



Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L9395/2023/1
Licence Holder	Mindarie Regional Council
File Number	DER2023/000416
Premises	Tamala Park Waste Management Facility 1700 Marmion Avenue CLARKSON WA 6030 Legal description – Being part of Lot 9020 on Plan 408820 as depicted in Schedule 1.
Date of Report	16 July 2024
Decision	Revised licence granted

A/MANAGER WASTE INDUSTRIES REGULATORY SERVICES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Table of Contents

1. Decision summary	1
2. Scope of assessment	1
2.1 Regulatory framework	1
2.2 Amendment summary	1
2.2.1 Clearing Permit - Part V Division 2 of the EP Act	1
2.2.2 Infiltration basin permeability	1
2.2.3 Catchment area and water balance	2
3. Risk assessment	5
3.1 Source-pathways and receptors	5
3.1.1 Emissions and controls	5
3.1.2 Receptors	5
3.2 Risk ratings	7
4. Consultation	9
5. Conclusion	9
5.1 Summary of amendments	9
References	10

Table 1: Hydraulic conductivity for various soil types	2
Table 2: Annual Exceedance Probabilities for Tamala Park, WA (ARR2016)	3
Table 3: Licence holder controls	5
Table 4: Sensitive human and environmental receptors and distance from prescribed activity	6
Table 5. Risk assessment of potential emissions and discharges from the premises during construction and operation	8
Table 6: Consultation	9
Table 7: Summary of licence amendments	9

Figure 1: Surface water catchment area	4
--	---

1. Decision summary

Licence L9395/2023/1 is held by Mindarie Regional Council (licence holder/MRC) for Tamala Park Waste Management Facility (the premises/TPWMF), located at 1700 Marmion Avenue, Clarkson.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction of perimeter drainage swales, culvert and surface water pond, in conjunction with the Stage 2 capping works on the premises. As a result of this assessment, revised licence L9395/2023/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Amendment summary

On 13 March 2024 the licence holder submitted an application to the department to amend licence L9395/2023/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). MRC had noted that the swale drains and infiltration basin for the stage 2, phase 2 west capping works approved on 14/03/2023 in a licence amendment to L6963/1997/14 had undersized the infrastructure to adequately contain a 1 in 10-year storm event. This licence amendment seeks to revise the design of the stormwater infrastructure to contain a 1 in 100-year 24-hour storm event without overtopping, considering the ponds theoretical infiltration rate capability.

This licence amendment application proposes:

- Construction of a stormwater infiltration basin to receive uncontaminated stormwater from the western side of the capped landfill. Basin is sized be able to hold a 1 in 100-year, 24-hour storm event within its full capacity.
- Construction of associated drainage culverts and swale drains.

Construction of the capping works are scheduled to take about 3 months. The stormwater infrastructure will be constructed near the end of the construction period.

2.2.1 Clearing Permit - Part V Division 2 of the EP Act

The applicant has applied for a clearing permit under Part V Division 2 of the EP Act to facilitate the necessary area for the proposed stormwater infiltration basin. The clearing permit for the clearing of 0.777ha of native vegetation is currently being assessed under CPS 10554/1. A determination on the clearing permit is currently pending awaiting responses from external consultation. This licence amendment does not permit any clearing activities.

2.2.2 Infiltration basin permeability

The applicant has completed laboratory permeability testing on the sandy soils ($6.6 \times 10^{-5} \text{m/s}$) and limestone soils ($4.2 \times 10^{-5} \text{m/s}$) present on the premises. The infiltration basin has been modelled using the less permeable sandy soils for conservatism.

The sandy soils are reported to not have significant clay content at ~3% but they do have some silt with ~12% passing the 0.075mm sieve. The laboratory permeability puts them in the “sandy clay” category used in the infiltration model as defined by the following table:

Table 1: Hydraulic conductivity for various soil types

Soil Type	Saturated Hydraulic Conductivity	
	mm/hr	m/s
Sand	> 180	> 5 x 10 ⁻⁵
<u>Sandy Clay</u>	<u>36 – 180</u>	<u>1 x 10⁻⁵ – 5 x 10⁻⁵</u>
Medium Clay	3.6 to 36	1x 10 ⁻⁶ – 1 x 10 ⁻⁵
Heavy Clay	0.036 to 3.6	1 x 10 ⁻⁸ – 1 x 10 ⁻⁶

Extracted from Stormwater management manual for Western Australia – Chapter 9 Structural controls.

2.2.3 Catchment area and water balance

The applicant has re-configured the originally proposed catchment design to incorporate catchment area E to join with catchment area F at the landfill peak with a combined catchment area of 83,750m² (Figure 1). The pond covers a surface area of approximately 59m x 60m giving a surface catchment area of 3,540m²

Stormwater inputs

- Rainfall capture on catchment areas E, F and the infiltration pond surface (87,290m²).

Stormwater outputs

- Natural evaporation; and
- Pond soil infiltration.

The applicant has used Australian climate data from the Queensland Department of Environment and Science SILO database as it provides more site-specific data for rainfall, temperature, solar radiation and pan evaporation from 1889 to the present. The database uses observational data from the BOM weather stations using mathematical interpolation techniques to infill gaps in time series and construct spatial grids. The spatial grid selected (Latitude: -31.7, Longitude: 115.75) encompasses majority of the premises. A 50-year data period was selected to gain a large range of rainfall scenarios whilst maintaining the quality of the data, as the SILO model indicates there are significant limitations on data pre-1970.

The mean annual rainfall for the premises is calculated as 716 millimetres (mm) with the highest recorded annual rainfall at 943mm, which occurred in 1991. The 90th percentile rainfall year recorded a rainfall of 881mm in 1971. The annual average pan evaporation rate was reported as 1,850mm.

The daily average pan evaporation ranges from 2.1mm to 9.7mm and monthly from 65mm to 300mm. The total annual pan evaporation for the premises is calculated as 1,971mm. This is a significant potential evaporation rate that is almost two times greater than the wettest rainfall year experienced at premises.

Rainfall Intensity Frequency Duration (IFD) data for the premises was obtained using the BOM Computerised Design IFD Rainfall System (CDIRS) and the Australian Rainfall and Runoff 2016 database (ARR2016). This data shows the Annual Exceedance Probabilities (AEP) of a storms intensity and duration for the premises as shown in Table 2.

Table 2: Annual Exceedance Probabilities for Tamala Park, WA (ARR2016)

Storm duration	1 in 1	1 in 10	1 in 20	1 in 50	1 in 100
	63.2%	10%	5%	2%	1%
Rainfall depth (mm)					
1 hour	17.2	29.6	34.3	41.1	46.7
2 hour	22	7.8	44.1	53.4	61.4
3 hour	25.3	43.5	51.1	62.5	72.3
6 hour	38.8	55.3	65.5	81	94.7
12 hour	39.5	69.1	81.9	102	119
24 hour	48.8	83.8	97.9	120	139
48 hour	60.1	98.8	112	134	151
72 hour	68.3	109	122	142	158
120 hour	81.7	127	141	162	177

The basin has been sized to accommodate a maximum 1 in 100-year, 24-hour storm event within its full capacity as highlighted in yellow in Table 2. Should the basin overtop due to any greater storm event, the pond design will allow for a controlled release of stormwater into the environment away from the capped landfill area via a 200mm notched weir to protect the pond walls integrity.

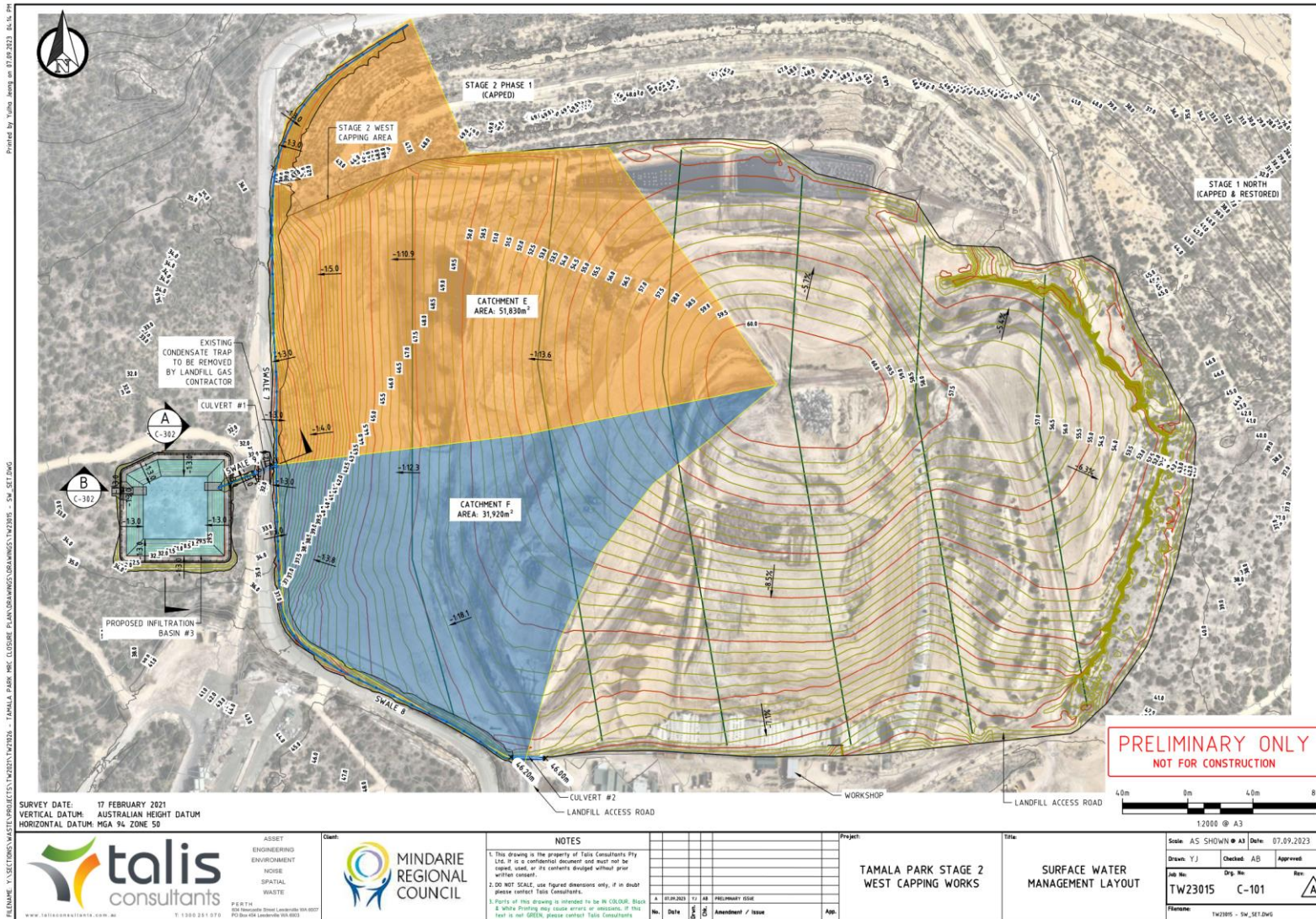


Figure 1: Surface water catchment area

Licence: L9395/2023/1

IR-T15 Amendment report template v3.0 (May 2021)

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction which have been considered in this Amendment Report are detailed in Table 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust and vehicle emissions	Placement of construction equipment including vehicle movements (reversing beepers)	Air/windborne pathway	<ul style="list-style-type: none"> Water suppression as required. Sustained vehicle idling prohibited.
Noise	Earth excavation Construction of swales, culvert and infiltration pond.		<ul style="list-style-type: none"> Vehicle silencers. Works scheduled for usual premises operating hours.
Sediment laden stormwater	Failure of stormwater infrastructure Overtopping of stormwater infrastructure	Overland runoff potentially causing ecosystem disturbance Seepage to soil and groundwater resulting in disturbance of groundwater quality	<ul style="list-style-type: none"> Installation of a notched weir below the crest of the pond to ensure a controlled discharge of stormwater away from the capped landfill. Existing controls in Licence L9395/2023/1 including a requirement to divert stormwater from landfilled areas and the removal of waste from stormwater drains to allow effective draining.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder’s from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 4 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Kinross residential areas	220m from area of operation, 20m from premises boundary (South)
Clarkson residential areas	460m from area of operation, 210m from premises boundary (North)
Mindarie residential areas	800m northwest from area of operation, 340m from premises boundary
Environmental receptors	Distance from prescribed activity
Threatened fauna	One threatened species located within the premises boundary. Three priority species located within 1km of the premises boundary.
Threatened Ecological Communities / Priority Ecological Communities Bush Forever Sites	Two priority 3 community buffer zones located within the prescribed premises boundary. Site is located within Bush Forever site 323 and links to Site 322 (Burns Beach Bushland), west and Site 383 (Neerabup National Park, Lake Gnowergup Nature Reserve), east of the prescribed premises boundary.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the licence holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the licence holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the licence holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The revised licence L9395/2023/1 that accompanies this Amendment Report authorises emissions associated with the operation of the premises i.e. perimeter drainage swales, culvert and surface water pond.

The conditions in the revised licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Reasoning
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Construction								
Placement of construction equipment including vehicle movements (reversing beepers)	Dust	Air/windborne pathway causing impacts to health and amenity	Refer to Table 4	Refer to Table 3	C = Minor L = Unlikely Medium Risk	Y	Condition 15 (vehicle washdown facility) Condition 35 (complaints management)	The Delegated Officer considers the applicant's controls sufficient in managing dust emissions from the construction of stormwater infrastructure. The general provisions of s.51 of the EP Act apply.
Earth excavation Construction of culvert-concrete slabs and pipes	Noise				C = Minor L = Unlikely Medium Risk	Y	Condition 35 (complaints management)	The Delegated Officer considers the applicant's controls sufficient in managing noise emissions from the construction works. The Environmental Protection (Noise) Regulations 1997 apply.
Operation								
Failure of stormwater infrastructure Overtopping of stormwater infrastructure	Sediment laden stormwater	Overland runoff potentially causing ecosystem disturbance Seepage to soil and groundwater resulting in disturbance of groundwater quality	Refer to Table 4	Refer to Table 3	C = Minor L = Unlikely Medium Risk	Y	Condition 18	The Delegated Officer considers the applicant's pond construction design will satisfactorily divert uncontaminated stormwater away from the capped landfill and direct stormwater to the infiltration pond. The overtopping of the infiltration pond is not expected to occur in most circumstances. If this is to occur, it will be a controlled release into the surrounding environment away from the capped landfill.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020).

Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Licence holder was provided with draft amendment on 11 June 2024 (A2286277)	The licence holder responded on 4 July 2024 (DWERDT973498) requesting some minor changes to figure references and correction of administrative errors.	The Delegated Officer has noted the response and made the requested changes.

5. Conclusion

The Delegated Officer considers the stormwater infiltration basin and associated drainage infrastructure design has been sized appropriately with consideration of local climate data including rainfall depth and intensity.

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a revised licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 7 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the revised licence as part of the amendment process.

Table 7: Summary of licence amendments

Condition/Table/Figure no.	Amendment summary
N/A	Addition of an advisory note regarding the clearing of native vegetation.
Condition 3, Table 2	Addition of waste type numbering and offsite processing note for wastes 9,10,11,12,13.
Conditions 32 and 33	Update to record keeping condition to updated licence format.
Figure 5 and 6	Addition of stage 2 west capping works specifications as per previously approved licence amendment.
Figure 7	Updated west capping works and surface water management plan figure.
Figure 8	New figure added showing the proposed infiltration basin.
Figure 9	New figure showing the design of the trapezoidal swale drains.
Schedule 2, Table 12	Inclusion of stormwater management infrastructure – infiltration basin, trapezoidal swale drains and culvert drains specifications with reference to updated figures.

References

1. Department of Environmental Regulation (DER), July 2015. *Guidance Statement: Regulatory principles*. Perth, Western Australia. Accessed at: www.wa.gov.au
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia. Accessed at: www.wa.gov.au
3. DWER, June 2019. *Guideline: Decision Making*. Perth, Western Australia. Accessed at www.wa.gov.au
4. DWER, June 2019. *Guideline: Industry Regulation Guide to Licensing*. Perth, Western Australia. Accessed at www.wa.gov.au
5. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia. Accessed at www.wa.gov.au
6. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia. Accessed at www.wa.gov.au
7. DWER and Department of Biodiversity, Conservation and Attractions April 2022, *Stormwater management manual for Western Australia – Chapter 9 Structural controls*, Perth, Western Australia. Accessed at <https://www.wa.gov.au/government/document-collections/stormwater-management-manual-of-western-australia>
8. Talis Consultants, February 2022, TW21026 - *Tamala Park Surface Water Management Strategy*, Western Australia. DWER Reference: A2266553
9. Talis Consultants, April 2024, *Response to Request for Information and Design Clarification – Licence Amendment Application Validation (Stormwater Infrastructure)*, Western Australia. DWER Reference: DWERDT936440