

Perth Seawater Desalination Plant

Compliance Assessment Report

1 July 2023 to 30 June 2024

Ministerial Statements 655 and 832

Glossary and definition of terms

Term	Description
CAR	Compliance Assessment Report
CSMC	Cockburn Sound Management Council
DO	Dissolved Oxygen
Desalination effluent	Desalination effluent consists of the brine stream from the RO system, neutralised clean-in-place (CIP) streams and wastewater originated from the backwash of the dual-media filters and seawater strainers. The desalination effluent is discharged to the marine environment via a diffuser array.
DWER	Department of Water and Environmental Regulation
EQC	Environmental Quality Criteria
EQO	Environmental Quality Objective
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
GL	Gigalitres
IWSS	Integrated Water Supply Scheme
KIC	Kwinana Industries Council
LEPA	Low Ecological Protection Area
MS626	Ministerial Statement 626
MS655	Ministerial Statement 655
MS832	Ministerial Statement 832
OEMP	Operational Environmental Management Plan
OEPA	Office of the Environmental Protection Authority
PSDP	Perth Seawater Desalination Plant
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TN	Total Nitrogen
TP	Total Phosphorous
BTEX	Benzene, toluene, ethylbenzene, and xylenes
Perth NRM	Perth Natural Resource Management Group
DPIRD	Department of Primary Industries and Regional Development
CEO	Chief Executive Officer
CAP	Compliance Assessment Plan
NDMP	Nitrogen Discharge Management Plan
WAMSI	Western Australian Marine Science Institution
CSIRO	Commonwealth Scientific and Industrial Research Organisation

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1. Introduction

Perth Seawater Desalination Plant (PSDP) has been producing potable water for Water Corporation's Integrated Water Supply System (IWSS) since 18 November 2006 (officially opened on 18 April 2007). PSDP can produce up to 18% of Perth's annual water supply requirements and continues to be an important climate-independent water source for the metropolitan population. PSDP produced approximately 45.48 GL of potable water during the 2023-2024 reporting period.

1.1. Environmental approvals

In May 2003, the Minister for Environment first approved the proposal for 30 GL/a under Section 38 of the *Environmental Protection Act 1986* (EP Act) issuing Ministerial Statement 626. Water Corporation proposed a range of amendments to the original proposal and in July 2004, Ministerial Statement 655 (superseding MS626) was issued authorising a 45GL/a desalination plant.

In July 2005, the Minister for Environment requested the Office of the Environmental Protection Authority (OEPA) provide environmental advice, under Section 46 of the EP Act, on the approval (MS655) for PSDP. The review carried out by the OEPA underwent two peer reviews, one by the Department of Environment and Conservation and one by the National Institute of Water and Atmospheric Research. Following the provision of these reviews to the Minister for Environment, Ministerial Statement 832 was issued in June 2010 to supplement MS655, requiring more robust compliance reporting, and marine monitoring and management.

In April 2014, the OEPA advised that the marine monitoring program required under MS832 was completed appropriately and a revised marine monitoring program then commenced. Many of the other monitoring programs required under MS655 and MS832 related to construction and commissioning and have now been completed.

1.2. Purpose

In accordance with MS832 Condition 5-6, Water Corporation is required to “... *submit a compliance assessment report annually from the date of issue of this Implementation Statement addressing the previous twelve-month period or other period as agreed by the CEO of the Office of the Environmental Protection Authority. The compliance assessment report shall:*

- 1. be endorsed by the proponent's Managing Director or a person, approved in writing by the CEO of the Office of the Environmental Protection Authority, delegated to sign on the Managing Director's behalf;*
- 2. include a statement as to whether the proponent has complied with the conditions;*
- 3. identify all potential non-compliances and describe corrective and preventative actions taken;*
- 4. be made publicly available in accordance with the approved compliance assessment plan; and*
- 5. indicate any proposed changes to the compliance assessment plan required by condition 5-1.”*

Water Corporation developed a Compliance Assessment Plan (CAP, March 2015) as required under MS832 Condition 5.2 and to address the requirements of MS832 Condition 5-6. The CAP was endorsed by the OEPA in a letter dated 21 September 2015 (OEPA Ref 2015-0001106379). The CAP specifies that compliance reports will be submitted to the CEO of OEPA annually in the form of Compliance and Assessment Report (CAR) and meets the requirements of MS832 Condition 5-6. As stated in the CAP,

CARs will be submitted by 1 September each year being two months from the end of the reporting period of 1 July to 30 June.

This CAR has been prepared to comply with MS832 5-6 and the CAP. This report covers the reporting period 1 July 2023 – 30 June 2024.

This CAR will be made publicly available in accordance with the CAP. It will be published on the Water Corporation's website:

<https://www.watercorporation.com.au/Our-water/Desalination/Perth-Seawater-Desalination-Plant>

2. Current active requirements

Many requirements under MS655 and MS832 have been completed and closed as they related to construction and commissioning aspects. Further detail on those requirements and evidence is provided in Table 3 and Table 4.

The remaining active Conditions and Commitments of MS655 and MS832 which require ongoing monitoring and reporting relate to MS655 Condition 2-1 “*The proponent shall implement the environmental management commitments document in schedule 2 of this statement.*” Specifically, these are:

- Commitment 2.2 “*Implement the Water Quality Management Plan*”
- Commitment 4.2 “*Implement the Greenhouse Gas Management Plan*”
- Commitment 5 “*... take all reasonable and practicable steps to obtain an electricity contract for the plant which will specify that the electricity will be sourced from gas-fired generating units at least 95% of the time*”
- Commitment 6.2 “*Implement the Noise Management Plan*”
- Commitment 7.2 “*Implement the Hazardous Materials Management Plan*”
- Commitment 13 “*Nitrogen free alternatives will be used for the process chemicals where appropriate and practicable*”

Importantly, only some of the items contained within the above-mentioned Management Plans remain as active requirements, and these are outlined below.

2.1. Requirements summary

Commitment 2.2

Under the Water Quality Management Plan, the only remaining active marine monitoring requirement is the annual marine infrastructure inspection carried out by commercial divers to assess the integrity of marine infrastructure.

Commitment 4.2 and 5

Under the PSDP Greenhouse Gas Management Plan, the hierarchy of energy supply to minimise greenhouse gas emissions is:

- 1) Renewable energy,
- 2) Gas-fired turbines at least 95% of the time (*Commitment 5*), then
- 3) General electricity market (grid power) with the purchase of carbon offsets based on the emissions intensity (emission factor) differential between grid power and gas-fired turbines.

It remains impractical to utilise gas-fired turbine electricity to supply 95% of power needs therefore renewables or grid-power remain the only viable options.

Commitment 6.2

Under the Noise Management Plan, boundary noise monitoring is required to be completed by a qualified external third-party every five years. Noise monitoring was last conducted in 2019 and will be completed again around September 2024.

Commitment 7.2

Under the Hazardous Materials Management Plan, regular inspections of chemical storage vessels, dosing lines, and bunds are required. Management of hazardous materials is also managed under the Dangerous Goods Licence DGS020212.

Commitment 13

The Nitrogen Discharge Management Plan (NDMP) outlines how the use of nitrogen containing chemical additives will be minimised wherever possible to achieve the objective of “*no net increase in nitrogen added to Cockburn Sound*”. The NDMP estimates up to 1.2 t/a of additional nitrogen may be discharged to Cockburn Sound via the PSDP outfall with an approved additional nitrogen discharge of ≤ 11.5 t/a. The NDMP requires “*regular sampling and analysis of the wastewater discharge...*”.

3. Compliance

The status of compliance against each MS655 and MS832 Condition and commitment is provided in Table 3 and Table 4.

3.1. Non-conformances and non-compliances

There were no non-compliances during this reporting period (1 July 2023 to 30 June 2024). Further compliance with individual Ministerial Statement conditions and commitments is detailed in the audit tables in Section 6.

3.2. Audits and inspections

Recertification audits for ISO14001 and ISO9001, an external surveillance audit for ISO55000, and an internal audit of our onsite laboratory under ISO9001:2015, ISO14001:2015, and ISO45001:2018 were conducted during the 2023-2024 reporting period.

During the October 2023 plant shutdown, an inspection of the intake infrastructure, stilling basin, wet well, de-aeration chamber, and diffuser inspections, including sections of the intake pipes were carried out. No significant issues were identified.

3.3. Complaints

No complaints regarding environmental management at the PSDP were received during this reporting period.

4. Environmental monitoring results

4.1. Required environmental monitoring

As required under MS655 and MS832, the outcomes of environmental monitoring carried out in the 2023-2024 reporting period are outlined below.

4.1.1. Water quality monitoring (marine)

An inspection of the intake infrastructure, stilling basin, wet well, de-aeration chamber, and diffuser inspections, including sections of the intake pipes were carried out. No significant issues were identified.

4.1.2. Greenhouse gas emissions

Water Corporation uses electricity supplied to PSDP by the South West Interconnected System (SWIS) grid and purchases carbon offsets if required. As stated in the “Australian National Greenhouse Accounts Factors 2023” (DCCEEW), the current Scope 2 emission factor of electricity taken from SWIS is 0.53 kg CO₂-e/kWh. Water Corporation uses an emission factor of 0.63 kg CO₂-e/kWh for a typical gas-fired turbine to calculate any potential carbon offset requirements. As the SWIS emission factor is less than that of a typical gas-fired turbine, Water Corporation did not purchase any offsets for 2023-2024.

4.1.3. Noise monitoring

Noise monitoring is not due again until around September 2024.

4.1.4. Nitrogen discharge monitoring

Monitoring of nitrogen concentrations in seawater intake, effluent discharge, product water, and sludge was carried out during the 2023-2024 reporting period and indicates a total of up to 16.22 tonnes of nitrogen was discharged to Cockburn Sound via the outfall (Table 1). Importantly, 17.47 tonnes of nitrogen were contained within the seawater brought into PSDP leaving a nett decrease of 1.25 tonnes of nitrogen was discharged to Cockburn Sound via the outfall. This nett reduction in nitrogen discharged is consistent with the higher nitrogen concentrations within the sludge.

Table 1 Nitrogen balance at PSDP during 2023-2024

Nitrogen types at PSDP	Concentration	Total (t)
NITROGEN USAGE		22.84
Nitrogen intake from seawater	0.15 mg/L	17.47
Nitrogen use in desalination process (chemical processing)		5.37
NITROGEN EMISSIONS		22.84
Nitrogen contained in product water	0.06 mg/L	2.73
Nitrogen contained in sludge	6,050 mg/kg	3.89
Nitrogen contained in effluent discharged to Cockburn Sound	0.24 mg/L	16.22
Nett <u>reduced</u> nitrogen (in effluent) discharged to Cockburn Sound		1.25
Nitrogen limit authorised to be discharged in effluent to Cockburn Sound		11.50

4.2. Additional environmental monitoring

As part of the Water Corporation's commitment to environmental sustainability and best-practice, PSDP maintains an Operational Environmental Management Plan (version 7, 19 January 2021, OEMP) to ensure the Low Ecological Protection Area (LEPA) boundary is maintained and key Environmental Quality Objectives (EQO) are achieved. The OEMP is a voluntary, non-regulated document developed by PSDP to streamline a structured monitoring program (based on the outcomes of previous Monitoring Programs which are now completed and closed) that enables identification of any potential impacts on the EQO.

Under the OEMP, the following additional environmental monitoring was carried out during the 2023-2024 reporting period:

- Marine monitoring of TDS, temperature, and DO of seawater at locations near the discharge site, LEPA boundary sites, reference sites, and a site in the deeper waters of Cockburn Sound.
- Monitoring (inline instrumentation and bulk samples) of seawater intake and desalination effluent for pH, conductivity, turbidity, DO, and temperature.
- Discharge diffuser performance analysis via marine monitoring of TDS at locations along the LEPA boundary.
- Groundwater monitoring upgradient and downgradient of evaporation pond (as well as the interstitial space between liners) for TN, TP, TDS, TSS, DO, pH, conductivity, BTEX and hydrocarbons.
- Volumes of sludge removed from site.
- Analysis of sludge cake composition and ingredients including nitrogen content.

Some of this data from the OEMP monitoring is used in annual reporting to DWER under Part V Licence reporting requirements and is also used in National Pollution Inventory calculations and reporting.

4.2.1. Cockburn Sound Management Council

In addition to the above, the Water Corporation continues to work with the Cockburn Sound Management Council (CSMC) contributing to the preparation of the Cockburn Sound Annual Environmental Monitoring Report. The CSMC reports annually to the Minister for Environment on the results of environmental monitoring of the Cockburn Sound marine area and the extent to which the results meet the EQO and associated Environmental Quality Criteria (EQC) set in the *State Environmental (Cockburn Sound) Policy*. Water Corporation provides monitoring data related to PSDP's operations, which then enables CSMC to determine if the EQC for maintenance of water quality for industrial water supply have been met.

In the 2023-2024 reporting period, monitoring of the intake seawater from Cockburn Sound into the PSDP indicated there were regular (66.7% of the time) exceedances of the EQG for TSS, and one record of TSS exceeding the plant operating limit. Also, Bromide concentrations slightly exceeded the EQG in April 2024. Outside of those events, the quality of seawater was considered suitable for the desalination process indicating the EQO has overall been achieved during the reporting period.

4.2.2. Perth Natural Resource Management group

PSDP has again partnered with Perth Natural Resource Management Group in their 'Adopt a Beach' program. During the 2023-2024 reporting period, PSDP staff conducted:

- a beach clean-up collecting 56.5 kg of rubbish from the beach and access path adjacent to the plant, and
- a seedling planting day along the dunes directly between the Plant and the coastline.

5. Stakeholder consultation

During this reporting period Water Corporation and proAlliance (operators of PSDP) consulted and engaged with several key stakeholders and the community regarding the operation of PSDP including:

Community groups

- Cockburn Sound Management Council (CSMC)
- Kwinana Industries Council (KIC)
- Perth Natural Resource Management Group (Perth NRM)

Government agencies

- Department of Water and Environment Regulation (DWER)
- Department of Primary Industries and Regional Development (DPIRD)
- City of Kwinana
- Fremantle Port Authority
- Westport / WAMSI

Others

- Murdoch University
- University of Western Australia
- CSIRO

6. Condition audit table

The compliance status against each of the Conditions and Commitments in MS655 and MS832 is provided in Table 3 and Table 4 below. A description of the status terminology used in Table 3 and Table 4 is provided below in Table 2.

Table 2 Status description used in Condition audit table.

Status	Acronym	Criteria
Compliant	C	Implementation of the proposal has been carried out in accordance with the requirements of the audit element.
Completed	CLD	A requirement with a finite period of application has been satisfactorily completed.
Not required at this stage	NR	The requirements of this audit element were not triggered during the reporting period.
Potential non-compliant	PNC	Possible or likely failure to meet the requirements of the audit element.
Non-compliant	NC	Implementation of the proposal has not been carried out in accordance with the requirements of the audit element.
In process	IP	Where an audit element requires a management or monitoring plan to be submitted to the OEPA or another government agency for approval, the submission has been made and no further information or changes have been requested by the OEPA or other government agency for the approval is still pending.
Not applicable	NA	Requirements which do not require specific action by the proponent. For example, requirements which refer to action by the regulator (and are 'Procedure' requirements).
Superseded	X	The requirement of this condition has been superseded by being replaced with a later issued Statement.

Notes relating to Table 3 and Table 4:

- Phases = Design, Construction, Operation, Decommissioning, overall.
- Code prefixes: M = Minister's condition; P = Proponent's commitment; N = Procedure or Note.
- Acronym's list: Minister for Env = Minister for the Environment; CEO = Chief Executive Officer of DWER; DWER = Department of Water and Environmental Regulation; CSMC = Cockburn Sound Management Council; DMIRS = Department of Mines, Industry Regulation and Safety; OEPA = Office of the Environmental Protection Authority; DoH = Department of Health.

Table 3 MS655 Condition audit table 2023-2024

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
655:M1-1	Implementation	The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.	Compliance Assessment Reports (refer to M832:M5-6 previously M655:M5-1) demonstrating implementation submitted by 1 September each year.	Provided each year in CAR.	Overall	Ongoing	C
655:M2-1	Proponent Commitments	The proponent shall implement the environmental management commitments documented in schedule 2 of this statement.	Compliance Assessment Reports (refer to M832:M5-6 previously M655:M5-1) demonstrating implementation submitted by 1 September each year.	Provided each year in CAR.	Overall	Ongoing	C
655:M3-1	Proponent Nomination and Contact Details	The proponent for the time being nominated by the Minister for the Environment under S38(6) or (7) of the <i>Environmental Protection Act 1986</i> is responsible for the implementation of the project until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominated another person in respect for the proposal.	Compliance Assessment Reports (refer to M832:M5-6 previously Compliance Audit and Performance Review Reports under M655:M5-1) demonstrating implementation submitted by 1 September each year.	The proponent is the Water Corporation, and this has not changed over the reporting period.	Overall	Ongoing	C
655:M3-2	Proponent Nomination and Contact Details	If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.	Statement endorsed by the proposed replacement proponent with evidence of capability and contact details.	The proponent is the Water Corporation, and this has not changed over the reporting period.	Overall	Before transfer of ownership of the proposal	NR
655:M3-3	Proponent Nomination and Contact Details	The nominated proponent shall notify the DoE of any change of contact name and address within 60 days of such change.	Notification of change of proponent contact name and address	The proponent is the Water Corporation, and this has not changed over the reporting period.	Overall	Within 60 days of change	NR
655:M4-1	Commencement and Time Limit of Approval	The proponent shall substantially commence the proposal within five years of the date of this statement or the approval granted in the statement of 26 May 2003 shall lapse and be void.	Compliance Audit Reports (refer to M655:M5-1) demonstrating substantial commencement.	The project was substantially commenced within 5 years. DEC letter (ref. DOC74574) dated 16 January 2009 acknowledged completion of construction.	Construction	By 9 July 2009	CLD
655:M4-2	Commencement and Time Limit of Approval	The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment, prior to the expiration of the five-year period referred to in condition 4-1. The Applicant shall demonstrate that: 1. The environmental factors of the proposal have no changed significantly. 2. New, significant, environmental issues have not arisen. 3. All relevant government authorities have been consulted.	Application for extension submitted to Minister for the Environment.	Not required.	Construction	At least six months prior to the expiration date of the five-year period (by 9 Jan 2009)	CLD
655:M5-1	Compliance Audit and Performance Review	The proponent shall prepare an audit program and submit compliance reports to the Department of Environment which address: 1. The status of implementation of the proposal as defined in schedule 1 of this statement. 2. Evidence of compliance with the conditions and commitments. 3. The performance of the environmental management plans and programmes.	Compliance Audit Reports submitted demonstrating implementation, compliance, and performance.	First report submitted 13 April 2006. Construction phase reports submitted. Annual operation phase reports submitted for two years, then as required by the DoE. Has been superseded by MS832.	Overall	First by 13 April 2006, then annually	CLD

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
655:M5-2	Compliance Audit and Performance Review	<p>The proponent shall submit a performance review report every five years after the start of operations, to the requirements of the Minister for the Environment on advice of the EPA, which addresses:</p> <ol style="list-style-type: none"> 1. The major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets. 2. The level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable. 3. Significant improvements gained in environmental management, including the use of external peer reviews. 4. Stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed. 5. The proposed environmental targets over the next five years, including improvements in technology and management processes 	Performance Review Reports submitted demonstrating environmental performance.	Performance Review Report every five years. Has been superseded by MS832.	Operation	Every five years after the start of operations	CLD
655:M6-1	Decommissioning Plans	<p>Prior to construction, the proponent shall prepare a Preliminary Decommissioning Plan, which provides the framework to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the EPA. The Preliminary Decommissioning Plan shall address:</p> <ol style="list-style-type: none"> 1. Rationale for the siting and design of plant and infrastructure as relevant to environmental protection, and conceptual plans for the removal or, if appropriate, retention of plant and infrastructure. 2. A conceptual rehabilitation plan for all disturbed areas and a description of a process to agree on the end land use(s) with all stakeholders. 3. A conceptual plan for a care and maintenance phase. 4. Management of noxious materials to avoid the creation of contaminated areas. 	Preliminary Decommissioning Plan submitted.	Preliminary Decommissioning Plan provided. DEC letter (ref. DEC ref. A475025) dated 19 April 2005 states M6-1 as complete.	Design	Prior to construction	CLD
655:M6-2	Decommissioning Plans	<p>At least 12 months prior to the anticipated date of decommissioning, or at a time agreed with the EPA, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirement of the Minister for the Environment on advice of the EPA. The Final Decommissioning Plan shall address:</p> <ol style="list-style-type: none"> 1. Removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders. 2. Rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s). 3. Identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities. 	Final Decommissioning Plan prepared.	Not required until decommissioning determined	Operation	At least twelve months prior to the anticipated date of decommissioning or at a time agreed with the EPA	NR
655:M6-3	Decommissioning Plans	The proponent shall implement the Final Decommissioning Plan required by condition 6-2 until such time as the Minister for the Environment determines, on advice of the EPA, that	Closure reporting	Not required until decommissioning commences	Decommissioning	As closure of PSDP commences	NR

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
		the proponent's decommissioning responsibilities have been fulfilled.					
655:M6-4	Decommissioning Plans	The proponent shall make the Final Decommissioning Plan required by condition 6-2 publicly available, to the requirements of the Minister for the Environment on advice of the EPA.	A request sent to DWER to include it in the EPA weekly advertisement in the main daily newspaper. Provide free copies to organisations nominated by EPA (the DoE library, Battye Library, LGA libraries, LGAs bordering Cockburn Sound). Make the document available on the proponent's website.	Not required until Final Decommissioning Plan has been approved	Operation	When the Final Decommissioning Plan has been approved	NR
655:M7-1	Management Plans and Monitoring Reports	Prior to finalisation of the management plans referred to in commitments 1, 2, 3, 4, 6, 7 and 12, the proponent shall make each draft management plan available for public comment and provide evidence to the Department of Environment that any matters arising have been addressed to the requirements of the Minister for the Environment on advice of the EPA.	Management Plans submitted to DoE after public comments have been considered annotating how any matters arising from the public or advisory agency have been addressed.	All Management Plan drafts made available for public comments and matters addressed appropriately. Final Management Plans submitted and approved by DoE.	Overall	Prior to finalisation of management plans	CLD
655:M7-2	Management Plans and Monitoring Reports	The proponent shall make the monitoring reports publicly available to the requirements of the Minister for the Environment on advice of the EPA.	Monitoring reports submitted. Reports available on proponent website.	Final copies of all monitoring reports have been submitted to DoE (now DWER). Reports available from proponent upon request.	Overall	Ongoing	C
655:N1	Procedures	Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environment and Conservation for the preparation of written notice to the proponent.	NA	NA	NA	NA	NA
655:N2	Procedures	The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environment.	NA	NA	NA	NA	NA
655:N3	Procedures	Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environment.	NA	NA	NA	NA	NA
655:N	Notes	The Minister for Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.	NA	NA	NA	NA	NA
655:P1	Consultative Environmental Management Plan (CEMP)	Prepare a Consultative Environmental Management Plan which will include the following: <ul style="list-style-type: none"> - Water Quality Management Plan (see commitment 2) - Flora and Fauna Management Plan (see commitment 3) - Greenhouse Gas Management Plan (see commitment 4) - Noise Management Plan (see commitment 6) - Hazardous Materials Management Plan (see commitment 7) - Cooling Water Monitoring Programme (see commitment 2) 	Consultative Environmental Management Plan submitted.	The CEMP was submitted in August 2005. The Flora and Fauna MP, Greenhouse Gas MP, Noise MP, and Hazardous Materials MP were included in the CEMP. The Water Quality MP was prepared prior to construction and has since been revised as part of a Section 46 amendment. The Cooling Water MP is not required as Kwinana Power Station cooling water is not used. See other referenced commitments.	Design	Within four months following a decision to construct	CLD

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
655:P2.1	Water Quality Management Plan	<p>Prepare a Water Quality Management Plan which will include the following:</p> <ul style="list-style-type: none"> - Procedures to mitigate potential impacts of construction of the discharge pipeline and intake. - A monitoring program for TDS (salinity), temperature and DO (dissolved oxygen) of water surrounding the discharge site, a nearby reference site, and a site in the deeper waters of Cockburn Sound. - A monitoring programme to ensure that the diffuser is performing to specifications and achieving the required level of dilution. - Monitoring of sediment habitat pre- and post-commissioning. - A contingency plan that examines the risk of contamination and procedures to mitigate any unanticipated impacts. - Whole of effluent testing methodology and protocols. - A monitoring programme for Kwinana Power Station cooling water, if used as input water, will be conducted. Analysis will be of sufficient accuracy and precision to enable comparison with appropriate standards and criteria for Cockburn Sound. - An annual inspection programme to check the physical integrity of the outlet pipe and diffuser. 	Water Quality Management Plan submitted.	<p>The Water Quality MP was prepared and approved prior construction.</p> <p>The Water Quality MP was submitted to the OEPA with a cover letter dated 11 March 2009.</p> <p>Note: Kwinana Power Station cooling water is not used.</p>	Design	Within four months following a decision to construct	CLD
655:P2.2	Water Quality Management Plan	Implement the Water Quality Management Plan.	Compliance Assessment Reports (refer to M832:M5-6, previously Compliance Audit and Performance Review Reports under M655:M5-1) demonstrating implementation submitted by 1 September each year.	In correspondence dated 13 April 2012 (DEC ref. A493843) the Corporation provided evidence of implementation. Only annual subsea infrastructure inspections are still required under the WQMP. Information provided in this CAR.	Overall	Ongoing	C
655:P3.1	Flora and Fauna Management Plan	<p>Prepare a Flora and Fauna Management Plan which will include the following:</p> <ul style="list-style-type: none"> - Locating the plant and pipelines to minimise clearing and effects on conservation values. - Mitigating impacts on Priority Flora. - Dieback management measures. - Weed control measures. 	Flora and Fauna Management Plan submitted.	DEC letter dated 7 April 2005 states commitment complete (DEC ref. A475023).	Design	Within four months following a decision to construct	CLD
655:P3.2	Flora and Fauna Management Plan	Implement the Flora and Fauna Management Plan.	Compliance Assessment Reports (refer to M832:M5-6 previously Compliance Audit and Performance Review Reports under M655:M5-1) demonstrating implementation submitted by 1 September each year.	<p>A figure showing the rehabilitated area was supplied to DEC in September 2006.</p> <p>CAR and Flora and Fauna monitoring reports.</p> <p>Letter received from OEPA dated 10 October 2013 stating rehabilitation required under this commitment have been completed and further words and reporting can cease.</p>	Overall	Ongoing	CLD
655:P4.1	Greenhouse Gas Management Plan	<p>Prepare a Greenhouse Gas Management Plan which will include:</p> <ul style="list-style-type: none"> - Use of sources of renewable energy as far as is practicable. - Calculation of the greenhouse gas emissions associated with the proposal, as indicated in 'Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors, No 12' published by the Environmental Protection Authority. - Specific measures to minimise the greenhouse gas emissions associated with the proposal. 	Greenhouse Gas Management Plan submitted.	<p>The plan was made available for public comment prior to approval and subsequent clearance, which was received in a letter from DEC (DEC ref. A4752757), dated 5 September 2006.</p> <p>Letter from DEC dated 5 September 2006 (DEC ref. A4752757) stated that the GHG Management Plan was accepted.</p>	Design	Within four months following a decision to construct	CLD

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
		<ul style="list-style-type: none"> - Monitoring of greenhouse gas emissions. - Estimation of the greenhouse gas efficiency of the proposal in comparison with the efficiencies of other comparable projects producing a similar product. - An analysis of the extent to which the proposal meets the requirements of the National Strategy using a combination of: "no regrets" measures, "beyond no regrets" measures, land use change or forestry offsets, and international flexibility mechanisms 					
655:P4.2	Greenhouse Gas Management Plan	Implement the Greenhouse Gas Management Plan.	Compliance Assessment Reports (refer to M832:M5-6 previously Compliance Audit and Performance Review Reports under M655:M5-1) demonstrating implementation submitted by 1 September each year.	CAR and other reports. If using power electricity from non-renewables aside from gas-fired, Water Corporation must purchase equivalent carbon credits to offset the difference in emission factor of that electricity compared with a typical gas-fired turbine. Emission factor for SWIS is 0.53 kg CO ₂ -e/kWh, less than typical gas-fired turbine of 0.63 kg CO ₂ -e/kWh. No carbon credits required for 2023-2024.	Operation	Ongoing	C
655:P5	Greenhouse Gases	The proponent will take all reasonable and practicable steps to obtain an electricity contract for the plant which will specify that the electricity will be sourced from gas-fired generating units at least 95% of the time.	A copy of electricity contract or sufficient evidence that reasonable attempts have been made to obtain one submitted.	CAR and other reports. No gas-fired electricity supply options have been identified during the reporting period.	Operation	Ongoing	C
655:P6.1	Noise Management Plan	Prepare a Noise Management Plan which includes detailed modelling of noise emissions and cumulative effect of emissions.	Noise Management Plan submitted.	The plan was available for public comment prior to approval and clearance, which was received in a letter from DEC dated 7 March 2006. Letter from DEC dated 7 March 2006 stated that the Noise Management Plan was accepted, and the commitment met.	Design	Within four months following a decision to construct	CLD
655:P6.2	Noise Management Plan	Implement the Noise Management Plan.	Noise survey results submitted.	CAR and other reports. Noise boundary survey last completed in September 2019. Next survey due September 2024 (5 yearly).	Overall	Ongoing	C
655:P7.1	Hazardous Materials Management Plan	Prepare a Hazardous Materials Management Plan.	Hazardous Materials Management Plan submitted.	The HM Management Plan was submitted to and approved by the DER as part of the CEMP. The HM Management Plan was approved and managed under requirements of the site's Dangerous Goods licence. Refer to the letter from DEC dated 5 September 2006 (DEC ref. A475257).	Design	Within four months following a decision to construct	CLD
655:P7.2	Hazardous Materials Management Plan	Implement the Hazardous Materials Management Plan.	Copy of Dangerous Good Licence submitted.	CAR and other reports. Managed under the requirements of the dangerous goods licence. Current licence was attached as appendix to the 2021-2022 CAR.	Overall	Ongoing	C
655:P8	Ocean outlet for seawater return	Design the ocean outlet diffuser system and locate it to ensure the discharge complies with the requirements of the <i>Revised Draft Cockburn Sound Environmental Protection Policy 2002</i> and the <i>Revised Environmental Quality Criteria Reference Document (Cockburn Sound)</i> . The design is to be	Outlet design and certification submitted.	The ocean outlet diffuser system was certified by expert to meet discharge requirements under EQC. Report showing compliance was submitted to the DEC on the 27 February 2006.	Design	Prior to construction	CLD

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
		certified by an expert as soon as the optimised design of the diffuser is available.		DEC letter dated 16 January 2009 acknowledges completion of commitment.			
655:P9	Seawater return	Obtain an expert assessment of the likely stratification build up and any subsequent dissolved oxygen effects in the deeper area of Cockburn Sound.	Expert assessment report submitted.	Expert assessment carried out and findings submitted. DEC Letter dated 16 January 2009 acknowledges completion of commitment.	Design	Within three months following approval	CLD
655:P10.1	Whole Effluent Toxicity (WET) testing	Conduct WET testing of the high salinity seawater discharge including added chemicals (anti-scalants and biocides) as soon as the chemicals to be used and their likely dosing rates are known to a reasonable level of certainty. Conduct the testing following the principles contained in the USEPA, APHA and ASTM protocols at a NATA accredited laboratory in accordance with the protocols set out in ANZECC/ARMCANZ (2000) whole effluent toxicity protocols, at various concentration levels as stated in the Water Quality Management Plan.	Expert report submitted.	Letter dated 31 March 2008 containing CSIRO review of WET reporting. DEC letter dated 9 May 2008 confirms requirements met.	Design	Prior to construction	CLD
655:P10.2	Whole Effluent Toxicity (WET) testing	Report the results of WET testing as described in commitment 10.1.	As above.	As above.	Design	Prior to construction	CLD
655:P10.3	Whole Effluent Toxicity (WET) testing	Conduct WET testing of the high salinity seawater discharge 12 months after commissioning.	As above.	As above.	Operation	12 months after commissioning	CLD
655:P10.4	Whole Effluent Toxicity (WET) testing	Report the results of WET testing as described in commitment 10.3.	As above.	As above.	Operation	12 months after commissioning	CLD
655:P11.1	Vegetation, Declared Rare and Priority Flora and Fauna Habitat	Conduct a survey of product pipeline routes to determine final alignments to avoid areas identified by CALM or DoE	Survey Report submitted.	Survey findings DEC letter dated 7 April 2005 states commitment met.	Design	Spring season and prior to ground-disturbing activities	CLD
655:P11.2	Vegetation, Declared Rare and Priority Flora and Fauna Habitat	Conduct detailed surveys for Rare and Priority Flora, to contribute to the Flora and Fauna Management Plan	Rare flora and Priority Flora and Fauna Survey Report submitted.	Rare flora and Priority Flora and Fauna Survey findings. DEC letter dated 7 April 2005 states commitment met.	Design	Spring season and prior to ground-disturbing activities	CLD
655:P12	Nitrogen loading to Cockburn Sound	Prepare a management plan to ensure that the upgraded desalination plant is nitrogen-neutral relative to the 30 GL/a desalination plant. The management plan will be developed in consultation with the Cockburn Sound Management Council, the Town of Kwinana, and the City of Rockingham, and will be submitted to the EPA for consideration.	Nitrogen Management Plan submitted.	Nitrogen Management plan - Nitrogen loading to Cockburn Sound . DEC letter dated 5 September 2006 states commitment met.	Construction	Prior to operation	CLD
655:P13	Nitrogen loading to Cockburn Sound	Nitrogen-free alternatives will be used for process chemicals where appropriate and practicable.	Compliance Assessment Reports (refer to M832:M5-6 previously Compliance Audit and Performance Review Reports under M655:M5-1) demonstrating compliance submitted by 1 September each year. Nitrogen Management Plan submitted.	CAR. Coagulant aid is the only chemical regularly used which contains a notable nitrogen concentration. Most of the nitrogen binds to solids and is disposed with other solid waste. Use of coagulant aid is minimised by the control system which automatically adjusts the dose rate based on incoming water quality. This ensures the use of the chemical is minimised in real-time.	Operation	Ongoing	C

Table 4 MS832 Condition audit table 2023-2024

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
832:M5-1	Compliance Reporting	The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the Chief Executive Officer (CEO) of the Office of the Environmental Protection Authority.	Compliance Assessment Plan submitted.	Compliance Assessment Plan submitted Dec 2010. Revised CAP submitted to OEPA March 2015. Approved by the OEPA 21 September 2015 (OEPA Ref 2015-0001106379).	Overall	Ongoing	C
832:M5-2	Compliance Reporting	The proponent shall submit to the CEO of the Office of the Environmental Protection Authority, the compliance assessment plan required by condition 5-1 at least six months prior to the first compliance assessment report required by condition 5-6. The compliance assessment plan shall indicate: <ol style="list-style-type: none"> 1. the frequency of compliance reporting 2. the approach and timing of compliance assessments 3. the retention of compliance assessments 4. reporting of potential non-compliances and corrective actions taken 5. the table of contents of compliance assessment reports 6. public availability of compliance assessment reports 	Compliance Assessment Plan submitted.	Compliance Assessment Plan submitted Dec 2010. Revised CAP submitted to OEPA March 2015. Approved by the OEPA 21 September 2015 (OEPA Ref 2015-0001106379).	Design	Six months prior to the first compliance assessment report required by condition 5-6	CLD
832:M5-3	Compliance Reporting	The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 5-1.	Compliance Assessment Reports (refer to M832:M5-6) demonstrating compliance submitted by 1 September each year.	This CAR.	Overall	Ongoing	C
832:M5-4	Compliance Reporting	The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 5-1 and shall make those reports available when requested by the CEO of the Office of the Environmental Protection Authority.	Retaining all Compliance Assessment Reports in proponent's Record Management System.	All CAR and other reports are retained in Water Corporation's Record Management System, Nexus.	Overall	Ongoing	C
832:M5-5	Compliance Reporting	The proponent shall advise the CEO of the Office of the Environmental Protection Authority of any potential non-compliance as soon as practicable.	Written correspondence to CEO of OEPA.	None this reporting period.	Overall	As soon as practicable	C
832:M5-6	Compliance Reporting	The proponent shall submit a compliance assessment report annually from the date of issue of this Implementation Statement addressing the previous twelve- month period or other period as agreed by the CEO of the Office of the Environmental Protection Authority. The compliance assessment report shall: <ol style="list-style-type: none"> 1. be endorsed by the proponent's Managing Director or a person, approved in writing by the CEO of the Office of the Environmental Protection Authority, delegated to sign on the Managing Director's behalf 2. include a statement as to whether the proponent has complied with the conditions 3. identify all potential non-compliances and describe corrective and preventative actions taken 4. be made publicly available in accordance with the approved compliance assessment plan 5. indicate any proposed changes to the compliance assessment plan required by condition 5-1. 	Compliance Assessment Reports (refer to M832:M5-6) demonstrating compliance submitted by 1 September each year.	This CAR. Approval received 28 Oct 2014 from OEPA to amend reporting period to financial year 1 July to 30 June, and CAR due date to 1 September each year.	Overall	1 September each year	C

Audit code	Subject	Requirement	How	Evidence	Phase	When	Status
832:M8-1	Marine Water Quality	<p>To protect the water quality of Cockburn Sound in accordance with the State Environmental (Cockburn Sound) Policy 2005 (SEP) the proponent shall operate the Perth Metropolitan Desalination Plant so that increases in the intensity and/or duration of density stratification do not cause declines in dissolved oxygen of bottom waters, defined as less than or equal to 0.5 metres above the seabed, to 60% saturation (24 hour running median) or less in the high and/or moderate protection areas of Cockburn Sound as defined by the SEP. This will be achieved by the proponent:</p> <ol style="list-style-type: none"> 1. Developing and implementing a monitoring plan to the satisfaction of the CEO of the Office of the Environmental Protection Authority. Monitoring will include dissolved oxygen levels of the bottom waters (as defined above) and other parameters relating to dissolved oxygen levels in Cockburn Sound. The monitoring plan will also consider the parameters necessary to define the spatial extent, characteristics, and persistence of the Plant plume; and 2. Undertaking a management response to the satisfaction of the CEO of Office of the Environmental Protection Authority if the monitoring required by condition 8-1-1 detects declines in dissolved oxygen of bottom waters, defined as less than or equal to 0.5 metres above the seabed, to 60% saturation (24 hour running median) or less in the high and/or moderate protection areas of Cockburn Sound. 	Marine Monitoring and Management Plan submitted.	<p>Marine Monitoring and Management Plan (MMMP) signed by the OEPA on 28 February 2011.</p> <p>PSDP Marine Operational Monitoring Procedure endorsed by the OEPA on 6 June 2012.</p> <p>Report on MMMP results submitted to the OEPA 15 August 2013.</p> <p>Letter received from OEPA dated 1 April 2014 stating monitoring required under this condition can cease.</p> <p>Revert to monitoring required under MS655 Schedule 2 Commitment 2-2.</p>	Overall	Operation	CLD
832:M8-2	Marine Water Quality	To provide a basis for the Minister for Environment and the Minister for Water to review the requirement for further monitoring and management, the proponent shall implement the monitoring plan required by condition 8-1-1 for a continuous period extending over at least two autumn periods	Marine Monitoring and Management Plan Report submitted.	<p>Monitoring plan successfully implemented.</p> <p>Summary report submitted and advice received from OEPA that monitoring can cease (Letter dated 1 April 2014).</p>	Overall	Over at least two autumn periods	CLD

1.2 Revisions to previous issue

Updated emission factors

The emission factors reported in this publication replace those listed in the 2022 NGA Factors Workbook and include key changes to the scope 2 and scope 3 electricity emission factors and methods.

Scope 2 and 3 electricity

The 2023 update to the scope 2 emission factors are available in Table 1 and further details are provided in **Appendix 4 Methodology for calculating electricity emission factors**. This update includes the scope 2 market-based method consistent with the NGER Measurement Determination Amendments for 2023-24 reporting year. This document also includes a scope 3 residual mix factor.

The method for estimation of the North-West Interconnected System (NWIS) scope 2 and 3 emission factors has been updated to be in line with those published within the NGER Measurement Determination.

Waste

Scope 3 volume to mass conversion factors for total waste disposed to landfill in Table 15 have been updated with a weighted average approach to better reflect the mix of individual waste types.

Liquid Fuels

There has been the addition of two liquid fuels: renewable diesel and renewable aviation kerosene.

2 Energy

Emissions in the Energy sector (IPCC Sector 1) arise from fuel combustion, fugitive emissions, and carbon dioxide transport and storage. Fuel combustion includes:

- Electricity - Emissions from the combustion of fuels to generate electricity.
- Stationary energy - Emissions from the combustion of fuels to generate steam, heat or pressure, other than for electricity generation and transport.
- Transport - Emissions from the combustion of fuels for transportation within Australia.

Fugitive emissions are emissions released during the extraction, processing and delivery of fossil fuels. Carbon dioxide transport and storage emissions are any leakage or venting of carbon dioxide during the transport, injection and geological storage of carbon dioxide associated with carbon capture and storage activities.

2.1 Greenhouse gas emissions from energy

The principal greenhouse gas generated by the combustion of fossil fuels for energy is carbon dioxide (CO₂). The quantity of gas produced depends on the carbon content of the fuel and the degree to which the fuel is fully combusted. Additionally, small quantities of methane (CH₄) and nitrous oxide (N₂O) are also produced, depending on the actual combustion conditions. For example, CH₄ may be generated when fuel is only partially combusted. Similarly, N₂O results from the reaction between nitrogen and oxygen in the combustion air.

2.2 Estimating emissions from stationary energy sources

Electricity

Scope 2 emissions are physically produced by the burning of fuels (coal, natural gas, etc.) at the power station to create electricity. Emissions from upstream (e.g. coal transport) and downstream (e.g. transmission and distribution losses) in the electricity supply chain are captured in scope 3 emissions.

For electricity, the scope 3 emission factor depends on the amount of electricity lost throughout the grid network. These losses depend on:

- the distance of the generator from customers - more power is lost the further it travels;
- the voltage and resistance of the transmission lines - the “quality” of the line; how much power is flowing through the line - a more heavily loaded line means more heat and more losses.

There are two methods for estimating electricity emissions – the location-based method and the market-based method. Reporting electricity emissions under both methods provides different perspectives of the emissions associated with a company’s electricity usage.

The **location-based method** shows a company’s electricity emissions in the context of its location. It calculates the emissions from a company’s electricity consumption, reflecting the emissions intensity of electricity generation within the state or territory where it operates.

The location-based scope 2 emission factors are state-based emission factors from on-grid electricity generation, calculated from the physical characteristics of the electricity grid. The emission factors are calculated each financial year based on electricity generation within each state and territory and take into account interstate electricity flows, where they exist, and the emissions attributable to those flows. The state-based emission factor calculates an average emission factor for all electricity consumed from the grid in a given state, territory or electricity grid.



Table 1 Indirect (scope 2 and scope 3) emission factors from consumption of purchased or acquired electricity: Location based approach

State, Territory or grid description	Scope 2 Emission Factors (kg CO ₂ -e/kWh)	Scope 2 Emission Factors (kg CO ₂ -e/GJ)	Scope 3 Emission Factors (kg CO ₂ -e/kWh)	Scope 3 Emission Factors (kg CO ₂ -e/GJ)
New South Wales and Australian Capital Territory	0.68	188	0.05	15
Victoria	0.79	220	0.07	18
Queensland	0.73	204	0.15	42
South Australia	0.25	71	0.08	21
Western Australia - South West Interconnected System (SWIS)	0.53	147	0.04	11