



**PART 1 - ENVIRONMENTAL SITING AND CONCEPTUAL SITE MODEL**

**1.1 Siting context and background**

The Donnybrook Waste Management Facility (DWMF) has been in operation at its current location, within a portion of State Forest 27, for at least the last 50 years by the Shire of Donnybrook-Balingup. The site was initially used as an area where waste was aggregated and burnt and later evolved into a trench system where large trenches were dug, waste was placed and covered in layers. The current landfill area is laid over the former trenches and compacted to form a constructed mound.

DWMF has received all municipal waste generated in the Shire since smaller sites throughout the Shire were closed and a transfer facility constructed at Balingup in 2006. In the last few years, with more competitive pricing available within the Southwest, much of the commercial and construction/demolition waste has been transferred out of the Shire however the licence still contains provision to accept this waste category if required. An informal transfer facility has been in operation within the site since 2007 to minimise public interactions with the active tipping area and to increase opportunities for recycling.

As a rural settlement, the community are very attached to their waste management facilities within the Shire, however have recognised, via the Council Plan 2022-2032, that some work is required regarding waste management with the following priority projects identified:

**Outcome 5. A sustainable, low-waste, circular economy.**

Objectives	Priority Projects	Related Documents	Responsible	22-23	23-24	24-25	25-26
5.1. Reduce waste generation.	5.1.1. Produce a Local Waste Strategy to identify measures to reduce waste going to landfill and establish public education and communication approaches to encourage waste reduction behaviours, including recovery, reuse, and recycling.	WA's Waste Avoidance and Resource Recovery Strategy 2030	Operations	●	●		
5.2. Increase material recovery and recycling.	5.2.1. Provide separated recycling bins at Shire facilities (e.g. parks, libraries, recreation centres).	WA's Waste Avoidance and Resource Recovery Strategy 2030	Operations		●		
5.3. Reduce landfill.	5.3.1. Implement the Landfill Closure Management Plan.	Landfill Closure Management Plan	Operations	●	●	●	●
	5.3.2. Collaborate with neighbouring councils to review regional waste options to reduce landfill (such as waste to energy facilities).	WA's Waste Avoidance and Resource Recovery Strategy 2030	Operations	●	●	●	●

**1.2 Sensitive receptors and designated areas (within a 2 km radius)**

The DWMF is located within a priority 3 public drinking water source area and immediately adjacent to a priority 1 public drinking water source area that were proclaimed in 2016. The site is located within 2km of the townsite of Donnybrook with a number of smaller “general agriculture” zoned lots located 130m to the southeast of the premises boundary.

Please refer to Table 10.2 as contained within the submitted application form for an overview of the human and environmental receptors, including specified receptors as noted in the Guideline: Environmental siting.

### 1.3 Local climate and meteorological data

The following is an excerpt from attachment 8 within the submitted application that provides an overview of the local climate and meteorological data:

The Bureau of Meteorology has collected climate data from the Donnybrook weather station (Site number 009965) between 1900 and 2021. The average monthly climate data has been summarised in **Table 3.1**. The area receives an average annual rainfall of 969mm with the majority of it falling throughout the winter season between May and September. The annual mean maximum temperature is 23.2°C with an annual mean minimum of 9.8°C.

Table 3.1 Monthly climate statistics for Donnybrook weather station (1900-2021)

Climate Statistic	January	February	March	April	May	June	July	August	September	October	November	December	Annual
<b>TEMPERATURE</b>													
Mean maximum temperature (°C)	30.6	30.5	28.0	24.1	20.0	17.5	16.6	17.3	18.8	21.2	24.9	28.3	23.2
Mean minimum temperature (°C)	14.1	14.5	13.0	10.4	8.2	6.7	5.7	6.1	7.1	8.4	10.5	12.4	9.8
<b>RAINFALL</b>													
Mean rainfall (mm)	2.5	14.8	25.3	49.2	133.8	187.0	185.9	148.3	102.1	62.5	33.2	16.3	969.3
Decile 5 (median) monthly rainfall (mm)	5.1	6.2	17.0	44.6	127.1	168.9	182.0	144.8	92.2	57.0	28.7	9.8	947.4
Mean number of days of rain >= 1 mm	1.9	1.9	3.0	6.0	10.9	14.4	15.9	14.8	12.0	8.6	5.3	2.8	97.5
<b>9AM CONDITIONS<sup>1</sup></b>													
Mean 9am temperature (°C)	22.0	21.6	19.9	16.4	13.1	10.8	9.8	10.8	13.2	15.9	18.5	20.9	16.1
Mean 9am relative humidity (%)	55	59	62	72	80	84	86	82	75	65	58	53	69
Mean 9am wind speed (km/h)	15.4	15.9	14.3	9.3	7.3	6.9	7.5	7.9	10.6	13.4	15.4	15.1	11.6
<b>3PM CONDITIONS<sup>2</sup></b>													
Mean 3pm temperature (°C)	29.7	29.6	27.2	22.8	19.2	16.5	15.6	16.1	17.6	20.2	23.7	27.3	22.1
Mean 3pm relative humidity (%)	35	36	39	47	57	64	63	59	56	50	42	37	49
Mean 3pm wind speed (km/h)	16.3	16.5	15.8	13.4	12.8	13.0	14.9	16.1	16.9	16.9	17.8	16.8	15.6

The Wind Rose data for Donnybrook shown in **Figure 3.1** below indicates predominantly easterly winds in the morning that switch to westerly in the afternoon.

Figure 3.1 Donnybrook Wind Rose Data for 9am (left) and 3pm (right) (Bureau of Meteorology, 2021)

**Rose of Wind direction versus Wind speed in km/h (01 Jan 1957 to 10 Aug 2020)**

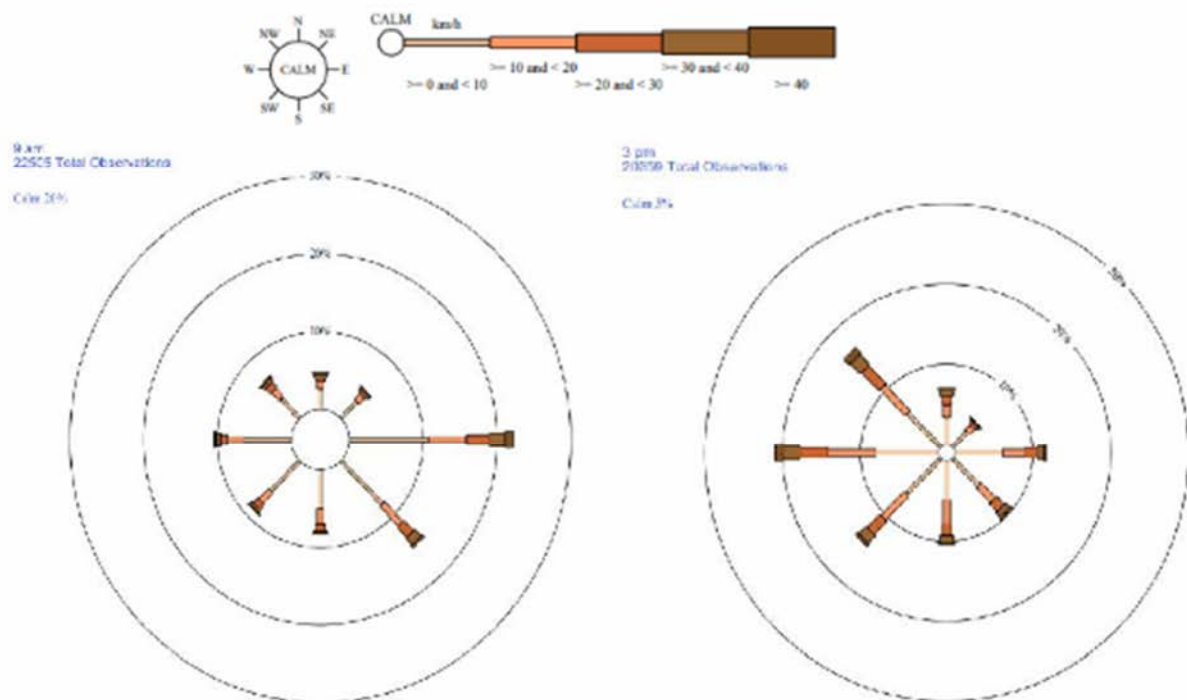
Custom times selected, refer to attached note for details

**DONNYBROOK**

Site No: 009534 • Opened Jan 1900 • Still Open • Latitude: -33.5719° • Longitude: 115.8247° • Elevation 63m

An asterisk (\*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



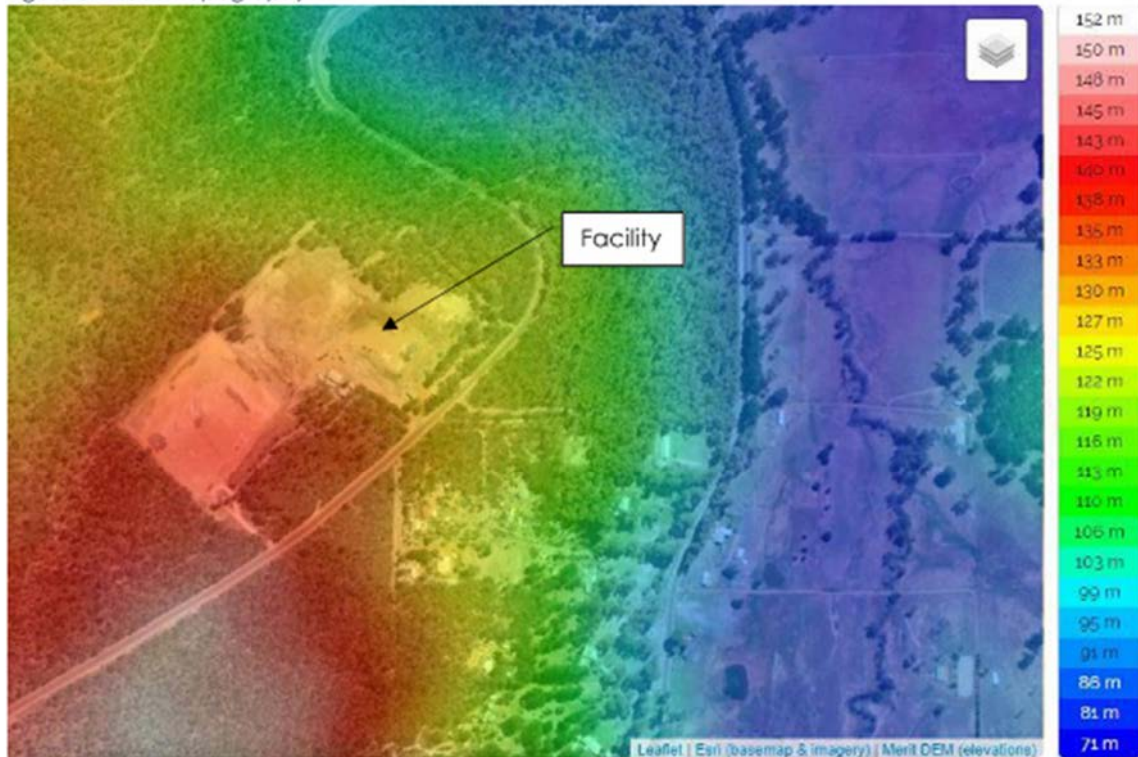
1.4 Topography, geography and hydrology

1.5 Conceptual site model

The following is an excerpt from attachment 8 within the submitted application that provides an overview of topography of the site:

The site slopes gradually to the north-east, from approximately 135m AHD along the southwestern edge to below 120m AHD in the eastern portion of the block. The topography continues to slope north-west offsite towards Noneycup Creek.

Figure 3.2 Local topography



Please refer to attachment 6A/7 contained within the submitted application that provides a detailed overview of geography and hydrology, including a desk top conceptual site model completed by DWER's Contaminated Sites branch in 2023. The Groundwater Assessment report (attachment 6A/7) completed by JBS&G included bore installation, which incorporated a lithological and geophysical log prior to the well installation. Details of these are contained within Appendix B and Appendix C of the JBS&G report.

#### 1.6 Attachment 1: Locality Map

Please refer to attachment 2B contained within the submitted application.

#### 1.7 Attachment 2: Topography, geology and hydrogeological plans/maps

Please refer to attachment 6A/7 contained within the submitted application.

#### 1.8 Attachment 3: Conceptual site model

Please refer to attachment.

## **PART 2A – DESIGN OVERVIEW AND CONSTRUCTION WORKS**

### **2.1 Landfill design concept**

The Shire proposes to continue laying waste over existing trenches in the direction and to the heights as identified within the post closure management plan (refer to attachment 8 within the submitted application). As the site is already underlain by landfill, there is no proposal for lining. The mounds are the highest point on the site so surface water through the area is not identified as being a risk. Any rainwater that falls onto this area is captured in existing stormwater sumps.

Waste types are as per the existing licence conditions with the majority of waste disposed of within the active landfill being the municipal kerbside waste collection.

There is no proposed change to existing site infrastructure. Some of the existing recovered stockpile materials (currently located above existing landfill areas) will be moved to other cleared areas within the site as the landfill area progresses.

### **2.2 Scope of construction works**

N/A

### **2.3 Attachment 4: Premises map and site layout plan(s)**

Please refer to attachment 2 contained within the submitted application.

### **2.4 Attachment 5: Detailed design drawings**

Please refer to attachment 8 within the submitted application.

## **PART 2B & 2C – LANDFILL LINER SPECIFICATIONS & STABILITY ASSESSMENT**

N/A – The DWMF is an unlined rural landfill site. A landfill liner system for the cells being installed above the existing (historical) landfill trenches is not proposed. The final contours and landform have been designed by ASK Waste Management Consultancy Services as a stable system.

## **PART 2D – LEACHATE MANAGEMENT**

N/A – There are no new leachate ponds proposed. Once post closure works progress, the Shire will make contact with DWER about the construction requirements for the proposed sediment dam as illustrated in the concept design.

## **PART 2E – LANDFILL GAS MANAGEMENT**

Landfill gas is proposed to be managed via the biocover cap design as outlined in the Post Closure Management Plan (Part 9 attachment 8 within the submitted application). This includes modelling of the landfill gas generation. The Shire is currently undertaking survey works to establish the current levels across the site to assist with commencing post closure works during the 2024/2025 budget period.



### PART 2F – SURFACE WATER MANAGEMENT

A concept design has been developed as part of the Landfill Closure Management Plan – please refer to part 8 of attachment 8 of the completed application.

### PART 2G – MONITORING REQUIREMENTS

As part of a former application it was identified that existing monitoring bores were not adequate to establish if historical practices were a risk to the groundwater. A new bore has been installed and two rounds of sampling undertaken that has confirmed that the depth to the groundwater ranges from 49-59m below ground level which is deeper than the levels previously estimated by DWER of 25-30m below ground level. The thickness of the unsaturated zone is estimated at 40m.

The current licence contains monitoring of inputs and outputs and the Shire expects an additional condition requiring groundwater monitoring to be undertaken as part of the licence renewal.

The Landfill Closure Management Plan (part 11 of attachment 8 of the completed application) outlines a proposed monitoring program.

### PART 3 – PREMISES OPERATIONS

The landfill opening hours are currently:

	MON:	TUES:	WED:	THUR:	FRI:	SAT:	SUN:
<b>DONNYBROOK WASTE MANAGEMENT FACILITY:</b>	8am-12pm	Closed	1pm-5pm	Closed	8am-12pm	7am-2pm	10am-5pm
<b>BALINGUP WASTE TRANSFER FACILITY:</b>	Closed	9am-12pm	Closed	2pm-5pm	Closed	7am-1pm	11am-5pm

All waste for burial from the Balingup Waste Transfer Facility is transferred to the Donnybrook site. Both sites are managed under a contract between the Shire and Hastie Waste.

Access to DWMF is via Goodwood Road with customers needing to pass through to the gatehouse where their waste is inspected and they are then directed to the various drop off areas. There is no weighbridge.

Waste is accepted as per the current licence. Access to the active cell is limited to the site contractor, municipal waste trucks and Shire staff. The active cell area is constructed over an existing filled area with the active tipping face being within the current licence size limitations. The site is currently licenced.

**PART 4 – LANDFILL CLOSURE AND REHABILITATION**

Please refer to attachment 8 within the submitted application.

Supporting documentation – L7084/1997/16  
 Application form annex: Category checklist

Shire of Donnybrook Balingup



CSM Table

Source/activities	Pollutant or contaminant of potential concern	Pathway (transport mechanism)	Receptor	Potential Impacts
Landfill	Leachate	Infiltration: vertical migration to the subsurface and groundwater.	Underlying groundwater (49-59mBGL).	Groundwater degradation and impacts to downgradient groundwater users.
Onsite effluent disposal system of site facilities	Nitrogen/phosphorous			
Oil spills	Hydrocarbons			
		Horizontal migration in surface water during storm events to nearby creek	Public drinking water source area via Noneycup Creek into Preston River.	Impacts to wetland water quality and ecosystem disturbance.
Site movement during acceptance, handling, processing and storage of waste.	Dust emission	Potential dust emissions from vehicle movement or wind actions across the site.	Site attendants and customers/visitors.  Nearby houses.  Vegetation/crops.	Negative impact on air quality.  Contribute to sediment.
	Noise emission	Potential noise emissions from vehicle movement across the site.	Site attendants and customers/visitors.  Nearby houses.	Occupational exposure.  Nuisance.
Acceptance, handling, processing of putrescible waste	Odour emission		Site attendants and customers/visitors.  Nearby houses.	Occupational exposure.  Nuisance.
Aggregation of un-gassed fridges and air conditioners	Refrigerant	Air	Site attendants and customers/visitors.  Atmosphere.	Respiratory difficulties, chemical burns.  Ozone depleting substance.