



Application for Licence Amendment

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

Licence Number	L5199/1983/12
Applicant	Western Australian Meat Marketing Co-operative Limited
File Number	DER2014/001668-1
Premises	WAMMCO International – Katanning Abattoir Great Southern Highway KATANNING WA 6317 Legal description - Lot 3 on Diagram 42266 Certificate of Title Volume 566 Folio 127A
Date of Report	10 June 2021
Proposed Decision	Licence granted

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1. Decision summary

Licence L5199/1983/12 is held by Western Australian Meat Marketing Co-Operative (WAMMCO) Ltd (Licence Holder) for Katanning Abattoir (the Premises), located at Lot 3, (on Diagram 42266) Great Southern Highway, Katanning.

This Decision Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Licence L5199/1983/12 has been granted.

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

In amending the Existing Licence, the Delegated Officer has also:

- extended the expiry date by three years making the new expiry date 15 October 2024;
- updated the format and appearance of the Licence;
- revised licence conditions to current licensing format, and removed any redundant conditions and realigned condition numbers for numerical consistency; and
- corrected clerical mistakes and unintentional errors.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Decision Report, the Delegated Officer has considered and given due regard to the Department of Water and Environmental Regulation's (department) Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Application summary

On 23 December 2020, the Licence Holder applied for a licence amendment under section 57 of the *Environmental Protection Act 1986* (EP Act).

The application seeks an amendment to the licence to authorise the discharge of wastewater into two existing evaporation ponds and also undertake works on the pond liner to make it fit for purpose in readiness for the Reverse Osmosis (RO) plant completion. In October 2019, an amendment to the licence authorised works associated with the installation and operation of the RO plant and required the Licence Holder to undertake a risk assessment of the impacts of disposing brine and quarterly RO cleaning waste into the Waste Water Treatment System (WWTS). The RO plant has not been constructed to date however, the risk assessment relating to the RO plant discharge has now been completed.

The Premises relates to the categories and assessed production/design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in Licence L5199/1983/12. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DER 2017) are outlined in Licence L5199/1983/12.

2.3 Overview of Premises

The Licence Holder slaughters up to one million animals (primarily sheep and occasionally goats) per annum at the Premises providing meat predominantly for the export market. The Premises receives animal by-products from slaughtering (including blood, offal, and paunch) processed in cookers, cake presses and driers to produce blood, meat and bone meal products, gall concentrate and tallow. These products are sold on domestic and overseas markets.

Two boilers fuelled by dehydrated refined waste oil are operated to generate steam to run the cookers and provide hot potable water for use in the slaughterhouse. Gases generated from operation of the rendering plant cookers pass through a wet scrubber and a condenser prior to discharge to air. This maximises the treatment of water soluble and odorous gases through the WWTS reducing odour emissions for the Premises. All animal by-product from slaughtering suitable for rendering, is required to be rendered within 24 hours of slaughter of the animals to minimise the generation of malodours.

Solid animal carcasses (mortalities) and other solid animal waste material (e.g. sheep heads & hide trimmings) are disposed of in an on-site burial pit. Sheep skins are salted and cured in large tumblers and are baled up and stored on pallets pending off site sale and export. Manure is disposed of off-site.

The WWTS comprises of Pond system 1 and Pond system 2 which receives wastewater from the abattoir operations, rendering activities and the lairage runoff / wash-down area at the premises. Pond system 1 is the series of anaerobic (1) and aerobic ponds (3) for the treatment and storage of wastewater generated by the abattoir and rendering operations following primary treatment through a solids trap, screening and fats separation via a dissolved air flotation unit (DAF). Pond system 2 comprises of 3 aerobic treatment ponds primarily receiving manure contaminated wastewater from the lairage runoff / wash-down area and may also receive treated wastewater transferred from Pond 3 in pond system 1, to manage winter water levels / treatment by evaporation, between the two pond systems. Treated wastewater from the final aerobic pond (Pond 3 in Figure 1 below) is periodically pumped to one of several areas authorised to receive treated wastewater via irrigation.

On completion of the RO plant (works authorised under previous licence amendment dated 8 October 2019), 230kL per day of treated wastewater will be transferred from Pond 3 for further treatment by reverse osmosis to generate 200kL RO plant permeate. The permeate will be temporarily stored in tanks and used for non-food handling requirements including water supply to the rendering plant cooling towers and wet scrubber and for stockyard (lairage) cleaning purposes.

The RO plant process generates 30kL per day of hypersaline brine as a by-product (TDS 12,400mg/L) which will be disposed of into two existing evaporation ponds of Pond system 2 (Pond 6 and 7). These ponds have historically received wastewater from the final aerobic pond (Pond 3) for evaporation. In the last few years, they have not been used for this purpose and Pond 6 and 7 have remained dry over summer with storage of rainwater during the winter season only.

Geotechnical investigations have been undertaken for the two evaporation ponds intended to receive hypersaline brine generated by the RO plant. Investigations have indicated that the northern wall of Pond 6 does not meet the permeability specifications as outlined in the *Water Quality Protection Note 27: Liners for containing pollutants, using engineered soils (WQPN 27)*. The Licence Holder has committed to upgrading the pond liners (for Pond 6 and 7) to ensure the integrity of the dam liner is suitable for the containment of brine and purge water.

A water balance calculation of Pond 6 and 7 demonstrates there is sufficient surface area to contain the disposal of brine and purge water (produced from membrane backwashing on a quarterly basis) without the risk of overtopping causing an uncontrolled discharge to the environment.

This licence amendment enables Pond 6 and 7 to function as stand-alone ponds to receive brine and RO purge water only. These ponds will operate independently of the WWTS with no wastewater entering Pond 6 (from any other WWTS pond) or wastewater irrigated to land (from Pond 7).

2.4 Existing infrastructure

The existing infrastructure and equipment relevant to the prescribed premises activities are outlined in Table 1 below and the site layout plans shown in Figures 1, 2 and 3 of this decision report.

Table 1: WAMMCO Katanning abattoir existing infrastructure

Existing Infrastructure	Site Layout Plan Reference
Prescribed Activity Category 15: Abattoir and lairage Animals (sheep & occasionally goats) are held in the livestock holding yards (lairage) pending processing within the abattoir. Animals are slaughtered to produce meat for human consumption.	
Covered livestock holding pens (lairage) with raised slatted floor. Concrete hardstand below slopes downwards connecting to an open concrete channel collecting and conveying wash down water to solids settlement sump	Sheep Yards 1 & 2 in Figure 2
Manure storage area and solids settlement sump (concrete floor and walls)	
Open concrete spoon drain – conveys manure contaminated wastewater from the solids settlement sump to aerobic pond	Wastewater drains from solids settlement and Pond system 2 in Figure 1
3 x clay lined aerobic/evaporation ponds (Ponds 5, 6 & 7)	Pond system 2 in Figure 1
Abattoir facility (animal processing including slaughter room floor and boning room)	Slaughter Room & Abattoir Facility Part 1 in Figure 2
Prescribed Activity Category 16: Rendering of animal material derived from the onsite abattoir (including offal and blood) to produce tallow, meat meal bone meal, blood meal and gall concentrate.	
Key infrastructure includes a hogger, cooker, cake presses, driers, blood tank (10kL storage capacity), tallow storage tanks (46kL & 115kL storage capacities), 2 x boilers (each 5000kW capacity) and associated emissions stacks, cooling towers, wet scrubber, condensing unit with vapour stack/outlet	Rendering Facility in Figure 2
Wastewater Treatment System infrastructure	
Concrete sump (5kL capacity), pump and pipeline to rotary screen	Wastewater sump in Figure 2
Rotary screen installed on a raised steel platform	Rotary Screen in Figure 2
Waste bin receiving separated solid waste via chute from the rotary screen	Located below the rotary screen
Dissolved Air Flotation (DAF) plant installed within a concrete hardstand	DAF in Figure 2
1 x clay lined anaerobic pond (Pond 1)	Pond System 1 in Figure 1
2 x clay lined aerobic / evaporation ponds (Ponds 2 & 8)	
1 x clay lined final treated wastewater storage / evaporation pond (Pond 3)	
Extraction pump, flow meter and PVC pipelines conveying treated wastewater from the final pond to irrigation areas	Not specified
Specified irrigation areas	Marked by yellow boundary lines in Figure 3
Carcass management infrastructure	
Carcass burial pit	Carcass burial pits in Figure 3
Fellmongering infrastructure	
2 x skins processing and storage sheds, includes tumble driers, salt store, baling equipment	Skin Shed 1 & 2 in Figure 2



Figure 1: WAMMCO Katanning abattoir complex and wastewater treatment ponds



Figure 2: WAMMCO Katanning Abattoir key infrastructure



Figure 3: Premises boundary and site layout (Irrigation areas marked by yellow boundary lines)

2.5 Proposed works – Reverse osmosis infrastructure (not constructed to date)

To date, the construction of the RO plant has not been completed. The proposed infrastructure related to the RO plant to be installed under works in the revised (amended) licence dated 8 October 2019 is described in Table 2 below with the layout for the infrastructure shown in Figure 4. Table 2 also includes works as part of this amendment which relate to the reconstruction of the liner for Pond 6 and Pond 7.

Table 2: Proposed works related to installation of reverse osmosis plant

Infrastructure	Design specifications	Site Layout Plan Reference
1 x <i>Integra</i> I INT BW30-200 model Reverse Osmosis Plant	4 sets of housings (pressure vessels rated to pressure of 300psi) each containing 3 spiral wound thin film composite polyamide membranes	Figure 4
Pumps ¹ and associated infrastructure	1 x low pressure stainless steel feed pump (4kW motor) and low pressure PVC piping (treated wastewater in-feed line)	
	1 x 36 inch automatic, back washable filter	
	Depth filters – 2 housings per train with 5 micron and 1 micron cartridge filters. Suspended solids filter housings with 5 x 40 inch filter elements	
	1 x high pressure stainless steel pump (15kW motor)	
Control panel	Control panel including alarm system, on/off auto switch for pumps and LED display for monitored values	
Storage tanks	1 x 50kl feed water tank	
	4 x 50kL permeate tanks	
RO brine discharge pipe	300mm by 30m long, heavy duty PVC pipeline connected to RO plant to convey both daily flush of saline concentrate waste (brine) and the periodic (quarterly) cleaning cycle waste ² from the RO plant to the clay lined anaerobic pond	
Permeate distribution pipeline	300 mm diameter PVC pipeline (as shown in Works plan – location of reverse osmosis plant and associated infrastructure)	
Proposed New Infrastructure	Design specifications	Site Layout Plan Reference
Clay liners for Pond 6 and 7	Liner permeability in accordance with WQPN 27	Figure 1



Figure 4: Reverse osmosis plant and associated infrastructure

3. Applicant's water balance - Pond 6 and 7

3.1 Water balance for WWTS

A water balance was undertaken to assess the water inflows with consideration to rainfall, evaporation and irrigation through the wastewater treatment system (WWTS). The impact on the WWTS from the extraction of 230kL per weekday from Pond 3 to the RO plant has been considered and the water balance has been modelled for the mean and the annually, adjusted 90th percentile high rainfall scenario. The operation of the RO plant will not impact on the nutrient concentration of the raw wastewater and total volume requiring irrigation is unlikely to be significantly different to current practice with minimal changes to current irrigation regime and nutrient loading rates.

3.2 Water balance for brine ponds

A water balance was undertaken of the existing evaporation ponds to determine if they have sufficient surface area to manage the RO plant brine discharge without the risk of overflowing or discharge to the environment. The assumptions used for the WWTS are also relevant to the brine ponds water balance with the inclusion that when Pond 6 fills to the freeboard level (500mm freeboard from top) brine will discharge to Pond 7.

Two water balance scenarios were used including two consecutive mean rainfall years and two consecutive adjusted annual 90th percentile high rainfall years over the period of 1999 to 2019.

Figure 1 below shows that brine is only expected to flow from Pond 6 to Pond 7 between the months of July and October.

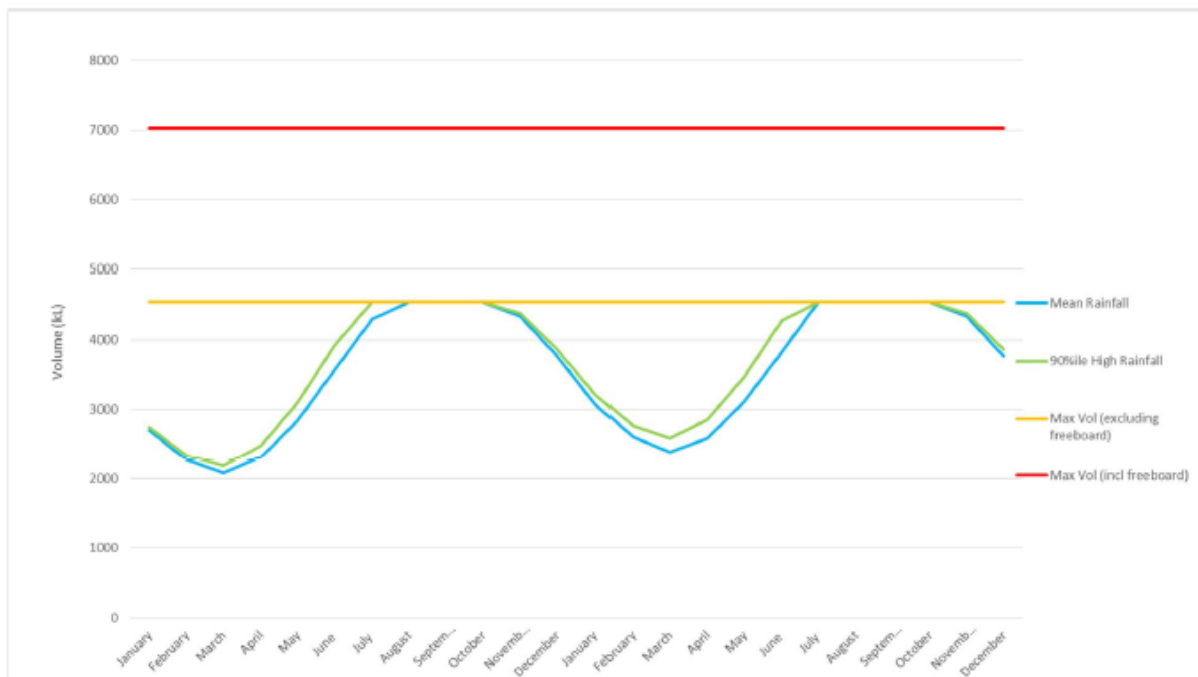


Figure 5: Pond 6 water level

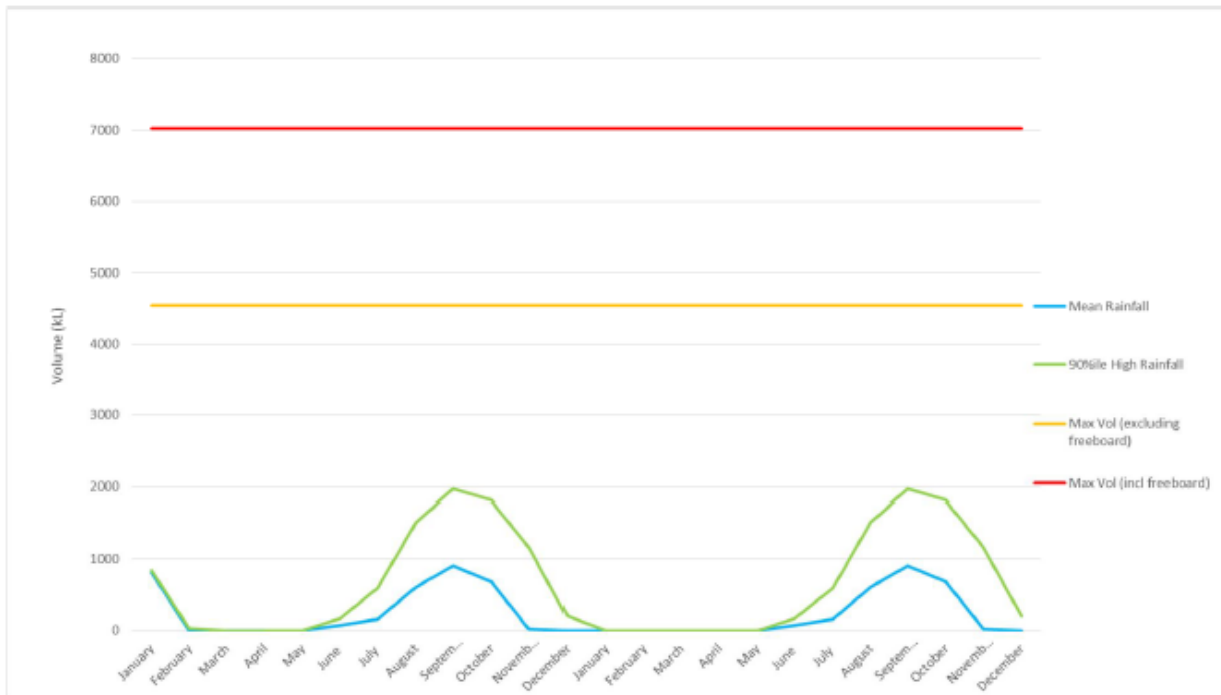


Figure 2: Pond 7 water Level

Figure 2 above shows that there is significant excess capacity within the proposed system for the loss of brine through evaporation.

4. Applicant's pond geotechnical investigations

An investigation was undertaken in May 2020 to assess the integrity of the two existing clay lined ponds (Pond 6 and 7) to receive hypersaline brine discharge associated with RO plant operations.

The investigation revealed both ponds were dry with approximately 100mm - 200mm of sludge remaining in the base. The ponds are located at the northern end of the WWTS and have not been actively used as part of the WWTS for the last few years. The ponds currently accumulate rainwater during winter and dry out in summer and have periodically been used as additional evaporation ponds.

The investigation included soil sampling to verify profile and permeability in accordance with WQPN 27. All soil samples complied with the characteristics of the WQPN 27 except for one soil sample which indicates the northern dam wall material of Pond 6 does not have the required particle size distribution and the permeability to meet the soil property requirements of WQPN 27.

Given the northern wall of Pond 6 does not meet the required material or permeability specifications the applicant proposes to use suitable in situ material to ensure the clay liners of Pond 6 and 7 meet the requirements detailed in WQPN 27.

WQPN 27 is considered a relevant guideline for the specification, installation and validation of engineered soil lining systems.

5. Risk assessment

The Delegated Officer assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

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.

5.1 Source-pathways and receptors

5.1.1 Emissions and controls

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

Table 3: Emission, Sources, Pathways and Proposed controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Leachate/sludge	Earthworks undertaken to Pond 6 and 7 prior to upgrading pond liner	Overland flow/direct discharge to the environment	No leachate/sludge controls Existing condition 19 of licence requires licence holder to remove desludging waste for offsite disposal
Operation			
Brine and purge water	Pond overtopping due to extreme rainfall event or RO plant malfunction	Overland flow/direct discharge to the environment Infiltration through soil to groundwater	Pond 6 and 7 are capable of storing 90 th percentile high rain event without overtopping freeboard level Weekly visual monitoring of ponds Existing contours surrounding Pond 6 and Pond 7 are designed to contain overflow Commitment by Licence Holder to maintain 500mm freeboard
	Seepage through pond liner	Infiltration through soil to groundwater	In situ material highly suited to containment pond liner construction Prior to operation, post construction liner testing will be undertaken to ensure compliance with the permeability specifications of WQPN 27

5.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the applicant's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

The Premises are located approximately 280 km southwest of Perth and 1.5km northwest of the Katanning town site. The abattoir complex and wastewater ponds are located centrally within the Premises (defined by the Lot 3 boundary), with a rail corridor running along the north-eastern boundary and the Great Southern Highway adjacent to sections of the southwestern lot boundary.

The land is zoned Special Use 8 under the Shire of Katanning's Local Planning Scheme No. 5. The surrounding land is zoned rural to the west and southwest and rural residential / small landholdings to the north, northeast. Two adjacent lots to the immediate north are held by Water Corporation being managed for the Katanning town water supply (Pinwernying Dam). Surrounding agricultural land is mainly used for cropping and grazing.

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* (DER 2016)).

Table 4: Sensitive human and environmental receptors and distance from the Premises

Human receptors	Distance from the Premises
Rural residence – Lot 1 on Diagram 13958	310m west of the Premises
Rural residence – Lot 4 on Diagram 47930	60m south-southeast of the Premises
Rural residence / small landholding – Lot 37 on Plan 223053	305m east of the Premises
Nearest residents – Katanning townsite	Approximately 1.2km southeast of the Premises
Environmental receptors	Distance from prescribed activity
Public Drinking Water Source Area (PDWSA) – Katanning Town Water Supply (Pinwernying Dam)	Approximately 1.1km north, northwest from edge of nearest wastewater treatment pond to point on the shared lot boundary closest to the Pinwernying Dam
Watercourses / water bodies	2 x Non-perennial watercourses run through the Premises, both watercourses forming part of upper drainage catchment of the Cobline River. Closest minor river is 170m north of Pond 7.
Groundwater – located within the Karri Groundwater Area (unproclaimed)	Depth to groundwater unknown. No nearby groundwater bores. GIS 250 Map series indicates total dissolved solids (TDS) between 0-1000 mg/L over most of the lot, and between 1000 – 3000 mg/L in the northern section.

5.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 5.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 5.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the applicant'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 applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

Licence L5199/1983/12 that accompanies this Decision Report authorises emissions associated with the operation of the Premises i.e. abattoir, rendering operations and livestock saleyard activities.

The conditions in the issued Licence, as outlined in Table 5 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	Applicant controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Construction								
Earthworks - construction of pond liner (Pond 6 and Pond 7)	Leachate/sludge	Overland flow/direct discharge to the environment	PDWSA – Katanning Town Water Supply approximately 1.1km northwest from nearest wastewater treatment pond Cobline River - Non-perennial minor river approximately 170m north of Pond 7 which runs through Premises	Refer to Section 3.1	C = Slight L =Rare Low Risk	N	Condition 19	Pond liner construction is expected to be of short duration and sludge is anticipated to be in a relatively solid state with minimal leachate generated (due to ponds being dry over the last few years). Existing condition 19 of the licence requires the licence holder to dispose of desludging waste off site.

Risk Event					Risk rating ¹	Applicant controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
Operation								
Operation of Pond 6 and 7	Brine and purge water	Overland flow/direct discharge to the environment due to overtopping from extreme rainfall event or RO plant malfunction	Soil and groundwater (depth to groundwater unknown)	Refer to Section 3.1	C = Slight L = Possible Low Risk	Y	Condition 34	An additional condition has been included to ensure brine discharge and purge water generated by the RO plant is directed to Pond 6 only and no irrigation or discharge to land occurs from Pond 7. The condition also specifies requirements to mitigate risk to the environment from pond overtopping. This has been replicated from existing condition 11 of the licence – Management of wastewater treatment ponds (except evaporation ponds) to ensure consistency.
		Seepage through pond liner	Soil and groundwater (depth to groundwater unknown)	Refer to Section 3.1	C = Minor L = Rare Low Risk	N	Condition 30 (including Schedule 2)	The licence holder proposed a clay liner with permeability of 1 x 10 ⁻⁹ m/s with minimal other detail other than that it will meet WQPN 27: Liners for containing pollutants, using engineered soils. The Delegated Officer has therefore specified conditions for the design, installation and testing of any compacted clay liner repairs consistent with guidance in WQPN 27. This is justified to ensure that the pond liner and overall pond module is fit for purpose and waste is adequately contained to limit seepage impacts to groundwater.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DER 2017).

Note 2: Proposed applicant controls are depicted by standard text. **bold and underline text** depicts additional regulatory controls imposed by department.

6. Consultation

Table 6 provides a summary of the consultation undertaken by the Delegated Officer.

Table 6: Consultation

Consultation method	Comments received	Delegated Officer's response
Applicant was provided with draft documents on 23 April 2021.	Comments received on 5 May 2021.	Refer to Appendix 1.

7. Decision

The Delegated Officer has determined, subject to regulatory controls outlined in Table 5, that the construction works and operation of Pond 6 and 7 does not present an unacceptable risk of impacts to human health or the environment.

Containment infrastructure (pond) design controls will be conditioned in this licence amendment to manage the risk associated with a potential release of brine and purge wastewater with elevated salt content to ground. These controls align with guidance in WQPN 27 and include the installation of a clay liner to prevent seepage.

Construction compliance requirements for critical containment infrastructure will be conditioned to ensure new infrastructure is installed or constructed as per the specified design requirements.

Operational requirements for the ponds are defined in condition 34 of the licence amendment. No additional conditions have been included for the management of sludge as existing condition 19 requires the offsite removal of sludge waste.

Based on the assessment in this Decision Report, the Delegated Officer has determined that a revised licence, licence L5199/1983/12, will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

7.1 Summary of amendments

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

Table 7: Summary of Amendments

Condition no. of original licence	Amendments
Cover page	Expiry date updated from 15 October 2021 to 15 October 2024 Date of last amendment updated Inclusion of table with prescribed premises categories and assessed production/design capacity
Contents and Introduction	Deleted - revised to current licensing format.
Works approval and licence history	Revised to current licensing format.

Condition no. of original licence	Amendments
Interpretation Definitions	Inserted - revised to current licensing format. Supersedes previous conditions 1.1.1, and 1.1.2. Redundant definitions removed. Inserted definitions as per current licensing format.
Heading and sub headings	Inserted 'Licence conditions' - revised to current licensing format. Deleted redundant subheadings and associated numbering for air, water, and solid waste pollution control conditions. Deleted 'Authorised works'. Revised to current licensing format.
Condition 7	Deleted. New condition 34 included.
Condition 20	Condition number updated.
Condition 22	Condition number updated.
Condition 12	Heading updated.
Condition 24 - Annual Audit Compliance Report	Revised to current licensing format. Forms accessed at www.dwer.wa.gov.au
Condition 25(a) and (b) – Reverse Osmosis Plant	Deleted redundant condition as this has been completed.
Condition 26	Table 5 in Schedule 4 has been included under condition - revised to current licensing format Deleted infrastructure from Column 1 that has no design specifications.
Conditions 27	Update reference to condition not schedule and condition numbering.
Condition 28	Update reference to condition not schedule and condition numbering. Deleted 'professional' and insert 'Engineer' in accordance with current licensing format.
Condition 29	Update reference to condition not schedule and condition numbering.
Schedule 1: Maps	New naming convention. Maps updated to include Figures 1 – 5.
Schedule 2: Prescribed premises categories	Deleted. Revised to current licensing format.
Schedule 3: Infrastructure and equipment	Deleted. Revised to current licensing format. Inserted in the Decision report of this licence amendment.
Schedule 4: Works – Reverse osmosis plant	Deleted. Inserted into condition 26 – Infrastructure and equipment – Reverse osmosis plant.
Works plan	Deleted. Updated map inserted as Figure 5 in Schedule 1.

Condition no. of original licence	Amendments
Condition 30	Insert infrastructure and equipment (construction) condition including Table for ponds as per current licensing format.
Condition 31	Insert Construction compliance report condition as per current licensing format.
Condition 32	Insert Critical Containment Infrastructure Report condition as per current licensing format.
Condition 33 & 34	Insert condition relating to operational requirement for RO plant and ponds as per current licensing format.
Condition 35 - 40	Insert Schedule 2: Ponds 6 and 7 – Clay liner requirements

References

1. Department of Environment Regulation (DER) 2016, *Guideline: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. DoW, August 2013, *WQPN 27 – Liners for containing pollutants, using engineered soils*, Perth, Western Australia.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
24	Amend the number of feedwater tanks in Column 2 of Table 2 (from 1 to 2) to ensure consistency with Figure 5: Map of reverse osmosis plant and associated infrastructure.	Noted and updated.
35 in Schedule 2	<p>Results of the geotechnical investigation in May 2020 demonstrates compliance of the lining material with regards to Percentage Fines, Liquid Limit and Plasticity Index, indicating a suitable material for the use as a liner.</p> <p>With regard to the criteria for Percentage fines this cannot be undertaken using standard particle size distribution (PSD) sieves as specified in AS 1289.3.6.1 and requires a specialist and expensive hydrometer test under AS 1289.3.6.2:2020. Consultation with a geotechnical expert suggests that the required level of compaction and permeability can be achieved without necessarily demonstrating the requirement of PSD. As such, it is proposed to remove this condition from the construction compliance requirements.</p> <p>Emerson class will be determined during construction compliance testing.</p>	Condition removed.
38 in Schedule 2	In situ density testing will be undertaken to verify that 95% MDD is achieved onsite in accordance with the proposed cores noted in condition 41.	Noted.
41 in Schedule 2	Based on the proposed core sampling requirements, a total of 27 core samples and permeability tests would be required to demonstrate compliance at a cost well in excess of \$5,000 for permeability laboratory testing only. Given that permeability testing of the material has already been completed in the May 2020 investigation and demonstrates that all but one bank of one dam achieves the required permeability, it is recommended that the number of samples be reduced to one in the base of each pond, one in each side wall and samples at 30m linear intervals for the length of the one wall that was considered non-compliant.	Condition updated to reflect Licence Holder's request.
42 in Schedule 2	<p>Following the filling of the ponds, the water level would be expected to fall over the first 24 hours while the soils in the liner of the ponds become saturated (filling the void spaces in the liner), and as such measurement of initial seepage is unlikely to provide a representative indication of the integrity of the containment structure.</p> <p>Given the noted acceptable seepage rate of 4kL/ha/day, the corresponding fall in water</p>	The Delegated Officer is satisfied with the Licence Holders justification for the removal of this condition. Condition removed.

	<p>depth is 0.4mm/day. Based on the exposure to atmospheric conditions including evaporation (up to 8.8mm per day in summer) and wind, it would be very difficult to accurately verify the dam permeability using the proposed method.</p> <p>Given that it has been demonstrated that the liner material is suitable, sometimes with a permeability more than an order of magnitude higher than required, and that the brine material has relatively low environmental risk, it is proposed that this condition be removed and compliance be achieved through in situ density and permeability samples.</p>	
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