Environmental Effects Report
Increase in Height of Existing Landfill Area

A Submission to EPA Tasmania on behalf of Meander Valley Council

3 October 2023

Meander Valley Council
Working Together

MRA Consulting Group

Environmental Effects Report – Increase in Height of Existing Landfill Area

A Submission to Meander Valley Council ABN 65 904 844 993

Prepared by

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Glossary

Terminology	Definition
AER	Annual Environmental Review
AMT	Accepted Modern Technology
BOD	Biochemical Oxygen Demand
BOM	Bureau of Meteorology
DOV	Eucalyptus ovata forest and woodland
DRDS	Deloraine Refuse Disposal Site
DSC	Eucalyptus obliqua damp sclerophyll forest
DTAE	Department of Tourism, Arts and Environment
EER	Environmental Effects Report
EMP	Environmental Management Plan
EMPC Act	Environmental Management and Pollution Control Act 1994
EPA	Environment Protection Authority
EPN	Environmental Protection Notice
EPP	Environment Protection Policy
EMS	Environmental Management Systems
FAG	Agricultural Land
FOGO	Food Organics and Garden Organics
GHG	Greenhouse Gas
Guide	DPIWE Landfill Sustainability Guide 2004
LGA	Local Government Area
MRA	MRA Consulting Group (MRA)
MVC	Meander Valley Council
NATA	National Association of Testing Authorities
NVA	Natural Values Atlas
PAF	Potentially Acid Forming

Terminology	Definition
PID	Property ID
SEMF	Scientists Engineers Managers & Facilitators
TAS	Tasmania
TASVEG	Tasmania-wide vegetation map
The List	Land Information System Tasmania
WTS	Waste Transfer Station

Introduction

This report has been prepared as an Environmental Effects Report (EER) on behalf of Meander Valley Council (MVC) for Deloraine Refuse Disposal Site (DRDS). The location of the existing facility is at 54 Tip Road, Deloraine, Tasmania (TAS), 7304 (the 'site'). The formal location is registered as property ID (PID) 1914365 and Title Reference 130751/1 in the Land Information System Tasmania (The List).

Proposal Overview and Background

The site is critical regional infrastructure for MVC, operating as a waste disposal site since the early 1970's and in a geographically central position within the municipality, approximately seven minutes driving distance from Deloraine and fifteen minutes from Westbury. It also has high visitation with around 13,000 entries in 2020. The DRDS provides waste disposal and recycling services for areas of MVC that do not have a kerbside collection service and the on-site tip shop is a community hub that encourages resource recovery and reuse. While MVC has a second, smaller landfill at Cluan, near Westbury, the DRDS is Council's key disposal site licensed by the Environment Protection Authority (EPA) Tasmania to receive 8,000 tonnes of waste per annum.

Recently it was identified that the maximum height had been reached at DRDS. A drone survey conducted on the 13 January 2022 revealed that the existing height of the DRDS was at RL 283. According to Attachment A - EPN 7216/3 - waste depot Deloraine, the height of the completed landfill must not exceed the contours specified in the Environmental Management Plan (EMP) drawings 682 001-C05-C07. The maximum height at any point must not exceed RL 283.

Part A Proponent Information

Proponent entity name	Tasmania's Green Heart
Proponent trading name	Meander Valley Council (MVC)
Registered address of proponent	26 Lyall St Westbury TAS 7303
Postal address of proponent	102 Westbury Tasmania 7303
ABN/ACN of proponent	65 904 844 993
Contact person's details	Name: John Chrispijn Telephone number: 03 6393 5329 Email address: John.Chrispijn@mvc.tas.gov.au
Consultant's details	Name: Richard Paschke Telephone number: 0427 807 880 Email address: richard@mraconsulting.com.au

Part B Proposal Description

1. Description of Proposed Activity

1.1. Proposed Activity

Activity

The DRDS is a critical regional infrastructure for MVC, operating as a waste disposal site since the early 1970's and in a geographically central position within the municipality, approximately seven minutes driving distance from Deloraine and fifteen minutes from Westbury. The landfill is located at Tip Road, Deloraine and received approximately 13,000 entries in 2020.

Below is the material received by DRDS in 2022 for recycling, green waste and disposal:[1]

- Total Recycling: 1,892 t
- Total Green Waste: 682 t
- Total Landfill: 2,604 t
- Total Onsite: 143 t
- **Grand Total: 5,321 t**

Figure 1: Recycling Quantities Received.[2]

Product	Description	2021/2022 Deloraine (t)	2021/2022 Cluan (t)
Glass		94.32	21.29
PET	Plastic no. 1	12.82	6.22
HDPE	Plastic No. 2	10.97	4.47
Mixed Plastic	Plastic No, 3, 4, 5, 7 and coloured	15.46	11.02
Aluminium cans		8.63	4.10
Scrap Steel	Ferrous	456.67	344.82
Scrap Steel	Non Ferrous	9.87	2.84
Batteries	Car and personal	2.74	1.08
Waste oil (litres)	Engine	8,000	6,000
Cardboard		177.63	50.88
Newsprint		45.88	21.94
Polystyrene (bags)		66	28
Soft plastic		11.18	3.19
drumMUSTER	triple rinsed agriculture containers	30.68	-
Mattresses (qty)		149	84
Ewaste		11.31	7.41

The services provided by DRDS include storage and disposal of the following types of waste:

- General waste: Inert waste, clean fill, putrescible waste, and recyclable materials (where stored for recycling).

[1] DRDS Annual Reporting 2022 (Attachment Q)
[2] Deloraine and Cluan Annual Report 2021-2022 (Attachment N, page 11)

- Controlled waste (subject to hazardous substances conditions): Scrap tyres, batteries and waste oil (where stored for recycling).
- Resource recovery centre (Tip Shop): The Shop provides an outlet for the sale of discarded and salvaged items e.g., household furniture, kitchen utensils, lawn care tools & equipment, toys, building materials etc. The items are sorted prior to sale to ensure all stocked items are of a quality suitable for reuse. As well as providing a service to the community, the Shop reduces the quantity of material going to landfill.

The activity is a waste depot (landfill) under 3(b), Schedule 2 of the *Environmental Management and Pollution Control Act 1994* (EMPCA). In accordance with section 27C of the EMPC Act, the class of assessment for this Activity has been determined to be 2A. This determination was based on the proposal being for a small-scale project with environmental impacts that are local in extent and likely to be minor in scale, may be readily avoided or mitigated through appropriate management and is a proposal unlikely to generate significant public interest.

It is proposed to extend the height of the landfill's final contour by 4 m, from currently approved RL 283 to a new RL 287. See Attachment F and G.

- **The landfill, including design, liner and how it was constructed:**

The DRDS was established many years prior to the publication of the DPIWE *Landfill Sustainability Guide, 2004* (Guide) (pre 1970 cf 2004). However, the continuous improvement that has occurred at the site over the years, as described below, has resulted in compliance with most aspects of the Guide.

The site layout[3] includes the following key facilities:

- Leachate collection and treatment including treatment pond and sand filter;
- Surface water management including stormwater detention pond;
- Groundwater management including monitoring bores;
- Waste minimisation, including recycling for domestic materials, green organics, timber reclamation, metal scrap and a tip shop;
- Storage areas for scrap steel, white goods, e-waste, chemical drums (DrumMuster) and green waste;
- Site security, including restricted public access, boom gate at entrance, fencing around the site and treatment facilities;
- Signage for site access and on-site directions; and
- Traffic management including controlled traffic movements on the site.

The DRDS incorporates comprehensive reuse, reprocessing and recycling facilities on site.

The DRDS landfill design, shown in Figure 6[4] displays the boundary of landfill liner and acceptable area of waste deposition including:

[3] Deloraine EMP 2018 (Attachment B, page 38-47)
[4] Drawing No. 682.001-CO1 (Attachment B, page 39).

- The boundary of the historic landfill footprint dating prior to the EPN 7216/3 (Attachment A) and the Guide, consisting of a 90% Standard Compaction clay liner with a coefficient of permeability of $8.9x10^{-9}$ m/s;
- The expanded landfill footprint constructed in accordance with the EPN 7216/3 (Attachment A) and the Guide, consisting of:
    - 0.3m thick subgrade of compacted in situ clayey material, with gradient of 2% to ensure drainage to the leachate collection system;
    - No foreign matter or stones loose on the surface or penetrating out of the subgrade greater than 10 mm;
    - Clay embankments, 0.5m high minimum, to prevent migration of leachate to the older landfill area;
    - Bentofix X1000 liner with permeability of $3.0x10^{-11}$ m/s over prepared subgrade and leachate diversion embankment, protected by a 0.3m thick layer of free draining sand.
- Leachate collection lines from all landfill cells, directing leachate to the onsite leachate treatment facility.

The proposal to extend the height of the landfill's final contour to RL 287 will not necessitate a change to the existing landfill liner, leachate collection and surface water management system.

- **Details of filling sequences at the landfill:**

Future landfill waste placement will follow an upwards filling sequence, in line with current waste placement procedures. Each 0.5m waste lift will include a 1.5m horizontal offset to achieve the 1:3 batter slope design requirement. Each successful landfilling lift must not exceed 2m in height, excluding cover material.

Any active tipping face(s) must not exceed 50 m in combined length, and public access to the tipping face is to be kept to the minimum necessary to facilitate access. Compacting equipment passes over the waste a minimum of three times to maintain compaction density requirements.

- **The collection and treatment system:**

The DRDS has a leachate collection system which was designed to prevent the pollution of water, including groundwater, by leachate. The leachate collection system has been constructed in accordance with Drawing No. 682.001-C01 (Figure 6) and No. 14850-C01 (Attachment B, page 43).

Potential environmental impacts from the proposal including leachate, runoff and landfill gas are managed by a leachate collection system. The leachate collection system collects leachate arising from waste deposited on the land and prevents it from escaping from the land into groundwater or surface water. Leachate is managed to prevent nuisance odours, and to minimise human contact with the leachate.

The leachate pond is to be maintained to ensure a freeboard of 500 mm below the top water level to maintain adequate storage capacity.

In September 2022 an aeration system was installed, to decrease Biochemical Oxygen Demand (BOD). In addition, leachate is pumped through a leachate sand filter for treatment. Sand filter overflow is then

directed across grassland, prior to discharge to the environment.

- **The stormwater management infrastructure:**

Unpolluted stormwater is to be prevented as far as practicable from mixing with deposited waste via drainage channels and settling areas. To achieve this goal, perimeter drains are in place at strategic locations on the land to prevent surface run-off from entering onto the area used or disturbed in operating the DRDS.

The stormwater diversion pipe through the central section of the site is monitored for any ingress of leachate annually and maintained to prevent the ingress of leachate. If leachate is detected the pipe must be sleeved.

Drains have sufficient capacity to contain run-off that could reasonably be expected to arise during a 24 hour, 1 in 20-year rainfall event. Maintenance activities are undertaken regularly to ensure that this capacity does not diminish.

The DRDS site infrastructure includes a stormwater detention pond that allows stormwater retention and settling prior to discharge, as shown in Figure 10.

The pond is to be periodically cleaned out to maintain its efficiency. Sediment removed during this cleaning must be securely deposited such that sediment will not be transported off the land by surface run-off.

- **The waste disposal and cover systems including maintenance procedures to ensure proper functioning of landfill:**

Machinery capable of spreading, compacting and covering the waste is kept on site at all times.

A person competent in operating the machinery spreads, compacts and covers all waste deposited daily. Waste is covered at the end of each day of operation with clean material to a depth of 300 mm.

The area of exposed waste without intermediate cover does not exceed 7,000 m^2. Intermediate cover comprised of low permeability materials is applied to a depth of at least 300 mm to areas more than 7,000 m^2 except where further waste deposition or final capping material will be applied within 90 days.

Note that the daily and intermediate cover may be provided concurrently by a single 300 mm layer.

- **The landfill gas management system:**

Currently, DRDS does not have a landfill gas management system.

New or existing?

- **State if this is an intensification or modification of an existing activity or a new activity.**

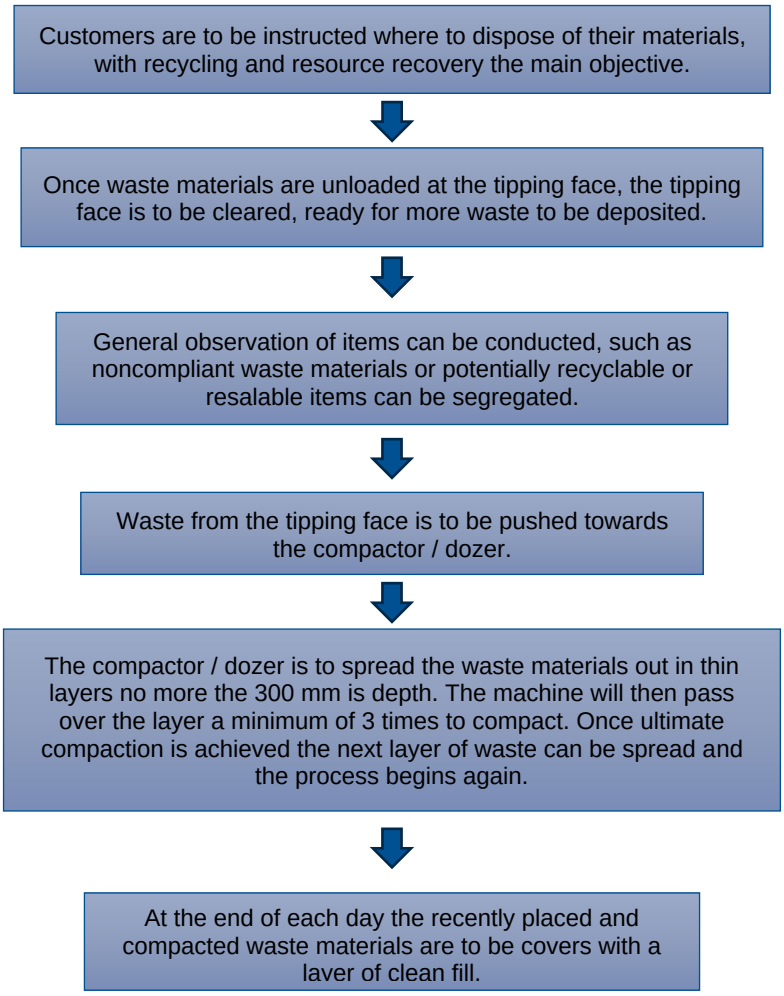
The application is for an upgrade/intensification/expansion of a Level 2 landfill site.

This application is to increase the height of the waste to be received at the active landfill. All other aspects and activities will remain unchanged.

The proposal is not for a substantial intensification as per subsection 12(7) of the LUPA Act.

- **Describe any planned or projected changes to existing landfill**

	operations as a result of the proposed increase in height. No change to landfill operations with the increase in height. Only the lifespan of landfilling is extended by up to 4 years.
Product or purpose	• **Describe the product or purpose of the activity:** DRDS provides refuse disposal services for the residents of Meander Valley Council and receives around 13,000 entries each year. This service is vital for MVC residents that do not have a kerbside collection service, which is over 15% of the region's population. The extension will allow the Council the room for sound decision making and budgeting including rehabilitation and future land use, while still providing a necessary waste management service to residents without kerbside collections.
Maximum quantity/limit	• **State the intended activity production capacity or limit/s, with respect to the activity type listed in Schedule 2 of the EMPC Act:** The annual license limit is 8,000 tonnes. No more than 8,000 tonnes of waste may be disposed of on the land per year, excluding clean fill and recycled material.
Method/s	• **State the method(s) of operation and the main items of equipment involved:**



Industry standards

- **Detail any industry standards or guidelines applicable to the activity:**
  - Australian Standard 3780 – Storage and Handling of Corrosive Substances.
  - Australian Standard 1940 – Storage and Handling of Flammable and Combustible Equipment.
  - Australian Standard and National Association of Testing Authorities (NATA) approved methods – Water Sample Handling.
  - Australian Standard 3798 - Guidelines on Earthworks for Commercial and Residential Developments, for Type 1 earthworks.
  - Landfill Sustainability Guide 2004, EPA Tasmania

Transport

- **Describe the proposed transport route, vehicle types, number of vehicle movements (per day), and time of day of vehicle movements:**

Vehicles enter and exit the site on Tip Road.

A traffic flow study conducted between 16/09/2021 to 22/09/2021 found:

- On average, 79 vehicles accessed the site daily (with weekends

being 6% busier than weekdays on average);

- Site peak periods are Friday between 10 am and 12 am and Wednesday between 10 am and 4pm;
- The most common vehicle types entering DRDS are short towing trailers (63%) and trucks (34%); and
- Other vehicle types include short vehicles (typically MVC residents) and larger articulated vehicles (used for bulk material transfers on/off site).

The increased height of the landfill is not expected to change traffic characteristics onsite.

Stockpiling

- **State any materials that will be stockpiled on site:**

General Waste

- Clean Fill; and
- Recyclable materials (where stored for recycling).

Green Waste

- Excludes contaminated green waste and scrap timber, stumps and logs greater than 150mm diameter.

Controlled Waste (subject to Hazardous Substances conditions)

- Scraps tyres (where stored for recycling);
- Batteries (where stored for recycling); and
- Waste oil (where stored for recycling).

Area of disturbance

- **State the total area of land to be cleared for the proposal, in hectares:**

The DRDS is in a rural environment off Tip Road, approximately 3 kilometers south of Deloraine in northern Tasmania and has an area of approximately 5.9 ha.

There will be no clearing as part of the DRDS increase of height.

Major equipment

- **List all existing and proposed plant/machinery and other temporary or permanent equipment:**

Existing Machinery:

	Operating dB(A)A max
John Deere tracked excavator	77
Victory wheel loader	72
Hook Lift Truck	77
Forklift	75
Excavator	75
Hydrapac Bailer	85 (should be lower as bailer is inside a shed)

Proposed Machinery:

- All plant/machinery will be maintained, no new plant/machinery will be proposed.

Infrastructure

- **List the existing and proposed buildings, structures, access roads, internal haul roads, etc.:**

Existing:

- Existing-Tip Road access, internal roads access and existing site, recycling packaging shed, tip shop and sheds, workshop shed and roofed and bunded oil storage. See Attachment E.

Proposed:

- No new infrastructure will be proposed.

Proposal timeline

- **State the key proposal timeline(s) and forecast life of the activity. Provide details of the expected timeframes for continued operation of the landfill and projected final closure timelines given the proposed increase in height of the existing landfill area:**

Council would like to emphasise the urgency of getting approval to increase height at DRDS as soon as possible. The site is currently at maximum height and is the municipality's main disposal site servicing its western towns including areas without kerbside collection services. The approval will provide an additional four years of landfill disposal at Deloraine (based on the filling rates from previous years). This will provide sufficient time for Council to complete its proposed transfer station, while budgeting and planning the closure and rehabilitation of DRDS.

Operating hours

- **State the proposed operating hours and days:**

The DRDS has the following operating hours:

Monday: 10:00AM - 05:00PM
Tuesday: Closed
Wednesday: 10:00AM - 05:00PM
Thursday: Closed
Friday: 10:00AM - 05:00PM
Saturday: 10:00AM - 05:00PM
Sunday: 10:00AM - 05:00PM

Closed: Christmas Day, Boxing Day, Good Friday and half day on ANZAC Day.

1.2. Location and planning context

Location

- **State the address of the site, and CTs and PIDs (as applicable) for all titles on which the activity will take place:**

The site is located at 54 Tip Road, Deloraine.

The site is critical regional infrastructure for MVC in a

	geographically central position within the municipality, approximately seven minutes driving distance from Deloraine and fifteen minutes from Westbury. The property is owned by the Meander Valley Council and is registered as PID 1914365 and Title Reference 130751/1 (See Attachment D).
Planning Permit	• **Confirm whether a Planning Permit is required under the Land Use Planning and Approvals (LUPA) Act:** a. Planning application is required under the Meander Valley Local Provisions Schedule (2021); b. A single permit application is required; and c. Application will be made under Section 57 of the LUPA Act.
Land zoning and tenure	• **Describe the land zoning and tenure of the site and surrounds. If rezoning of the site is required, provide details:** The zoning is Rural Resource and it will not change. Surrounding the site are a gravel quarry to the northwest, low density residential land to the southeast.
Use Class and Permissibility	• **If a permit is required under the LUPA Act, state the Use Class and Permissibility of the activity under the relevant Planning Scheme:** a. Application will be made under Section 57 of the LUPA Act; b. Existing zoning is Rural Resource and it will not change; c. The site Use Class is Recycling and Waste Disposal under the Tasmanian Planning Scheme (2022); d. The proposal is for the intensification of an existing activity, being a landfill site; and e. The proposal is not for a substantial intensification as per subsection 12(7) of the LUPA Act.

1.3. Description of site and surrounds

Land use	• **Describe the land use of the site and surrounds, distance to the nearest residences, and any nearby conservation reserves or recreation areas:** Land use for the site and surrounds has been sourced from the LIST[5]. **Land Use of Site:** • Land Use of the site is described as waste treatment and disposal (Land Use Code 5.9.0) and solid garbage (Land Use Code 5.9.3); and • Use of land include activities to collect, dismantle, store,

[5] https://maps.thelist.tas.gov.au/listmap/app/list/map?bookmarkId=566952

dispose of, recycle or sell used or scrap material and waste.

Land Use of surrounds area:

- Intensive Uses:
  - Quarries (approximately 350 m North-West); and
  - Rural residential without agriculture (bordering the site to the North and East).
- Conservation and Natural Environments:
  - Residual native cover (bordering the site to the West and South); and
  - Other conserved area (approximately 200 m North-West).
- Water:
  - Lake (approximately 700 m East and another 700 m North); and
  - Reservoir or dam (approximately 750 m North-East).
- Production from Relatively Natural Environments:
  - Grazing native vegetation (approximately 500 m North).
- Production from Dryland Agriculture and Plantations:
  - Plantation forests (approximately 550 m North-East); and
  - Grazing modified pastures (approximately 650 m North-East, 1000 m South-East, 750 m South-West and 950 m East).

Distance to the nearest residents:

- One private dwelling approximately 350 m North;
- Five private dwelling between 600-750 m East and South-East; and
- Six private dwellings between 600-1000 m North-West, North and North-East.

Further detail on the positioning of nearby residents is provided in Figure 8.

Topography

- **Describe the topography of the site and surrounds:**

The DRDS is in a small catchment of approximately 20 ha at the confluence of two shallow drainage valleys from the west and south-west. The overall surface drainage from the area would have originally joined Bonneys Creek, just south of the intersection of Tip Road, approximately 150 m north of the site. The site is well screened by native vegetation.

A diagram of the site and surrounding topography is provided in Figure 7.

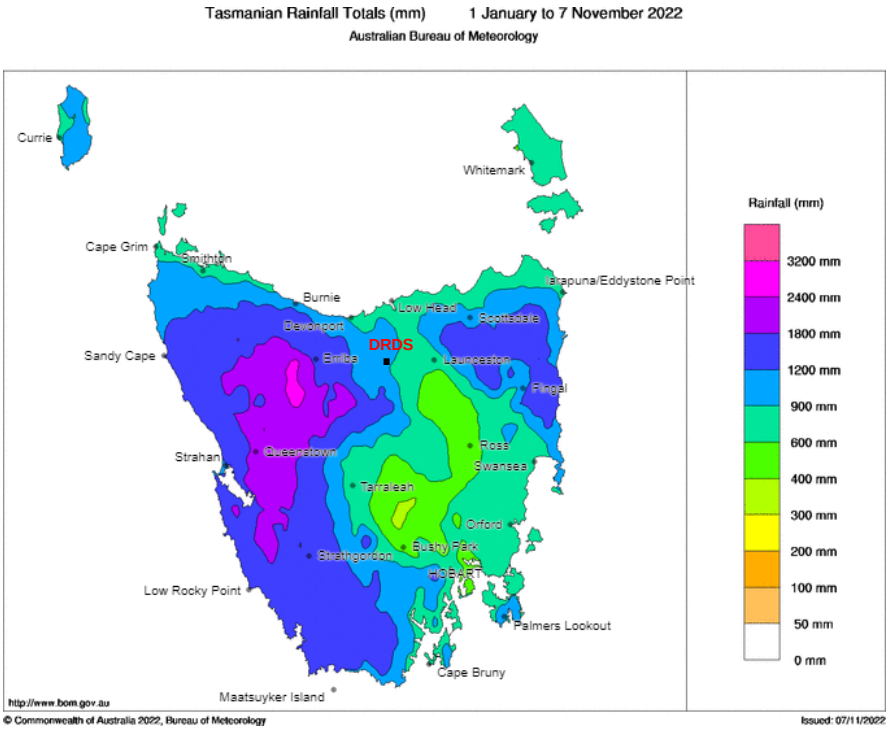
Climate

- **State the annual rainfall, average temperatures, and predominant wind direction (provide wind roses if possible):**
  - **Annual rainfall:** The annual rainfall in the region of the DRDS is between 900 to 1200 mm according to the Bureau of Meteorology (BOM)[6].

[6] http://www.bom.gov.au/climate/maps/rainfall/?variable=rainfall&map=totals&period=cyear&region=ta&year=2022&month=11&day=07

- The annual average between the three observation points varies between 953mm and 976mm (BOM monthly data between 2000 and 2022)[7].
- The landfill is situated in the center three BOM observation points with Lemana (Woodlands) to the North, Golden Valley to the South West and Meander (Meander River) to the South East.
- The wettest months are June to August with July averaging between 114mm at Golden Valley and 135mm at Lemana Observation points (BOM monthly data between 2000 and 2022).
- The driest months are January and February with monthly rainfalls between 35mm and 55mm (BOM monthly data between 2000 and 2022).

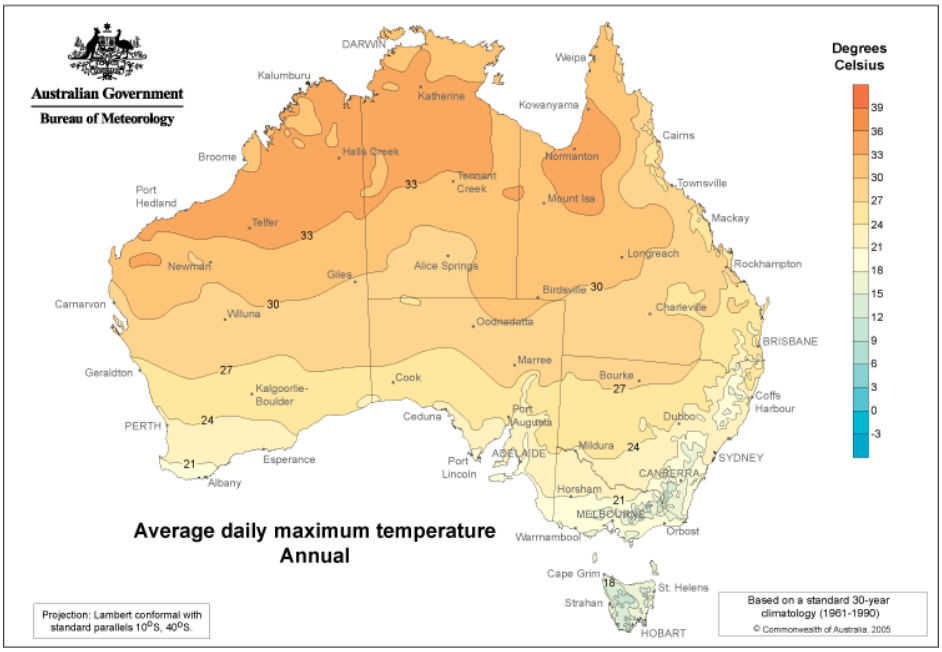
Figure 2: Tasmanian Rainfall Totals (mm)



[7] http://www.bom.gov.au/climate/maps/rainfall/?variable=rainfall&map=totals&period=cyear&region=ta&year=2022&month=11&day=07

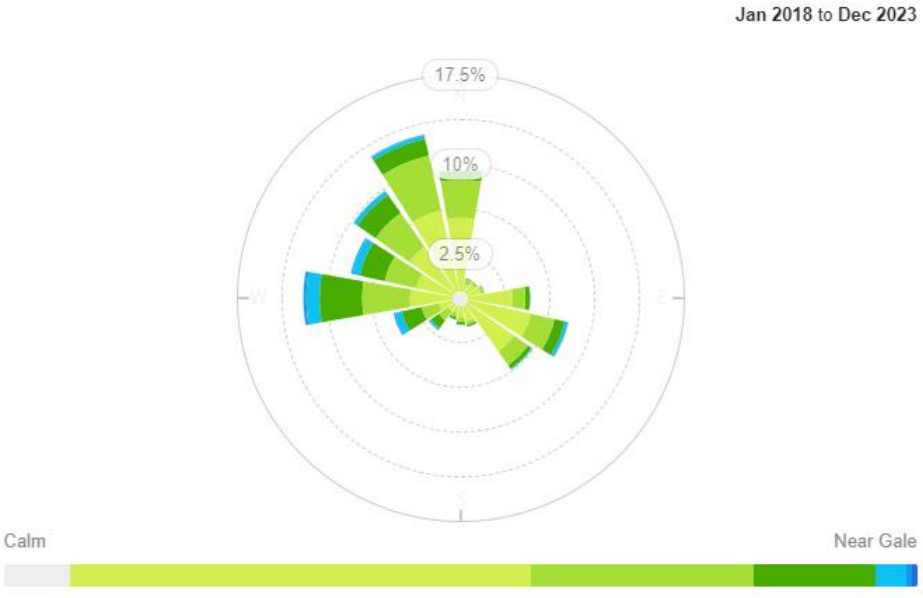
- **Average temperatures:** The Tasmanian average temperature is 18 degrees Celsius.

Figure 3: Average Daily Maximum Temperature Annual



- **Predominant wind direction:** Rose of Wind direction versus Wind speed in km/h (Jan 2018 to Dec 2023) – Sheffield Weather Station.

Figure 4: Rose of Wind Direction Versus Wind – Sheffield Weather Station[8]



Five-year average wind rose data for Sheffield weather station:

- Calm (7.26%): 0-1.1 km/h
- Light (50.64%): 1.1-12.6 km/h
- Gentle (24.57%): 12.6-19.8 km/h
- Moderate (13.31%): 19.8-28.8 km/h

- Fresh (3.44%): 28.8-38.9 km/h
- Strong (0.7%): 38.9-50 km/h

Site topography and wind:

- The site is largely at an elevation of 280 m;
- The most signification topographic features near the site are elevation rises to the South-East (320 m elevation) and East (310 m elevation);
- Elevation rises to the East of the site would decrease the intensity of prevalent Westerly winds; and
- The closest neighbors are to the North of the site and downhill (270 m elevation), although prevailing Westerly and Northerly wind directions mean they are upwind of the site.

Geology

- **Describe the geology of the site, including the likelihood that potentially acid forming (PAF) material will be found on site:**

Cambrian sediments, Tyndall Group and correlates (Edt). Upper sequence of felsic to intermediate volcaniclastic and volcanic rocks with sedimentary units, of late middle Cambrian age.[9]

In general, the potential for PAF occurrence in these types of rocks and sediments is relatively low. Cambrian sediments and volcanic rocks are typically less likely to form acid soils compared to other rock types, such as granites or sulfide-rich rocks, which have a higher potential for acidification.

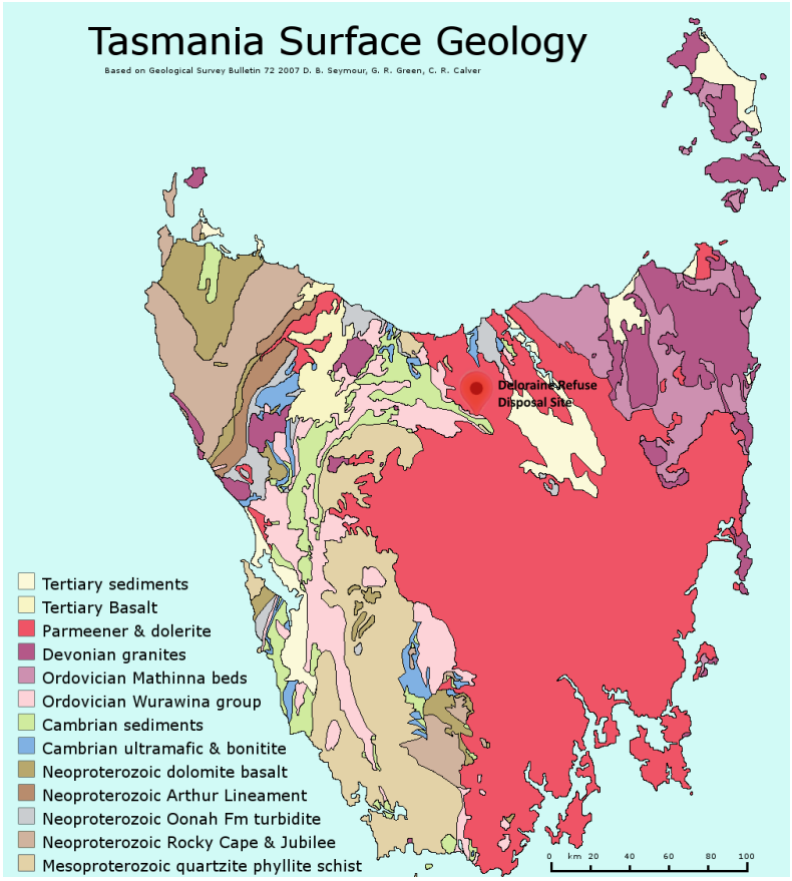
Since the bedrock is highly weathered, it is less likely to contain significant amounts of sulfide minerals, which are a primary source of acidity in soils and water. As rocks weather, they break down into smaller particles and undergo chemical reactions that alter their mineral composition. This can result in the release of some minerals and elements while others become locked up in minerals that are more resistant to weathering.

In general, the highly weathered rock has a lower potential for acidification compared to fresh or unweathered rocks. This is because the weathering process can cause minerals like sulfides to oxidise and release acidity, but it can also lead to the formation of minerals that are more resistant to weathering and acidification.

Therefore, since the surface expression of the bedrock on the site is highly weathered, it is less likely to contain significant amounts of PAF. However, it's important to note that the potential for PAF occurrence can still vary greatly depending on the specific mineralogy and geochemical properties of the rocks and sediments.

[8] Graphic generated from data provided by the Bureau of Meteorology, available: https://www.willyweather.com.au/climate/weather-stations/tas/north-western/sheffield.html
[9] Department of State Growth, Mineral Resources Tasmania, Geology of northeast Tasmania.

Figure 5: Tasmania Surface Geology



Source: Based on Geological Survey Bulletin 72 2007 D. B. Seymour, G. R. Green, C. R. Calver.

- **Describe any geoconservation values on or near the site (e.g., karst):**

  No Geoconservation sites found within 1000 metres of the site.

Soils

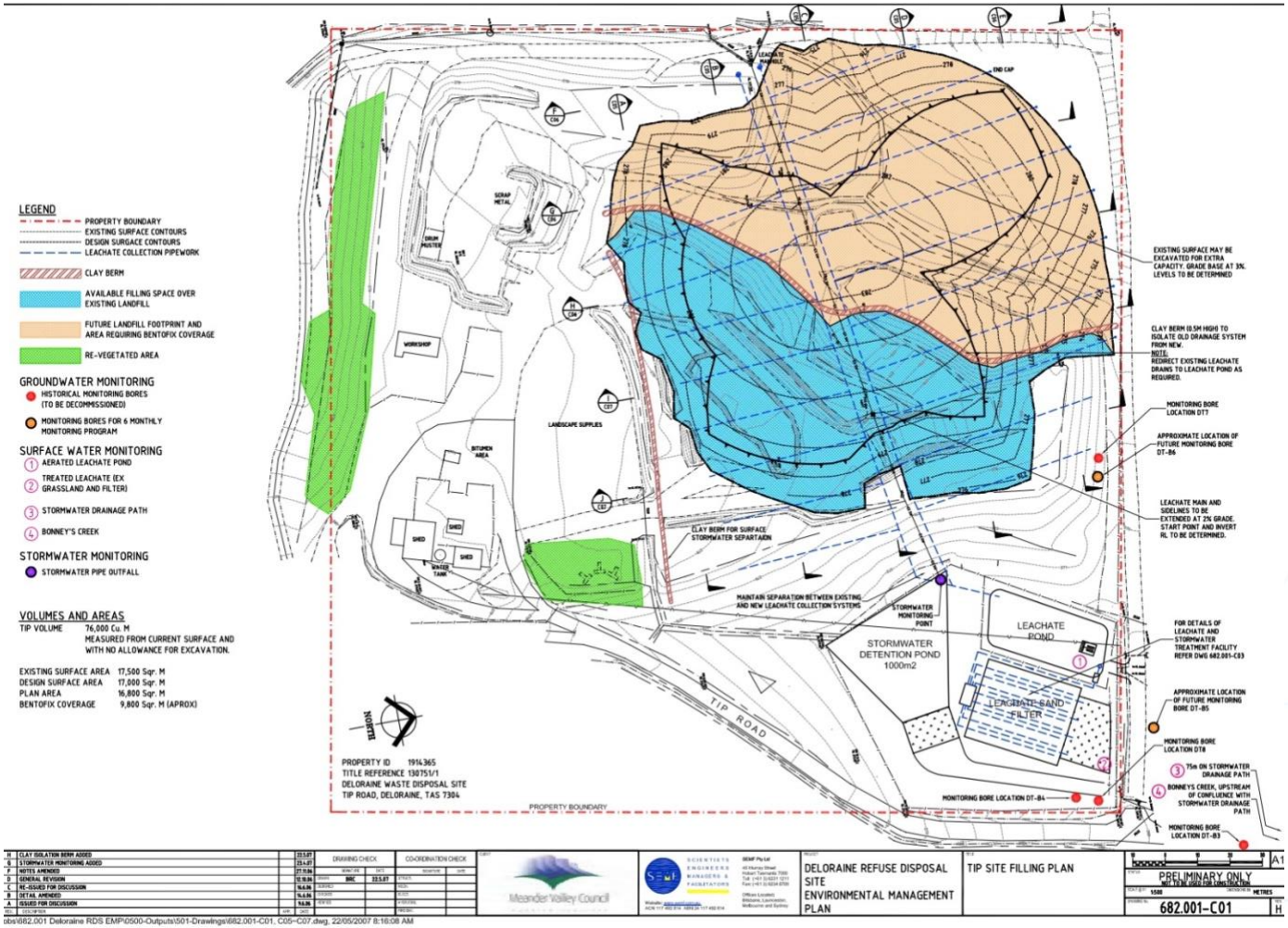
- **Describe the soils on the site (including erodibility), and state whether there is potential to encounter acid sulphate soils and/or contaminated soil.**

  The soil type in which the DRDS is situated is Miscellaneous Soils 2 (M2) RYP - Red and Yellow Podzolic Soils and Podzols (ash coloured, bleached or leached layer underlying the topsoil) on various metamorphic rocks (174 sq. km).[10]

[10] https://nrmdatalibrary.dpipwe.tas.gov.au/FactSheets/WfW/SoilReports/Quamby_report.pdf

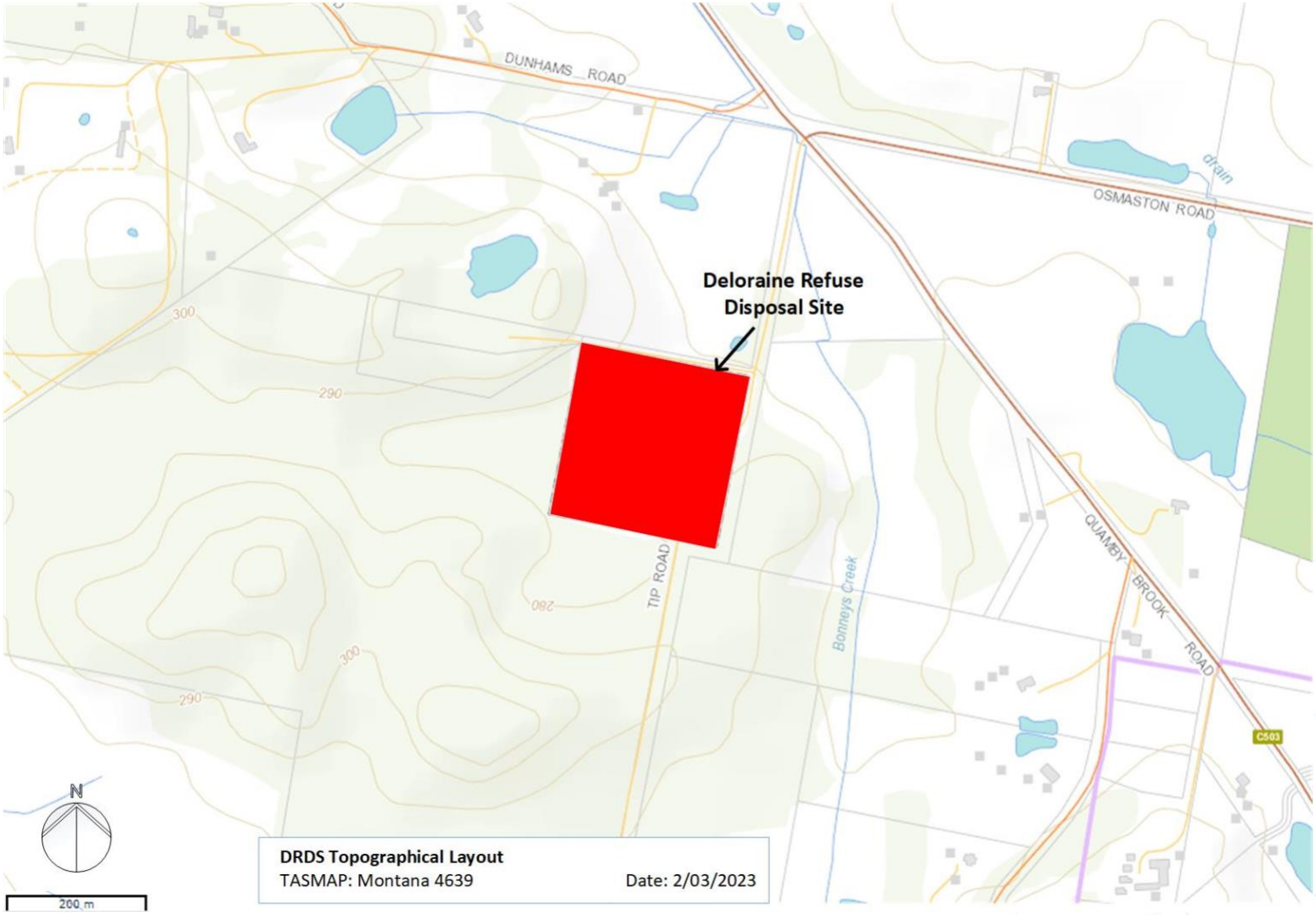
Hydrology	• **Describe the waterbodies (surface and groundwater) and aquatic values on site and in the surrounding area. State the distance from the activity to the nearest waterbody.** DRDS is located in a small catchment of approximately 20 ha at the confluence of two shallow drainage valleys from the west and southwest. The overall surface drainage from the area would have originally joined Bonneys Creek, just south of the intersection of Tip Road, approximately 150 meters north of the site. According to List Map Bonneys Creek has a high conservation value.

Figure 6: DRDS Landfill Design Diagram



(Source: Attachment O - SEMF Drawing Tip Filling Plan).

Figure 7: DRDS Surrounding Topographic Layout.



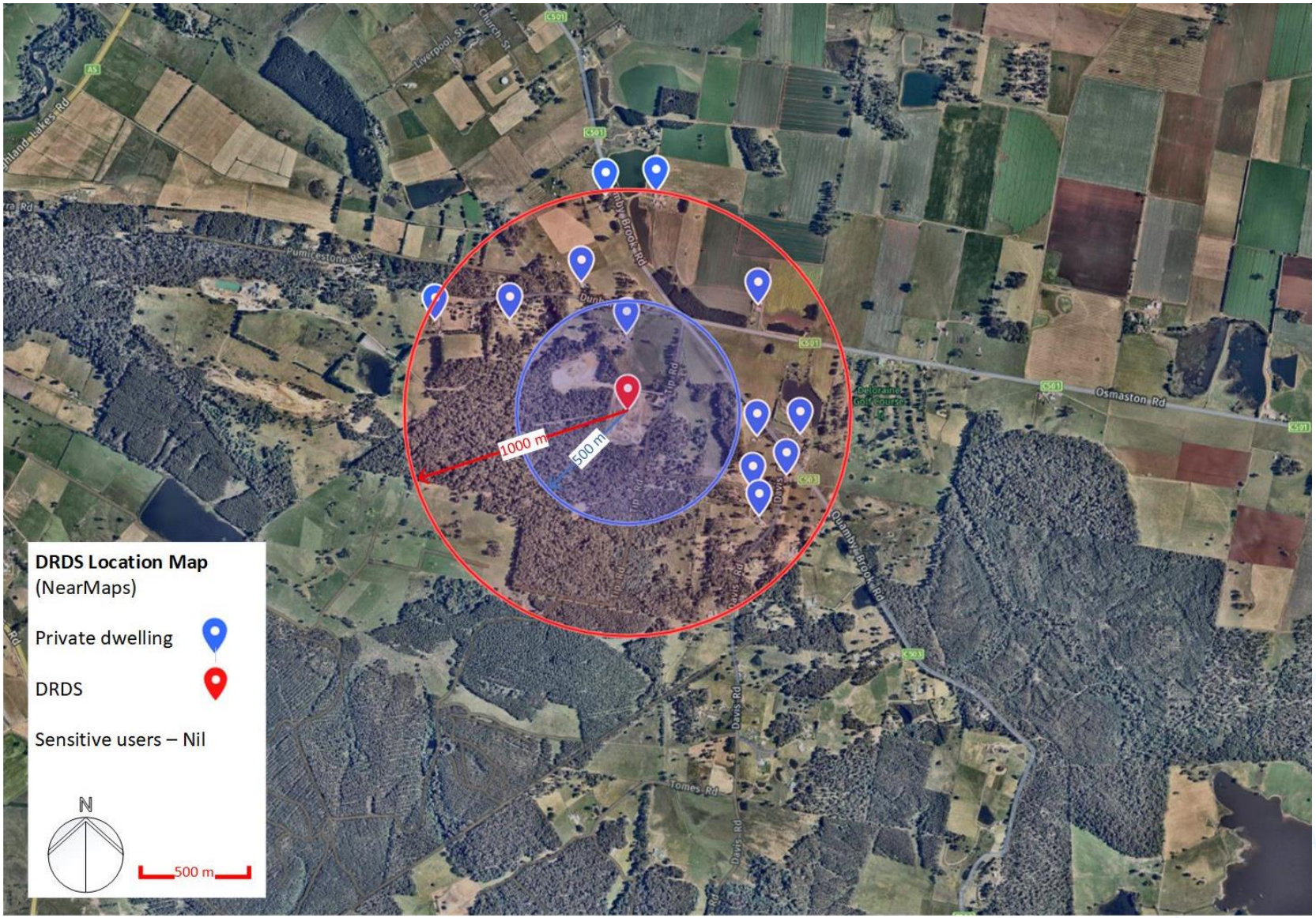
(Source: List Map https://maps.thelist.tas.gov.au/listmap/app/list/map?bookmarkId=566952)

2. Maps and Site Plans

1.1 General Location Map

Figure 8 shows the site, the nearest residences in other ownership, other sensitive uses, and residential zones within 1.5 km of the proposed activity and within the applicable attenuation distance, and the transport route(s) to and from the activity.

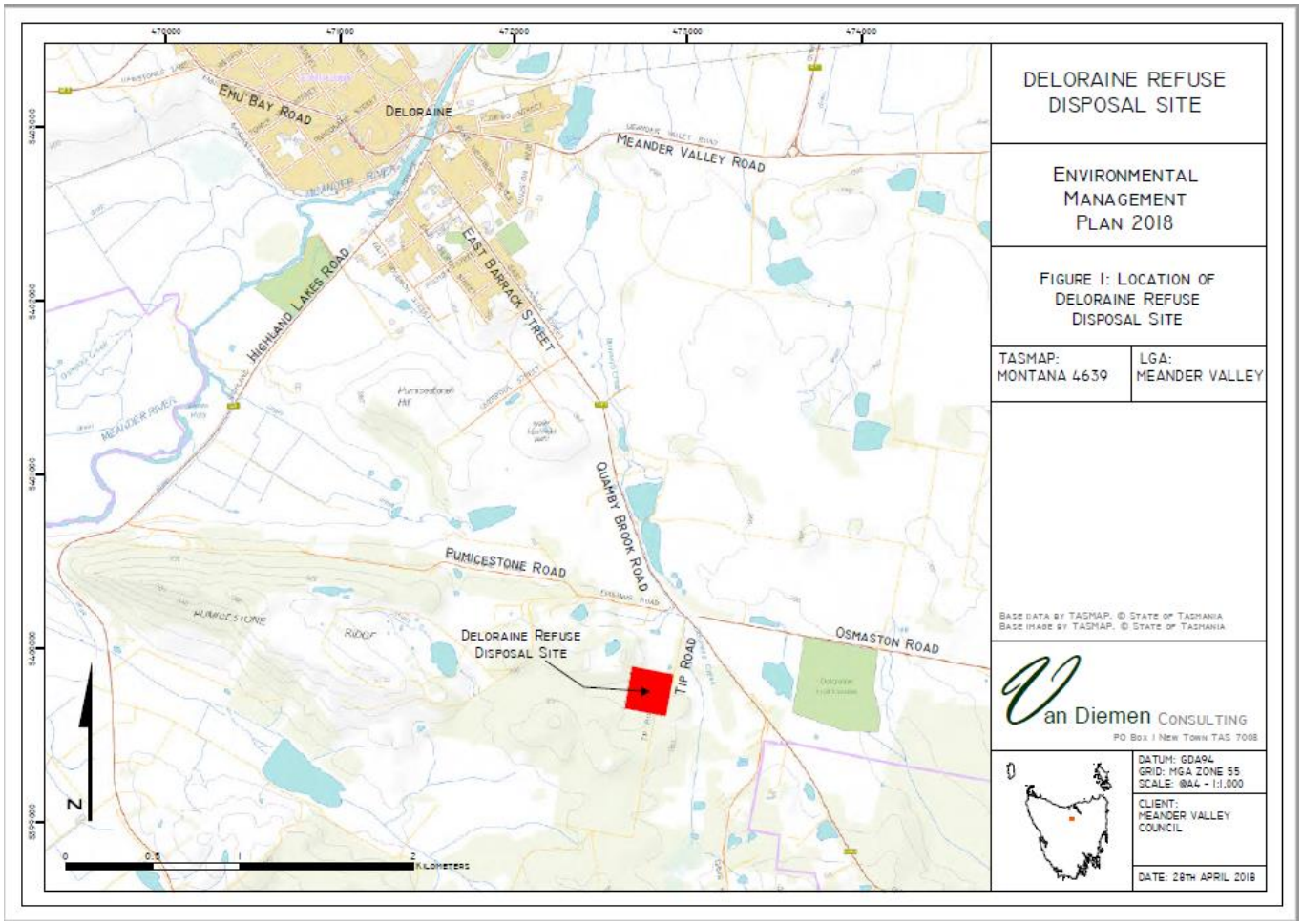
Figure 8: Map of DRDS and Surrounds



1.2 Map of the Land and Site Plan

Figure 9 shows the boundary of the site.

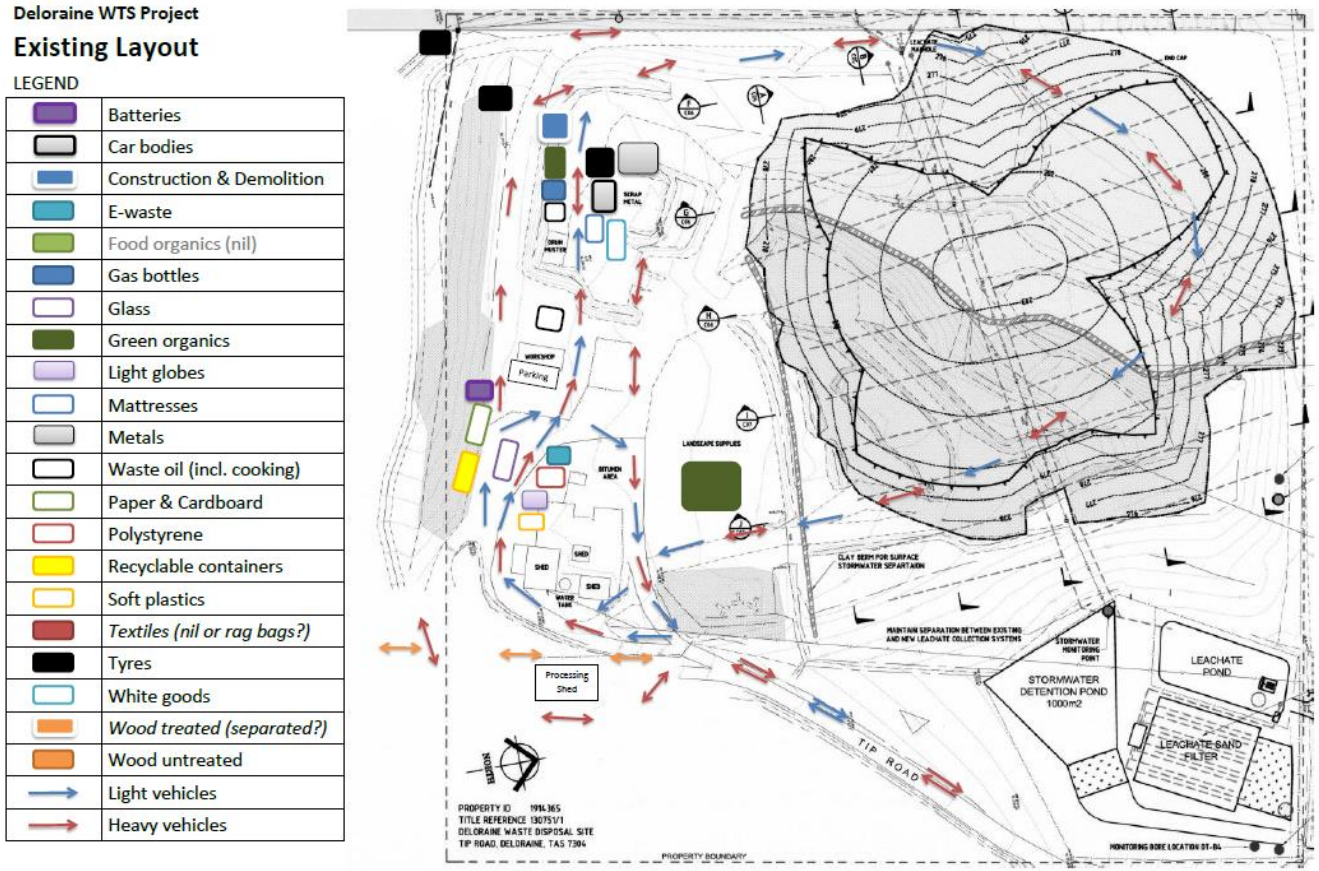
Figure 9: Location of DRDS



(Source: Attachment C - Location Map DRDS)

Figure 10 shows the location of existing and proposed buildings/structures and plant and machinery. It also shows the location of product, overburden, soil, and waste stockpiles. Figure 10 shows the layout prior to changes agreed upon with the EPA to shift the green waste stockpile to the north western part of the landfill (see attachment P for updated green waste location)

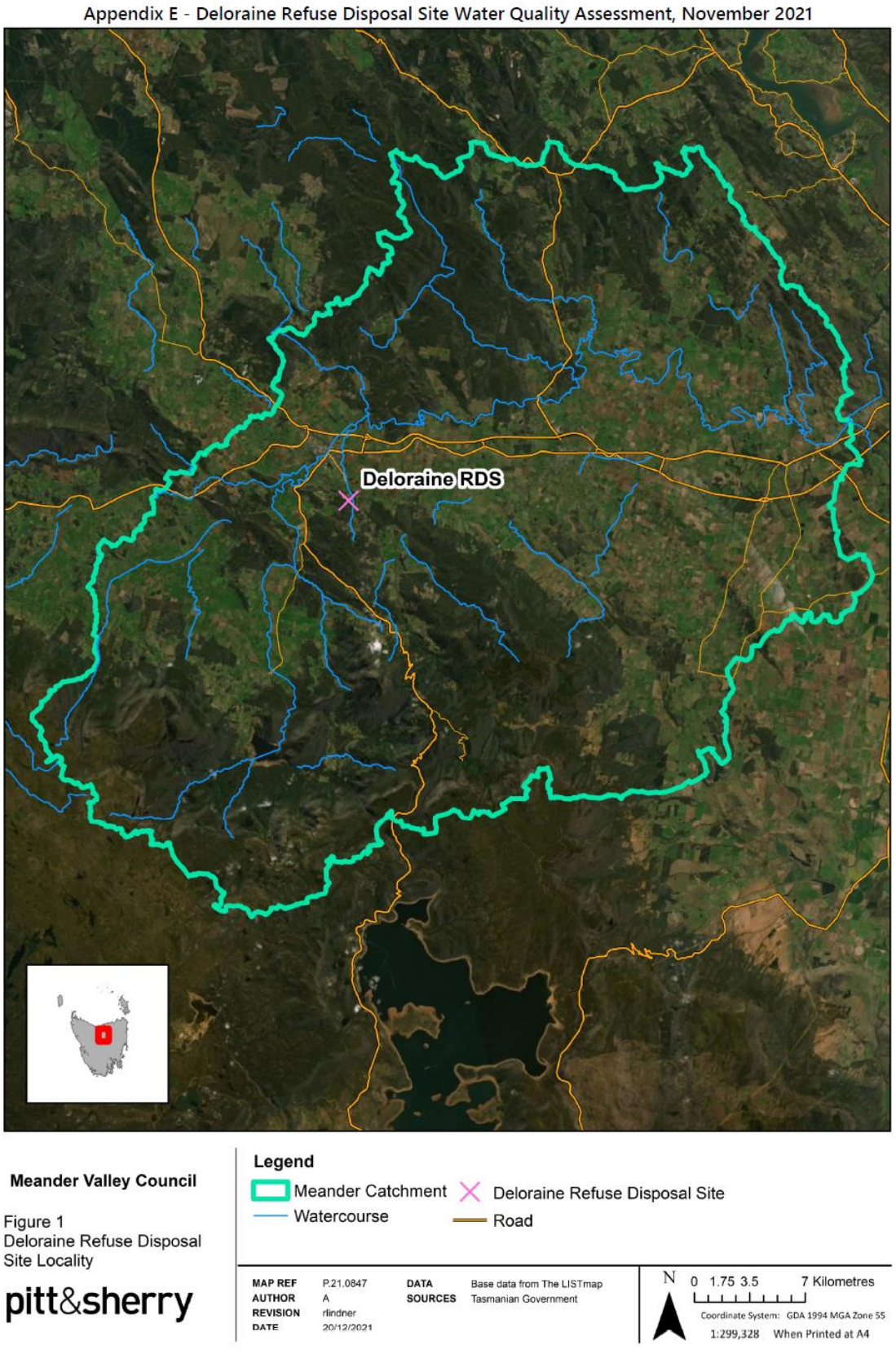
Figure 10: Layout of DRDS



(Source: DRDS MVC Environmental Management Plan, 2018)

Figure 11 shows the watercourses on and near the site.

Figure 11: Site Locality and Watercourse



(Source: DRDS Water Quality Assessment, March 2022)

Figure 12 shows the water monitoring locations and the site drain. Detailed plans and

description of the leachate collection and management infrastructure can be found in Attachment B on page 39.

Figure 12: Site Monitoring Locations

(Source: DRDS Water Quality Assessment, March 2022)

3. Project Rationale and Alternatives

3.1. Explain the rationale for the proposal.

The DRDS provides waste disposal and recycling services for areas of MVC that do not have a kerbside collection service and the on-site tip shop is a community hub that encourages resource recovery and reuse. While MVC has a second landfill at Cluan, near Westbury, the DRDS is Council's key disposal site licensed by the Environment Protection Authority (EPA) Tasmania to receive 8,000 tonnes of waste per annum. Cluan is licenced for 4,500 tonnes of waste annually.

3.2. Evaluate the benefits and disadvantages of any alternative options that have been considered.

The site serves as critical Council infrastructure, providing a regional landfill to the municipality's eastern townships and rural communities that do not receive a kerbside collection service. Without the approval to increase height, the DRDS would need to close within a short time period which would trigger significant rehabilitation and reporting that Council has not yet planned for, including:

- Providing a decommissioning and rehabilitation plan 30 days after notifying the Director of the EPA Tasmania the planned cessation of operations.
- Undertaking rehabilitation upon cessation and progressive rehabilitation.

The cost for rehabilitation (immediate and final cover) if Council closed DRDS is around $3,228,000. This is a significant burden that Council would need to bear immediately. Additionally Council would need to plan and build a Waste Transfer Station (WTS) to continue to provide a waste service to the whole of the Local Government Area (LGA).

The last couple of years have been disruptive to Council processes and have caused delays in many areas, including waste infrastructure planning.

Increasing the height of the DRDS, would provide additional filling capacity and allow council to plan and budget for the closure of the landfill and the building of a WTS.

4. Existing Activity

As the proposed activity is associated with an existing activity, provide the following information in relation to the existing activity:

4.1. A summary of environmental monitoring results:

The half yearly ground and surface water monitoring results summary in September 2022 quotes as follows:

The previous significant increases in groundwater concentrations at DT-B5 (Groundwater sampling location) reported in November 2021 for TDS, alkalinity, DOC, COD, Ca2+, Na+, K+, SO42-, NH3, NO3, NO2 and TN had returned to within historical ranges in March 2022 and remained within historical ranges in September 2022. The detection of TPH above the LOR in November 2021 had returned to within historical ranges and was below the LOR in September 2022 (not monitored in March 2022). It is likely that the elevated concentrations were catchment-related given the elevated concentrations detected at surface water monitoring locations (RDS Drain, BC-D and BC-U8) in November 2021.

Groundwater extraction does not occur within the DRDS boundary or within a 2 km radius. Groundwater beneath the DRDS is assumed to discharge to Bonney's Creek.

Further detail can be found in Attachment T, which discusses current monitoring.

Surface water results have been varied over the years and require further attention. High nutrient levels suggest that there is potential to improve the water quality by draining the sediment pond, removing vegetation and sediment. This will increase detention and improve biological parameters resulting in better water quality downstream.

4.2. A summary of public complaints regarding the activity (received by the activity operator and by regulatory authorities):

See Attachment M for the FY 22 Annual Review Report DRDS - EPN (page 3), provides a summary of complaints received and actions taken in relation to complaints. Feedback from previous years can also be provided.

The recently more frequent reports about uncovered waste and litter on site let to the implementation of the Daily Cover & Litter Collection Spreadsheet for DRDS which was forwarded to JustWaste to use as a reporting tool and evidence to the EPA on any future complaints.

Table 1: Summary of Complaints Received and Actions Taken

Date	Complaint	Outcome
6 September 2021	Feral kittens at DRDS.	Natural Resource Management's Cat Management Officer was approached about further actions and support that can be offered with feral cat control.
13 December 2022	Cleanliness at the tip shop with allegations of bird droppings on display items.	The issue was raised with the contractor who arranged for the tip shop to be cleaned.
11 February 2022	Fire in the green waste area at the landfill that burnt the entire stockpile.	Attachment S - Pitt & Sherry's Deloraine Refuse Disposal Site February 2022 - Fire Incident Follow Up Sampling Report (Rev03) describes the incident and the recommended actions. The actions: • Continued testing of stormwater conductivity, • Getting EPA permission to bury soil onsite, and • Retesting for glycols at lower levels of reporting to allow comparison to the ethylene glycol ANZG 2018 freshwater DGV (95% of species protection) criterion have been acted upon.
25 May 2022	Daily cover and litter collection allegedly not been undertaken.	The EPA Senior Environmental Officer received a complaint that the daily cover and litter collection had not been undertaken for over two months. Council provided email evidence dated 30 May 2022 and 21 June 2022 advising that daily cover and litter clean ups had been conducted at the site.
8 July 2022	Requirement for waste	Following a site visit by the EPA officer there was

Date	Complaint	Outcome
	cover.	a request for an intermediate level of waste cover to be applied to the DRDS. This request was withdrawn as the current exposed area at DRDS was identified to be 6400m^2, below the 7000m^2 threshold whereby immediate cover needs to be applied.
20 December 2022	Daily cover not applied	The Senior Environmental Officer from EPA received a complaint that there was uncovered waste. JustWaste were notified and daily cover had been used on the Saturday and Sunday. The active face at DRDS was being reshaped and this might have given the appearance that cover had not been applied. Nevertheless, additional stockpiles of cover material were secured for use as an action.
17 January 2023	Poor state of site	Former JustWaste employee sent a text message to the Mayor about the “poor state” DRDS. Issue raised with JustWaste with a reminder to conduct regular litter collections along with daily cover of the active tipping face.
3 April 2023	High gate fee for recycling complaint	Resident called about the high gate fees for recycling. Contacted JustWaste who confirmed it was a contaminated load so it was charged for waste disposal rather than the recycling rate.
27 April 2023	Tip shop cost complaint	Resident complained about DRDS specifically cost of items at tip shop and that C&D waste was not recycled

4.3. Details of breaches of conditions of current regulatory approvals (if any):

In the previous 2020-21 Annual Environmental Review (AER) DRDS received 5 non-compliances and 2 minor non-compliances against AER Reporting Conditions detailed in Q5 of EPN 7216/3 for Deloraine Waste Depot (see Attachment L)

It was noted in correspondence from the EPA that “the EPA has failed to provide Council with feedback in relation to previously submitted AERs. As such, it is considered that non-compliance with the 2020- 2021 AER process can be resolved with the submission of satisfactory AERs for the 2021- 2022 financial year.”

Council has submitted the AER for 2021-2022 on 20/10/2022 (See Attachment N) a more comprehensive document than previously submitted, responding in detail to the annual reporting requirements specified in Condition Q5. Correspondence from the EPA on 20/12/22 confirmed that the AER for 2021-2022 was compliant with the requirements of the Permit.

4.4. Details of contraventions of environmental law (if any):

MVC couldn’t find any reports or evidence that the operations of the DRDS had contravened any environmental law recently or in the past.

5. Air Quality

5.1. Discuss the potential for emissions to air (including odour and dust) from the proposed activity to cause environmental nuisance or harm on the local and regional air environment during construction and operation stages:

The increase in height of the landfill will not lead to additional environmental problems or harm to the local and regional air quality. This is because there will be no change in activity or traffic at the site. However, it is important to recognise that the increase in height from where the emissions occur may require extra measures to reduce the effects of potentially higher winds.

The prevailing wind directions at the landfill have been west and north-west, with wind speeds (monthly averages) at Sheffield Station Number 091091, which is the closest observation station to the landfill, ranging from 3.8km/h to 11.9km/h. The months of November through to January have recorded higher wind monthly averages, while the months between May and August have lower averages.

During the summer months, wind speeds between 10 and 40 km/h are more likely to be from the westerly direction, while prevailing winds are from the North, but largely at speeds between 0 and 10 km/h. Higher wind speeds in summer, combined with higher temperatures and less precipitation, may lead to potential nuisance conditions and increased potential for dust.

In winter, wind speeds are generally lower and rarely exceed 30 km/h. Calm conditions occur 61% of the time in the morning and 16% of the time in the afternoon. Winds up to 10 km/h can occur from the West, North-West, North, and East. Higher wind speeds have been recorded from the westerly and north-westerly directions. Calm overnight conditions have the potential to cause an accumulation of landfill gas, which may potentially lead to odour issues downwind from the landfill fill area when wind speeds increase during the day. Please refer to Figure 13 and Figure 14 for wind roses showing typical summer and winter conditions months.

There are five residences located East of the landfill within a 1km circle. These residences are at highest risk of odour impacts from landfill gas. The most likely time for the impacts occurring would be between 9am and 1pm on after a calm night. To date, there have not been any odour complaints, indicating that odours or emissions have not been creating nuisance conditions for the downwind residents. This is most likely due to the relatively small quantities of landfill gas generated. Furthermore, the surrounding topography, particularly to the West and North West, shows elevations higher than the finished height of the landfill, which further reduces the effects of wind exposure.

In summary, while the increase in height of the landfill will not cause additional environmental nuisance or harm to the local and regional air environment, care must be taken to reduce the effects of potentially higher winds.

Figure 13: Wind Rose Sheffield - January

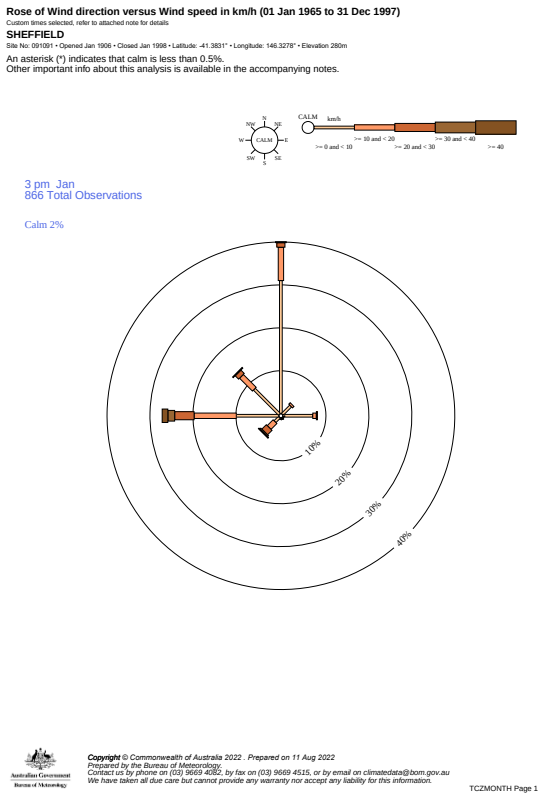
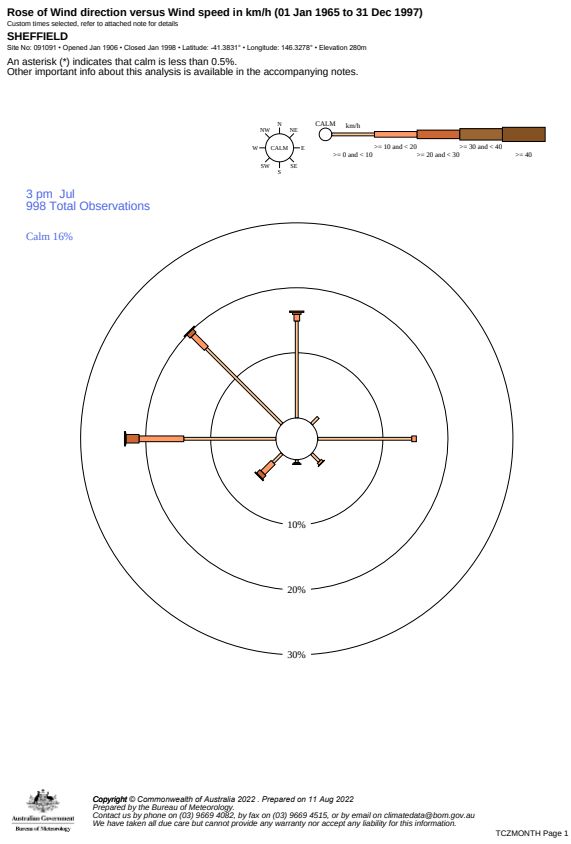


Figure 14: Wind Rose Sheffield - July



Odours and emissions from the activity are not anticipated to be different from current operations. The types of waste, volumes and processes will not change. The operator follows all applicable procedures to minimise emissions and odours:

- Minimisation of the active face;
- Application of daily cover with clean fill.
- Active treatment of landfill leachate through aeration and pumping leachate onto the sand filter to reduce pond retention time and decrease odours;
- Reducing disposal of kerbside putrescible waste and expanding the current Food Organics Garden Organics service. Currently FOGO goes to a Composting Facility at Remount Rd.
- Potential odour generating waste like garden waste is separated and shredded and transported to Dulverton for composting (updated operations from 10 July 2023); and
- Spraying of road surfaces for dust suppression.

Refer to paragraph 5.7 for Dust Management Strategy.

See Attachment B, page 20 for contaminated water and leachate management.

5.2. A map of the location of all potential sources of atmospheric emissions (from arrival of waste material, activity on the site, storage, handling, and transport of material on and off site, maintenance) from the proposed development. The map should include but not be limited to roads, disturbed areas, storage heaps, machinery, the leachate management system.

A map is attached as Attachment P showing location of potential sources of atmospheric emissions:

- Leachate Pond – potential odour emissions (upset conditions)
- Active landfill cell – potential diffuse emission of landfill gas
- Green waste – potential odour in case of decomposition
- Access roads and internal roads – potential dust emissions

5.3. Describe each potential source of emissions (i.e., point or fugitive) including the likely composition (i.e., types of constituents including odour and dust), approximate quantities, frequencies, and rates of emissions to the atmosphere that may arise from construction, and operation and maintenance of the facility. Particular attention should be paid to emissions from controlled waste handled at the site (like asbestos or sanitary waste).

Construction Phase:

There is no construction activity to be expected.

Operation and Maintenance Phase:

Point sources of emissions during the operation and maintenance phase include emissions from general waste handled at the site. These emissions are likely to contain a range of constituents depending on the type of waste being handled but may include volatile organic compounds (VOCs) and particulate matter (PM). Relatively small waste quantities (up to 8,000tpa) and significant buffer distances ensure dilution of VOCs beyond the perimeter of the landfill. Further potential point source emissions are dust emissions from vehicle movements and waste compaction. The control measures are water spraying and speed limits to reduce dust emissions.

Fugitive sources of emissions during the operation and maintenance phase include dust and odours generated by the landfill itself. This can occur as a result of the decomposition of

organic waste and the movement of air over the landfill surface. The composition of the dust and odours may vary depending on the type of waste being decomposed, but is likely to contain organic matter, bacteria, and other microorganisms. The quantities and rates of emissions will depend on the amount and type of waste being decomposed and on factors like the leachate levels in the waste pile. The control measures in place are:

- regular application of cover material;
- diversion of organic materials;
- leachate collection and treatment.

Active diversion of green waste from landfilling has been occurring at least since 2007 as part of landfill gas management. There is no earlier record since records were lost in the council amalgamation. The LFG generation curve typically exhibits an initial period of low gas production, referred to as the "latent period." During this stage, gas production is minimal or negligible as the waste undergoes early stages of decomposition. The duration of the latent period can vary depending on several factors, such as waste composition, moisture content, and landfill management practices.

After the latent period, LFG generation increases and reaches a peak level known as the "peak gas generation phase." This phase is characterised by the highest rate of gas production from the landfill. The peak gas generation phase is influenced by factors like waste age, waste characteristics, and environmental conditions.

Following the peak gas generation phase, the LFG emission curve gradually declines. This decline occurs as the waste continues to decompose and the generation rate of LFG decreases over time. The decline in LFG emissions is typically described by an exponential decay curve or a diminishing rate of gas generation.

It's important to note that the exact timing and duration of the peak gas generation phase can vary depending on site-specific factors. Factors such as waste composition, waste depth, moisture content, temperature, and waste management practices can all influence the shape and timing of the LFG emission curve. Refer to paragraph 5.4 below for management of landfill gas.

5.4. Describe the potential for landfill gas generation and measures to manage any gas likely to be generated:

Landfill activities are causing landfill gas emissions due to the decomposition of organic waste. Landfill gas is a composition of different gases including methane and CO2, and a range of trace gases. The generation of landfill gases at the DRDS is reduced through avoiding organic waste disposal, and dissipated through the application of a daily cover, applied at the end of each day. Organic waste is considered to be responsible for the majority of Landfill gas generation. Green waste from the public is accepted for recycling at the DRDS with a designated drop off, an area with intermediate cover within western part of the landfill. After shredding, MVC is taking the material to Dulverton Waste Management for composting at their current open windrow facility. This has been occurring since 10 July 2023.In the future Council will expand its FOGO collection service, potentially including the Deloraine region. The FOGO material will be sent to Dulverton Waste Management's new in vessel composting facility which is currently under construction. In the meantime Council is actively encouraging home composting to reduce the organics content of the MSW. The application of gas collection systems and gas flares is not reasonably practicable due to the relatively small quantities of landfill gas.

There have been no complaints received regarding odour from landfill gas at the site.

The landfill gas management system for the DRDS complies with the Acceptable Standard for a Category B Landfill: Landfill gas must not present a source of odour or an explosion or toxicity hazard.

5.5. The identification of all sensitive receptors in the vicinity of the proposed activity (include a map of their locations).

There is one residential property within 500 m of the filling area and 11 residential properties within 1000 m of the filling area. There are no schools or hospitals or any other sensitive receptors within 1000 m of the landfill as shown in Figure 8. Five of the properties are situated downwind of the landfill.

5.6. An assessment of the potential for emissions to air from the proposed activity to cause environmental nuisance or harm at or beyond the site boundary. Include environmental impact of the facility during construction activities and operation of the landfill. The assessment should cover a variety of conditions including emissions under normal operations and upset conditions.

Under normal operations, the landfill will produce emissions that may include volatile organic compounds (VOCs), methane, carbon dioxide, and other gases. These emissions may cause environmental nuisance or harm, especially if they are not adequately controlled. For example, methane is a potent greenhouse gas that contributes to global warming. VOCs can react in the atmosphere to produce ground-level ozone, which can cause respiratory problems in humans and damage plants.

During upset conditions, emissions from the landfill may increase, and there is a higher risk of environmental nuisance or harm. Upset conditions may occur if leachate management systems fail or maintenance issues occur. Main reasons for upset conditions may be:

- High leachate levels in the waste pile; and
- Anaerobic or anoxic conditions in the leachate pond.

MVC is aware of the potential risks and has installed an aerator (1.5kW AIOLOS ASA Series Aerator Model ASA0151-SUF QU-30) in the leachate pond to combat low oxygen levels in the leachate. The ASA0151-SUF QU-30 aerator is equipped with a motor that drives a rotor or impeller. The impeller is positioned just below the liquid surface in the leachate pond or tank. When the motor is activated, the impeller rapidly rotates, creating a spinning motion in the leachate.

As the impeller spins, it draws surrounding air or oxygen through vents or openings in the aerator unit. The air is then mixed with the leachate as it is forcefully expelled from the aerator. This process creates turbulence and agitation in the leachate, allowing for efficient oxygen transfer.

The high-speed rotation of the impeller not only facilitates air mixing but also helps in breaking up any surface scum or floating debris in the leachate. This ensures that the leachate is exposed to a maximum amount of oxygen and promotes the growth of aerobic microorganisms that aid in the degradation of organic matter and pollutants.

As a contingency MVC is investigating the availability of a second aerator. Additionally MVC is considering the installation of a monitoring bore in the waste pile to monitor leachate levels and landfill gas volumes.

Construction activities can also contribute to environmental nuisance or harm. For example, dust and particulate matter may be generated during earth-moving and grading activities. These emissions may impact air quality, and nearby residents may experience respiratory problems. It is, therefore, necessary to implement adequate dust control measures during construction to minimise these impacts.

In addition to the normal and upset conditions, it is essential to consider the potential impact of a fire like the recent fire at the green waste pile and subsequent firefighting activities on the air quality and the environment.

Fires at waste facilities are not uncommon and can have severe environmental and health impacts. The combustion of waste materials, especially organic materials such as green waste, can release toxic gases, particulate matter, and other harmful pollutants into the air. These pollutants can travel long distances and cause respiratory problems, eye irritation, and other health issues in humans and animals.

Furthermore, firefighting activities can also contribute to air pollution. The use of water, foam, and other firefighting agents can generate significant amounts of runoff, which may contain pollutants. Firefighting vehicles and equipment may also produce emissions such as diesel exhaust and noise pollution.

To minimise the environmental impact of a fire and subsequent firefighting activities, MVC is in the process to develop a comprehensive emergency response plan. The plan outlines the measures to be taken to prevent fires from occurring, such as regular inspections of the green waste pile. It will also include procedures for responding to fires, such as the use of appropriate firefighting agents and equipment and the protection of nearby water sources and habitats.

Currently MVC is taking the green waste to DWM for composting immediately after mulching. Stockpiles are never exceeding 150m3 before mulching and transport occurs.

The emergency response plan may also consider the potential impact of firefighting activities on the air quality and the environment. Adequate measures to contain runoff from firefighting activities will be considered.

The proposed activity is essentially the same as the current activity, with the exception that the waste stack's height will be raised by 4 meters. Although this height increase may pose a higher risk of upset conditions, it is unlikely that the landfill's emissions will have any adverse environmental effects on neighbouring residents, due to the relatively small quantities of landfill gas generated and the distance to residences. There have been no reports of odour or dust impacts from residents living within a 1000-meter radius of the site, which suggests that the landfill operator's efforts to mitigate odour by applying daily cover and reducing organic waste have been effective. There have been no previous complaints about potential upset conditions, and it is unlikely that such conditions will generate complaints in the future.

5.7. Discuss the measures to be implemented to mitigate any air emissions (including odour and dust) that may cause environmental nuisance or harm at or beyond the site boundary. Management of emissions associated with the operation of the facility in adverse weather conditions should also be described.

Landfill operators must minimise the generation of unpleasant odours at all times. If odours are apparent, the odours must not be detectable outside the boundary of the landfill site.

Leachate management is an important aspect of controlling odours in a landfill. Leachate is a liquid that is formed when water percolates through the waste in a landfill, picking up dissolved organic and inorganic substances along the way. This liquid can become a source of odour if not properly managed. High leachate levels encourage gas generation and it therefore important to reduce water ingress and leachate build up.

To mitigate any air emissions that may cause environmental nuisance or harm at or beyond the site boundary, several measures are implemented at the DRDS:

- Use of daily cover: Applying daily cover to the waste helps to reduce the potential for odour emissions from the landfill.
- Reduction of organic and putrescible waste: Reducing the amount of organic waste disposed of in the landfill through recycling options like green waste recycling and expansion of Food Organics Garden Organics collection services, diverting kerbside putrescible waste to other disposal sites (an estimated 500 tonnes of kerbside waste was deposited at DRDS for 22/23).

- Dust suppression: The landfill operator uses water sprays or other dust suppression equipment to minimise emissions of dust during construction and operation of the landfill.
- Management of emissions during adverse weather conditions: The landfill operator takes measures to manage emissions during adverse weather conditions, such as covering the waste pile during heavy rain to prevent leachate formation and potential odour emissions.
- Preventing stormwater ingress: The landfill design takes into consideration stormwater flows and stormwater is drained off the active face to prevent leachate overflows and water ingress into the waste pile.
- Aeration of leachate: Aeration involves introducing air into the leachate to promote the growth of aerobic microorganisms that can break down the organic compounds and remove nutrients through natural biological processes.
- Sedimentation and filtration: Aeration is an effective treatment method for reducing the organic and inorganic content of leachate and is used at the DRDS in combination with other treatment methods such as sedimentation, filtration, to achieve the desired level of treatment.

Excess leachate from the leachate collection pond is pumped through a sand filter. Sand filter overflow is then directed across grassland, prior to discharge from the site.

The treatment of leachate involves a combination of aeration, sedimentation, and filtration processes to remove contaminants and improve water quality. Here is a detailed description of these treatment methods:

1. Aeration: Aeration is the process of introducing air or oxygen into the leachate. This promotes the growth of aerobic microorganisms, which play a crucial role in breaking down organic matter and reducing the concentration of pollutants. Aeration can be achieved by pumping air or using mechanical devices such as diffusers or aerators in the leachate pond. By providing oxygen to the microorganisms, aeration enhances their metabolic activity and accelerates the degradation of organic compounds.

2. Sedimentation: After aeration, the leachate allowed to settle in the leachate pond. The process consists of heavier particles and solids in the leachate settling to the bottom due to gravity. This process is facilitated by allowing sufficient retention time for sedimentation to occur. The settled solids form a sludge layer at the bottom of the pond, while the clarified leachate is pumped into the sand filter for further treatment.

3. Filtration: One of the common filtration methods employed in leachate treatment is the use of a sand filter. In a sand filter system, the leachate is passed through a bed of sand or other granular media. The sand acts as a physical barrier, trapping suspended particles and further removing organic compounds through biological processes occurring on the surface and within the sand filter bed. The sand filter allows for the retention of fine particles and promotes the growth of beneficial microorganisms that aid in the breakdown of contaminants.

Effectiveness of the sand filter:

The design of the leachate collection and treatment system at the Deloraine Refuse Disposal Site is primarily based on the Open Biological Sand Filter System developed by Nielsen, Lynggaard-Jensen, and Haling in 1993. This system differs from conventional covered sand filters as it remains uncovered throughout its operation, which simplifies its location, monitoring, and maintenance.

Sand filtration for wastewater treatment is not a new concept and has been successfully employed in the past. Previous studies have shown widespread satisfaction with the performance and operation of biological sand filter systems. Sand filters have demonstrated excellent treatment efficiency and produce high-quality effluent. They are also relatively easy to maintain and require simple operational and management procedures.

Recent evidence of the effectiveness of sand filtration systems comes from a trial conducted in Campbell Town, Tasmania, where an intermittent medium flow sand filter system was

tested. The trial showed significant reductions in suspended material, organic load, bacterial count, ammonia, chlorophyll, as well as 33% reduction in phosphorous and 51% reduction in nitrogen levels. The study suggests that the removal of phosphorous can be further improved by utilising more suitable sand materials that have a greater capacity for chemical binding. Similarly, increased oxygen levels and the use of coarse-grained filter materials can enhance nitrogen removal.

Overall, the Open Biological Sand Filter System offers a simple, effective, and economical approach to treating and upgrading wastewater. With proper design, operation, management, and monitoring, sand filtration systems can be a reliable and efficient solution for leachate treatment in landfill facilities.

High rainfall can impact the filtration rate and subsequent odour reduction in several ways. Firstly, excessive rainfall can increase the hydraulic loading on the sand filter, leading to a higher flow rate through the filter bed. This increased flow rate may compromise the contact time between the leachate and the sand, reducing the overall effectiveness of the filtration process. Moreover, heavy rainfall can result in dilution of the leachate, potentially decreasing the concentration of odorous compounds. However, if the filtration system is overwhelmed by the high volume of leachate during rainfall events, it may not be able to effectively treat the leachate, leading to a temporary increase in odour emissions.

Therefore, it is important to consider the design and capacity of the sand filter system to accommodate variations in flow rates during high rainfall periods and ensure effective odour reduction throughout different operating conditions.

Extended dry periods may cause excessive dust generation and commercial water cart operators may need to be engaged to spray driveways and the tip face.

Landfill operators must minimise the generation of dust at the landfill site.

The procedures used to manage dust at the site are described in Table 2.

Table 2: Dust Management Strategy

Issue	Procedures	Responsibility

Dust prevention	• Manage soil stockpiles to prevent dust problems:
	  ○ Locate stockpiles out of the prevailing wind direction;
	  ○ Construct with a height to width ratio of <2:1; and
	  ○ Cover dusty piles and use water sprays if required.
	• Minimise areas of exposed soil.
		Site supervisor

Roads	• Access road to the site is sealed; • Internal site road is watered as required to minimise dust generation; and • Add gravel.	Site staff
Traffic movements	• Traffic movements are restricted to the defined road network.	Site staff

The odour management measures associated with the leachate at the site are described in Table 3.

Table 3: Odour and Leachate Management

Issue	Procedures	Responsibility
Leachate	• Leachate is directed to the leachate collection system detailed in Drawing No. 14850-C01 (Attachment B, page 43). • Leachate levels is gravity drained into the leachate pond. • Leachate aeration, sedimentation and filtration. • Increased pumping through the sand filter or leachate removal and off-site treatment (in case of extended rain events)	Works Manager and site staff
Leachate pond	• Pond is kept at a pumped down level 500 mm below top water level to maintain adequate storage capacity. • The leachate pond is aerated to increase biological removal of nutrients. • Leachate is intermittently pumped from the leachate pond to the sand filter. • Sand filter is maintained to maximise operational performance. • Treated leachate overflows from the sand filter to grassland, prior to discharge from the site. • Remove sludge when it has reached 20% of total storage and beneficially reuse where possible.	MVC
Monitoring	• Refer to Section 15.1.1.3 for monitoring program.	MVC
Water ingress	• Daily cover is applied to reduce water ingress. • Temporary cover is applied to prevent ponding. • Stormwater drains keep stormwater and leachate flows separate.	Works Manager and site staff

5.8. A description of Accepted Modern Technology (AMT) for reduction of unavoidable emissions applied on the site.

AMT is a method to reduce unavoidable point source emissions. Generally, point source emissions refer to emissions that originate from specific identifiable sources within a facility. In the context of landfills, point source emissions would include emissions from specific areas or features such as gas wells and flares. These emissions are more concentrated and localised, making them easier to measure, monitor, and control.

Landfill emissions at the DRDS are largely diffuse source emissions, which are emissions that occur from broader areas or surfaces within the landfill site. These emissions can arise from the waste mass itself, the surface of the landfill, and exposed areas where gas and odorous compounds can escape into the surrounding environment. Diffuse source emissions are more challenging to quantify and manage due to their dispersed nature.

The application of AMT, like the implementation of landfill gas flares, to reduce emissions has been considered by Council and is not practicable due to the relatively small volumes of gas being emitted.

There is a minimum amount of landfill gas (LFG) required to maintain a flame at a gas flare. This is known as the Minimum Combustion Zone (MCZ) or Minimum Ignition Flow (MIF). The MCZ is the minimum LFG flow rate required to maintain stable combustion of the gas flare flame, and it varies depending on the flare type and design.

In general, the MCZ is influenced by several factors, including the gas composition, the flare design, and the flare operating conditions. Typically, the MCZ for LFG flares ranges from 15-50 cubic meters per hour (m3/h), but this can vary depending on the flare type and design.

If the LFG flow rate is below the MCZ, the flare may not be able to maintain a stable flame, and the flare may go out or produce incomplete combustion products, such as carbon monoxide and unburned hydrocarbons, which can be harmful to the environment. Therefore, it is essential to ensure that the LFG flow rate is above the MCZ to ensure effective and safe operation of the gas flare.

The annual fill rate required to generate a minimum of 50 m3/hr of landfill gas will depend on various factors such as the waste composition, moisture content, and climate conditions at the landfill site. In general, landfills with a higher organic content, such as food waste and yard waste, will generate more LFG than landfills with lower organic content.

Estimating landfill gas (LFG) generation at DRDS, where historical data on incoming waste quantity and composition is limited, presents a significant challenge. The absence of this crucial information makes it difficult to develop precise models for LFG generation. Consequently, any estimates in this context are subject to a higher degree of uncertainty. However, there is a positive development in recent years, where waste quantity data has been diligently recorded. This data collection effort is expected to refine LFG generation predictions over time, enhancing our ability to manage and mitigate its environmental impact effectively. Additionally, MVC will be installing a gas monitoring well to better assess and monitor LFG generation patterns. This proactive step will provide valuable real-time data, allowing for more accurate estimations and a comprehensive understanding of the landfill's gas dynamics.

5.9. A demonstration that the proposal is consistent with the requirements of the Tasmanian Environment Protection Policy (Air Quality) 2004 and any supplementary documents.

Air emissions from the DRDS are regulated under Part 5 - MANAGING DIFFUSE SOURCES OF AIR CONTAMINANTS of the EPP (Air Quality) 2004, and must be managed by minimising emissions, and managing the emissions that are unavoidable.

Based on the provided measures, the landfill proposal appears to be consistent with EPP (Air Quality) 2004 regarding the management and regulation of diffuse sources of air pollution.

The proposal addresses the need to always minimise the generation of unpleasant odours, ensuring that odours are not detectable outside the landfill boundary. This is achieved through effective leachate management, which helps control odours in the landfill. By reducing water ingress and leachate build-up, the potential for gas generation and odour emissions is mitigated.

To further mitigate air emissions that may cause environmental nuisance or harm, the proposal includes various measures. Daily cover is applied to the waste, reducing the potential for odour emissions. The reduction of organic waste through recycling options helps minimise the amount of waste disposed of in the landfill, which can contribute to emissions. Dust suppression techniques, such as water sprays, are used during construction and operation to minimise dust emissions. Measures are taken to manage emissions during adverse weather conditions, such as covering the waste pile during heavy rain to prevent leachate formation and odour emissions. Stormwater ingress is prevented, ensuring proper drainage and reducing the risk of leachate overflows and water ingress into the waste pile.

Additionally, the proposal includes treatment methods for leachate, such as aeration, sedimentation, and filtration, to reduce the organic and inorganic content of the leachate. Excess leachate is pumped through a sand filter, and the overflow is directed across grassland area prior to discharge from the site. The proposal also considers extreme weather conditions, such as extended high rainfall periods and extended dry periods, and outlines specific measures to address these situations, such as using commercial wastewater tankers for leachate transfer and engaging water cart operators to spray driveways and the tip face to minimise dust generation.

The generation of landfill gas at the DRDS is minimised through active waste avoidance and recycling. The decomposition of organic waste is the main contributor to the production of methane. MVC is currently recycling all garden waste delivered to the site and may expand its Food Organics and Garden Organics (FOGO) kerbside collection service as well as divert kerbside putrescible waste in the future.

MVC offers a drop off area for green organic waste with exclusions including contaminated green waste and scrap timber, stumps and logs greater than 150mm diameter. For 21/22 Financial Year 682 tonnes of green waste was deposited at the site. The green waste is mulched by a contractor when the quantities are sufficient.

Under the Waste Levy green waste applied as landfill daily cover will be charged. To avoid this and have a better outcome green waste will now be collected and mulched prior to the piles reaching 150m3, immediately after mulching transport to the Dulverton Organics Facility will be arranged so movements can be recorded, and levy records will be kept up to date.

Daily cover now used at the DRDS consists of soils sourced from construction projects or purchased from quarries that meet specification of fill material (Level 1) in *Information Bulletin 105 Classification of Contaminated Soil for Disposal*. This material does not contain any waste and is essentially inert and not a source of methane emissions.

It is expected that the landfill emits landfill gas which contains Methane, itself a powerful greenhouse gas (GHG). Due to the relatively small disposal quantities and minimising disposal of organic waste, more sophisticated methods of landfill gas management, like gas collection and energy recovery are not viable.

Overall, the measures outlined in the proposal demonstrate a commitment to minimizing odours and dust emissions, implementing effective leachate management practices, and considering various weather conditions to mitigate environmental impacts in accordance with EPP (Air Quality) 2004.

6. Water Quality (Surface, Discharge, and Groundwater)

6.1. Identify and characterise all liquid emissions which could arise from the proposal:

The proposal will not change the types or characteristics of potential liquid emissions from landfilling which are:

Leachate: Leachate is a liquid that is formed as water percolates through the waste in the landfill, picking up various contaminants and pollutants. It can include dissolved organic compounds, heavy metals, and other harmful substances. Leachate is managed and treated to prevent contamination of groundwater and surface water bodies.

Surface runoff: During rainfall or irrigation events, water can come into contact with the landfill's surface, picking up pollutants and contaminants present on the waste. This runoff can carry suspended solids, organic matter, and other pollutants, potentially impacting nearby water bodies if not properly managed.

Sediment-laden runoff: As rainfall or irrigation water flows over the exposed soil or slopes within the landfill, it can carry sediments with it. These sediments can contain pollutants and suspended solids, contributing to water quality degradation if the runoff reaches surface water bodies.

Spills and leaks: Accidental spills or leaks of liquid waste or hazardous substances can occur during landfill operations or due to improper waste handling. These releases can result in the discharge of potentially harmful substances into the environment if not promptly contained and remediated.

Fire fighting water: During firefighting activities, water or firefighting foam is applied to suppress and extinguish fires. This water can become contaminated with various substances present in the landfill, such as pollutants, chemicals, and organic materials. As a result, the fire water runoff from firefighting operations can carry these contaminants along with it.

Appropriate measures have been implemented to manage and control these liquid emissions, such as the installation of leachate collection and treatment systems, stormwater management infrastructure, spill prevention and response protocols, and proper containment and treatment of effluents from on-site treatment processes. Regular monitoring and adherence to regulatory requirements are essential to minimise the environmental impact of these liquid emissions from the landfill extension.

To prevent the migration of unfiltered leachate into the stormwater pond, the council is relocating the green waste stockpile to a suitable area within the western part of the landfill. Here, runoff water from the green waste will be efficiently captured by the existing leachate management system.

In the case of runoff from the scrap steel stockpile, a 35m^3 skip will be employed for collection. Once the skip reaches capacity, it will be promptly transported off-site for proper disposal, effectively preventing any runoff from entering environmentally sensitive areas.

The relocation and improved management of these stockpiles shall prevent offensive odours, the contamination of surface waters/groundwaters and the generation of leachate.

6.2. If discharge to the environment is proposed, describe the nature of the receiving environment (e.g., downstream waterways) and likely impact of the discharge:

In addition to uncontaminated stormwater, the extension of the landfill may generate liquid emissions in the form of leachate. Leachate is the liquid that is formed as water percolates

through the waste in the landfill, picking up contaminants and pollutants. The management of leachate involves several processes to ensure its proper treatment and discharge.

The leachate generated from the landfill cells is pumped into a designated leachate pond. In the pond, aeration is employed to facilitate the breakdown of organic matter and promote the settling of heavier particles. This process helps to reduce the concentration of contaminants in the leachate.

To further treat the leachate, the landfill is equipped with a sand filter. The treated leachate from the leachate pond flows into the sand filter, where additional filtration and purification take place. The sand filter helps to remove finer suspended solids and residual pollutants, improving the quality of the leachate.

Once the leachate has been treated in the sand filter, it is directed into the stormwater discharge drain. This drain ultimately discharges the treated leachate into Bonney's Creek, located 150m north of the landfill.

To monitor the impact of the discharged leachate on surface water quality, regular testing is conducted. Surface water samples are collected from the drain, as well as upstream and downstream of the discharge point in Bonney's Creek. These tests assess any changes in the surface water quality and help ensure that the discharged leachate meets acceptable environmental standards.

It is worth noting that the efficiency of the sand filter in treating the leachate has not consistently demonstrated conclusive results. To address this data gap and ensure effective management, the landfill operators have committed to implementing measures outlined in the groundwater management plan, as stated in Attachment T. These measures will provide further insights and enhance the understanding of the sand filter's performance and its role in treating leachate before discharge.

6.3. Will surface water from the site drain to a river, creek, wetland, or estuary? If so, provide details about potential impacts and how they will be managed, such as sediment settling ponds. Consideration should be given to management of surface water runoff using water sensitive urban design principles where applicable:

The site's surface water drains through a stormwater drain into Bonneys Creek, which presents a potential risk of contamination downstream and potential impact on protected environmental values. To ensure the monitoring and assessment of surface water quality, specific monitoring locations have been selected to enable regular monitoring and the development of long-term trends.

Based on the surface water testing conducted in September 2022, the trends in surface waste and leachate contamination from 2010 to 2021 indicate stability or decreasing levels of physical parameters and nutrients across all sampling locations. However, there have been notable spikes in certain sampling locations for heavy metals and Total Petroleum Hydrocarbon (TPH) due to peak measurements in March 2021, September 2016, and November 2021. These spikes have since returned to historical ranges.

Copper levels were generally within historical ranges, with some variability observed. However, there have been notable increases in the RDS drain location. In contrast, samples taken from the leachate pond and sand filter have remained stable.

Iron levels have shown variability, and significant increases have been detected in the Bonneys Creek upstream and downstream locations. Conversely, samples from the leachate pond and sand filter have exhibited stable iron levels.

These findings highlight the importance of ongoing surface water monitoring to identify any potential impacts on water quality. By assessing historical trends and addressing notable

spikes in certain contaminants, measures can be implemented to mitigate and manage any adverse effects on downstream waters and protected environmental values. Continued monitoring will provide valuable data for evaluating the effectiveness of control measures and ensuring compliance with environmental standards.

6.4. Describe the waterbodies and aquatic values on site and in the surrounding area, including relevant Protected Environmental Values as per the State Policy on Water Quality Management 1997:

Under the Tasmanian State Policy on Water Quality Management 1997 (SPWQM), water quality objectives for a site are established based on the protection of various environmental values. These protected environmental values (PEVs) include drinking water, irrigation, industry, recreation, stock, and ecosystem protection. To assess and monitor water quality, regular monitoring is conducted at specific locations.

Water monitoring is carried out every six months at three monitoring bores, the leachate dam, downstream locations from the leachate dam, and at points along the natural water course beyond the site's boundary. Additionally, monitoring is conducted both upstream and downstream in Bonneys Creek to assess any potential impacts.

The DRDS Groundwater Management Plan 2023 (Attachment T) provides an assessment of the likelihood of each PEV being realised. The findings and assessment are summarised in Table 4, which provides an overview of the potential risks and impacts associated with each environmental value.

By conducting regular water monitoring and assessing the likelihood of the PEVs being realised, the site attempt meeting the water quality objectives outlined in the Tasmanian State Policy on Water Quality Management 1997.

Table 4 Summary of Likelihood of PEVs Being Realised

PEV	Description	Likelihood of PEV being realised
Drinking Water	• Bonneys Creek flows in a northerly direction to the Meander River (approximately 6 km downstream) which is a major tributary of the South Esk River • Both the Meander and South Esk rivers have town water supply extraction points and recreational areas downstream of the Bonneys Creek inflow • Water extracted for drinking purposes is treated by TasWater for any known CoPC • Inferred low surface water flow / volume from the Deloraine RDS and within Bonneys Creek compared to the Meander River • There is the potential for a range of agricultural and possibly other land contaminants that could limit achievement of the PEV; and • Extraction of water from Bonneys Creek for drinking is considered unlikely given the distance to the Meander River and the inferred low surface water flows from the Deloraine RDSA.	Unlikely
Irrigation	• Groundwater abstraction for irrigation is considered possible in the agricultural land surrounding the Deloraine RDS.	Possible
Industry	• Groundwater abstraction for industrial use is considered unlikely in the agricultural land surrounding the Deloraine RDS; and • Any industries that may establish in the area would test the source water for suitability and treat accordingly if necessary.	Unlikely
Stock	• Groundwater abstraction for stock is considered possible in the agricultural land surrounding the Deloraine RDS.	Possible
Recreational water quality and aesthetics	• Shallow groundwater from beneath the Deloraine RDS is assumed to discharge to Bonneys Creek, located approximately 150 m to the east of the Deloraine RDS; and • Occasional recreational use of Bonneys Creek is possible but the frequency would be low.	Possible

PEV	Description	Likelihood of PEV being realised
Ecosystem protection	• Shallow groundwater from beneath the RDS is assumed to discharge to Bonneys Creek, located approximately 150 m to the east of the Deloraine RDS; and • There is potential for poor groundwater quality to impact on the health of the surface water ecosystem within Bonneys Creek.	Possible

Please refer to the Attachment T – DRDS Groundwater Management Plan 2023, Pitt and Sherry, 18 May 2023 for more detail.

6.5. State the distance from the activity to the nearest waterbody:

Bonney's Creek located approximately 150 m to the east of the DRDS.

6.6. Where available, provide water quality data describing the downstream environment:

6.6.1 Groundwater

Two groundwater wells were installed along an unnamed road, off Tip Road, downgradient (and to the north) of the Deloraine RDS in May 2007 by Sloane Geoscience Pty Ltd (SGEO):

- DT-B5 (labelled DT-B2 when installed to replace DT8) – was installed to a depth of 6.4 m bgl to monitor groundwater downgradient of the Deloraine RDS, north-east of the sand filter overflow grassland; and
- DT-B6 (labelled DT-B1 when installed to replace DT7) – was installed to a depth of 6.2 m bgl to monitor groundwater downgradient of the Deloraine RDS, north-west of the leachate collection dam.

Both DT-B5 and DT-B6 are currently monitored on a six-monthly basis in accordance with Condition M4 of EPN 7216/3.

No background (i.e. upgradient) groundwater well has been installed and the direction of groundwater flow has not been confirmed.

Current groundwater trends by parameter, from a review of data from 21 monitoring events between 2007 to 2022, are provided in Table 5. Increasing trends are shown in yellow.

Table 5 Groundwater Trends

Parameter	Trend		
	DT-B5	DT-B6	Comment
Physical parameters			
SWL	Decreasing	Decreasing	Within historical ranges and subject to seasonal variation; very similar for both bores; SWLs are becoming shallower.
pH (field)	Increasing	Increasing	Generally within historical ranges; steadily increasing since March 2017.
Electrical conductivity (EC, field)	Increasing	Decreasing	DT-B6 generally within historical ranges; variable in DT-B5; September 2022 reading was the highest in DT-B5 since monitoring commenced.
TDS	Increasing	Increasing	Generally within historical ranges; November 2021 and September 2022 concentrations in DT-B5 were the highest since monitoring commenced, this was within historical ranges in March 2022.
Total alkalinity	Increasing (due solely to November 2021 peak)	Stable	Generally within historical ranges; November 2021 concentrations (total alkalinity and DOC) in DT-B5 were the highest since monitoring commenced, this returned to within historical ranges in March 2022.
DOC	Increasing	Increasing	
COD	Increasing	Decreasing	Generally within historical ranges; January 2014 peak in DT-B6 and November 2021 peak in DT-B5.
Dissolved major cations and anions			
Ca^{2+} Calcium Cation	Stable	Stable	Generally within historical ranges; November 2021 concentration in DT-B5 was the highest since monitoring commenced, this returned to within historical ranges in March 2022; not graphed.
Mg^{2+} Magnesium Cation	Increasing	Stable	Generally within historical ranges; November 2021 concentration in DT-B6 was the highest since monitoring commenced, this returned to within historical ranges in March 2022; February 2016 peak in DT-B6.
Na+ Sodium Cation	Increasing	Stable	Generally within historical ranges; November 2021 concentrations in DT-B5 were the highest since monitoring commenced, these returned to within historical ranges in March 2022.
K+ Potassium cation	Increasing (due solely to November 2021 peak)	Stable	

Parameter	Trend		
	DT-B5	DT-B6	Comment
Physical parameters			
Cl Chloride^{-}	Increasing	Stable	Within historical ranges; September 2022 concentration in DT-B5 was the highest since monitoring commenced.
SO_4^{2} Sulfate Anion	Increasing (due solely to November 2021 peak)	Decreasing	Generally within historical ranges; November 2021 concentration in DT-B5 was the highest since monitoring commenced, this returned to within historical ranges in March 2022.
Nutrients			
NH_3 Ammonia	Increasing (due solely to November 2021 peak)	Stable	Generally within historical ranges; November 2021 concentrations in DT-B5 were the highest since monitoring commenced, these returned to within historical ranges in March 2022.
NO_3 Nitrate	Increasing (due solely to November 2021 peak)	Stable	
NO_2 Nitrite	Increasing (due solely to November 2021 peak)	Stable	
TN Total Nitrogen	Increasing (due solely to November 2021 peak)	Stable	
TP Total Phosphorus	Increasing (due solely to March 2019 peak)	Decreasing	Within historical ranges; notable peak in DT-B5 in March 2019.
Heavy metals (dissolved)			
As Arsenic	<LOR	<LOR	Consistent and within historical ranges; not graphed.
Cd Cadmium	<LOR	<LOR	
Cr Chrome	<LOR	Increasing	Within historical ranges and <LOR in DT-B5; the September 2022 concentration in DT-B6 was the highest since monitoring commenced; not graphed.
Cu Copper	Stable	Decreasing	Generally within historical ranges; variable.
Fe (total) Ferrum	Stable	Stable	

Parameter	Trend		
	DT-B5	DT-B6	Comment
Physical parameters			
Fe (dissolved) Ferrum	Stable	Increasing	Generally within historical ranges; variable.
Pb Lead	Decreasing	Decreasing	Generally within historical ranges.
Mn Manganese	Increasing	Stable	Generally within historical ranges; March 2022 concentration in DT-B5 was the highest since monitoring commenced, this returned to within historical ranges in September 2022; notable peak in DT-B6 in February 2016.
Hg Mercury	Stable	Stable	Consistent and within historical ranges; not graphed.
Ni Nickel	Increasing	Increasing	Generally within historical ranges; variable; September 2022 concentration in DT-B6 was the highest since monitoring commenced.
Se Selenium	<LOR	<LOR	Consistent and within historical ranges; not graphed.
Zn Zinc	Increasing (due solely to peak in September 2016)	Increasing (due solely to peak in September 2016)	Generally within historical ranges; notable peak in September 2016; last monitored in November 2021.
Hydrocarbons			
BTEX Benzene (B), toluene (T), ethylbenzene (E) and xylenes (X)	<LOR	<LOR	Consistent and within historical ranges; not graphed.
TPH Total petroleum hydrocarbons	<LOR	<LOR	Generally within historical ranges and <LOR; November 2021 concentrations were the highest since monitoring commenced, these had returned to <LOR in September 2022; not graphed.
PAH	<LOR	<LOR	Consistent and within historical ranges; not graphed.

Parameter	Trend		
	DT-B5	DT-B6	Comment
Physical parameters			
Polycyclic aromatic hydrocarbons			

Notes:
LOR – (laboratory) limit of reporting
'-' – indicates no trend, results are generally < LOR

Yellow shading – indicates increasing trend (based on data from 2007 to 2022)

6.6.2 Surface Water

Four surface water sites DT-SFO, RDS-Drain, BC-U and BC-D, downgradient of the Deloraine RDS, and one leachate site (DT-LP) at the Deloraine RDS, are currently monitored on a six-monthly basis in accordance with Condition M4 of EPN 7216/3.

Monitoring sites are periodically dry at the time of sampling.

Current surface water trends by parameter, from a review of discontinuous data from 2010 to 2022, are provided in Table 6. Increasing trends are shaded orange. Graphs are provided in Attachment F. Note that some trends are biased by a single data point as noted in Table 6.

Based on the concentrations of CoPC reported in surface water during the most recent six-monthly sampling event (September 2022), surface water in the vicinity of the Deloraine RDS is:

- **Unlikely** to be protective of downstream surface water aquatic ecosystems (modified) based on nutrient and some heavy metal concentrations.
- **Unlikely** to be suitable for short-term irrigation of raw human food with direct water contact based on biological parameters; **likely** to be suitable for short-term irrigation of silviculture; and
- **Unlikely** to be suitable for stock watering based on biological parameters.
  Note that water quality results are not currently assessed against the ANZECC 2000 recreational (primary contact) guideline criteria.

Surface water Contamination trends are detailed in Table 6.

Table 6: Surface Water and Leachate Contamination Trends

Parameter	Trend					
	DT-LP	DT-SFO	RDS-Drain	BC-U	BC-D	Comment
Physical parameters						
pH (field) Acidity	Stable	Stable	Stable	Stable	Stable	Generally within historical ranges; consistently highest at DT-LP; notable increase in DT-LP in March 2019.
EC (field) Electrical Conductivity	Decreasing	Decreasing	Decreasing	Stable	Decreasing	Generally within historical ranges; variable; consistently highest at DT-LP; notable increases at all sampled sites in March 2017.
TDS Total Dissolved Solids	Decreasing	Decreasing	Decreasing	Stable	Decreasing	
TSS Total Suspended Solids	Stable	Stable	Stable	Stable	Increasing	Generally within historical ranges; variable; notable increase at DT-SFO in March 2017; November 2021 concentration at BC-D was the highest since monitoring commenced, returned to within historical ranges in September 2022.
Total alkalinity	Stable	Stable	Decreasing	Stable	Stable	Generally within historical ranges; variable; consistently highest at DT-LP; notable increase at DT-SFO in September 2016.
DOC Dissolved Organic Carbon	Decreasing	Decreasing	Decreasing	Stable	Stable	Generally within historical ranges; variable; consistently highest at DT-LP; notable increases at all sampled sites in March 2017.
COD Chemical Oxigen demand	Decreasing	Decreasing	Decreasing	Stable	Stable	Generally within historical ranges; variable; consistently highest at DT-LP; notable decrease in DT-LP in November 2021.
Dissolved major cations and anions						
Ca^{2+} Calcium Cation	Stable	Stable	Stable	Stable	Stable	Generally within historical ranges; variable; not graphed.

Mg2+ Magnesium Cation	Stable	Stable	Stable	Stable	Stable	Generally within historical ranges; variable; generally higher at DT-LP.
Na^+ Sodium Cation	Decreasing	Decreasing	Decreasing	Stable	Decreasing	
K+ Potassium Cation	Decreasing	Decreasing	Decreasing	Stable	Decreasing	
Cl^- Chloride Anion	Stable	Stable	Stable	Stable	Stable	
$SO_{4^{2-}}$	Stable	Stable	Decreasing	Stable	Stable	
Nutrients						
NH_3 Ammonium	Decreasing	Decreasing	Decreasing	Stable	Stable	Generally within historical ranges; variable at DT-LP, DT-SFO and RDS-Drain; consistently highest at DT-LP.
NO_3 Nitrate	Stable	Decreasing	Stable	Stable	Stable	Generally within historical ranges; variable; notable increases at all sampled sites in March 2017 and March 2021.
NO_2 Nitrite	Stable	Stable	Increasing (due solely to peak in March 2021)	Stable	Stable	Generally within historical ranges; notable increase at RDS-Drain in March 2021 and this was the highest concentration since monitoring commenced, returned to within historical ranges in November 2021.
TN Total Nitrogen	Stable	Decreasing	Decreasing	Stable	Stable	Generally within historical ranges; variable at DT-LP, DT-SFO, RDS-Drain and BC-D.
TP Total Phosphorus	Stable	Decreasing	Stable	Stable	-	Generally within historical ranges; variable at DT-LP; consistently highest at DT- LP; only two results for BC-D, September 2022 was <LOR.
Heavy metals (total)						
Al Aluminium	Decreasing	Stable	Increasing (due solely to November 2021 peak)	Increasing due solely to March 2021 peak)	Increasing due solely to November 2021 peak)	Generally within historical ranges; variable; November 2021 concentrations at RDS-Drain and BC-D and March 2021 concentrations at BC-U were the highest recorded at these locations, had returned to within historical ranges in September 2022.

As Arsenic	-	-	-	-	-	Generally below the LOR; not graphed.
Cd Cadmium	<LOR	<LOR	<LOR	<LOR	<LOR	Consistent; not graphed.
Cr Chromium	Stable	Stable	Stable	Stable	Stable	Generally within historical ranges; not graphed.
Cu Copper	Decreasing	Decreasing	Increasing	Increasing (due solely to March 2021 peak)	Stable	Generally within historical ranges; variable; notable increases at DT-SFO, RDS- Drain and BC-D in March 2017; generally lowest in DT-LP.
Fe Iron	Stable	Stable	Increasing (due solely to November 2021 peak)	Increasing	Increasing	Generally within historical ranges; variable; November 2021 concentrations at RDS-Drain and BC-D were the highest recorded at these locations, had fallen to within historical ranges in September 2022.
Pb Lead	Decreasing	Stable	Increasing (due solely to November 2021 peak)	Stable	Increasing (due solely to November 2021 peak)	Generally within historical ranges; November 2021 concentrations at RDS-Drain and BC-D were the highest recorded at these locations, had returned to within historical ranges in September 2022.
Mn Manganese	Stable	Stable	Increasing (due solely to November 2021 peak)	Stable	Increasing (due solely to November 2021 peak)	Generally within historical ranges; variable; November 2021 concentrations at RDS-Drain and BC-D were the highest recorded at these locations, had returned to within historical ranges in September 2022.
Hg Mercury	<LOR	<LOR	<LOR	<LOR	<LOR	Consistent; not graphed.
Ni Nickel	Decreasing	Decreasing	Decreasing	Increasing	Stable	Generally within historical ranges; variable; notable increases at all locations in March 2017; generally highest at DT-LP.
Se Selenium	<LOR	<LOR	<LOR	<LOR	<LOR	Consistent; not graphed.
Zn Zinc	Decreasing	Decreasing	Decreasing	Stable	Increasing (due solely to March 2021 peak)	Generally within historical ranges; variable; notable increases at DT-LP in March 2017 and at BC-U in March 2021.

Hydrocarbons						
BTEX Benzene (B), toluene (T), ethylbenzene (E) and xylenes (X)	<LOR	<LOR	<LOR	<LOR	<LOR	Consistent; not graphed.
TPH Total petroleum hydrocarbons	Increasing	Increasing (due to September 2016 peak)	Decreasing	<LOR	Increasing (due solely to November 2021 peak)	Generally within historical ranges; variable; consistently <LOR at BC-U; November 2021 peak at BC-D had returned to <LOR in September 2022.
PAH Polycyclic aromatic hydrocarbons	<LOR	<LOR	<LOR	<LOR	<LOR	Consistent; not graphed.
Others						
Thermo-tolerant coliforms	Stable	Decreasing	Increasing (due solely to March 2021 peak)	Increasing (due solely to March 2021 peak)	Decreasing	Generally within historical ranges; variable; notable increases at RDS-Drain, BC-D and BC-U in March 2021, had returned to within historical ranges in November 2021.
E. coli	Stable	Stable	Increasing (due solely to March 2021 peak)	Increasing (due solely to March 2021 peak)	Increasing (due solely to March 2021 peak)	Generally within historical ranges; variable; notable increases in peak at BC-D and BC-U in March 2021.

Notes:
'-' – indicates no trend, results are generally <LOR

Orange shading – indicates increasing trend (based on sporadic data from 2010 to 2022)

6.7. Provide details of any current and proposed water monitoring activities:

MVC has devised a Ground Water Management Plan which is attached as Attachment T detailing any of the current water monitoring activities as well as incorporating

The sampling regime is in accordance with Condition M4 of the EPN requires six monthly surface and groundwater monitoring for the parameters summarised in Table 7, at the locations shown in Attachment J, Figure 2. Water samples are to be collected and tested from groundwater bores and surface water collection points. The frequency of sampling and the parameters tested for each of the water monitoring locations are show below. If water is not present in the surface water locations (RDS-Drain, BC-D and BCU), then water cannot be collected for sampling.

The DRDS Water Quality Assessment, September 2022 information is documented in Attachment J.

Table 7: Summary of EPN Water Quality Monitoring Requirements

Sampling points	Description	Monitoring frequency and parameters
DT-B5	Groundwater monitoring well located below sand filter.	Group 1, 2 & 3 parameters detailed in Table 2 of the permit, at six monthly intervals and additional Group 4 parameters annually.
DT-B6	Groundwater monitoring well located below leachate pond.	As per DT-B5.
DT-LP	Leachate collection dam - collected near spillway.	Group 1, 2 & 3 parameters detailed in Table 1 of the permit, at six monthly intervals and additional Group 4 parameters annually.
DT-SFO	Surface water immediately downstream of leachate and filter system.	As per DT-LP
RDS-Drain	Just beyond the boundary of the land in the natural watercourse.	As per DT-LP
BC-U	Bonney's Creek above the stormwater confluence.	As per DT-LP
BC-D	Bonney's Creek below the stormwater confluence.	As per DT-LP

All water sample obtained during a monitoring event are subject to the following handling procedure:

- The sample must be tested in a laboratory accredited by the NATA, or a laboratory approved in writing by the EPA Director, for the specified test;
- The sample must be collected and analysed in accordance with the relevant Australian Standards, NATA approved methods or other standard(s) approved by the EPA Director;
- Details relating to the collecting and analysis of the sample must be retained for at least three years after the date of measurement and be made available on request by an authorised officer; and
- The sample must be taken and transported by a person with appropriate training and experience.

6.8. Provide a water balance/budget to address leachate generation during winter months to prevent the offsite discharge of leachate. Demonstrate the adequacy of the leachate collection and treatment system for both the current and increased height. Detail any additional leachate management infrastructure that may be required to increase the capacity of storage during winter months:

The DRDS leachate collection system, constructed in accordance with Drawing No. 682.001-CO1 of the SEMF Tip Filling Plan dated May 2007 (Attachment O), has been designed to prevent water pollution, including groundwater, caused by leachate.

The leachate collection system gathers leachate from waste deposited at the DRDS in a 1,500m^3 pond situated in the north-eastern part of the facility. The storage capacity is maintained to ensure a freeboard of 500mm below the maximum water level.

Perimeter drains are strategically placed throughout the site to prevent surface water runoff from entering disturbed areas. Unpolluted stormwater is prevented from entering the leachate stream as much as possible.

During a major storm event in mid-October 2022, the leachate pond overflowed. This overflow was reported to the EPA, and the leachate pump was activated to reduce the pond's height below the freeboard level. Excess water was discharged over the sand filter and grassed filter bed, eventually making its way to Bonneys Creek. No further action was deemed necessary, and no leachate is directly discharged off-site. An engineered sand filter is located downstream to facilitate controlled discharge of treated leachate and prevent overflow.

Raising the height of the landfill will not significantly alter the volume of leachate generated at the DRDS. The same daily and intermediate cover, lift, and cell area approach depicted in the Meander Valley Council Deloraine Environmental Management Plan 2018 (Attachment B) will be maintained. The leachate system's adequacy at the proposed height will match that of the current system.

Section 4 of the Groundwater Management Plan for the DRDS dated May 2023 recommends an assessment of the stormwater and leachate management infrastructure's capacity. Please refer to the plan for details, any identified infrastructure shortcomings will be addressed in accordance with the Groundwater Management Plan. While a water balance has not been completed for the site, shortcomings are addressed in the Groundwater Management Plan.

For the location of the Sand Filter and Leachate Pond, please refer to Attachment B, Figure 2.

Refer to Attachment B, Figure 2, for location of Sand Filter and Leachate Pond. Table 8 shows the table of average monthly annual.

Table 8: Rainfall Averages at the Nearest Observation Site Deloraine (Athol) in mm

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
50.4	45.8	50.5	71.8	86.4	101.3	120.2	113.3	91.2	82.1	64.7	62.8	945.7

6.9. Provide a Groundwater Management Plan.

A Groundwater Management Plan has been prepared for the DRDS; see Attachment T.

6.10. Demonstrate that the proposal is consistent with the requirements of the State Policy on Water Quality Management 1997 and any supplementary documents.

The GMP (Attachment-T) uses a Protected Environmental Values (PEVs), and Contaminants of Potential Concern (CoPC) approach, consistent with the Tasmanian *State Policy on Water*

Quality Management 1997 (SPWQM), to assess the effectiveness of the drainage system at preventing pollution of groundwater and surface water.

Based on the concentrations of CoPC reported in groundwater during the most recent six-monthly sampling event (September 2022), the groundwater beneath the Deloraine RDS exhibits the following characteristics:

- It is unlikely to provide adequate protection for downstream surface water aquatic ecosystems (modified), as indicated by nutrient concentrations.
- It is likely to be suitable for short-term irrigation.
- It is likely to be suitable for stock watering.

Based on the concentrations of CoPC reported in September 2022, the following statements can be made about the surface water in the vicinity of the DRDS:

- It is unlikely to provide sufficient protection for downstream surface water aquatic ecosystems, as indicated by modified nutrient and some heavy metal concentrations.
- It is unlikely to be suitable for short-term irrigation of raw human food that comes into direct contact with water, considering nutrient and some heavy metal concentrations.
- It is likely to be suitable for short-term silviculture irrigation.
- It is unlikely to be suitable for stock watering based on biological parameters.

As a result of the above, it is not possible to conclude that the proposal is consistent with the SPWQM 1997 and supplementary documents.

7. Noise Emissions

7.1. Will the activity include fixed or mobile equipment that emits noise? Describe all noise sources, including the site and sound power level, noise attenuation and hours of operation for each main piece of equipment.

Noise is created during transport from cars and trucks on the way to and from the landfill along the access road. Further noise is caused by compaction equipment (TANA waste compactor) and by a bulldozer operating at the site during the hours of operation from:

- Monday: 10:00AM - 05:00PM
- Tuesday: Closed
- Wednesday: 10:00AM - 05:00PM
- Thursday: Closed
- Friday: 10:00AM - 05:00PM
- Saturday: 10:00AM - 05:00PM
- Sunday: 10:00AM - 05:00PM

Noise is largely emitted from mobile equipment and can occur from any location on the landfill site.

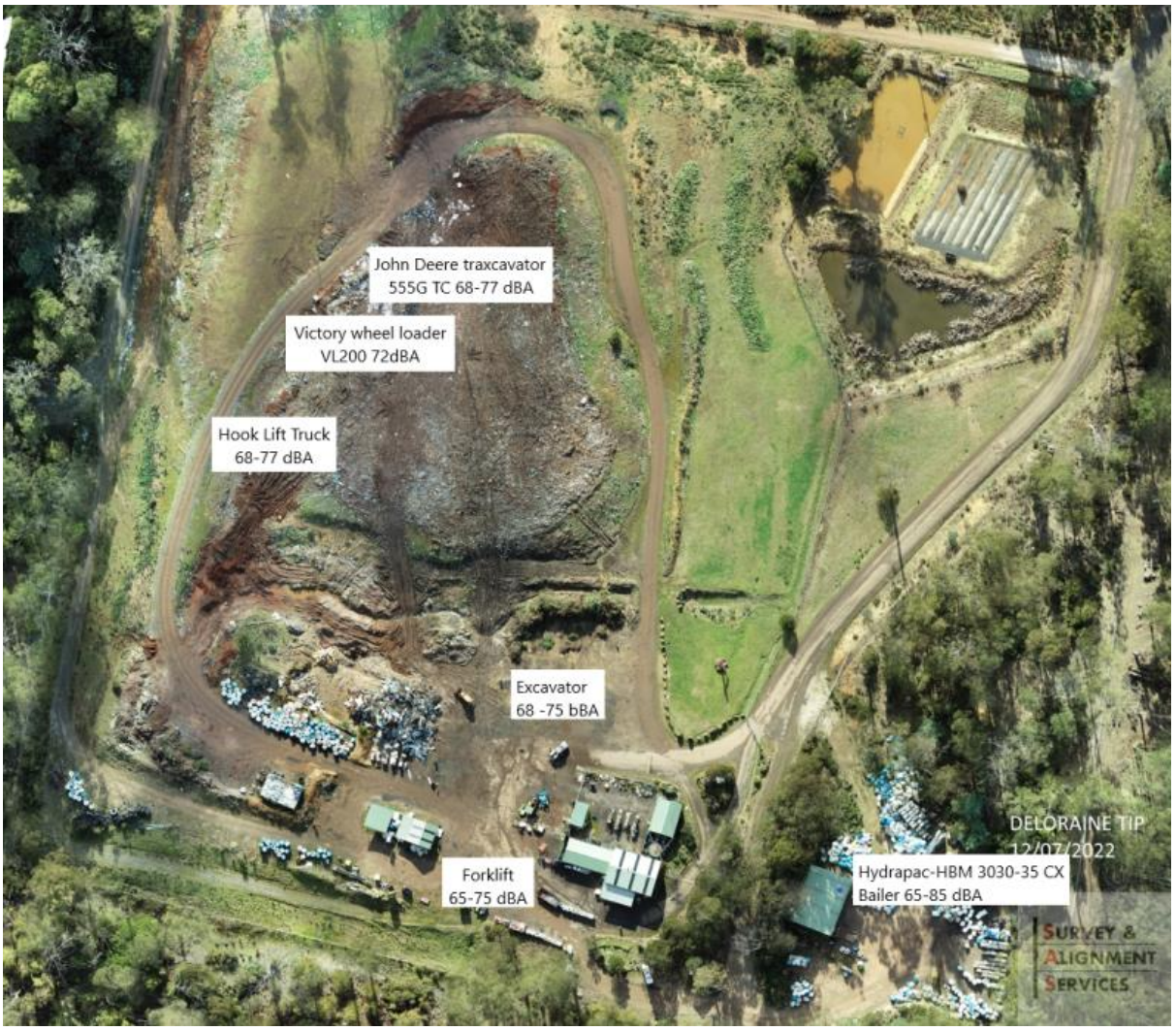
Table 9: Potential Sources of Noise

Vehicle/plant	Operating time	Operating days	Operating dB(A)A max
John Deere tracked excavator	10am-5pm	Mon, Wed, Fri Sat & Sun	77
Victory wheel loader	10am-5pm	Mon, Wed, Fri Sat & Sun	72
Hook Lift Truck	10am-5pm	Mon, Wed, Fri Sat & Sun	77
Forklift	10am-5pm	Mon, Wed, Fri Sat & Sun	75
Excavator	10am-5pm	Mon, Wed, Fri Sat & Sun	75
Hydrapac Bailer	10am-5pm	Mon, Wed, Fri Sat & Sun	85 (should be lower as bailer is inside a shed)

7.2. Provide a map of the location of all major sources of noise and any noise sensitive premises within 1km of the boundary of the Land.

Figure 15 shows all major sources of potential sources for noise on the landfill.

Figure 15: Map of Potential Noise Pollution Sources



Refer to Figure 8 for any residencies within one kilometre of DRDS.

There is no indication of noise pollution in the area. No noise complaints have been received.

7.3. Evaluate the potential for the activity to create a noise nuisance.

This is a general analysis based on the noise levels provided and the assumption that the nearest residence is 500 meters away.

Based on the noise generation values the following noise levels were modelled:

1. John Deere tracked excavator: Generates 77 dB(A) at 1 m distance. Assuming a 500-meter distance, the noise level would decrease by approximately 53 dB(A). Therefore, the noise level at the nearest residence from this equipment would be around 22 dB(A).

2. Victory wheel loader: Generates 72 dB(A) at 1 m distance. The estimated noise level at the nearest residence would be approximately 18 dB(A).

3. Hook Lift Truck: Generates 77 dB(A) at 1 m distance. Similarly, the noise level at the nearest residence would be around 23 dB(A).

4. Forklift: Generates 75 dB(A) at 1 m distance. The estimated noise level at the nearest

residence would be approximately 22 dB(A).

5. Excavator: Generates 75 dB(A) at 1 m distance. The estimated noise level at the nearest residence would be approximately 22 dB(A).

6. Hydrapac Bailer: Generates 85 dB(A) at 1 m distance. Assuming the bailer is inside a shed, it would provide some degree of noise attenuation. The resulting noise level at 500m distance is estimated to be 31 dB(A).

Condition SO18 in EPN 7216/3 (Attachment A) includes that noise emissions for the activity when measured at any domestic premises in other ownership and expressed as the adjusted time average A-weighted sound pressure level must not exceed:

- 45 dB(A) during the specified hours of operation; and
- 40 dB(A) outside these hours.

The site is operated by one operator and commonly only one machine is operating. The baler is only in use if cardboard or other recyclables are baled. Combined noise emissions occur only for short periods and not at maximum noise level. For example in case of a garbage truck dropping off waste and the wheeled loader or tracked excavator is nearby compacting or spreading waste. Should both plant be operating at maximum noise level (truck at 77dB(A) and Loader at 72 dB(A) the combined level at 500 m distance is modelled to be 41dB(A) at peak, which is within the adjusted time average A-weighted sound pressure range in condition SO18.

Please note that the provided noise levels are estimates based on general assumptions and calculations using a simple logarithmic model where attenuation=20*LOG10(distance)-sound barrier constant. Sound barrier constants have been assumed to be 10 dB(A) for the metal shed housing the HydraPak bailer due to the shed and 0 for all other noise sources. Actual noise levels can vary depending on various factors, including the specific characteristics of the site, topography, atmospheric conditions, and the effectiveness of noise control measures. However it can be assumed that noise levels are within acceptable limits at the nearest residence which is further confirmed through the fact that no noise complaints have been received.

7.4. Describe the noise attenuation measures that will be implemented.

To mitigate the potential noise nuisance risk, implementing noise control measures such as operational restrictions during sensitive hours, noise barriers and regular maintenance of equipment to minimise noise emissions have been implemented.

The procedures used to manage noise at the site are described in Table 10.

Table 10: Noise Management

Issue	Procedures	Responsibility
Operating hours	Site operating hours are restricted.	Site Staff
Equipment maintenance	Equipment on site is regularly maintained every 50 hours.	Site Staff
Noise barrier	The baling equipment is housed in a shed to limit noise pollution	Site

7.5. A demonstration that the proposal is consistent with the requirements of the Environment Protection Policy (Noise) 2009 and any supplementary documents.

To determine if the proposal complies with the specified provisions of the Environment Protection Policy (Noise) 2009, the following requirements from EPP (Noise) 2009 provide a general understanding of how the provisions align with noise management principles:

1. Regulatory Assessment and Management:

Regulatory authorities should assess, manage, and regulate proposed commercial and industrial activities as noise sources to protect environmental values. This implies that the proposal should undergo a thorough assessment to evaluate its potential noise emissions and impacts on the surrounding environment.

2. Best Practice Environmental Management:

The proposal should employ best practice environmental management to reduce noise emissions to the greatest extent that is reasonably practical. This indicates that the operation should incorporate noise control measures and techniques like describe above to minimise noise generation and resulting nuisance.

Through a restriction of hours and through regular maintenance requirements for noise generating machinery noise is controlled on the site.

3. Reduction of Dominant or Intrusive Noise Characteristics:

Efforts should be made to reduce the dominant or intrusive noise characteristics of the activity to the greatest extent that is reasonably practical. This implies that the proposal should include specific measures to address and minimise noise sources that are particularly noticeable or disruptive to the surrounding environment.

None of the noise sources have been identified as being dominant or intrusive.

4. Retaining Reserve Capacity:

The proposal should not emit noise at a level or in a manner that would prejudice the protection of environmental values at the location. This suggests that the noise emissions should be maintained within acceptable limits, taking into account the existing ambient noise and potential cumulative effects from other noise sources in the vicinity.

It is believed that the noise emissions have been maintained within acceptable limits, since there has not been a noise complaint.

5. Exceptional Cases:

In certain circumstances, regulatory authorities may choose not to require a reserve capacity if best practice environmental management is employed, and it is highly unlikely that significant additional sources of noise will be present. This exception can allow for flexibility in balancing noise management requirements with proposals that are deemed to be clearly in the public interest.

Point 5 may not apply to the landfill proposal.

6. Acknowledgment of Challenges:

The policy acknowledges that even with best practice environmental management, noise emissions from an activity may still pose challenges in terms of protecting environmental values and providing sufficient reserve capacity.

Point 6 may apply, however incidents that led to elevated noise emissions have not occurred yet.

7. Review and Statutory Tools:

If noise emissions from an activity jeopardise the protection of environmental values or fail to provide sufficient reserve capacity, the responsible regulatory authority should conduct

periodic reviews to assess opportunities for further noise reduction. Alternatively, appropriate statutory tools should be prepared to mitigate conflicts with noise-sensitive uses or developments.

Point 7 does not apply since the protection of the environmental values don't appear to be jeopardised through this proposal.

Based on the provided analysis, it appears that the proposal is consistent with the requirements of the Environment Protection Policy (Noise) 2009, specifically in relation to Part 5 - Commercial and Industrial Activities. The proposal demonstrates compliance with the principles of regulatory assessment and management, best practice environmental management, reduction of dominant or intrusive noise characteristics, and retaining reserve capacity.

Additionally, there is no indication of noise emissions exceeding acceptable limits or compromising the protection of environmental values at the location. The absence of noise complaints further suggests that the proposal aligns with the policy requirements.

While exceptional cases and the acknowledgment of challenges may not directly apply to the landfill proposal, the overall assessment indicates that the proposal adequately addresses noise management and complies with the specified provisions of the Environment Protection Policy (Noise) 2009.

8. Natural Values

8.1. Provide records from the Natural Values Atlas and TASVEG 4.08 of any listed threatened flora/fauna species or threatened vegetation communities on or near the site. If any are present, or if the site has potential habitat for any such species, a detailed survey is likely to be required and the results should be presented in the EER.

The Natural Values Atlas Report shown in Table 11 records threatened flora within 5000 metres of the site.

Table 11: Verified Records – Threatened Flora – NVA Report

Species	Common Name	Observation Count	Last Recorded
Brunonia australis	Blue pincushion	5	11-Dec-2000
Euphrasia scabra	Yellow eyebright	1	01-Jan-1849
Glycine microphylla	Small-leaf glycine	2	01-Jun-2001
Juncus prismatocarpus	Branching rush	1	22-Feb-1882
Pimelea curviflora	Curved riceflower	2	22-Mar-1996
Pimelea curviflora var. gracilis	Slender curved riceflower	13	14-Sep-2021
Pomaderris phylicifolia	Narrow-leaf pomaderris	1	20-Nov-1974
Viola caleyana	Swamp violet	1	01-Jan-1851

The Natural Values Atlas Report shows no records of threatened fauna within 500 m of the site.

Table 12 shows the threatened fauna that have the potential to be present within 500 metres from the site.

Table 12: Verified Records – Threatened Fauna – NVA Report

Species	Common Name	Potential
Litoria raniformis	Green and gold frog	I
Lathamus discolor	Swift parrot	I
Dasyurus maculatus subsp. Maculatus	Spotted-tail-quoll	I

Species	Common Name	Potential
Prototroctes maraena	Australian grayling	I
Pseudemoia pagenstecheri	Tussock skink	I
Galaxias fontanus	Swan galaxias	I
Tyto novaehollandiae subsp. castanops	Masked owl (Tasmanian)	I
Haliaeetus leucogaster	White-bellied sea-eagle	I
Sarcophilus Harrisii	Tasmanian devil	I
Accipiter novaehollandiae	Grey goshawk	I
Perameles gunni	Eastern barred bandicoot	I
Aquila audax subsp. Fleayi	Tasmanian wedge-tailed eagle	I
Dasyurus viverrinus	Eastern quoll	0

The Natural Values Report is documented in Attachment I.

8.2. Detail any proposed clearing or disturbance of native vegetation or potential habitat for native fauna as part of the proposal, including details of the nature of vegetation and habitat values to be cleared or disturbed, and the area of vegetation affected (in hectares).

There will be no proposed clearing or disturbance of native vegetation or potential habitat for native fauna as part of the DRDS increase of height.

There will be no increase of carbon footprint.

8.3. Describe the potential impacts to threatened fauna, flora, and vegetation communities, taking into account:

- The clearance or disturbance of native vegetation or other potential habitat. Provide details of the vegetation and habitat values to be cleared or disturbed, and the area to be affected, in hectares: N/A
- Movement, noise, or lights during sensitive avifauna breeding seasons:

  There will be no change in activity, therefore issues such as noise, light and amount of movement will be the same. The landfill only works during business hours, the lighting required is minimal.
- Roadkill from vehicles:

  The traffic speed is 10kph across all areas of the site. Also, the DRDS does not operate at night time. The roadkill from vehicles is minimal.

8.4. Describe the potential impacts to geoconservation sites (e.g., karst systems), aquatic or riparian environments and other natural values, and the management measures proposed to mitigate these impacts.

No Geoconservation sites found within 1000 metres. Refer to Attachment I for the NVA report.

8.5. Describe the management measures that will be implemented to mitigate or avoid impacts to threatened fauna, flora and vegetation communities or other natural values.

While the NVA report found that the area is not considered to have significant nesting, denning or foraging habitat, all operational activities occur during daylight hours only. This minimises potential impacts to fauna, especially to reduce potential impacts during avifauna breading seasons.

Should any injured fauna be encountered, work in the immediate area should cease. For small native animals (lizards, birds, possums) throw a blanket or towel over it to immobilise it, then capture the animal and put it in a well-ventilated box and cover it. Keep it warm, quiet, and undisturbed to minimise shock.

Large animals may be too dangerous to handle (kangaroo). Keep an eye on the animal and protect it from further harm until assistance arrives. Injured animals should be immediately taken to the nearest appropriately qualified veterinary clinic or fauna rescue organisation contacted.

9. Weeds, Pests, and Pathogens

9.1. List the weeds, pests and pathogens occurring on or near the site.

Key weed species of concern (either present in the DRDS or in the region) are listed below:

- Gorse (Ulex europaeus) – present on the site;
- Ragwort (Senecio jacobea);
- Spanish heath (Erica lusitanica);
- Brooms (Cytisus scoparius and Genista monspessulana); and
- Californian thistle (Cirsium arvense).

9.2. Evaluate the potential for the activity to introduce or spread weeds and diseases to, from and within the site.

Weed management is important for the neighbouring properties and bushland. Many weeds are brought into the site through the disposal of garden organics in the green waste. The spread of weeds can occur quickly and must be brought under control as quickly as possible. The EMP is covering weed management procedures as follows:

- Regularly remove noxious weeds and deposit in landfill; and
- Ensure that species selected for plantings are appropriate for the area.

The responsibility for the management of weeds lies with the Works Manager who will be informed of the occurrence of weeds by the site supervisor.

9.3. Discuss the proposed management measures for controlling current weed infestations (e.g., on the northern slope of the central landfill cell) and preventing the spread of weeds, pests, and pathogens (e.g., vehicle washdown procedures).

Weed management will occur on an as need basis with periodical spraying of weeds during the spring and summer months. If weeds are identified, they are to be reported to management to include in future spraying programs. Records are kept of areas / zones sprayed.

Nuisance animals will be actively discouraged from accessing the DRDS to the extent necessary to ensure they do not present an unacceptable public health risk.

Measures to be applied may include the trapping of animals (e.g. feral cats) and the use of deterrent devices (e.g. reflectors, artificial decoys, light and sound emitting devices), especially for nuisance birds.

The covering of the material in the putrescible landfill with inert material aids to discourage nuisance animals as food wastes will not be accessible to them, thereby removing a possible attractant.

Spraying Program

A targeted weed spraying program is to be implemented by Site Operator.

The program should be reviewed each year, when the Annual Report is completed, and updated as new information about the occurrence of weeds within the DRDS become available.

Monitoring

The early detection of any weeds is important to ensure that any control or eradication program has the highest likelihood of success. A survey to identify any new weed species within the DRDS should be conducted at 1-yearly intervals.

The following monitoring regime will be applied:

1. Surveys and assessments by a suitably qualified person will be conducted to –

    a. identify, record and map weed species that require management action;
    b. assess and map the extent of known weed infestations to determine if they are becoming larger and/or more significant such that control measures can be modified; and
    c. review/assess the weed control works that have been conducted and to provide advice, where necessary, on the management of weeds.

2. Areas where weed control/eradication works have occurred (e.g. spraying) will be assessed no more 12 months after the treatment occurred to determine if the measures implemented were successful. Where measures have proved unsuccessful, repetition and/or modification of the weed control technique(s) will be employed.

10. Waste

10.1. Describe the solid and liquid waste that will be produced by the activity (e.g., Potentially Acid Forming material, metal, and machinery service wastes, used oils, general refuse).

Deloraine a pre-existing Level 2 Putrescible Landfill, with a licence limit of 8,000 tonnes of deposited waste a year. The proposal to increase height at DRDS will provide approximately an additional 11 thousand tonnes of general waste to be deposited potentially providing another 4 years of landfill disposal.

Table 13 shows the types of waste permitted to be stored or disposed of in DRDS – General Waste.

Table 13: Types of General Waste Permitted to be Stored or Disposed of in DRDS.

Waste Type	Description
Inert waste	Means waste that does not undergo environmentally significant physical, chemical or biological transformations and have no potentially hazardous content once land filled and are not contaminated with other material. Substantial quantities of inert waste may be derived from building and demolition works, including bricks, concrete, and glass, plastic, metal and timber.
Clean fill	Means Soil, rock, concrete, bitumen or similar non-putrescible material that is not contaminated by other waste; and does not contain contaminant levels exceeding limits set by the Director in Bulletin 105, Classification and Management of Contaminated Soil for Disposal, DPIWE, 2004.
Putrescible waste	Means waste containing materials that are capable of rapid biological decay or rotting.
Recyclable materials (where stored for recycling)	Means recovered materials that can be re-used in their current or another form that would otherwise be disposed of as wastes, into useful materials or products;

Table 14 shows the types of waste that ARE NOT PERMITTED to be stored or disposed of in the DRDS.

Table 14: Types of Waste that are not Permitted to be Stored or Disposed of in DRDS

Waste Type	Description
Controlled wastes unless otherwise approved in these conditions	Means controlled waste as defined in Section 3 of the *Environmental Management and Pollution Control Act 1994*.
Liquid wastes	Means any waste product that is in liquid form or is substantially comprised of free liquids or is not capable of being lifted and moved in heaps with a spade.

Waste Type	Description
Low Level Contaminated Soil	As defined in DPIWE Bulletin 105; Classification and Management of Contaminated Soil for Disposal, DPIWE, 2004.
Sewage sludge	Solid, semi-solid or liquid residue generated from the treatment of sewage in a treatment works. When it is in a form suitable for beneficial reuses, it is more commonly known as biosolids (From Tasmanian Biosolids Reuse Guidelines 1999, DPIWE).

Table 15 shows the types of waste permitted to be stored or disposed of in DRDS – Controlled Waste (subject to Hazardous Substances conditions).

Table 15: Types of Controlled Waste Permitted to be Stored or Disposed of in DRDS.

Waste Type	Description
Scrap tyres (where stored for recycling)	Means complete or partial rubber tyres.
Batteries (where stored for recycling)	Means complete or partial batteries (for power generation) and associated products and ingredients they contain.
Waste oil (where stored for recycling)	Means oil (hydrocarbon) products.

10.2. Describe the proposed methods for avoidance, reuse, recycling, treatment, and disposal of waste.

MVC has a temporary recycling storage, materials are generally stored in bulka bags, crates or bins.

Storage and stockpiling are a temporary measure and there must be no stockpiling for speculative purposes, an immediate market should exist for a material being stored for recycling or reuse. An immediate market means that it is an identified and recognised market as demonstrated by the existence of a known customer with a demonstrated and available beneficial use for the material.

Temporary storage of materials prior to reuse will not exceed six months to reduce potential abandonments, speculative indefinite stockpiling and/or an increased fire risk.

The procedures used to implement waste minimisation at the site are described in Table 16: Waste Minimisation Procedure. The overall objective of the Meander Valley Waste Strategy is to divert 50% of incoming material (including recyclables) from landfill.

Table 16: Waste Minimisation Procedures

Issue	Procedures	Responsibility
Car Batteries/Domestic Batteries	• Stored separately behind workshop, contact metal recycler when a number accumulate. • Only site staff and authorised contractors are allowed to handle the car batteries.	Site Staff / Site Supervisor

Issue	Procedures	Responsibility
Green Waste	• Green waste is directed to the green waste stockpiling area, mulched and transported to a composter.	Site staff / Site supervisor
Domestic Recyclables	• Facilities are provided for glass, aluminium cans, steel cans, PET, HDPE, non-ferrous metals.	Site staff / Site supervisor
Refrigerators	• Refrigerators are to be stored with Light scrap. Non-working appliances are set aside for salvaging. Working appliances are checked and sold.	Site Supervisor
Scrap Metal	• Scrap metal including car bodies, white goods (except fridges), corrugated iron and wire are to be placed directly into the designated area. Sims Metal will pick up as required.	Site Supervisor
Tip Shop	• Tip shop is operated by JustWaste and is open during landfill operating hours.	Site staff / Site supervisor
Tyres	• No more than 500 whole tyres may be stored on the land unless otherwise approved by the EPA Director. Such storage will only occur as an interim measure while awaiting disposal or removal to another site.	Site Staff
Waste Oil	• Waste oil facility is maintained on site. • Customers decant small containers into the oil storage tank. • The oil tank is to be dipped each week. When tank is about ¾ full, call Hagen Oil to recycle oil. • Any spilt oil contained within the bund is to be drained into a container and then poured into the oil tank.	Site Supervisor
DrumMUSTER	• Monthly collection advertised each year. Drums stored in drum muster compound. • Plastics collected by Veolia. • Steel collected through the light scrap process.	Site staff / Site supervisor
Cardboard and Paper	• Three bins for cardboard and 3 bins for paper. • Deposited by customers. • Picked up by external contractors.	Site staff / Site supervisor

Issue	Procedures	Responsibility
Used Paint	• Part of Paintback Program • Dedicated stillage containers. • Picked up by external contractors.	Site staff / Site supervisor
Styrofoam	• Stored in bulka bags • Picked up by City Mission	Site staff / Site supervisor
E-waste	• Dedicated stillage containers. • Picked up by TechCollect.	Site staff / Site supervisor

10.3. Describe the proposed methods to prevent the escape of any litter, including in circumstances of high wind or if extreme weather is predicted.

Measures have been implemented and maintained to control and monitor the escape of litter from the land to avoid and mitigate environment nuisance to adjoining landowners.

Control procedures

Litter control measures are used to control litter from escaping the site. The security fencing that exists around the perimeter of the land aids the capture of fugitive litter that may blow away from the site. The security and other site fences are regularly cleared of litter to maintain their effectiveness (i.e. the fences must remain permeable to wind).

Fill compaction and covering is to be carried out after waste deposition if wind conditions are such that debris cannot be contained within the active landfill area. During times of gale force wind and at any other time when wind strength is such that, notwithstanding all other litter control measures, it is likely that litter cannot be contained within the boundaries of the land, then the landfill must not receive putrescible waste. The Site Operator is to keep a record of all such occasions and provide a copy to an authorised officer upon request.

Check and clean-up procedure

Properties adjoining the DRDS will be kept clear of windblown litter originating from the DRDS. Neighbouring properties within a one-half kilometre radius of the land and the access road, and areas of the land outside the active tipping face(s) must be kept clear of windblown litter originating from the site.

Daily litter collections are made as well as regular collections on adjoining properties, with litter collected disposed to the DRDS (subject to the type of waste collected). An up-to-date record of litter collections and photos of clean-up activities are to be forwarded to Council as part of the site reporting. Council will notify the EPA Director in writing if any owner of adjoining land refuses to allow staff to undertake litter removal on their land.

11. Environmentally Hazardous Substances

11.1. Detail the nature and quantity of any environmentally hazardous substances that will be stored (permanently or temporarily) and/or handled on site. This includes fuels, oils, waste, and chemicals:

Controlled waste other than that listed below must not be received except with the prior written approval of the EPA Director:

- Scrap tyres for storage and/or recycling;
- Batteries for storage and/or recycling; and

- Waste oil for storage and/or recycling.

11.2. Describe the storage method and location of any environmentally hazardous substances and discuss the proposed management measures to prevent release and respond to accidental spills (e.g., provision of spill kits):

11.2.1 Tyres

No more than 500 whole tyres may be stored on the land unless otherwise approved by the EPA Director. Such storage will only occur as an interim measure while awaiting disposal or removal to another site. Tyre stockpiles must contain no greater than 200 tyres per stockpile. Tyre storage must be on a clean, hard stand area that has all weather access.

11.2.2 Lead Acid Batteries

Used motor vehicle lead acid batteries received at the DRDS will be stored in a facility that conforms to Australian Standard 3780 (Storage and Handling of Corrosive Substances).

11.2.3 Waste Oil

Waste oil received at the landfill must be placed in suitably sealed containers in the dedicated and appropriately designed receival area. The receival area is a bunded containment area, constructed of suitable impervious materials and have a roof to stop rain infiltration.

The used oil storage tank must conform with the following requirements:

- The tank must be of suitable volume (e.g. 200 - 500 Litres) to store the volumes of used oil that are likely to be received on a regular basis (e.g. 4 weeks storage);
- The tank must be placed in a suitable bunded containment area, constructed of suitable impervious materials, designed to contain not less than 110% of the volume of the storage tank;
- Storage areas must be designed in accordance with relevant Australian Standards including AS 1940 (Storage and Handling of Flammable and Combustible Equipment);
- The storage tank must be covered by to prevent ingress of rainwater into the bunded area;
- The bunded area must contain appropriate valves to allow drainage and recovery of materials in the bund. These valves must contain suitable locking mechanisms such that authorised personnel can only operate the valves; and
- The storage tank must be secured to prevent unauthorised access.

11.2.4 Asbestos

Asbestos waste is not accepted at the site.

11.3. Identify any dangerous goods and controlled wastes that will be present on the site, with reference to standard classification. Detail how they will be managed:

11.3.1 Tyres

No whole tyres except earthmoving tyres may be disposed in the landfill. Where cut tyres are to be disposed of in the land fill the size of the pieces must not exceed 250 mm in any

dimension. Earthmoving vehicle tyres must be individually buried and be filled completely, to remove any voids, with an inert and non-degradable material such as soil or sand.

11.3.2 Lead Acid Batteries

Only operators or contractors authorised by the Site Operator are permitted to handle lead acid batteries for storage purposes.

11.3.3 Waste Oil

Waste oil accumulated in the bunded containment area is to be emptied into a used oil storage tank on a regular basis. Only operators or contractors authorised by the Site Operator are permitted to empty used oil into the used oil storage tank for storage purposes.

12. Site Contamination

1.1 Has the site on which the activity is to be located been used in the past for activities which may have caused soil or groundwater contamination? If so, provide details. Include details of any assessments of soil or groundwater contamination on the site:

DRDS has been operating as a waste disposal site since the early 1970's. Environmental impacts from the activity including leachate, runoff and landfill gas are managed by a leachate collection system. Assessments of any surface or groundwater contamination are conducted every six months. See Attachment T for detailed information.

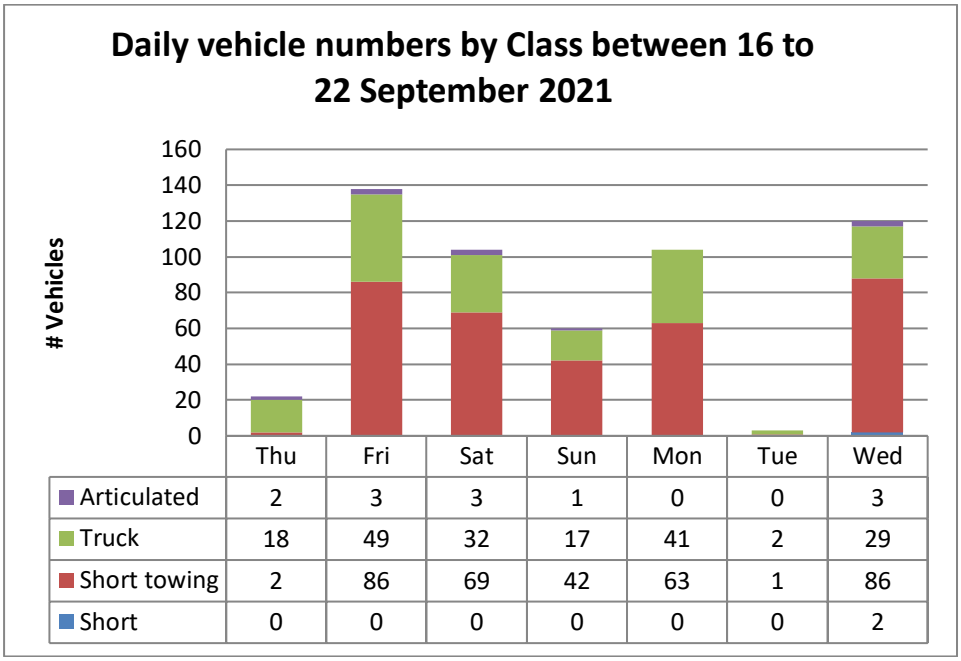
13. Environmental Impacts of Traffic

13.1. Provide details of the vehicle types, number of vehicle movements, times of movements and route(s):

The vehicle types vary from small car, small truck, garbage truck to large trucks.

The most common vehicles entering DRDS are short towing vehicles and class 3 to 5 trucks. See Figure 16 for daily vehicle numbers by class between 16 to 22 September 2021.

Figure 16: Number of Vehicle Movements (per day)

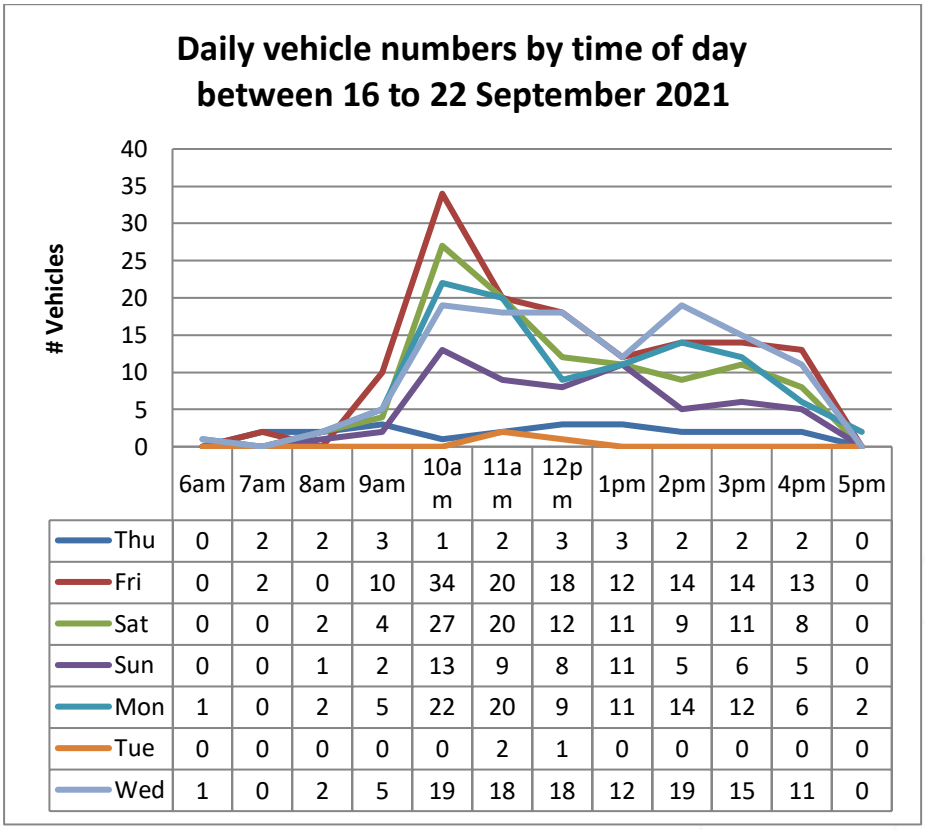


	Thu	Fri	Sat	Sun	Mon	Tue	Wed
Articulated	2	3	3	1	0	0	3
Truck	18	49	32	17	41	2	29
Short towing	2	86	69	42	63	1	86
Short	0	0	0	0	0	0	2

Source: 3. Tip Rd Traffic Count Data v1.

Between 16 and 22 September 2021, DRDS recorded the busiest day of the week being Friday between 10am and 12pm and Wednesday between 10am and 4pm. See Figure 17 for a daily vehicle number by time of day.

Figure 17: Time of Day of Vehicle Movements.



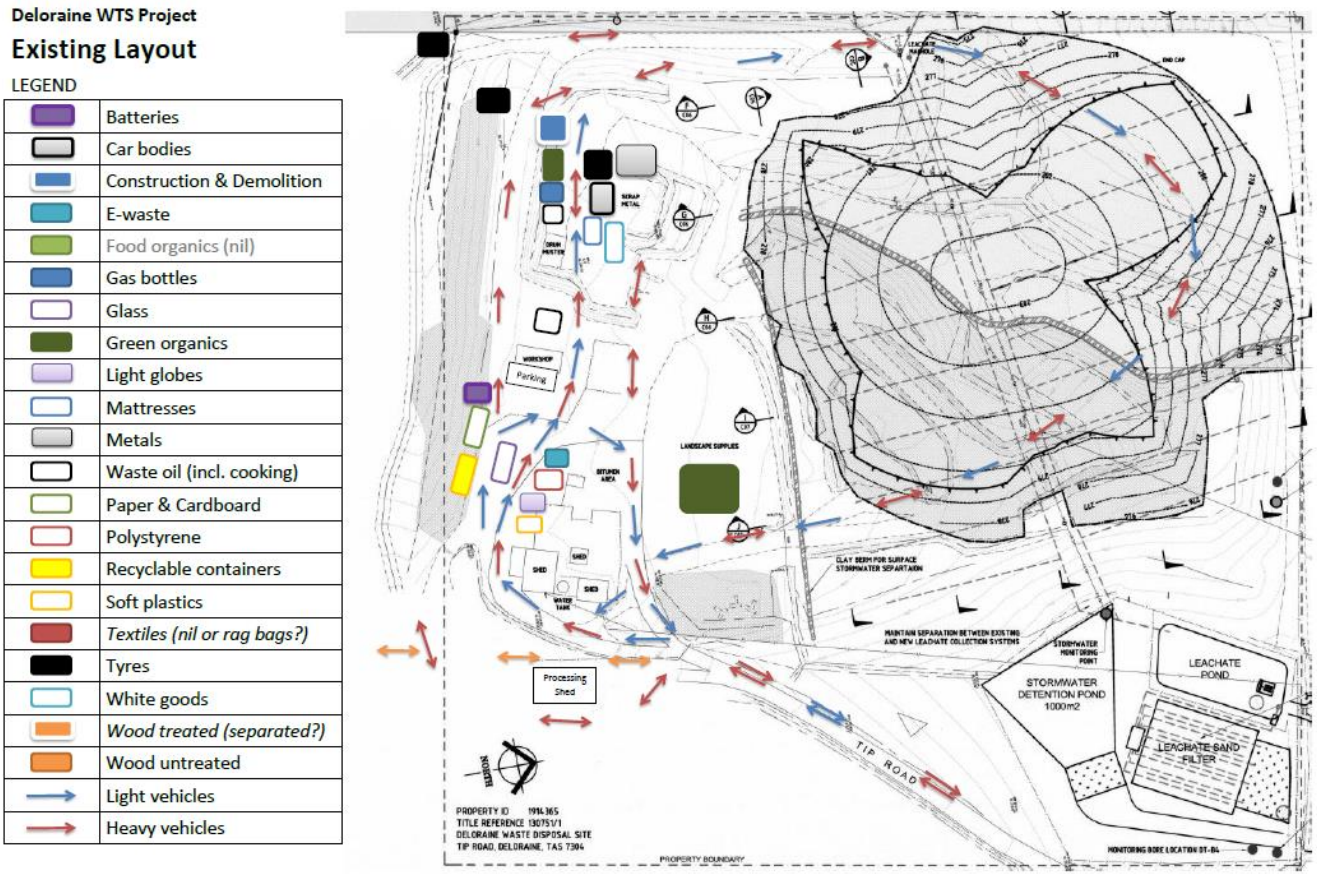
	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm
Thu	0	2	2	3	1	2	3	3	2	2	2	0
Fri	0	2	0	10	34	20	18	12	14	14	13	0
Sat	0	0	2	4	27	20	12	11	9	11	8	0
Sun	0	0	1	2	13	9	8	11	5	6	5	0
Mon	1	0	2	5	22	20	9	11	14	12	6	2
Tue	0	0	0	0	0	2	1	0	0	0	0	0
Wed	1	0	2	5	19	18	18	12	19	15	11	0

Source: 3. Tip Rd Traffic Count Data v1.

Access to the site is via Tip Road. Tip Road is a no through road, connecting to Quamby Brook Rd and Osmaston Rd. See Figure 9.

Figure 18 shows the proposed transport route. Figure 10 shows the layout prior to changes agreed upon with the EPA to shift the green waste stockpile to the north western part of the landfill (see attachment P for updated green waste location)

Figure 18: DRDS Existing Layout



(Source: 4. DRDS – Existing Layout v2.pdf)

13.2. Evaluate the potential for transport to and from the site to cause a noise nuisance to residences and other noise sensitive premises in proximity to the Land, considering the type, volume and time of traffic associated with the proposal:

In accordance with clause C3.5.1 of the Tasmanian Planning Scheme – Meander Valley, MVC (as the Road Authority) confirms herewith that the proposed increase of height at the DRDS will have no noticeable effect on the daily traffic to and from the site and traffic volumes will be within the acceptable range as per Table C3.1 of the Tasmanian Planning Scheme.

The traffic speed is 10 kph across all areas of the site. Children and animals must remain in the vehicles whilst on site and must not ride in the backs of utilities of trailers. Effective directional signage shall be in place and properly maintained. Staff will direct vehicles to the appropriate unloading areas.

It is considered that traffic to and from the property would not adversely impact on the safety or efficiency of the road network, including pedestrians and cyclists.

The Road Authority confirmation of unchanged traffic volumes on proposed increase of height at the DRDS is documented in Attachment H.

13.3. Evaluate the potential to cause a dust nuisance as a result of traffic in proximity to the Land:

Acceptable standard: Landfill operators must minimise the generation of dust at the landfill site. There is the potential of dust being a nuisance especially in dry and warm conditions. Where generation of dust does occur, the dust must be controlled to ensure that environmental nuisance does not occur beyond the landfill boundary.

Deloraine EPN states that dust emissions from roads, disturbed areas, storage heaps, or machinery on the land must be controlled to prevent environmental nuisance. Council follows the recommendations from the Landfill Sustainability Guide:

- Unsealed road surfaces and material stockpiles should be regularly sprayed with water, especially in areas with clay soils and during dry, windy conditions;
- The trafficable area of the landfill should be kept as small as possible; and
- Completed landfill sections should be rehabilitated as soon as possible.

2.1 Will the activity result in a night-time (between one hour before dusk and one hour after dawn) traffic increase of more than 10% on roads in proximity to the Land? If so, roadkill mitigation measures for Tasmanian Devils may need to be addressed.

This is not applicable as the site operates in daylight hours only and vehicle speed is limited to 10 km/h. Opening hours are from 10am - 5pm.

14. Other Off-Site Impacts

14.1. Does the activity have the potential to generate any other off-site impacts that may affect the amenity of residences or other sensitive uses (such as schools and hospitals)? If yes, provide details. The location of all nearby residences or other sensitive uses must be clearly shown on the area map (see Part B):

Environmental and health impacts for adjoining areas are not expected.

There will be no changes in traffic, caused by the increase in height. The proposal is for a slight (4 m) increase in height only and traffic frequency or volume will not occur. The same drop off and compaction activity as current will occur only slightly more elevated. Please see the email from MVC, in Attachment H for the road authority confirmation of unchanged traffic volumes.

15. Monitoring

15.1. Describe any current and proposed environmental monitoring and reporting for the activity:

Monitoring and reporting complying with the EPA guidelines, is in place.

15.1.1 Monitoring

At the end of each month, a report is to be provided to Council on all aspects of the entries into the sites. This includes daily records of:

- Vehicle types and quantities; and

- Income.

Data is a key criterion for Council as well as the reporting requirements for NRE Tasmania and EPA Tasmania.

As such JustWaste is required to provide monthly reports and Annual Reports on all activities on the site. This includes recyclable volumes leaving site for processing such as cardboard, waste oil etc. Receipts are to be provided by these companies upon leaving the site outlining the materials recycled and the volumes.

Unless otherwise approved by the Director monitoring must be carried out at the following points:

- At the two groundwater monitoring bores (being DT-B5 and DT-B6);
- Surface water immediately downstream of the leachate pond and sand filter system;
- Just beyond the boundary of the land in the natural stormwater course;
- Upstream and downstream from where the stormwater enters Bonneys Creek; and
- The leachate collection dam.

Unless otherwise specified in writing by the Director, monitoring and the frequency of monitoring, must be undertaken in accordance with Tables 1 and 2 (see Attachment A, pages 23 and 24).

Unless otherwise approved in writing by the Director, the results of laboratory analysis of samples collected in the course of monitoring must be submitted to the Director within 21 days of completion of those analyses by the laboratory.

15.1.1.1 Groundwater

Regular, representative sampling of groundwater is being conducted to ensure early detection of any contamination by leachate and to demonstrate compliance with any statutory requirements.

Figure 12 shows the location of two groundwater sampling points. Attachment J also contains a specialist's report on a Water Quality Assessment from these bores (Pitt&Sherry – 2022).

Attachment T contains the latest groundwater management plan.

The sampling strategy is in accordance with the Guidelines and based on two bores, sampled at six-monthly intervals. Procedures used to monitor groundwater at the site are described in Table 17 Groundwater Monitoring.

Table 17: Groundwater Monitoring

Issue	Procedures	Responsibility
Sample location	• Groundwater bores (DT-B5 and DT-B6) are shown in Figure 12.	Contractor
Sample collection	• Samples are taken in accordance with AS-5677.1: 1998 Water Quality Sampling Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples and AS 5667.11: 1998 Water Quality Sampling Guidance on sampling of groundwater.	MVC
Sample analysis	• Samples are analysed for the parameters detailed in Attachment B, page 36 (Table 3).	MVC

Issue	Procedures	Responsibility
Sample frequency	• Six-monthly event.	MVC

Refer to paragraph Attachment T for recent monitoring results.

15.1.1.2 Surface Water

Surface water has been monitored on a regular basis to detect and respond to any pollution from the landfill and to demonstrate compliance with any statutory requirements.

Figure 12 shows the location of four surface water monitoring points, for sampling the leachate pond (Point 1), immediately downstream of the leachate sand and grassland filter (Point 2), just off-site in the natural stormwater course (Point 3) and in Bonneys Creek for a background s/w quality comparison (Point 4).

The procedures used to monitor stormwater at the site are described in Table 18. This is located at the outfall of the stormwater pipe that is centrally located beneath DRDS and immediately before entering the stormwater detention pond. Sampling will occur only when there is a flow at this sampling point and no flow in the stormwater drains upstream of DRDS. This monitoring point will be included in the weekly visual inspection of the DRDS's stormwater drains to ensure immediate sampling is achieved if this scenario occurs. Particular attention will be given to the possibility of flow from the stormwater pipe beneath the DRDS during dry weather. The site operator will need to notify the MVC immediately so that the 'stormwater' is sampled.

Table 18: Stormwater Monitoring

Issue	Procedures	Responsibility
Sample location	• The stormwater pipe outflow sampling point is shown in Figure 12. Stormwater exiting from the stormwater pipe at base of the DRDS will only be sampled when stormwater is not visible upstream od DRDS.	Site operator and MVC
Sample collection	• Samples are taken in accordance with AS-5677.1: 1998 Water Quality Sampling Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples and AS 5667.11: 1998 Water Quality Sampling Guidance on sampling of rivers and streams.	MVC
Sample analysis	• Samples are analysed for the parameters detailed in Attachment B, page 35 (Table 2).	MVC
Sample frequency	• Visual monitoring will occur weekly with immediate sampling by MVC, if required.	Site operator

15.1.1.3 Leachate

Leachate has been regularly monitored to establish its quality and assess suitable management options.

Figure 12 shows the location of four surface water monitoring points. Of these, untreated leachate is monitored at point 1 in the collection pond and treated leachate at point 2, just prior to discharge off site from the grassed filtration system.

The procedures used to monitor leachate at the site are described in Table 19.

Table 19: Leachate Monitoring Procedures

Issue	Procedures	Responsibility
Sample location	• Leachate sample locations are located as shown in Figure 12.	MVC
Sample collection	• Samples are taken in accordance with AS-5677.1: 1998 Water Quality Sampling Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples and AS 5667.11: 1998 Water Quality Sampling Guidance on sampling of waste waters.	MVC
Sample analysis	• Samples are analysed for the parameters detailed in Attachment B, page 35 (Table 2).	MVC
Sample frequency	• Six-monthly event.	Site operator

15.1.1.4 Annual Waste Quantities and Source

Council will submit to the EPA Director a report on the quantity of waste (measured as tonnes) disposed at the landfill during each financial year. The report is to be submitted by 30 September each year and must, as a minimum contain details of:

- The total quantity of waste disposed of at the facility, measured as tonnes using a;
- Methodology approved by the EPA Director; and
- The methodology by which the quantity disposed of has been calculated.

The report must break down the total tonnage disposed using the categories listed in Table 20 below.

Table 20: Tasmanian Solid Waste Classification System

Tasmanian Solid Waste Classification System (Based on the Australian Waste Database)		
Processing Route	**Primary Source**	**Secondary Source**
1 Recycling	A Municipal	1 Domestic Waste
2 Composting		2 Other Domestic
3 Incineration		3 Other Council
4. Landfill		
5 Onsite	B Commercial & Industrial	0 Unknown
		X Waste Processing Facility
	C Construction & Demolition	0 Unknown
		2 Other Domestic
		3 Other Council
		X Waste Processing Facility

Source: Environmental Management Plan - 2018

15.1.2 Reporting

15.1.2.5 Waste Acceptance Records

Landfill operators must maintain accurate records of the amount, type, source (where known) and management of wastes received at the landfill.

The procedures used to manage various activities at the site (including waste acceptance) are described Table 21.

Table 21: Site Management

Issue	Procedures	Responsibility
Daily	• Undertake daily records for waste acceptance using checklists in the Operations Manual.	Site staff / Site supervisor
Monthly	• Undertake monthly inspections at irregular times using the monthly inspection checklist provided in Operations Manual. • Ensure that necessary follow-up actions are undertaken to correct any non-compliance identified during the inspection. • Store the completed and signed inspection checklist in the designate register.	Site Manager / Works Manager
Annual	• Calculate total quantity and sources of waste received in tonnes, by September, for each financial year.	Manager Infrastructure Services
Annual	EMP Review: • The performance of the landfill based on the previous 12 months performance; • Upgrade actions undertaken during the previous year;	EPA Tasmania

Issue	Procedures	Responsibility
	• Statutory requirements and guidelines covering landfill management; • Monitoring results for the 12-month review period; and • Any complaints received.	

The Operations Manual is provided in Attachment K.

15.1.2.6 Filling Plan

The landfill must be managed in a systematic manner. The procedures used to manage the filling plan at the site are described in Table 22.

Table 22: Filling Plan Management

Issue	Procedures	Responsibility
Filling Plan	• Filling plan is shown in Attachment B, page 78 (Drawing No. 682.001-C01.)	Site staff
Monitoring	• Site survey is undertaken at the site on an annual basis.	Site staff
Volumetric Survey	• Undertake a volumetric survey of the landfill, on an annual basis. Summarise the results of the survey in the Annual Report.	Works Manager

15.1.2.7 Contingency and Cost Planning

Landfill owners must demonstrate that appropriate procedures are in place, and that sufficient funds are available to cover expenditure requirements for environmental management during landfill operation, rehabilitation and after care.

The procedures used to manage contingency and cost planning at the site are described in Table 23.

Table 23: Financial Management

Issue	Procedures	Responsibility
Annual Budget	• Sufficient funds are provided for operation and upgrading of the site as required.	Manager MVC Department of Infrastructure.

15.1.2.8 Incident Reporting

Landfill owners must document the occurrence of, and response to, any complaints and incidents that may cause environmental harm.

All reasonable and practicable action must be taken to minimise the adverse environmental effects resulting from an incident.

The responsible person must notify the Director, as soon as reasonably practicable but not later than 24 hours after becoming aware of the release of a pollutant occurring as a result of any incident in relation to that activity, if this release causes or may cause serious or material environmental harm. Notification must include details of the incident, its nature, the circumstances in which it occurred and any action that has been taken to deal with it.

The procedures used to manage incident reporting at the site are described in Table 24.

Table 24: Incident Reporting Procedures

Issue	Procedures	Responsibility
Customer Service Request System	• Logs, processes and actions all queries, comments received from the public. • DEM advised if a significant environmental issue arises.	Works Manager

15.1.2.9 Annual Report

Landfill owners must prepare a report on activities at the landfill within each year, including all matters of environmental significance, and make this document available to the Regulatory Authority and to the general public.

The procedures used to manage annual reporting at the site are described in Table 25.

Table 25: Annual Reporting

Issue	Procedures	Responsibility
Annual Report	• Annual report will be provided to EPA Tasmania in September.	Manager Infrastructure Services.

15.1.2.10 Five Yearly Review

Permit conditions will normally require landfill owners to fully review their Environmental Management Plan every five years.

The procedures used to manage the review of the Environmental Management Systems (EMS) are described in Table 26.

Table 26: Five Yearly Reporting

Issue	Procedures	Responsibility
Five-yearly review	• Five-yearly reviews will be provided to EPA Tasmania.	Manager Infrastructure Services.

16. Decommissioning and Rehabilitation

16.1. Describe the proposed decommissioning and rehabilitation measures in the event of cessation of the activity:

- Providing a decommissioning and rehabilitation plan 30 days after notifying the Director of the EPA Tasmania the planned cessation of operations.
- Undertaking rehabilitation upon cessation and progressive rehabilitation.

Progressive rehabilitation and revegetation are to be conducted in accordance with the following:

- Rehabilitation must commence, on a progressive basis, immediately after completion and capping of each cell;
- Rehabilitation is to include planting or seeding compatible with the proposed end use of the site; and
- Maintenance and monitoring of rehabilitated areas will continue until the Director is satisfied that there is no further risk of environmental harm derived from the activity arising from those areas.

A detailed rehabilitation plan including monitoring plan will be prepared two years prior to the intended site conversion to a waste transfer station.

A summary of the proposed actions is provided in Table 27.

Table 27: Rehabilitation and Aftercare

Guide Requirements	Actions	Comments
Removal of site structures	• Removal of site structures.	• Conversion of site to waste transfer station.
Additional compaction	• Compaction of the final waste cell using appropriate equipment. • No bulky wastes will require specific management.	• Additional equipment will be brought to site if required. • Current site management prevents the inappropriate disposal of bulky wastes on the site.
Completion of capping	• Capping of the final cell will be undertaken in accordance with the Guide.	
Completion of vegetation establishment	• Pasture will be established on the final cell in accordance with the revegetation already undertaken on site.	• Completed cells have been revegetated using pasture species.
Leachate management	• Leachate management system will be maintained.	• Existing procedures for maintenance and monitoring will be continued.
Landfill gas management	• Surface gas monitoring will be undertaken.	• Gas monitoring will be implemented as per

Guide Requirements	Actions	Comments
	• Installation of a gas bore into the middle of the manmade fill to monitor leachate head in the waste and the potential for the generation of landfill gas will be considered in the near future.	requirements of the time. • The requirement for gas collection in the final cap will be assessed.
Surface water controls	• Stormwater management system will be maintained.	• Existing procedures for maintenance and monitoring will be continued.

16.2. Provide details of the planned final shape of the landfill:

Refer to Attachment O and Attachment B page 39, for the DRDS layout, leachate system design and scheduled final contours.

16.3. Provide details of the proposed final land use once landfilling has ceased:

The site once rehabilitated will be used as a Waste Transfer Station.

16.4. The final capping of the landfill will have the potential to contain landfill gas within the man-made fill. Provide a post closure landfill gas management plan:

Refer to Attachment U - Draft Post Closure Landfill Gas Management Plan.

The post closure landfill gas management plan involves comprehensive measures to effectively manage gas emissions following the closure of the landfill. The plan begins with the installation of gas monitoring boreholes strategically placed within the landfill to monitor leachate head and assess the potential for landfill gas generation. This allows for early detection and proactive management of gas-related issues.

To control and mitigate gas emissions, a gas collection and control system will be implemented. This system will consist of a network of gas extraction wells strategically located throughout the landfill. These wells will be connected to a gas control system, such as a gas flare or a gas utilisation system, to safely manage and dispose of the collected gas.

Regular monitoring will be conducted to assess gas levels, gas composition, and the effectiveness of the gas collection system. Maintenance activities, including well inspections, repairs, and system optimisation, will be performed on a scheduled basis to ensure the system's efficiency and effectiveness.

The post closure gas management plan is designed to minimise gas emissions, prevent environmental harm, and ensure compliance with regulatory requirements. It aims to protect air quality, prevent potential health and safety risks associated with gas emissions, and mitigate any environmental nuisances. By implementing these measures, the plan ensures long-term safety and sustainability, maintaining the integrity of the site even after landfill operations have ceased.

Continuous monitoring, maintenance, and adherence to the gas management plan will provide ongoing assurance that gas emissions are effectively controlled, minimizing any potential impacts on the environment and nearby communities.

17. Greenhouse Gas Emissions and Climate Change

17.1. Describe how the proposal will implement best practice environmental management in energy consumption and in transport of materials to and from the proposed activity, to minimise greenhouse gas emissions.

DRDS is in a geographically central position within the municipality, approximately seven minutes driving distance from Deloraine and fifteen minutes from Westbury. Alternative disposal options such as transporting to a regional waste facility in Launceston or Dulverton would lead to increased traffic and therefore to increased greenhouse gas emissions.

A resource recovery facility is located at the DRDS that facilitates the salvaging of recoverable materials before they reach the active tip face.

17.2. Discuss the impacts of the proposed activity in relation to Tasmania's climate change strategy.

Climate Action 21 was Tasmania's action plan 2017-2021. Since then, the Tasmanian Government has released an opportunities paper and has conducted community consultation and has released a consultation report. There is no current strategy.

The activity doesn't change, additional waste quantities will be disposed in the landfill, which will lead to additional greenhouse gases from decomposition. Waste reduction is likely the best viable greenhouse gas strategy and MVC is working with the waste management group on further organic waste reduction through the introduction of FOGO collection systems for households.

17.3. Describe the potential impacts of climate change upon the proposal. For example, it may be appropriate to plan for more intense storm events, more severe fire weather, long-term sea level rise, etc.

Climate change is likely to be the main cause for extreme weather events and extreme storms as well as droughts and bush fire risk.

Extreme storm events can potentially cause a higher than normal amount of leachate to be generated. The leachate treatment system may be overwhelmed by an unusually large amount of precipitation and could potentially overflow and release untreated leachate into the downstream environment. The large quantities of water would dilute the leachate which would reduce the impact of the breach.

There is an increased risk of bush fires due to extended dry periods. In case of a bush fire in the vicinity or an increased risk of a bushfire in the vicinity the risk would need to be managed by putting a soil cover on all exposed waste to prevent ignition of the waste disposal area.

Fires occurring at the DRDS must be extinguished as soon as possible using all practical means available.

Any fire occurring on the land must be reported to the Tasmanian Fire Service and the EPA Director by the MVC and/or Site Operator.

Table 28: Fire Prevention and Control

Issue	Procedures	Responsibility
Fire Prevention	• Communicate with the local fire brigade to establish effective preventative measures and further develop the fire management plan / procedures. • UHF radios are used for communication purposes. • Construct and maintain an effective firebreak. • Fire extinguishers are in place in equipment and buildings. • Ensure that all staff are aware of preventative fire management procedures. • Fire cart is used on site. • Do not allow potential ignition sources, such as hot coals and burning waste, into the landfill. • Do not allow burning of wastes at the landfill.	Site supervisor
Stormwater dam	• Stormwater dam can be used for water supply for firefighting purposes.	Site staff
Waste acceptance	• No hot wastes (e.g. ashes) are accepted at the site.	Site supervisor

Part C Summary of Proposed Management Measures

Table 29 shows the proposed measures for avoiding, minimising, and managing the potential environmental impacts of the proposal (as identified in Part C).

Table 29: Proposed Management Measures

No.	Proposed Management Measure	Timeframe
1	Dust will be managed through: • Daily visual monitoring; • Dust suppression; and • Traffic movements restrictions. As described in Part C, paragraph 5.7 of the EER.	Ongoing
2	Litter emissions will be managed through: • Daily collections; • Regular clearing of litter from security and other site fences; and • Fill compaction and covering. As described in Part C, paragraph 10.3 of the EER.	Ongoing
3	Fauna and weeds will be managed through: • Spraying Program; • Trapping of animals; • Use of deterrent devices; • Covering putrescible landfill; and • Surveys and assessments. As described in Part C, paragraph 8.5 and 9.3 of the EER.	Ongoing
4	Noise emissions will be managed through: • Hours of operation restricted from 10:00AM to 5:00PM; and • Equipment regularly maintained every 50 hours. As described in Part C, paragraph 7.4 of the EER.	Ongoing
5	Fire prevention and control procedures will include: • Use of UHF radios for communication; • Construction and maintenance of an effective firebreak; • No acceptance of burning of wastes; and • No acceptance of hot wastes (e.g. ashes). As described in Part C, paragraph 17.3 of the EER.	Ongoing
6	Site traffic will be managed through: • Speed limit; • Children and animals to remain inside of the vehicle; • Effective directional signage; • Vehicles directed to the appropriate unloading areas.	Ongoing

No.	Proposed Management Measure	Timeframe
	As described in Part C, paragraph 13.2 of the EER.	
7	Water sampling for monitoring purpose will include: • Tests in a laboratory accredited by NATA; • Retain sample analysis details for at least three years; and • Sample collection and transport by a trained and experienced person. As described in Attachment T.	Ongoing
8	Waste accumulation records to be managed through: • Use checklist to undertake daily records; • Use the monthly inspection checklist; • Follow-up actions to correct any non-compliance; and • Calculate total quantity and sources of waste each financial year. As described in Part C, paragraph 15.1.2.5 of the EER.	Ongoing
9	Filling plan will be managed through: • Site survey; and • Volumetric survey of the landfill. As described in Part C, paragraph 15.1.2.6 of the EER.	Annual basis
10	Incidents reporting will be managed through: • Logs, processes and actions all queries, comments received from the public; and • Advise DEM if a significant environmental issue arises. As described in Part C, paragraph 15.1.2.8 of the EER.	Ongoing
11	Groundwater sampling to be conducted from two bores as described in Part C, paragraph 15.1.1.1 of the EER. New sampling Complete groundwater monitoring in accordance with Section 8, including QA/QC sampling and reporting and clean out of sediment from DT-B5	Six monthly
12	Install three new groundwater monitoring wells at the locations identified in Table 8 (section 8.2.1) of the groundwater management plan	23/24
13	Compare reported groundwater concentrations against criterial in the: • EPA 2021 Meander Valley Catchment-specific DGVs (specific to the season of sampling) • ANZG 2018 freshwater DGVs for slightly to moderately disturbed systems (95% of species protection) • ANZECC 2000 o STVs (irrigation) o Livestock drinking TVs; and o Recreational guideline values.	Ongoing

No.	Proposed Management Measure	Timeframe
	Compare to and comment on differences with the new background well (DT - B7)	
14	Surface water will be managed through: • Monitoring to detect and respond to any landfill pollution; • Inform the MVC immediately if 'stormwater' sampling is required; and • Sampling from four locations. As described in Part C, paragraph 15.1.1.2 of the EER. Complete surface water and leachate monitoring in accordance with Section 8, including QA/QC sampling and reporting.	Ongoing / Six monthly
15	Compare reported surface water concentrations against criteria in the: • EPA 2021 Meander Valley Catchment-specific DGVs (specific to the season of sampling) • ANZG 2018 freshwater DGVs for slightly to moderately disturbed systems (95% of species protection) • ANZECC 2000 o STVs (irrigation) o Livestock drinking TVs; and o Recreational guideline values. Compare to and comment on differences with the new upgradient surface water location (BC-U1)	Ongoing
16	Leachate detected in the stormwater pipe outflow will be managed through: • Immediately assess the stormwater piped drainage system underlying the DRDS by the MVC; and • Make repairs or line, to prevent leachate ingress. As described in Attachment T to the EER.	Ongoing
18	Survey all of the groundwater wells and surface water monitoring sites.	23/24

Part D Public and Stakeholder Consultation

Community engagement activities from the Meander Valley Council for this proposal will include:

- A letter from Meander Valley Council to landowners immediately adjacent to DRDS outlining the proposal and the need to increase height;
- Personal briefings offered to all landowners immediately adjacent to DRDS. These briefings will be referenced in the letter that is mailed out;
- A letter from Meander Valley Council to landowners adjacent to the DRDS stating

that a Planning Application has been received by Council;

- An advertisement in the Examiner Public Notices; and
- A display of the proposal in the Meander Valley Council Chambers.

Community consultation will include all residents directly impacted by the landfill and will commence as soon as the EER is approved by the EPA.

Issues to be raised in the stakeholder consultation include:

- The proposal to increase height at DRDS and that a lift of 4 metres would provide an additional 18,000 tonnes for waste disposition.
- The proposal will have non-measurable impact to landowners adjacent to DRDS.
- The proposal is in the community interest allowing waste disposal to continue and meeting regional service needs.
- There are no additional environmental impacts from the proposal as the active cell area of the landfill has a clay liner and is connected to a leachate collection system. Environmental and operational issues of the proposal will be managed through existing documents including Attachment A and B.

Attachments (in separate documents):

Attachment A - DRDS EPN 7216.3
Attachment B - DRDS MVC Environmental Management Plan 2018
Attachment C - Location Map DRDS
Attachment D - Landfill Title Reference 130751-1
Attachment E - Deloraine Waste Disposal Site Map- 54 Tip Road
Attachment F - SAS-2017110-MVC-Deloraine Tip-DEC 22 Modelling-RL287m OVERALL
Attachment G - SAS-2017110-MVC-Deloraine Tip-DEC 22 Modelling-RL287m
Attachment H - Road Authority confirmation - DRDS
Attachment I - Natural Values Report_ DRDS
Attachment J - DRDS Water Quality Assessment, September 2022
Attachment K - Transfer Station and Landfill OPERATIONS MANUAL - v4
Attachment L - Compliance assessment of combined Annual Environmental Review 2020-21 Deloraine
Attachment M - Annual review report MVC-LET-18829-EPN 7216-3.Q5_DRDS
Attachment N - Deloraine and Cluan Annual Report 2021-2022_v3
Attachment O - SEMF Drawing Tip Filling Plan
Attachment P – DRDS layout
Attachment Q - DRDS Annual Reporting 2022
Attachment R - MVC Priority Vegetation Report
Attachment S- Deloraine Refuse Disposal Site February 2022 Fire Incident Follow Up Sampling Report
Attachment T - DRDS groundwater management plan 2023
Attachment U - Draft Post Closure Landfill Gas Management Plan for Deloraine refuse disposal site

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