Decision Report

Application for Licence

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

Licence Number	L8108/2004/5
Applicant	Water Corporation
ACN	28 033 434 917
File number	DER2013/000873-1
Premises	Perth Seawater Desalination Plant 18 Barter Road NAVAL BASE WA 6165 Legal description Lot 3003 on Plan 46763, Crown Reserve 48164 and Part Lot 3000 on Plan 46736, Crown Reserve 30611 As defined by the coordinates in Schedule 2 of the licence
Date of report	22 September 2023
Decision	Licence granted

Jarrod Abrahams
Digitally signed by Jarrod Abrahams
Date: 2023.09.22 08:50:19 +08'00'

MANAGER WASTE INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Table of Contents

1. Decision summary

This decision report documents the assessment of potential risks to the environment and to public health from emissions and discharges during the operation of the premises. As a result of this assessment, licence L8108/2004/5 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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.

2.1.1 Environmental Protection (Kwinana) (Atmospheric Waste) Policy 1999

The premises is located within the *Environmental Protection (Kwinana) (Atmospheric Waste) Policy 1999* (Kwinana EPP) Area A. Subsequently, operations at the premises are subject to the ambient air quality standard and limits set in Schedule 1 and Schedule 2 of the *Environmental Protection (Kwinana) (Atmospheric Waste) Regulations 1992* that are summarised in Table 1 and Table 2.

Table 1: Kwinana EPP total suspended particulates ambient air quality summary

Kwinana EPP Areas	Standard (ug/m3)	Limit (ug/m3)	Averaging period
Policy area	-	1,000	15 minutes
Area A	150	260	24 hours

Table 2: Kwinana EPP ambient air quality summary – sulphur dioxide

Kwinana EPP Areas	Standard (ug/m3)	Limit (ug/m3)	Averaging period
Area A	700	1,400	1 hour
	200	365	24 hours
	60	80	1 year

2.1.2 State Environmental (Cockburn Sound) Policy 2015

The premises is located adjacent to Cockburn Sound in the Kwinana Industrial Area. Cockburn Sound is valued and widely used by the community for activities such as aquaculture, fishing, recreation, and tourism, and is protected under the *State Environmental (Cockburn Sound) Policy 2015* (SEP).

The *Environmental Quality Criteria Reference Document for Cockburn Sound (April 2017)* was established by the Environmental Protection Authority (EPA) as a supporting document to the SEP. This document provides a suite of environmental quality criteria which provide quantitative standards for measuring achievement of the environmental quality objectives of the SEP.

The SEP defines three ecological protection levels to accommodate land use activities whilst maintaining the environmental quality of Cockburn Sound:

- High Protection: only allows small changes in water, sediment, or biota quality.
- Moderate Protection: allows moderate changes in water, sediment, or biota quality.
- Low protection: allows large changes in water, sediment, or biota quality.

A high level of ecological protection has been allocated to the majority of Cockburn Sound. However, areas of Cockburn Sound adjacent to the industrial area have been assigned a moderate level of ecological protection (moderate ecological protection areas; MEPA), whilst areas of a lower level of ecological protection (low ecological protection areas; LEPA) have been assigned to marinas, harbours, or other areas to allow for activities such as the operation of the desalination plant.

2.1.3 Part IV of the EP Act

The discharge of emissions to the marine environment is managed and regulated under Part IV of the *Environmental Protection Act 1986*, in accordance with the ministerial conditions within Ministerial Statement (MS) 655, issued on 9 July 2004, and MS 832 issued on 28 June 2010. Compliance Reports required by the Ministerial Statements are submitted to EPA Services annually.

The Water Corporation developed and implemented the following management plans under MS 655 and 832 to minimise the environmental impacts of the plant, with water quality management discussed further below:

- Water Quality Management Plan
- Nitrogen Management Plan
- Flora and Fauna Management Plan
- Greenhouse Gas Management Plan
- Noise Management Plan
- Hazardous Materials Management Plan
- Cooling Water Monitoring Programme

Water Quality Management Plan (WQMP; Water Corporation 2007) for the premises was prepared and implemented to satisfy condition 2 of MS 655. The WQMP objectives were to ensure that water quality during construction and operational activities of the PSDP was managed; and that effective strategies were developed to protect the environment. A requirement remains under the WQMP for the annual inspection of marine infrastructure.

Water Corporation developed a *Nitrogen Management Plan* (NMP; Water Corporation 2006) in accordance with MS 655 to manage the discharge of nitrogen from the plant during construction and ongoing operation. The Plant is required to be nitrogen-neutral under MS 655, using nitrogen free alternatives for its chemical processes where possible. Nitrogen discharged from the plant (from coagulants, antiscalants, and cleaning chemicals) contributes to the nutrient load in Cockburn Sound, which may have consequences for the marine environment.

Condition 8 of MS 832 required the development of a monitoring program for marine water quality which included the monitoring of dissolved oxygen level of bottom waters (≤ 5 m above the seabed). This was required to ensure that 60% saturation (24 hour running median) or less in Cockburn Sound's high and/or moderate protection areas (as defined by the SEP) would be met with the operation of the plant. The plan was also required to consider parameters that would define the spatial extent, persistence, and characteristic of the desalination effluent plume from the plant. Monitoring was to be conducted over at least two autumns before the monitoring requirement could be reviewed by the Minister for Water and Minister for Environment. It was found that the operation of the plant was unlikely to cause anoxic conditions at the seabed or significantly contribute to low dissolved oxygen levels in Cockburn Sound, and the Water

Corporation was permitted to cease monitoring in 2014.

Water Corporation developed a non-regulatory plan, the *Perth Seawater Desalination Project Operational Environmental Management Plan* (OEMP; Suez & Water Corporation 2021), in partnership with proAlliance, to continue operational marine monitoring. The OEMP was developed to ensure that risks from the discharge of desalination effluent to marine waters (water quality and nitrogen) are appropriately controlled.

The effects of the plant's operations on marine water quality have been considered as part of this licence renewal.

2.2 Application summary and overview of premises

On 13 June 2023, the Water Corporation (Licence Holder) submitted an application for a licence renewal to the department under section 57 of the *Environmental Protection Act 1986* (EP Act). The current licence is due to expire on 23 September 2023.

The licence renewal application is in relation to the operation of the Perth Seawater Desalination Plant at 18 Barter Road, Naval Base (PDSP; the premises). The desalination plant, which started producing potable water in November 2006, extracts seawater from Cockburn Sound and treats it through reverse osmosis (RO) to produce potable water for the Perth metropolitan area. An average of 130 ML of potable water is produced per day. The desalination effluent resulting from the RO process consists of a concentrated brine that is discharged via outfall diffusers back into the ocean. The outfall diffusers are located within a LEPA to allow the dilution of desalination effluent in the seawater. Outside of the LEPA boundary is a designated MEPA. The water quality outside of the LEPA boundary must be able to provide 90% species protection in accordance with the *Environmental Quality Criteria Reference Document for Cockburn Sound 2017*.

Approximately 68 GL of desalination effluent is discharged to Cockburn Sound per year as a result of plant operations.

The nearest residential zoned area to the PSDP is located approximately 3.6 km south-east of the premises boundary, with a caravan park located approximately 2.3 km north of the premises.

No changes to the premises operations or activities are proposed as part of this licence renewal application. The premises relates to the category and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L8108/2004/5. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in licence L8108/2004/5.

2.3 Operations summary

The desalination process at the premises is shown in the flow diagram in Figure 1 and includes the following treatment systems:

Intake and Pump Station

Seawater is drawn from Cockburn Sound via the offshore intake approximately 250 m offshore and moves through the inlet pipes from the intake to the seawater pumping station. The intake pump station is an onshore facility that screens the seawater from the offshore intake to remove ocean debris and then pumps the water to the pre-treatment system. Sodium Hypochlorite is used for shock chlorination of the seawater after screening.

Pre-treatment

Pre-treatment is required to ensure that the quality of the seawater is suitable for the RO treatment process. A pre-treatment coagulant is used to remove suspended solids, prior to the water being moved through pre-treatment filters. The pre-treatment filters further clean the

seawater and it is neutralised with Sodium Metabisulphate before it goes to the two-pass RO Plant. A Clean on Place (CIP) system cleans the filters when required.

Treatment

In the RO Plant, high pressure pumps increase the pressure of the seawater to push it through the semi-permeable membranes. “First pass” membranes remove salt and other impurities from the seawater, splitting the incoming water into 2 streams; permeate (clean water) and brine. Energy recovery devices (ERDs) recover energy remaining in the brine, reducing plant energy consumption. The “second pass” membranes further improve the quality of the water. There is a CIP system in place to clean the membranes when required. Water from this process is stored in the evaporation/storage pond.

Post-treatment

The permeate water from the RO process is treated with lime (to stabilise the water), carbon dioxide (stabilise the water and reduce pH), gaseous chlorine (disinfection) and Fluorosilicic acid (to add fluoride to the water) to ensure that drinking quality water standards are met. Drinking water is then stored in the Drinking Water Tank prior to pumping it to the Integrated Water Supply System.

Waste treatment and disposal

Wastewater from the pre-treatment filtration process goes to the backwash tank for storage, then passes through a wastewater clarifier and a centrifuge to separate the solid waste from the liquid waste. The remaining solid waste (sludge) is disposed of at the North Bannister Landfill Facility. The liquid component is sent to the outfall tank.

Desalination effluent (containing concentrated brine from the RO process, cleaning chemicals and liquid waste from pre-treatment) goes to the outfall tank for discharge into the ocean via the outfall diffusers, located approximately 500 to 650 m offshore.

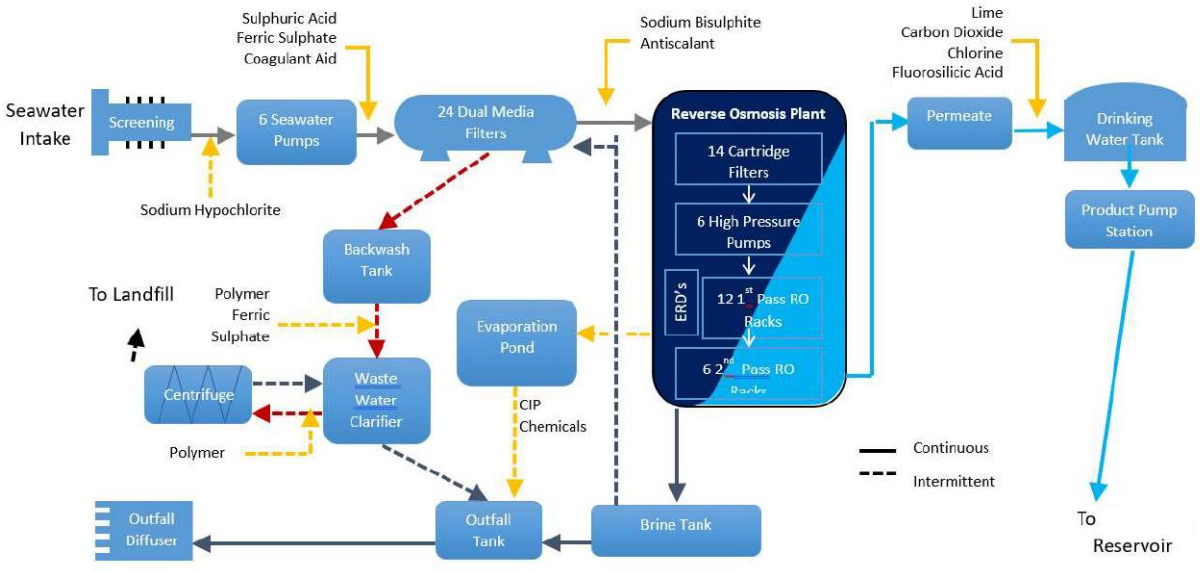

Figure 1: PSDP process flow diagram

2.4 Licence format update and environmental reporting date amendment

As part of this renewal, the department has updated the format of the licence, included contemporary conditions, and incorporated changes made under the Notice of Amendment of Licence Reporting Requirements Section 59(2), Section 59(1)(a) and 59(1)(b) *Environmental Protection Act 1986* Licensed Prescribed Premises issued on 16 May 2022.

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 operation which have been considered in this decision report are detailed in Table 33 below. Table 33 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 3: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Operation			
Desalination effluent containing concentrated brine, nutrients (nitrogen) and chemicals from treatment and cleaning processes	Discharge of desalination effluent into Cockburn Sound	Direct discharge via outfall into the marine environment	• Dilution of desalination effluent with seawater via diffusers to achieve a minimum of 45 times dilution within the mixing zone (within LEPA boundary). • Performance of diffusers is tested biannually to ensure that a minimum of 45 dilutions is met. • The PSDP is operated continuously where possible at a relatively stable production rate to ensure that the brine discharge will be of relatively consistent composition. • Continuous online monitoring of brine discharge quality. • A programmable logic controller (PLC) system to accurately monitor plant processes and ensure the plant is operating within design parameters. • PSDP is managed with a preventative maintenance program. • Nitrogen emissions are managed

Emission	Sources	Potential pathways	Proposed controls
			through: ➢ monitoring and controlling chemicals used on site; ➢ replacement of nitrogen sources where possible; ➢ optimise coagulant aid dosing to ensure minimal introduction of nitrogen ➢ optimise polymer carryover from clarifier; ➢ optimise wastewater polymer dosing to ensure minimal introduction of nitrogen whilst maximising solids collection and sludge dewatering.
Chemical solutions (e.g. highly acidic or alkaline solutions for cleaning and water treatment)	Equipment/operational failure resulting in the accidental discharge of chemical solutions into Cockburn Sound		• Dilution of desalination effluent with seawater via diffusers to achieve a minimum of 45 times dilution within the mixing zone (within LEPA boundary). • A programmable logic controller (PLC) system to accurately monitor plant processes and ensure the plant is operating within design parameters. • PSDP is managed with a preventative maintenance program.
Odour	Intake screens, waste bins, sludge waste and seawater	Air/windborne pathway	• Intake screens are flushed daily or as required. Intake waste bin is removed on a fortnightly basis and also cleaned. • Sludge tank is aerated to reduce odours. • Seawater can be diverted directly to outfall during an extended maintenance shutdown to prevent stagnation and subsequent odours.
Noise	Operation of pumps, screens, grit removal, filters and reverse osmosis units		• Active management and engineering. Noise is monitored every 5 years as per the PSDP Noise Management Plan (required under MS 655) and is consistent with the limits in the *Environmental Protection (Noise) Regulations 1997*.
Process effluent	Storage of process effluent in onsite storage basin	Seepage through pond storage to soil and through soil to groundwater	• Storage pond has double plastic liner.

Emission	Sources	Potential pathways	Proposed controls
Chemical solution spills/leaks	Storage of chemicals in chemical dosing facility	Overland flow and/or seepage through soil to underlying groundwater	• Infrastructure is bunded and contained in a concreted facility. • Spill clean-up kits are located onsite. • Hazardous Materials Management Plan and Incident Management Plan have appendixes for chemical spill response.
Contamination of land with sludge/solid waste	Removal of sludge/solid waste	Seepage through soil to groundwater	• Infrastructure is bunded and contained in a concreted facility.

3.1.2 Receptors

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

Table 44 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
Residential Premises	Appx. 3.6 km south-east of prescribed premises boundary (The Delegated Officer considers that due to distance, residential premises are unlikely to be affected by the Desalination Plant. Therefore, they have not been considered further in this assessment)
Caravan Park	2.3 km north of prescribed premises (The Delegated Officer considers that due to distance, the caravan park is unlikely to be affected by the Desalination Plant. Therefore, it has not been considered further in this assessment)
Industrial premises	Directly bordering the premises to the north, east and south
Environmental receptors	**Distance from prescribed activity**
Underlying soil Safety Bay Sand overlying Tamala Limestone Formation	Within prescribed premises boundary

Underlying groundwater (non-potable purposes) RIWI Act – Cockburn Groundwater Area	Groundwater flow is in a northwesterly direction (originating from the Jandakot Mound) and is typically less than 1 m AHD, with site elevation being approximately 4-6 m AHD Depth to groundwater is appx. 3 – 5 mbgl (Perth Groundwater Map) Salinity levels are in the range of 500 to 1000 mg/L (fresh to slightly brackish)
Cockburn Sound (Indian Ocean): Ecological Protection area A under the *State Environment (Cockburn Sound) Policy 2005*	Within 50 m west of the premises. Activities on premises directly discharge into the Indian Ocean.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. 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 3.1), 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 55.

Licence L8108/2004/5 that accompanies this decision report authorises emissions associated with the operation of the premises.

The conditions in the issued licence, as outlined in Table 55 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 operation

Risk events					**Risk rating** [1] **C = consequence L = likelihood**	**Applicant controls sufficient?**	**Conditions** [2] **of licence**	**Justification for additional regulatory controls**
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Operation								
Discharge of Reverse Osmosis (RO) Brine into Cockburn Sound	Desalination effluent containing concentrated brine, nutrients (nitrogen), and chemicals from treatment and cleaning processes (coagulants, antiscalants, etc.)	Direct discharge via outfall into the marine environment causing ecosystem disturbance	Indian Ocean	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	Conditions 1, 4 5, 10, 11,12 **Conditions 6, 7, 8 and 9**	The Delegated Officer considers the applicant controls to be suitable to manage the risk from emissions of desalination effluent into Cockburn Sound. Emissions to Cockburn Sound are also managed under MS 655 and MS 832. Previous monitoring has shown that under most conditions the brine plume is not very distinct and does not spread over large distances. However, under long spells of calm conditions, the plume can contribute to and worsen stratification, reducing dissolved oxygen (DO) near the seabed. The spatial extent of the brine plume under these conditions would be relatively

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
								large and could affect marine biota. These long spells of calm conditions are relatively rare and potentially were not encountered for the time DO monitoring was required. Therefore, the Delegated Officer considers it appropriate to include specific monitoring controls in the licence for DO at marine monitoring sites. Requirements for calibration of monitoring equipment are also considered appropriate to ensure that accurate results are obtained. No regulatory controls have been stipulated for nitrogen emissions as the Delegated Officer considers that nitrogen is suitably managed under Part IV of the EP Act.
Equipment/operational failure resulting in the accidental discharge of chemical solutions into Cockburn Sound	Chemical solutions (e.g. highly acidic or alkaline solutions for cleaning and water treatment)			Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	N	**Conditions 1, 6, 7, 8, 9, 18 and 20**	The Delegated Officer considers it appropriate to include additional conditions within the licence for the maintenance of equipment and investigation and reporting of incidents
Intake screens, waste bins, sludge waste and seawater	Odour	Air/windborne pathway causing impacts to amenity	Adjacent industrial premises	Refer to Section 3.1	C = Minor L = Rare **Low Risk**	Y	N/A	N/A
Operation of pumps, screens, grit removal, filters, and reverse osmosis units	noise			Refer to Section 3.1	C = Minor L = Rare **Low Risk**	Y	N/A	NA

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Storage of process effluent in onsite storage basin	Process effluent containing cleaning chemicals and nutrients from CIP process and desalination effluent containing concentrated brine, nutrients and chemicals from cleaning processes (coagulants, antiscalants, etc.)	Seepage through soil to underlying groundwater, causing disturbance to the marine environment (where groundwater discharges)	Indian Ocean	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	**Condition 1**	The Delegated Officer considers it appropriate to include a condition for the integrity of the pond liner to be maintained to prevent emissions of process effluent to the environment.
Chemical dosing facility	Chemical solution spills/leaks	Overland flow and/or seepage through soil to underlying groundwater, causing disturbance to the marine environment (where groundwater discharges)		Refer to Section 3.1	C = Moderate L = Rare **Medium Risk**		**Conditions 1, 2, 18**	The Delegated Officer considers it appropriate to include controls in the licence for the maintenance of equipment and recovery of spills to mitigate emissions of chemical solutions to the environment. The condition for the submission of an annual report has also been updated to include the reporting of any incidents and failure of pollution control equipment.
Removal of sludge/solid waste	Contamination of land with sludge/solid waste	Seepage through soil to underlying groundwater, causing disturbance to the marine environment (where groundwater discharges)	Indian Ocean	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	N	**Condition 3**	The Delegated Officer considers it suitable to include a condition on the licence regarding the safe collection and storage of solid waste from the desalination process for disposal.

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

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

Licence: L8108/2004/5

4. Consultation

Table 66 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 17 July 2023	None received	N/A
The City of Kwinana was advised of proposal on 14 July 2023	None received	N/A
Department of Primary Industries and Regional Development (DPIRD) advised of renewal application on 14 July 2023	DPIRD replied on 25 July 2023 advising that they had no comments to make on the licence application as it involves no changes.	N/A
Department of Health (DOH) advised of renewal application on 14 July 2023.	Comments received 16 August 2023. DOH commented on the ambiguity of Water Corporations commitment to monitoring, undertaking investigations and reporting incidents.	Conditions have been included in the licence requiring the monitoring of water quality, and the investigation and reporting of incidents.
Applicant was provided with draft documents on 18 August 2023	Comments received from Water Corporation (WC) on 11 September 2023. Refer to Appendix 1	Refer to Appendix 1
Applicant was provided with a second draft package to review on 13 September 2023	Comments received from WC on 15 September 2023. Refer to Appendix 1	Refer to Appendix 1

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

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.
4. Environmental Protection Authority (EPA) 2017, *Environmental quality criteria reference document for Cockburn Sound*, 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
Comments received on 11 September 2023		
Condition 1, Table 1	WC requested that all infrastructure operational requirements from Table 1 be deleted apart from Evaporation/storage pond and Containers. WC stated that it is unclear how the operational requirements for other infrastructure can be demonstrably audited. The operational requirements duplicate condition 4. Demonstrating performance against "Maintained in good working order in accordance with the manufacturer's specification" is unclear an not precise, being misaligned to the GS Setting Conditions (DER 2015) enforceability and outcome-based principles. Operational requirements duplicate conditions in the appropriate environmental outcomes in components of Conditions 7, 8 and 12. The principles of the requested amendments are supported by the Guideline Regulatory Principles (DER 2015) where outcome-based conditioning is preferred (which is achieved in conditions 7, 8 and 12) over process and management based conditions.	Operational requirements in Table 1 have been amended to be clearer and more specific for auditing purposes.
Condition 7, Table 3 (now condition 5)	Desalination effluent discharge limit needs to be corrected from 54 GL/a to 68 GL/a.	The desalination effluent discharge limit volume has been corrected as requested.

Condition	Summary of applicant's comment	Department's response
Condition 8, Table 4 (now condition 9)	WC requests the removal of outfall sampling requirements. Outfall sampling is not an outcome-based condition given the requirement to undertake marine monitoring. Furthermore, it is not standard practice to undertake regulatory continuous outfall monitoring and the operational targets listed are used to inform operations of plant performance and do not necessarily inform of a change to the environmental risk.	The Delegated Officer considers it reasonable to require the monitoring of water quality at the outfall to ensure that the quality of the effluent does not have the potential to impact the marine environment (in addition to the marine monitoring sites). 17.3.3 of WC's Operational Environmental Management Plan (OEMP), Issue 7, 19 January 2021, for the PSDP states that outfall targets were set to ensure that the quality of the brine effluent stream remains within legislative requirements and does not impact on the environment as opposed to being solely used to provide information on plant performance. **17.3.3 Limits / targets** Internal limits have been applied to the brine effluent stream to ensure the quality of the effluent remains within legislative requirements and does not impact on the marine environment. Brine effluent is continuously monitored by on-line instrumentation, with the following acceptable limits: • pH: between 6.7 – 8.4. • conductivity: maximum limit of 92 mS/cm. • turbidity: maximum limit of 8.0 NTU. • DO: minimum 5.0%; and • Temperature <2oC above seawater. The Delegated Officer has resolved to remove the requirement for the investigation of target exceedances and implementation of corrective actions for the outfall sampling point. Elements relating to this that were previously specified in Table 4 has been moved to Schedule 3 and renumbered to Table 12. An environmental reporting requirement has instead been included to provide a comparison of outfall monitoring results to the targets in Schedule 3 (this approach was also discussed in a meeting between DWER and Water Corporation dated 11 September 2023).

Condition	Summary of applicant's comment	Department's response
Condition 12, Table 5 (related requirements now captured in condition 9)	WC requests the removal of intake monitoring requirements, outfall monitoring requirements, and the amendment of marine monitoring frequency to biannual. WC contends licencing the monitoring of intake quality (excluding intake volume as required for Condition 15) as it is outside the scope of the licence. The requirement for continuous monitoring is an example of WC environmental performance beyond Environmental Standards and should be retained as voluntary. A non-continuous period-based frequency is standard practice and should be included in the licence instead. The request to change the marine monitoring frequency from quarterly to biannual is due to biannual frequency being the industry standard. This allows fir Autumn and Spring monitoring which reflects the highest risk times for Cockburn Sound.	The Delegated Officer has resolved to remove all intake monitoring requirements apart from intake flow rate. The monitoring frequency for other parameters (besides flow rate) has been changed from continuous to quarterly. WCs request for the marine monitoring frequency to be changed from quarterly to biannually has been granted.
Comments received on 15 September 2023		
Condition 1, Table 1 (version 2)	WC requests an amendment to "Operational requirement" wording for seawater items to: a) Screen washings must be stored within appropriately impervious bins to prevent seepage and overflow. The skip bins containing screen washing is not collected routinely, only when required. While in some seasons this can be fortnightly, it is not unusual for a skip to take 2 months to fill. It is costly, inefficient, and increases risks within the Plant to have the skip removed fortnightly even if it is not full.	The Delegated Officer has resolved to amend the condition as requested by the applicant.
Condition 1, Table 1 (version 2)	WC requests an amendment to "Operational requirement" wording for RO membranes to: a) Membrane cleaning and flush water must be directed into the discharge effluent stream at a rate to ensure brine waste can neutralise and dilute the stream prior to marine discharge. Neautralisation occurs only through dilution with the brine stream. There is no separate or chemical neutralisation. It is a slow rate	The Delegated Officer has resolved to amend the condition as requested by the applicant.

Condition	Summary of applicant's comment	Department's response
	release into the discharge line.	
Schedule 3, Table 12	WC requests the removal of the temperature target for the outfall sample point. The target does not specify how the comparison to seawater is made (i.e. is it compared to temperature at the intake, temperature at the ocean outfall discharge point, temperature at the reference sites). An outcomes-based temperature target has been prescribed for in-water marine water quality monitoring; setting a target for temperature within at the outfall tank sampling point is duplicative and does not achieve a different environmental outcome than marine monitoring.	The temperature target for the outfall was taken directly from the supporting information provided with the licence renewal application and from the OEMP: **17.3.3 Limits / targets** Internal limits have been applied to the brine effluent stream to ensure the quality of the effluent remains within legislative requirements and does not impact on the marine environment. Brine effluent is continuously monitored by on-line instrumentation, with the following acceptable limits: • pH: between 6.7 – 8.4. • conductivity: maximum limit of 92 mS/cm. • turbidity: maximum limit of 8.0 NTU. • DO: minimum 5.0%; and • Temperature <2oC above seawater. Although not clear in the OEMP, WC confirmed on 18 September 2023 that the in-line outfall temperature is compared to the intake temperature. There are several factors that can result in discrepancies between outfall temperature vs intake temperature. The Delegated Officer has resolved to remove the target for temperature from the Outfall sample point in Table 12 given that the risk to the marine environment from the temperature of desalination effluent is monitored at the marine monitoring sites.
Condition 9, Table 4	The parameter "Total Dissolved Solids" has (TSS) next to it which is for Total Suspended Solids. WC requests DWER to confirm which parameter it is.	The Delegated Officer confirms that the parameter is Total Dissolved Solids and should be TDS instead of TSS. Table 4 has been amended accordingly.
Decision Report, Table 5	WC requests that desalination effluent be added as a potential emission from the storage pond. WC confirms that onsite storage basin/pond contains process effluent as listed and desalination effluent.	Desalination effluent has been included as a potential emission from the storage of process effluent in the onsite storage basin.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
Application type					
~~Works approval~~	☐				
~~Licence~~	☐	~~Relevant works approval number:~~		None	☐
		~~Has the works approval been complied with?~~	Yes ☐ No ☐		
		~~Has time limited operations under the works approval demonstrated acceptable operations?~~	Yes ☐ No ☐ N/A ☐		
		~~Environmental Compliance Report / Critical Containment Infrastructure Report submitted?~~	Yes ☐ No ☐		
		~~Date report received:~~			
Renewal	☒	Current licence number:	L8108/2004/4		
~~Amendment to works approval~~	☐	~~Current works approval number:~~			
~~Amendment to licence~~	☐	~~Current licence number:~~			
		~~Relevant works approval number:~~		~~N/A~~	☐
~~Registration~~	☐	~~Current works approval number:~~		~~None~~	☐
~~Date application received~~		13 June 2023			
Applicant and premises details					
Applicant name/s (full legal name/s)		Water Corporation			
Premises name		Perth Seawater Desalination Plant (PSDP)			
Premises location		18 Barter Road, Naval Base WA 6165 Lot 3003 on Deposited Plan 46763			
Local Government Authority		City of Kwinana			
Application documents					
HPCM file reference number:		DER2013/000873-1~1			
Key application documents (additional to application form):		*PSDP L8108/2004/4 RenewalApplication Form Attachments:* *1A: Proof of occupier status* *2: Premises Maps* *3B: Proposed activities* *6A: Emission and discharge control measures*			

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)

Scope of application/assessment

Summary of proposed activities or changes to existing operations.	Renewal of existing licence

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

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 54A: Water desalination plant: premises at which salt is extracted from water if – (a) waste water is discharged into marine waters; and (b) the discharged waste water has a density greater than the average ambient density of the marine water at the discharge site.	45 gigalitres per year	N/A

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: MS 655 & 832 EPA Report No: 1070 and 1137 (MS 655) and 1327 (MS 832)
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No: N/A
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☒ General lease ☐ Expiry: Mining lease / tenement ☐ Expiry: Other evidence ☒ Expiry: Statement of Intent for use of part of Lot 3000 on Plan 46763 (neutralisation pond) between Synergy and Water Corporation
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Water Corporation are considered an agent of the crown when providing water services. The desalination plant is considered puclic works under s.137 of the *Water Services Act 2012* and is

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)		
		therefore, exempt under s.6 of the *Planning and Development Act 2005.*
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: N/A Licence/permit No: N/A 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: N/A Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☒ N/A ☐ Regional office: Kwinana Peel
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 ☐	*Environmental Protection (Kwinana) (Atmospheric Waste) Regulations 1992*
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☒ No ☐	*Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999* Area A
Is the Premises subject to any EPP requirements?	Yes ☒ No ☐	Site is subject to SO_2 requirements and total suspended particulate requirements of the Kwinana EPP.

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)		
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Classification: possibly contaminated – investigation required (PC–IR) Date of classification: 9 April 2019