represent 10 seconds operation in 10-minute period and 4 vehicles entering in a 10-minute period.

Table 1 – Sound power level.

e info@tarkarri.com
w tarkarri.com
p +61 (0) 3 6343 2077

Tarkarri Engineering Pty Ltd
ABN 98 009 561 488
PO Box 506 Kings Meadows
Tasmania 7249 Australia

1/1-octave band sound power levels spectrum (dBA)										
Source	Frequency (Hz)									Total
	31.5	63	125	250	500	1k	2k	4k	8k	
Truck entering site	43	78	83	86	89	92	89	83	73	**96**
Light vehicle entering site	-	51	73	73	83	86	88	85	77	**92**

Table 2 – 1/1-octave band sound power level spectrum.

2.2 Modelling results and discussion

Figures 1 to 3 provide L_{Aeq} environmental noise model noise contour maps for the three model runs to assist in the visualisation of noise propagation to the surrounding environment.

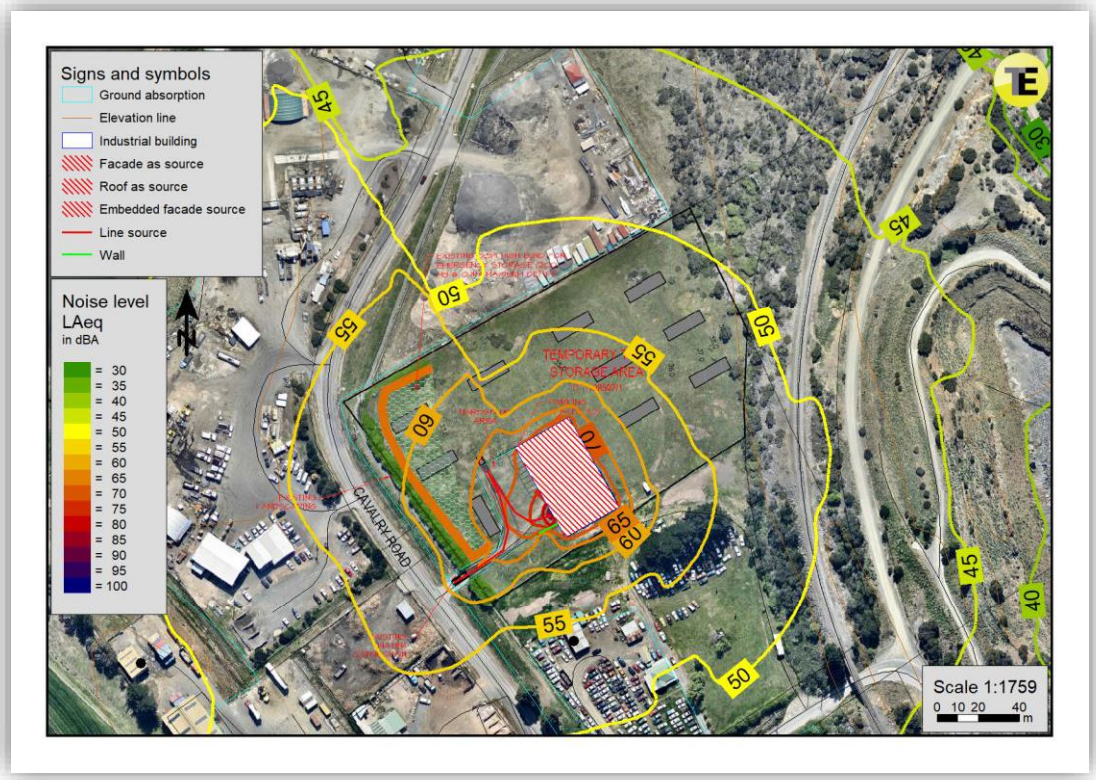


Figure 1 - Predicted noise emission contours, near-field, **truck entering site**.

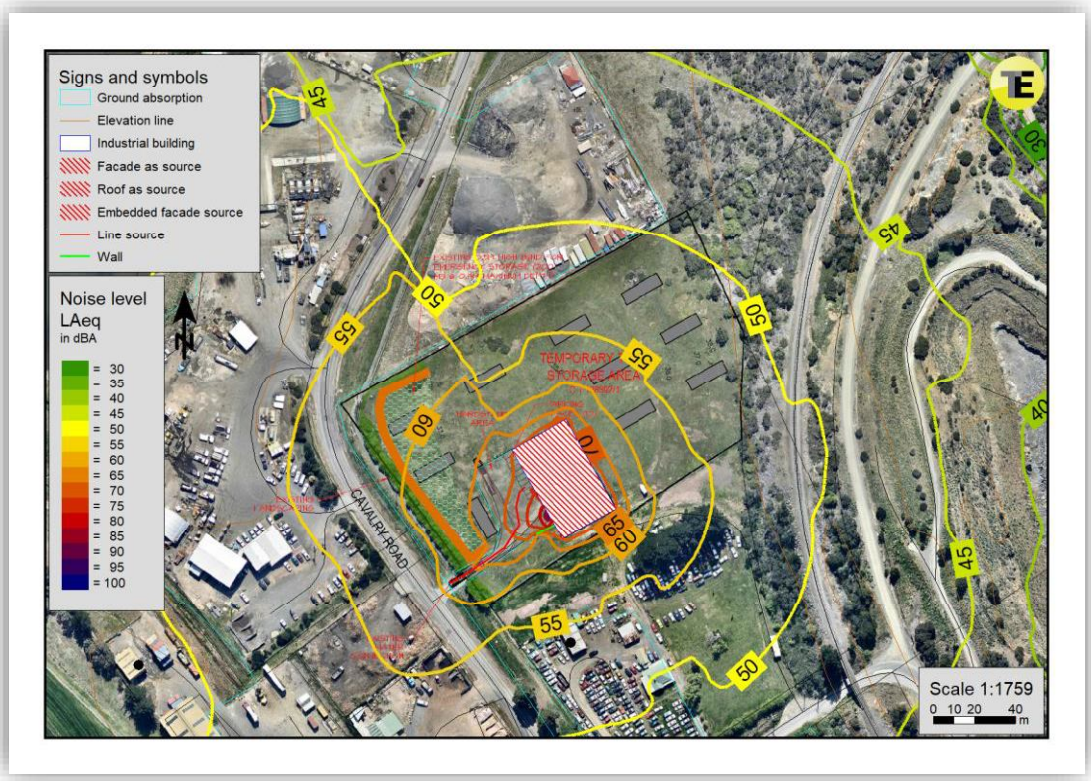


Figure 2 - Predicted noise emission contours, near-field, **LV's entering site during operations**.

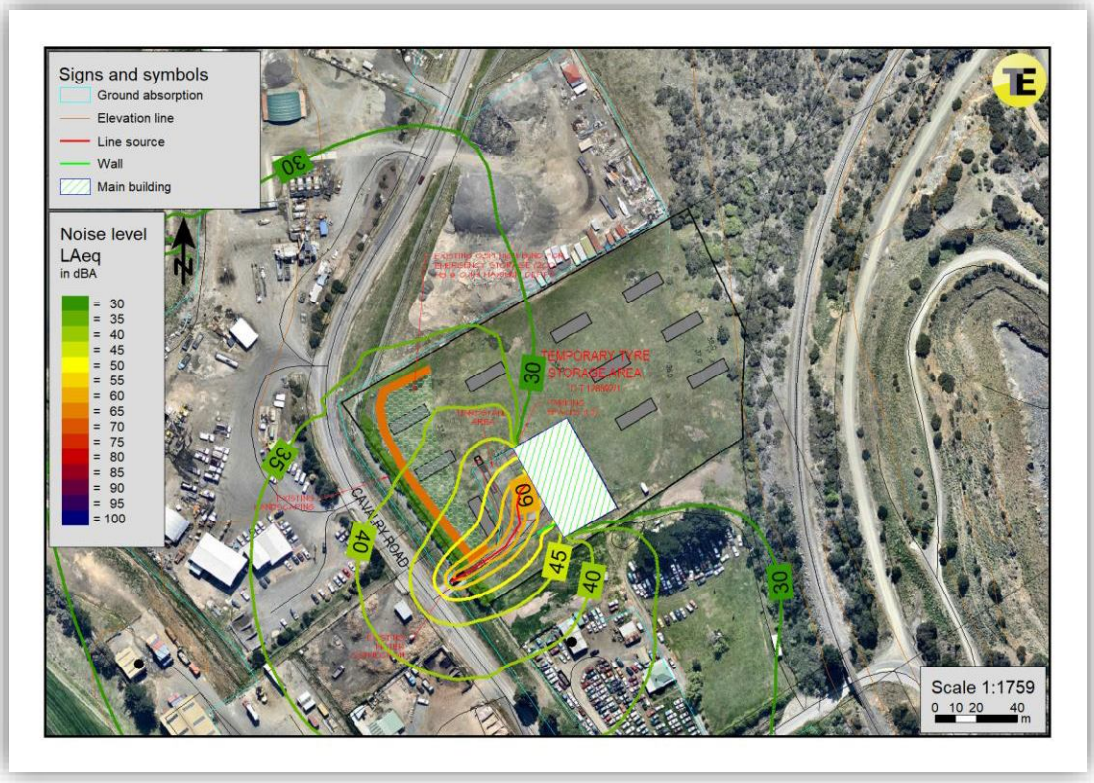


Figure 3 - Predicted noise emission contours, near-field, **LV's entering site prior to operations**.

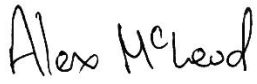
From the above:-

- For the first two model scenarios L_{Aeq} noise emission contours don't exceed the commercial/light industrial noise emission limit of 65 dBA at the boundary of the nearest residential property.
- Tarkarri Engineering notes that the Tasmania EPA comments regarding the draft EER states that 'Operation of the activity between 0600 and 0700 should be assessed against a criteria of 45 dBA (*Tarkarri Engineering assumes this is an L_{Aeq} level*) at the nearest residence.' For the third scenario, the L_{Aeq} 45 dBA noise emission contour marginally intrudes into the nearest residential property. However, the L_{Aeq} noise level at the residential building is 35 dBA with a maximum noise level of 43 dBA (L_{Amax} level from single point data not presented here). Given this noise impact in the early morning (0600 to 0700) during LV arrivals at site is considered highly unlikely to be excessive.

I hope this information meets your immediate requirements.

Please contact me directly if you have any questions concerning this work.

Yours faithfully,
Tarkarri Engineering Pty Ltd



Dr. Alex McLeod
Principal Consultant

m. +61(0)439 357 297
email: alex.mcleod@tarkarri.com

Appendix H

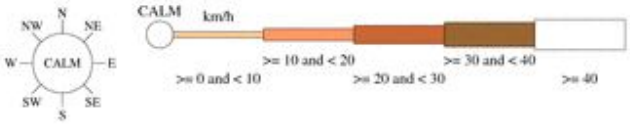
Wind Rose Chart

Australian Government
Bureau of Meteorology

Wind speed and direction rose

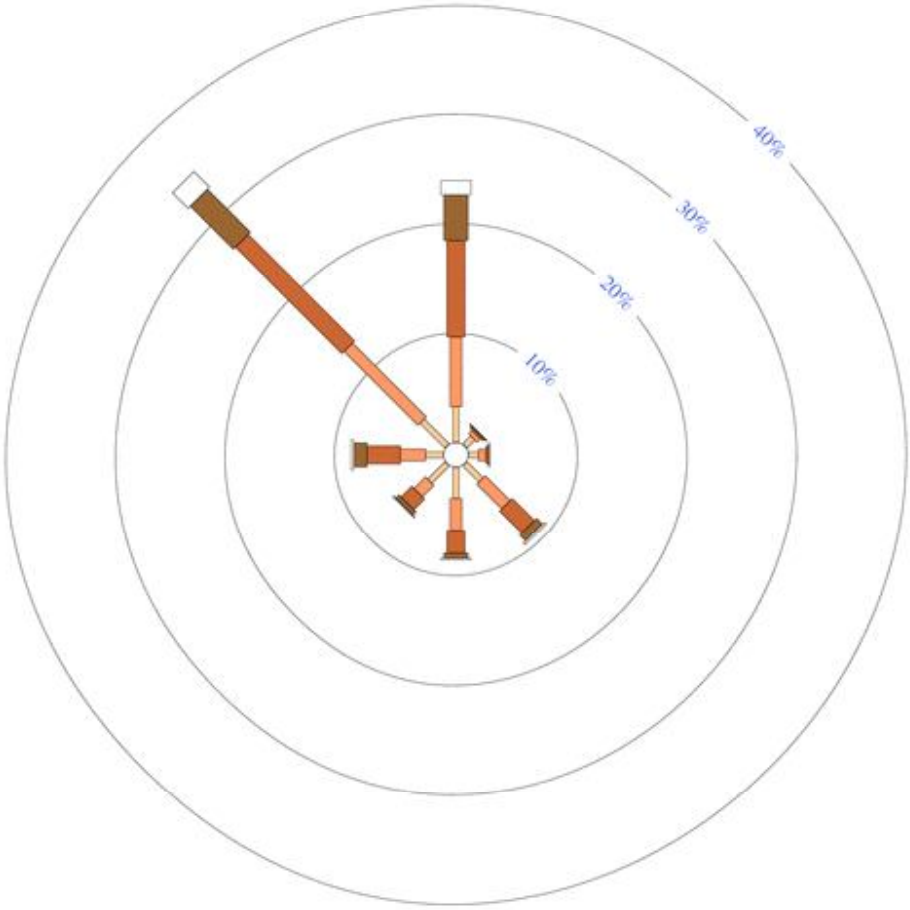
Product ID code: **IDCJCM0021**

Location: LAUNCESTON AIRPORT COMPARISON
Site Number: 091104
Latitude: 41.54°S
Longitude: 147.2°E
Elevation: 166 metres (above sea level)
Period: 3pm Annual
Start year: 1939
End year: 2009
Download: PDF | Wind Frequency Data



3 pm
24586 Total Observations

Calm 6%



Australian Government
Bureau of Meteorology

Wind directions are divided into eight compass directions. The circles around the image represent the various percentages of occurrence of the winds. For example, if the branch to the west just reaches the 10% ring it means a frequency of 10% blowing from that direction. The scale factor can be ignored when interpreting these wind roses.
An observed wind speed which falls precisely on the boundary between two divisions will be included in the lower range (eg 10km/h is included in the 1-10 km/h range).
Calm has no direction. An asterisk(*) indicate that calm is less than 1%.
Only quality controlled data have been used.

Image last updated April 2016

This page was created at 11:12 on Monday 29 January 2018 (AEDT)

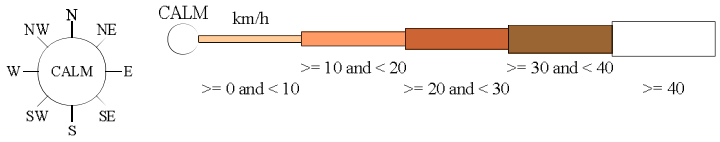
Rose of Wind direction versus Wind speed in km/h (01 Apr 1939 to 17 Jun 2009)

Custom times selected, refer to attached note for details

LAUNCESTON AIRPORT COMPARISON

Site No: 091104 • Opened Jan 1931 • Closed Jun 2009 • Latitude: -41.5397° • Longitude: 147.2033° • Elevation 166m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am
24610 Total Observations

Calm 15%