Amendment Report

Application for Works Approval Amendment

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

Works Approval Number	W5800/2015/1
Works Approval Holder	Opalvale Pty Ltd
ACN	106 512 896
File Number	DER2014/003195
Premises	Salt Valley Road Class II Landfill Chitty Road, HODDYS WELL WA 6566 Legal description – Part of Lot 11 on Deposited Plan 34937 Certificate of Title Volume 2535 Folio 391 As defined by the Premises maps attached to the Revised Works Approval
Date of Report	24 February 2022
Decision	Revised works approval granted

Tracey Hassell
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Date: 2022.02.24 16:41:04 +08'00'

Tracey Hassell
A/Senior Manager, Waste Industries

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

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1. Decision summary

Works Approval W5800/2015/1 is held by Opalvale Pty Ltd (Works Approval Holder) for the Salt Valley Road Class II Landfill (the Premises), located within Lot 11 Chitty Road, Hoddys Well.

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 and operation of the Premises. As a result of this assessment, Revised Works Approval W5800/2015/1 has been granted.

The Revised Works Approval issued as a result of this amendment supersedes the existing Works Approval previously granted in relation to the Premises. The Revised Works Approval has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

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 Background

The Salt Valley Road Landfill (the Premises) is located within a portion of Lot 11 on Plan 34937 Chitty Road, Hoddy's Well within the Shire of Toodyay. The landfill is sited within Williamsons Clay Pit, a clay extraction pit, situated approximately 1.25 kilometres (km) to the east of Chitty Road and 3 km to the southeast of the site entrance at of Salt Valley Road. Lot 11 is approximately 619 hectares (ha) in size, and forms part of a large farming property which is mostly cleared of native vegetation. The Lot has been used historically for farming (animal grazing) and extraction of clay for the production of bricks and tiles.

Stage 1 of the Class II landfill at Salt Valley Road Landfill was approved for construction under Works Approval W5800/2015/1, which comprises six cells located in the eastern portion of the allocated landfill footprint. Cell 1 of Stage 1 was constructed in March 2016. Compliance with conditions of the works approval for the construction of Cell 1 was assessed by the department and finalised on 6 December 2018, with this assessment finding the Applicant in compliance with construction conditions within the works approval.

Licence L9089/2017/1 (Licence) was granted on 5 February 2019, with conditions in the instrument authorising the operation of Cell 1 only. The Licence was amended on 4 June 2020 to allow waste to be deposited into newly constructed Cell 2.

2.3 Application summary

On 16 September 2021, the Works Approval Holder submitted an application to the department to amend Works Approval W5800/2015/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- The construction of a single landfill cell as opposed to two cells (being Cell 3 and Cell 4) as previously approved within the works approval;
- The construction of a single, triangular shaped, leachate pond (leachate pond 3) and a leachate extraction system to direct leachate from the new landfill cell directly to the leachate ponds, as opposed to directing leachate through existing landfill cells 1 and 2 as previously approved within the works approval; and

- The removal of reference to currently installed groundwater monitoring bores, as these bores lie within the footprint of the new landfill cell and will be decommissioned when construction works commence.

The Works Approval Holder has submitted supporting evidence to demonstrate that the construction of the new single landfill cell, as opposed to the previously approved two cells, will not fundamentally alter overall landfill stability and operation. This evidence, as well as construction specifications for the landfill cell and leachate ponds, is outlined in Sections 2.3.1, 2.3.2, 2.3.3, 2.3.4 and 2.3.5 below.

2.3.1 Landfill cell construction

The Works Approval Holder is proposing to amend the previously approved Stage 1 landfill design so that individual Cells 3 and 4 are constructed as a single cell. The Works Approval Holder has advised that due to the small size of Cells 3 and 4, it will be more efficient to construct them together.

It is also proposed to install a separate leachate extraction system for the new cell as opposed to relying on the existing extraction system within Cell 1, as this will allow for greater control of leachate levels on the landfill base.

Construction works and design specifications for the new cell will be consistent with what has previously been approved for Stage 1 landfill cells. The cell will be comprised of the following infrastructure:

- 500mm thick Engineered Attenuation Layer subbase, compacted to achieve a permeability of 5 x 10^{-7} m/s, which will be moisture conditioned in preparation for the liner system;
- Geosynthetic composite liner system, consisting of a geosynthetic clay liner (GCL) with a design hydraulic conductivity of ≤ 5 x 10^{-11} m/s, a 2 mm thick High Density Polyethylene (HDPE) liner, a geotextile cushion layer, a leachate collection layer (including collection pipes and 300mm high permeability low calcareous aggregate) and a geotextile separation layer;
- Leachate collection pipework consisting of 250mm HDPE perforated primary pipework, and 110mm HDPE perforated secondary pipework;
- Leachate extraction and transmission infrastructure comprising of 355mm HDPE double side rise pipes, a 160mm HDPE leachate monitoring pipe, side riser concrete headwall and pump control cubicle, 110mm HDPE leachate main and rodding points.

The liner system will be integrated with existing cells and the landfill perimeter fence will be re-established around the new boundary to also include the new cell. The new cell design is outlined in Figure 1 below.

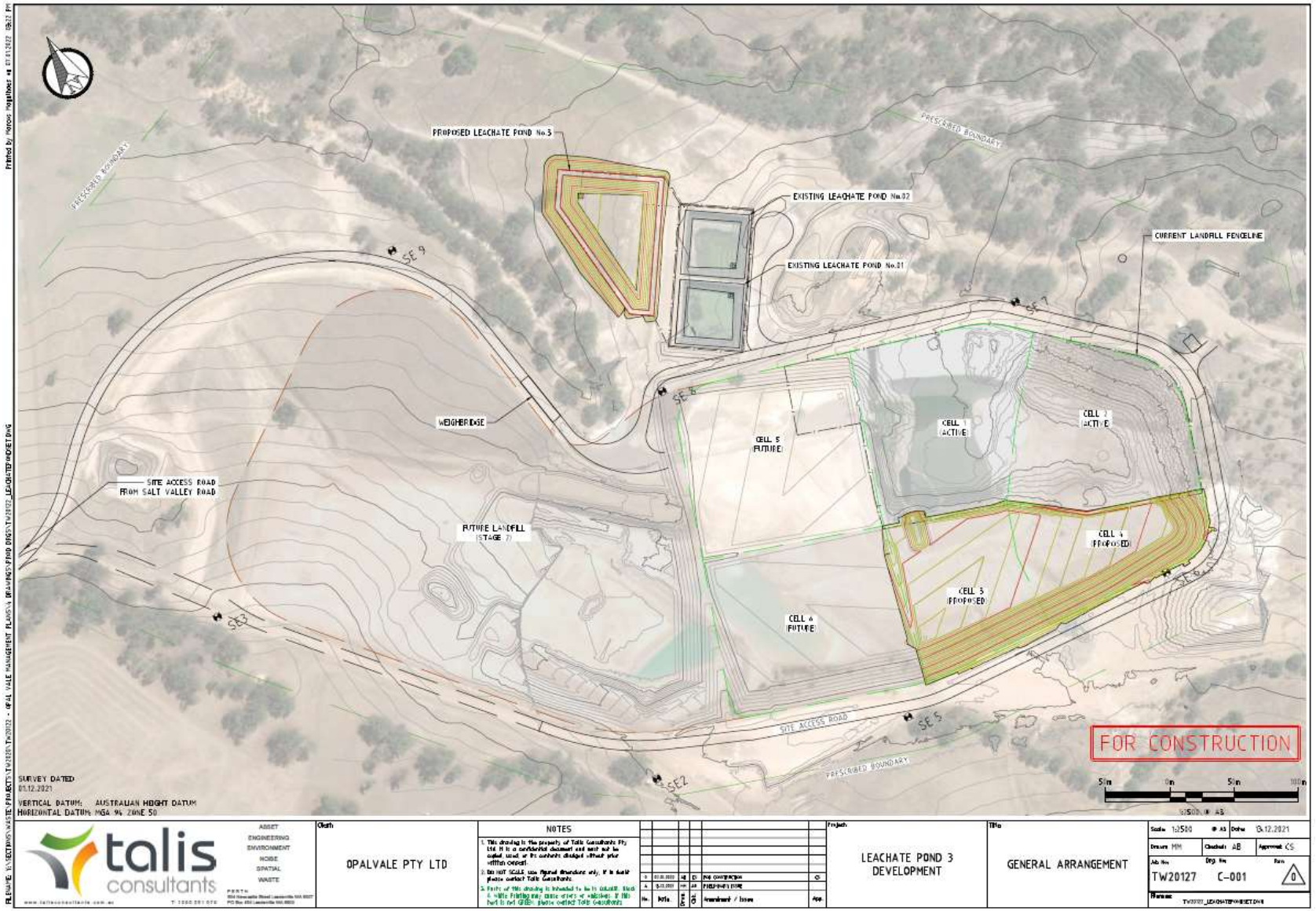

Figure 1: Proposed site layout

Works Approval: W5800/2015/1

2.3.2 Stability Risk Assessment

In support of the original landfill design, the Works Approval Holder engaged Golder consultants to undertake a number of technical studies, including an assessment of landfill stability. To support the change in landfill cell design, being the construction of Cells 3 and 4 as one cell, the Works Approval Holder has engaged Talis consultants to undertake additional stability modelling to ensure the change in design will not have any adverse effect to overall landfill stability. Talis have advised throughout their report that the original assessment undertaken by Golder has been used in part to inform their findings when considering the modified landfill cell design.

The Talis Stability Risk Assessment has considered the below parameters when undertaking the stability modelling:

- Separation distance to groundwater as a factor of influence;
- The temporary waste slope, modelled at a gradient of 1V:3H with an overburden stress (R_u) value of 0.0 and 0.1 for the near surface and a R_u value of up to 0.2 for the main body of the waste mass, which will simulate the potential effect of leachate and gas on pore pressure within the waste mass; and
- Internal slope stability of the basal lining systems.

The scenarios assessed in the modelling are considered to be the critical worst case slopes (highest slope), being the 30m high western 1V:3H temporary slope prior to future cells being developed and the 25.5m high 1V:5H permanently capped southern slopes. Data parameters have been selected to ensure conservative values have been used for shear resistance and cohesion.

For the limit state equilibrium analysis, a factor of safety of ≥1.5 has been adopted for peak shear strength parameters under static loading, and factor of safety of ≥1.1 and ≥1.0 have been adopted for earthquake loading for an operating base earthquake and a maximum credible earthquake respectively.

For the closed form interface analysis, considering construction plant and gas pressures, a factor of safety of ≥1.3 is considered appropriate for the conservative peak shear strength parameters. For the temporary waste slopes where slopes will be buttressed with the filling operations in the adjacent cell over a short period of time, a factor of safety of ≥1.3 has also been adopted.

Both stability assessment models determined that the factors of safety were acceptable under all scenarios. Changes to the original landfill design assessed by Golder do not act to change the final profile of the landfill or proposed capping specifications.

2.3.3 Groundwater monitoring network

There are currently three groundwater monitoring bores within the proposed footprint of the new landfill cells. To facilitate construction, these bores are proposed to be decommissioned by the Works Approval Holder in line with the guidance in the Water Quality Protection Guidelines No. 4 - Mining and Mineral Processing - Installation of Mine Site Groundwater Monitoring Bores 2000 Section 4.15. The bores requiring decommissioning are bores C7, C8 and C9 as indicated in Figure 2 below.

The bores were installed as a requirement of condition 1.2.3 of the existing works approval, which states:

1.2.3 *Prior to submission of the Construction Quality Assurance Validation Reports required by condition 3.1.3 for landfill Cell 1 and prior to commencing construction of Cells 2, 3, 4, 5 and 6, the Works Approval Holder shall:*

a) *install surface water diversion devices to divert all up-gradient surface water around the proposed cell and surface water bodies that are up hydraulic gradient of the proposed cell;*

b) *pump dry all surface waterbodies that are hydraulically up-gradient of the proposed cell;*

c) *install 4 groundwater monitoring bores to a depth of 5 metres below the design base of that cell at equal distances along the boundary of the proposed cell; and*

d) *install groundwater level loggers within each groundwater monitoring bore.*

The intent of this condition was to establish the depth to groundwater beneath areas approved for future landfill cell construction, so the separation distance between the proposed base of the future landfill cells and groundwater would be well established prior to construction works occurring. Condition 2.1.5 of the existing works approval requires continuous monitoring of standing water level in these bores by water level data logger and monthly by manual measurements over the period of 1st July to 31st October preceding the construction of each cell.

To demonstrate compliance with these conditions within the existing works approval, the Works Approval Holder has commissioned Stass Environmental to undertake groundwater bore installation and monitoring in accordance with the specifications in the works approval. The results of this monitoring have been used to inform the proposed cell construction designs as discussed in Section 2.3.4 below.

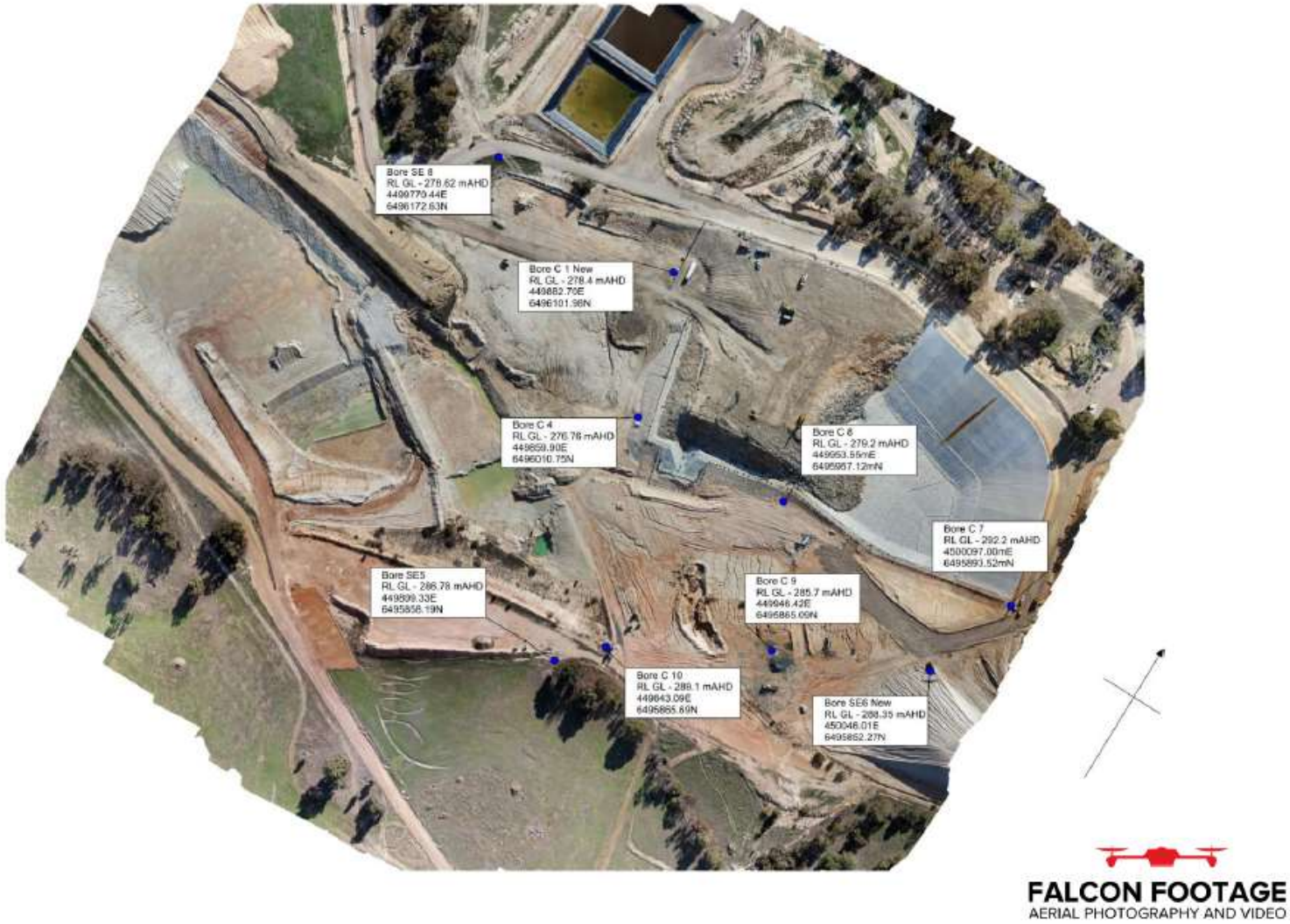

Figure 2: Bore location surrounding landfill footprint

2.3.4 Separation distance to groundwater

The Works Approval Holder is proposing to alter the floor level of the new landfill cell to 276mRL, which the Works Approval Holder believes will be adequate to maintain the 2m separation distance to groundwater as required by conditions within the existing works approval.

To support this change to design, the Works Approval Holder has engaged Stass Environmental to undertake continuous standing water level monitoring of groundwater beneath the site to demonstrate that the 2m separation distance would be achieved below the base of the cell liner. This monitoring was required by conditions within the existing works approval for the winter months and was to be undertaken through the installation of groundwater monitoring bores to a depth of 5m below the landfill design base. Monitoring was undertaken from bores C4, C7, SE6, C8, C9 and C10 (being located along the base of previously proposed cells 3 and 4) as indicated in Figure 1.

Monitoring was undertaken from July 2020 – February 2021 to account for late seasonal rainfall. The highest recorded standing water levels (groundwater level) for each sampled bore across the monitoring period are outlined in Table 1 below. Stass determined the peak groundwater level below the Cell 3 landfill sump would be approximately 272.5 mAHD (3.5m separation to groundwater). The groundwater level at the north-western corner of Cell 3 would be approximately 269.9 mAHD while the base of the landfill will be approximately 279 mAHD (approximately 8m separation to groundwater). It is also noted that this monitoring period was drier than previous years and reflected lower groundwater levels than previously recorded.

Table 1: Highest recorded standing water level

Sample Monitoring Bore	Maximum groundwater level (mAHD) 2020-2021
SE6	272.328
C4	268.989
C7	272.85
C8	271.823
C9	217.887
C10	273.87

The Works Approval Holder also engaged Talis Consultants to prepare a technical memorandum for the maximum groundwater levels beneath Cells 3 and 4. Based on Talis's interpretation on groundwater monitoring results, the base of Cell 3 constructed to be 276 mAHD will ensure that the groundwater separation exceeds 3m at all locations, which will provide an additional 1m buffer over the required separation distance of 2m specified within the existing Works Approval.

2.3.5 Leachate pond construction

The premises currently has two leachate ponds constructed for the containment of landfill leachate, with holding capacities of 5,024m^3 accounting for the maintenance of a 500mm freeboard. Since landfill operations commenced in 2019 only one pond has been required for leachate storage and the other has been used for clean water storage. The existing Works Approval authorises the construction of up to 6 leachate ponds with the same design specifications as those already constructed, as this is the capacity that has been calculated as required for the containment of all leachate expected to be generated from the final landfill

design.

The Works Approval Holder commissioned Talis Consultants to undertake a leachate balance assessment (LBA) as a part of this amendment application, to determine the required leachate storage capacity for the operation of Cells 1, 2 and 3/4 within the landfill facility. The LBA was undertaken at this stage of the landfill operation as the period when Cells 1, 2 and 3/4 are in operation until the first phase of capping in September 2025 is predicted to be the period of greatest leachate generation potential.

The LBA was modelled using a worst-case climate scenario, encompassing a 90th percentile rainfall year followed by four consecutive 50th percentile rainfall years. Recirculation rates of 40% and 70% were considered and the LBA assumed that future leachate ponds would be identical in geometry and operational capacity to leachate ponds 1 and 2 already in operation at the premises.

Assuming that the pond network could contain a 1 in 100 year storm event or 24 hour duration whilst maintaining a 500mm freeboard across all ponds, the LBA concluded that:

- The 40% recirculation scenario found a total of 8 ponds (development of 6 new ponds) would be required;
- The 70% recirculation scenario found a total of 4 ponds (development of 2 new ponds) would be required; and
- Previous modelling for leachate generation at the premises (conducted by Golder in December 2014) indicated that 4 ponds would be required over the life of the Stage 1 landfill for the 40% recirculation scenario, however this may be an underestimate given that less conservative values have been used in justifying worst-case scenario conditions.

Additionally, Talis considers that the previous leachate pond design of six identical ponds did not account for the practicality of construction on the locations sloping topography and the lateral offset that would be required between rows of ponds. Where this is considered into the design, the footprint of the next row of ponds is found to encroach into the existing natural drainage line to the west of the existing ponds.

Based on these findings, the Works Approval Holder is now seeking the construction of one additional leachate pond with a triangular shape, which has been determined to be more appropriate to prevent impacts to natural drainage lines and maintain the required offset to groundwater. The new pond is proposed to be constructed to the following specifications:

- Side slopes at a grade of 1V:3H, reduced from 1V:2H in the previous design to provide better long term stability;
- Operational capacity of 11,370m^3, accounting for the maintenance of a 500mm freeboard, an increase of 1,322m^3 from the previous design of two square ponds;
- 250mm thick compacted subgrade layer;
- Installation of a geosynthetic clay liner or similar; and
- Installation of a 2mm double textured HDPE Geomembrane liner.

The location of this pond is outlined in Figure 1.

For noting: The initial submission of this works approval application proposed to construct two additional leachate ponds in accordance with the originally assessed 6 pond design. However, during the assessment period of the works approval amendment, the applicant has provided the department with new information regarding the suitability of the location for the additional ponds and how the original design will not be practical in terms of maintaining ongoing site operations.

As such, the Applicant has submitted an amended leachate pond design for consideration under this works approval application. The Delegated Officer considers the following:

- The liner system proposed for the new leachate pond is the same as in use in currently operational leachate ponds 1 and 2, and the same as proposed in the original designs for 2 additional leachate ponds;
- The new shape and location of the leachate pond will negate the need for terracing ponds down the sloping ground in the area of construction and will ensure greater consistency across the pond area in maintaining an adequate separation distance to groundwater;
- Side slope stability should be greater in the new pond due to a reduction in side slope gradient from the original designs; and
- The leachate pond will have a greater holding capacity than previously proposed for the two additional leachate ponds.

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

Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Please note that many of these controls are currently in effect at the premises and conditioned under the sites active Licence L9089/2017/1.

Table 2 below. Please note that many of these controls are currently in effect at the premises and conditioned under the sites active Licence L9089/2017/1.

Table 2 also details the proposed control measures the Works Approval Holder has proposed to assist in controlling these emissions, where necessary. Please note that many of these controls are currently in effect at the premises and conditioned under the sites active Licence L9089/2017/1.

Table 2: Works Approval Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Construction and excavation works associated with landfill cell and leachate ponds	Air/windborne pathway causing impacts to health and amenity	Maximum site speed limit of 40km/hr is imposed for all vehicles. Construction areas will be wet down using a water cart to prevent dust emissions.
Noise			Maximum site speed limit of 40km/hr is

Emission	Sources	Potential pathways	Proposed controls
			imposed for all vehicles. All equipment will be maintained in good working order.
Operation			
Dust	Acceptance of waste for disposal into the new landfill cell (previous landfill cells 3 and 4)	Air/windborne pathway causing impacts to health and amenity	Maximum site speed limit of 40km/hr is imposed for all vehicles. The active tipping area is wet down using a water cart to prevent dust emissions.
Noise			Maximum site speed limit of 40km/hr is imposed for all vehicles. All equipment is maintained in good working order.
Asbestos fibres			Asbestos is received as appropriately wrapped, separate loads. Asbestos is landfilled in a dedicated, separate area directly from the delivery vehicle and is immediately covered.
Odour			Odourous wastes are immediately landfilled and covered. The length of time between waste being tipped and waste being compacted is kept to a minimum. Daily cover material at least 150mm thick is applied to deposited waste. Reticulation of landfill leachate only occurs when the waste is dry and when there is sufficient waste to avoid leachate accumulation on the surface.
Landfill fire and smoke			Firebreaks are maintained around the premises. Flammable fuel is appropriately stored on site. Flammable material is not placed in significant quantities in a single area within the landfill. Fire fighting equipment is stored and maintained on site.
Windblown waste			All waste delivery vehicles are covered. 2m high perimeter fencing is installed, along with 4m high mobile screens installed around the active tipping area. Regular compaction of waste occurs.
Vermin/pests		Air/windborne and land	Regular compaction of waste occurs.

Emission	Sources	Potential pathways	Proposed controls
		pathway causing impacts to health and amenity	Cover material is applied daily.
Leachate		Infiltration through soil profile to groundwater causing potential impacts	The landfill liner system consists of a geosynthetic clay liner (GCL) with a design hydraulic conductivity of ≤ 5 x 10^{-11} m/s, a 2 mm thick High Density Polyethylene (HDPE) liner, a geotextile cushion layer, a leachate collection layer (including collection pipes and aggregate) and a geotextile separation layer. The landfill subbase is comprised of a 500mm thick engineered compacted fill to achieve a permeability of 5 x 10^{-8} m/s. Regular monitoring is undertaken of background groundwater quality and potential movement of leachate through any liner defects. Surface water diversion infrastructure surrounding landfill cells is maintained.
Odour	Accumulation of landfill leachate into new leachate pond	Air/windborne pathway causing impacts to health and amenity	Small quantities of leachate will be pumped into the ponds over longer time periods. Leachate pond will be maintained at the maximum depth and surface area to promote aerobic conditions. Chemical dosing will be undertaken to alter pH if required.
Leachate – seepage to underlying soils and groundwater		Infiltration through soil profile to groundwater causing potential impacts	The leachate pond liner system consists of a geosynthetic clay liner (GCL) with a design hydraulic conductivity of ≤ 5 x 10^{-11} m/s, a 2 mm thick High Density Polyethylene (HDPE) liner, a geotextile cushion layer, a leachate collection layer (including collection pipes and aggregate) and a geotextile separation layer. The leachate pond subbase is comprised of a 500mm thick engineered compacted fill to achieve a permeability of 5 x 10^{-8} m/s. Regular monitoring is undertaken of background groundwater quality and potential movement of leachate through any liner defects. Surface water diversion infrastructure surrounding leachate ponds is maintained.
Leachate – overtopping of ponds		Overland flow of from the overtopping of leachate ponds	A 500 mm freeboard will be maintained at all times. Surface water diversion infrastructure surrounding leachate ponds is maintained.

Emission	Sources	Potential pathways	Proposed controls

Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Works Approval 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 3 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 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Privately owned farm land	Immediately adjacent (east and west)
Residential premises	Internal farmhouse, approximately 400 m south west The original Works Approval application included a letter of consent from the landowner of Lot 11 Chitty Road dated 10 November 2014, which states "As the landowner of Lot II Chitty Road, I consent to the development of a class II putrescible landfill on the site. In accordance with this development, I acknowledge the presence of the farmhouse that is approximately 400 m to the south west of the landfill footprint and accept that this dwelling can be ignored as a receptor when considering the environmental impact of the proposed development".
	Two properties approximately 1.1 km north east of the premises. One property approximately 1.7 km south of the primary prescribed activity Approximately 70 houses within a 1-5 km radius of the premises, predominately to the north and south.
Environmental receptors	**Distance from prescribed activity**
Department of Biodiversity, Conservation and Attractions (DBCA) Managed Lands and Waters	Clackline Nature Reserve approximately 2.3 km south east Nanamoolan Nature Reserve 2.3 km east and north east. DBCA managed land, being Lot 889 on Deposited Plan 415818, containing suitable foraging, roosting and breeding habitat for threatened black cockatoo species, located approximately 670 m south. The land is managed as part of the adjacent Clackline Nature Reserve pending inclusion to the existing reserve
Waterways Conservation areas	The Premises is within the Avon River Management Area.
Proclaimed surface water area	The Premises is within the Avon River Catchment Area.
Directory of Important	Avon River Valley, approximately 17 km downstream from the

Wetlands of Australia	closest feeding tributary to the premises. The Avon River is a registered type B2 wetland and provides high environmental value to public and the environment.
Threatened Ecological Communities and Priority Ecological Communities	A number of threatened ecological communities (wheatbelt woodlands) >5 km to the north east and south east
Groundwater	Low permeability fractured rock aquifer (confined) potentially suitable for domestic and non-potable use as well as stock watering. No registered users within 5 km of Premises.

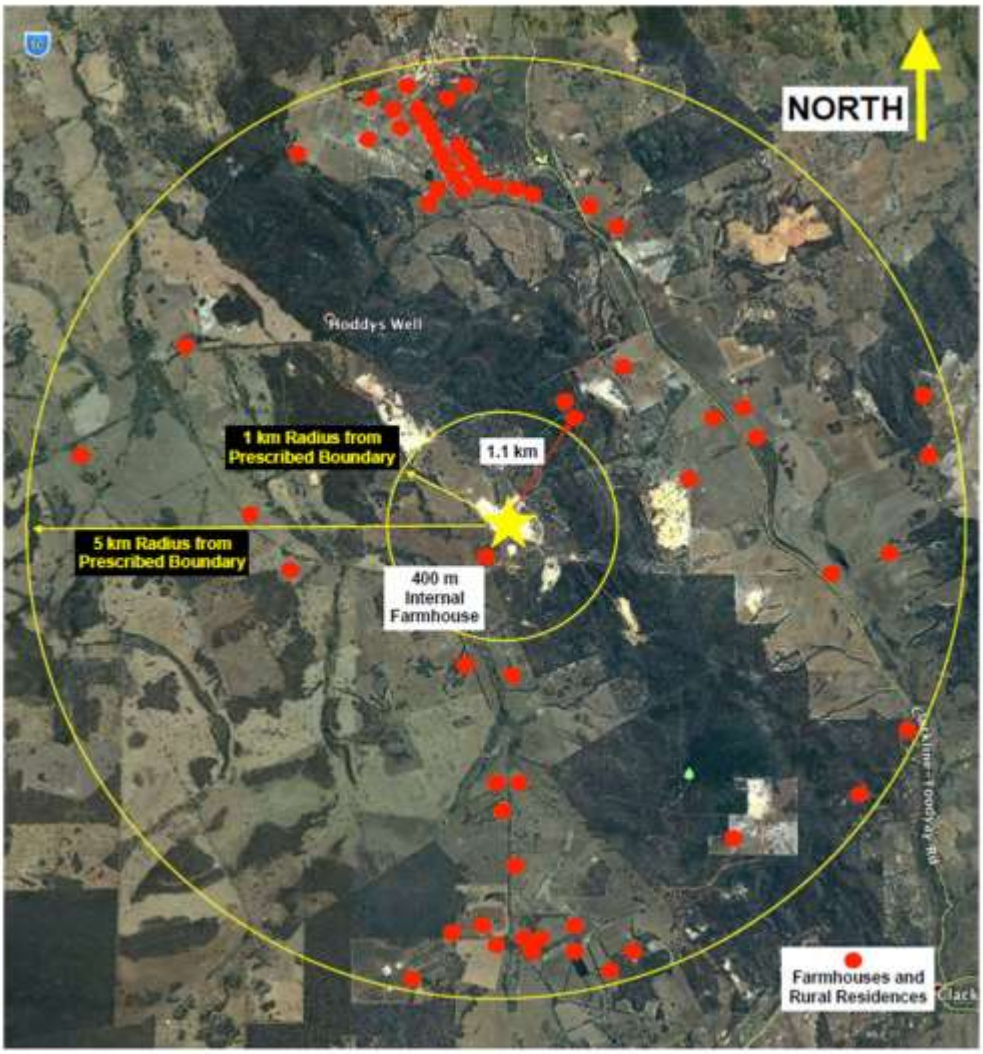

Figure 3: Proximity of residential properties surrounding the premises

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 Works Approval 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 Works Approval Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the Works Approval Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Works Approval W5800/2015/1 that accompanies this Amendment Report authorises the changes to landfill cell and leachate pond construction only. The conditions in the Revised Works Approval have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence to authorise emissions associated with the operation of the landfill Premises i.e. landfilling activities was granted on 5 February 2019 (L9089/2017/1). A risk assessment for the operational phase has been included in this Amendment Report in relation to the newly proposed landfill cell and leachate ponds only.

Table 4. Risk assessment of potential emissions and discharges from the Premises during construction

Risk Event					Risk rating[1] C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions[2] of works approval	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Works Approval Holder's controls**				
Construction								
Construction and excavation works associated with landfill cell and leachate ponds	Dust	Air/windborne pathway causing impacts to health and amenity	Two properties approximately 1.1 km north east of the premises and one property approximately 1.7 km south of the primary prescribed activity.	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1	N/A Design modification documents for additional infrastructure also contain operational controls to suppress emissions generated during construction
	Noise			Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 1	
Operation								
Acceptance of waste for disposal into the new landfill cell (previous landfill cells 3 and 4)	Dust	Air/windborne pathway causing impacts to health and amenity	Two properties approximately 1.1 km north east of the premises and one property approximately 1.7 km south of the primary prescribed activity.	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. The Delegated Officer considers that the existing dust controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating fugitive emissions.	N/A
	Noise			Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. The Delegated Officer considers that the existing noise controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating emissions.	N/A
	Asbestos fibres			Refer to Section 3.1	C = Severe L = Rare	Y	Emission has been assessed as a part of the premises Licence assessment for operations.	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions[2] of works approval	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Works Approval Holder's controls**				
					High Risk		The Delegated Officer considers that the existing asbestos management conditions specified in Licence L9089/2017/1 are likely to be sufficient at mitigating fugitive emissions.	
	Odour			Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. The Delegated Officer considers that the existing odour controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating fugitive emissions.	N/A
	Landfill fire and smoke			Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. The Delegated Officer considers that the existing controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating emissions.	N/A
	Windblown waste			Refer to Section 3.1	C = Slight L =Likely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. The Delegated Officer considers that the existing controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating emissions.	N/A
	Landfill gas			Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. The Delegated Officer considers that the existing controls specified in Licence L9089/2017/1 are likely to be	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions[2] of works approval	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Works Approval Holder's controls**				
							sufficient at mitigating emissions.	
	Vermin/pests	Air/windborne and land pathway causing impacts to health and amenity		Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. The Delegated Officer considers that the existing controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating emissions.	N/A
	Leachate	Infiltration through soil profile to groundwater causing potential impacts.	Ecological values and beneficial uses associated with quality of water in the aquifer.	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. It is noted that the landfill cell design proposed for the new landfill cell 3/4 is the same as already in place at the premises for landfill cells 1 and 2. The Delegated Officer considers that the existing leachate management controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating emissions.	N/A
Accumulation of landfill leachate into new leachate pond	Leachate – seepage to underlying soils and groundwater	Infiltration through soil profile to groundwater causing potential impacts.	Ecological values and beneficial uses associated with quality of water in the aquifer.	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Emission has been assessed as a part of the premises Licence assessment for operations. It is noted that the leachate pond liner design proposed for the new leachate pond 3 is the same as already in place at the premises for leachate ponds 1 and 2, and pond 3 will provide a greater holding capacity than ponds 1 and 2. As such, the Delegated Officer considers the revised design for leachate pond 3 to be an improvement on the original designs. The Delegated Officer considers that	N/A
	Leachate – overtopping of ponds	Overland flow of from the overtopping of leachate ponds	Jimperding Brook and the Greater Avon River Valley catchment.	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y		N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions[2] of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
							the existing leachate management controls specified in Licence L9089/2017/1 are likely to be sufficient at mitigating emissions from the new pond.	

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

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

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Shire of Toodyay advised of proposal on3 November 2021	None received.	N/A
Department Planning, Lands and Heritage (DPLH) advised of proposal on 3 November 2021	DPLH is of the view that there are no land use planning issues arising from the proposal.	Noted.
Toodyay Naturalists Club advised of the proposal on 3 November 2021	None received.	N/A
Residential receptors advised of proposal on 3 November 2021	None received.	N/A
Works Approval Holder provided with draft amendment on 10 February 2022	Comments of the draft amendment were provided via email on 14 February 2022. Refer to Appendix 1 for a summary.	Refer to Appendix 1

5. Conclusion

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

5.1 Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Works Approval as part of the amendment process.

Table 6: Summary of works approval amendments

Condition no.	Proposed amendments
1	Inclusion of construction design modification documents for landfill cell 3/4 and leachate pond 3. Inclusion of critical containment infrastructure reference.
3	Removal of reference to construction quality assurance reporting. Updated reference to landfill cells.

Condition no.	Proposed amendments
4	Inclusion of separation distance requirement for the construction of the leachate sump in landfill cell ¾.
15	Removal of reference to Cells 2, 3 and 4 regarding monitoring bore installation.
18	Insertion of Critical Containment Infrastructure reporting requirement.
19	Insertion of Critical Containment Infrastructure report specifications.
20	Insertion of Environmental Compliance reporting requirement.
21	Insertion of Environmental Compliance report specifications.
3.1.1 – 3.1.3	Reporting conditions deleted – updated by insertion of Critical Containment Infrastructure and Environmental Compliance reporting requirements.
N/A Schedule 1	Premises boundary map updated. Insertion of new construction specification drawings for landfill cell 3/4 and leachate pond 3.

Table 7: Consolidation of licence conditions in this amendment

Existing condition	Condition summary	Revised licence condition	Conversion notes
1.1.1 1.1.2	Interpretation and definitions	N/A Interpretation section, Definitions and Table 4	Redundant condition. Revised to current licensing format.
1.1.3	Australian or other standard	N/A Interpretation section, Definitions and Table 4	Redundant condition. Revised to current licensing format.
1.1.4	Reference to code of practice	N/A Interpretation section, Definitions and Table 4	Redundant condition. Revised to current licensing format.
1.2.1 Table 1.2.1	Construction of works	Condition 1 Table 1	Reference to Critical Containment Infrastructure added. Reference to design modifications for landfill cell 3/4 and leachate pond 3 added. Reference changed and reformatted.
1.2.2	Implement recommendations	Condition 2	Reference changed and reformatted.
1.2.3	Installation specifications prior to construction	Condition 3	Reference to Construction Quality Assurance reporting removed. Reference to landfill cells updated. Reference changed and reformatted.

Existing condition	Condition summary	Revised licence condition	Conversion notes
1.2.4	Separation distances	Condition 4	Reference to leachate sump within landfill cell 3/4 included. Reference changed and reformatted.
1.2.5	Installation of markers	Condition 5	Reference changed and reformatted.
1.2.6	Works subject to construction quality assurances processes	Condition 6	Reference changed and reformatted.
1.2.7	Notification of soft saturated material depth in quarry pit	Condition 7	Reference changed and reformatted.
1.2.8	Settlement assessment specifications	Condition 8	Reference changed and reformatted.
1.2.9	Fine grain protection layer specifications	Condition 9	Reference changed and reformatted.
1.2.10	Crushed limestone not to be used in fine grain protection layer	Condition 10	Reference changed and reformatted.
2.1.1	Water sampling requirements	Condition 11	Reference changed and reformatted
2.1.2	Monitoring time frames	Condition 12	Reference changed and reformatted
2.1.3	Calibration of monitoring equipment	Condition 13	Reference changed and reformatted
2.1.4	Notification of calibration not met	Condition 14	Reference changed and reformatted
2.1.5 Table 2.1.1	Ambient groundwater monitoring	Condition 15 Table 2	Condition wording updated to current condition set in use by the Department. Reference to relevant landfill cells updated. Reference changed and reformatted
2.1.6	Monitoring requirements	Condition 16	Reference changed and reformatted
2.2.1 Table 2.1.2	Monitoring of the fine grained protection layer	Condition 17 Table 3	Condition wording updated to current condition set in use by the Department. Reference changed and reformatted
N/A	Critical Containment Infrastructure Report	Condition 18	Inclusion of reporting requirement in line with current condition set in use by the Department.
N/A	Critical Containment Infrastructure Report specifications	Condition 19	Inclusion of site specific requirements to be considered in report.

Existing condition	Condition summary	Revised licence condition	Conversion notes
N/A	Environmental Compliance Report	Condition 20	Inclusion of reporting requirement in line with current condition set in use by the Department.
N/A	Environmental Compliance Report specifications	Condition 21	Inclusion of site specific requirements to be considered in report.
3.1.1 – 3.1.4	Reporting requirements	N/A	Redundant conditions deleted.
N/A Schedule 1	Maps	N/A Schedule 1	Premises map updated. New maps relating to constructions works of new landfill cell 3/4 and leachate pond 3 included.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.

Appendix 1: Summary of Works Approval Holder's comments on risk assessment and draft conditions

Condition	Summary of Works Approval Holder's comment	Department's response
4(a)	It was recommended not to remove the following wording as it was related to an appeal determination: "with the exception of a 6 m x 6 m leachate sump in landfill Cell 1"	The Delegated Officer notes this advice has left the wording in the condition.
17	Works approval questioned the use of the word 'monitoring' when referring to the sampling of the fine grained protection layer because it infers an ongoing testing regime.	The Delegated Officer has revised the condition by replacing the word 'monitoring' with 'analysis'.
18	The Works Approval Holder advised that the wording of this condition inferred that Opalvale could commence placing waste into the new cell one month after the submission of the critical containment infrastructure report.	The Delegated Officer notes this advice and has amended the Works Approval to remove the wording "and 1 month prior to the commencement of waste placement in that cell".
21	The Works Approval Holder questioned the need to provide engineer verification for the placement of the fine grain protection layer as it does not form part of the critical containment infrastructure.	The additional requirement to provide engineer verification was added in error. Standard condition wording was added and was not amended to suit the specific condition. The Delegated Officer notes this error and has removed the requirement to provide certification by a qualified engineer.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)			
Application type			
Amendment to works approval	☒	Current works approval number:	W5800/2015/1
Date application received		15 September 2021	
Applicant and Premises details			
Applicant name/s (full legal name/s)		Opalvale Pty Ltd	
Premises name		Salt Valley Road Class II landfill	
Premises location		Lot 11, Chitty Road, HODDY'S WELL WA 6566	
Local Government Authority		Shire of Toodyay	
Application documents			
HPCM file reference number:		DER2014/003195-1~5	
Key application documents (additional to application form):		Amendment application cover letter Opalvale Cell 3&4 Technical Specification Opalvale Cell 3&4 CQA Plan Opalvale Cell 3&4 GWL Memo Report – Cell 3&4 Winter Monitoring Opalvale – April 2021 Opalvale Cell 3&4 Stability Risk Assessment IWP Dwgs Opalvale – Leachate pond specification – previously approved Set C 104 Cell 3 leachate management layout Set C 105 Max inferred groundwater level Set C 201 Hydrogeological cross section 1 A Set C 202 Hydrogeological cross section 2 B Set C 301 Cell 3 and 4 standard detail 1 – 4 Set C 101 Site layout Set C 102 Cell 3 and 4 formation Set C 103 Cell 3 and 4 top of engineering attenuation layer	
Scope of application/assessment			
Summary of proposed activities or changes to existing operations.		Works approval amendment for the construction of a single lined landfill cell as opposed to two cells (Cells 3 and 4) as previously approved within the works approval. The amendment also seeks to construct an additional two leachate ponds, which will be built to the same specifications as leachate ponds already approved for construction at the site. A leachate extraction system will also be installed to direct leachate from the landfill cell to the leachate ponds. The amendment will also remove reference to currently installed groundwater monitoring bores, as these bores lie within the footprint of the newly proposed landfill cell and will be decommissioned when construction commences.	

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 64: Class II or III putrescible landfill site	150 000 tonnes per annual period	No change.

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	General lease ☒
Has the applicant obtained all relevant planning approvals?	Yes ☒ No ☐ N/A ☐	
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	CPS No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ No ☒	Application reference No: Licence/permit No: Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☒ No ☐	Name: Avon River Proclaimed Surface Water Area Avon River Waterways Conservation Area. Type: Surface Water Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☒ N/A ☐ Regional office: Swan Avon

Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☐ No ☒	
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	Classification: N/A Date of classification: N/A