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Adam Wilson
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Dear Adam

The EPA welcomes the opportunity to make a formal submission towards SA Waters Regulatory Determination 2024. As the leading environmental regulator in SA, many of SA Water's operations are of interest to the EPA.

The attached advice is provided in response to ESCOSA's request for formal submissions via the Regulators Working Group. The level of communication through this group has helped the EPA and the other regulators to provide robust and effective input to ESCOSA process. The EPA has focused its submission on an assessment of whether SA Water will meet its regulatory obligations and the EPA's expected environmental outcomes.

For further information on this matter, please contact Shaun Thomas, Principal Adviser Compliance on [redacted] or [redacted].

Yours sincerely

TANIA KILEY

A/DIRECTOR OPERATIONS

ENVIRONMENT PROTECTION AUTHORITY

Date: 3 October 2023

SA Water Regulatory Business Plan Proposal 2024-2028: Formal submission from the EPA

The EPA (Environment Protection Authority) is pleased to provide a submission in response to the SA Water Regulatory Business Proposal (RBP) for the 2024-28 period. Working with other regulators throughout SA Water's drafting of the proposal has provided a high level of engagement and opportunity to ensure the plan meets the EPA's requirements, as well as understanding how it addresses those from other regulators.

Although the EPA regulates SA Water through Environmental Authorisations in the form of a licence, SA Water is required to comply with other provisions of the *Environment Protection Act 1993* (the EP Act) and Environment Protection Policies (EPPs). For more information on the EPA and our role in regulation and compliance please visit:
https://www.epa.sa.gov.au/our_work/compliance_and_enforcement

This submission addresses engagement with the EPA through the regulatory business proposal process, Environment Improvement Program (EIP) requirements for Wastewater Treatment Plants (WWTPs), overflows and managing odour from SA Water Networks and reuse of recycled water.

ENGAGEMENT WITH SA WATER FOR RBP 2024

The EPA has a high level of engagement with SA Water. This engagement has been consistent, collaborative, and involves a range of different interactions including:

- Regular meetings at the Operations Level, as well as Higher Level Meetings,
- Regulatory interactions (inspections and incident response),
- Briefings on specific issues, such as odour impacts and overflows from network and treatment plant sites,
- Briefings on proposed capital and operational expenditures to address environmental legislative requirements, and
- Ad hoc provision of advice and direction across a range of issues.

During development of RBP 2024, the EPA has communicated expectations for SA Water to meet its obligations under the Act and subordinate EPPs. This approach has built upon previous RBPs, which realised a number of successful environmental outcomes, required by the EPA. Particular examples are the Murray Bridge WWTP replacement at Brinkley and sludge handling and other upgrades at Pt Lincoln WWTP. The River Murray flood event in 2022/23 highlighted the benefit of implementing successful environmental upgrades, as the decommissioned Murray Bridge WWTP site was heavily impacted by the high-water levels.

During the development of RBP 2024, the EPA has communicated the required outcomes SA Water is expected to meet. This has been supported through the use of regulatory tools such as EIPs, conditions of licence and as well as encouragement to meet the overarching objects of the EP Act and general environmental duty. The EPA recognises the clear and frequent communication of ESCOSA and other regulators including DEW, SA Health and OTR to ensure positive outcomes through this RBP.

Consistent with the previous RBP 2020, the EPA has identified areas which it believes should continue to be addressed during this RBP. These are broadly included within RBP 2024, and are as follows:

- Network maintenance and improvements for managing odour, infiltration, and overflows.
- Wastewater re-use expansion.
- Metropolitan WWTP long term EIP planning science.
- Regional EIP implementation.

The key spend of concern for the EPA is focussed on the sewerage services component, which totals $390 million across the regulated period, with projected spending discussed with regard to EPA requirements.

WWTP PROPOSALS BY SA WATER

SA Water is proposing to spend $221.6 million capex and $4.6 million opex on a program of upgrading and improving WWTPs to meet compliance with the EP Act and EPA licence conditions for required EIPs.

The main items include:

- Upgrades to Port Augusta East, Millicent, and Finger Point WWTPs to meet EIP requirements
- Improvements in treatment processes at Bolivar WWTP
- Improvements in the environmental performance of a number of recycled and wastewater systems

The EPA supports these investments.

Metropolitan WWTPs

A key priority for the EPA is the investment proposed to address expectations under the Metropolitan WWTP EIPs. This area of investment will assist in meeting nutrient load targets to coastal waters and other outcomes required by the Adelaide Coastal Water Quality Improvement Plan (ACWQIP).

The ACWQIP was released by the EPA in 2013. The plan draws heavily from the accepted scientific findings of the Adelaide Coastal Waters Study completed in 2007. The study established that nitrogen and sediment inputs from discharges from WWTPs, Penrice Soda Products discharge to the Port River, stormwater and catchments were the main contributors to issues impacting on Adelaide's coastal water quality and seagrass health. The ACWQIP was developed in partnership with key stakeholders and the community with the strategies and actions presenting a path forward to achieve community agreed values for water quality improvements to Adelaide's coastal waters.

The ACWQIP identifies a nitrogen reduction to 600 tonnes per annum across metropolitan facilities that discharge to the marine environment. SA Water WWTPs at Glenelg, Christies Beach and Bolivar are major contributors to the discharge of nitrogen to the metropolitan marine environment. The ACWQIP states the targets for SA Water of 300 tonnes of nitrogen and 760 tonnes of suspended solids per annum across the metropolitan WWTPs are to be achieved by 2030, and these targets are reflected in the EPA required EIPs for the metropolitan WWTPs.

To require SA Water to achieve the targets of the ACWQIP, the EPA imposed EIPs on the licences for the major metropolitan WWTPs to reduce the volume of nitrogen and suspended solids being discharged to the Gulf. SA Water provided the EPA with EIPs in July 2017 outlining a timetable and actions to best meet the outcomes in the ACWQIP. The most recent version of the EIPs (version 5) were approved by the EPA in September 2023.

RBP 2024 reflects requirements of the EIPs and includes capital and operating expenditure related to the metropolitan WWTPs which are supported by the EPA. These include:

- Bolivar WWTP activated sludge capacity and network growth ($104.5 m)

- Glenelg WWTP network growth ($33 m)
- Research initiatives to inform the Metropolitan WWTP long term Environment Improvement Plans, including coastal modelling.

The research initiatives proposed are particularly critical to be undertaken within RBP 2024, as they will inform future requirements for the RBP 2028-32. SA Water has proposed to undertake a number of studies to inform work in the EIPs for the major metropolitan WWTPs to meet long term targets in the ACWQIP. The EPA understands that the focus of the research will cover:

- additional receiving environment modelling incorporating climate change impacts;
- monitoring of ecosystem trajectory (satellite, airborne and drone remote sensing);
- a seagrass restoration trial aiming to demonstrate the feasibility of assisted seagrass restoration;
- a suspended sediment mitigation trial which may include marine solutions and catchment related initiatives focussing on stormwater improvements;
- an investigation into the factors impacting suspended sediments within the Bolivar stabilisation lagoons.

In addition to the established EIPs on the metropolitan WWTP EPA licences, EPA and SA Water have recently commenced discussions to establish an Environment Performance Agreement. The purpose of the Environment Performance Agreement is to secure the outcomes of the ACWQIP, through investment in a range of initiatives to target improvement in suspended solids and seagrass recovery, in conjunction with the EIPs at Bolivar and Glenelg WWTP.

Regional WWTPs

Based on prioritisation risk assessments undertaken by the EPA, regional WWTPs requiring significant upgrades are identified as Millicent and Port Augusta East. These sites are required to implement EIPs as conditions of licence to reduce the harm to receiving environments. The EIPs approved by the EPA include a range of measures to address these requirements including minimising the discharge of treated effluent to the environment and improving wastewater treatment. Through the EIPs, SA Water have identified that significant upgrades are required to improve effluent quality.

SA Water has proposed $80 million in major investments towards these WWTPs in RBP 2024. The EPA supports the proposed line items to be addressed in RBP 2024 for priority sites including Millicent and Port Augusta . Further details on the upgrades for Millicent and Port Augusta East are outlined in Appendix A of this letter.

Other regional WWTPs that also have requirements to implement EIPs as conditions of licence to reduce harm to receiving environments, include Finger Point, Naracoorte and Whyalla. The focus of investment at these sites in RBP 2024 involves preliminary work to identify the preferred options to address EIP objectives. It is expected that on ground works to implement the preferred options will be delivered in the 2028-2032 and 2032-2036 Regulatory Business Periods.

Other regional WWTPs not currently subject to an EIP condition but with some upgrades to the site planned in RBP 2024 are Normanville and Port Pirie. The EPA supports the proposed line items to be addressed in the RBP 2024 - 2028 for these regional WWTPs.

NETWORK UPGRADES AND MAINTENANCE ACTIVITY

SA Water has 29 wastewater systems and 24 recycled water systems across the state, which are operated and maintained in accordance with applicable licence and approval conditions to either discharge effluent or store, use and supply recycled water. Feeding SA Water's wastewater facilities

is the associated sewer network and pumping infrastructure. Although this network and infrastructure is not directly licensed by the EPA, there are obligations under the EP Act including the general environmental duty, as well as under subordinate EPPs (i.e. Environment Protection (Water Quality) Policy 2015 ("the Policy")) to manage the sewerage network and ensure overflows are minimised. In meeting the requirements of the Code of Practice for Wastewater Overflows, which is specified within the Policy, SA Water is required to maintain and deliver an overflow abatement plan.

SA Water's wastewater network assets are, on average, in the mid to upper end of their expected useful life. As described in the RBP 2024, the majority (approximately 60 per cent) of wastewater pipe assets are older than 45 years old, with most between 40 and 70 years old. Over 50% of the length of the pipe network being made up of ceramic pipe, which is more prone to tree intrusion and blockages. Due to the age and nature of water and wastewater infrastructure, incidents can, and will, occur from time to time. A Water/Wastewater Incident Notification and Communication Protocol (the Protocol) has been established and maintained by a number of agencies, including SA Water, the EPA and the Department for Health and Ageing. The Protocol was developed to improve communications between government agencies and to ensure a coordinated response to potentially serious water and wastewater incidents.

The EPA has identified that SA Water's wastewater network as a key area of concern as it is an ongoing source of sewage overflows, discharge, and spills to the environment, as well as odour. The RBP 2024 in general looks to sustain services and enable growth, a departure from RBP 2020 whereby improving services was a stronger focus. This change of focus is not a concern, as improvements in the current RPB have been achieved, and additional improvements are already underway. The impending focus on sustaining services and enabling growth is supported by the EPA as key risks from failure to provide the necessary infrastructure to support growth are increased environmental impacts from overflows to the environment and increased odour complaints. Indeed, this focus demonstrates commitment to Section 25 of the EP Act and the WQ EPP.

The EPA supports the projected capital and operational expenditure for RBP 2024 associated the wastewater asset classes identified below:

Sustain Services

- Wastewater mains and ancillaries' renewals
- Recycled water mains renewals
- Wastewater and recycled water treatment plant reliability
- Wastewater and recycled water pump station reliability
- Adelaide wastewater trunk main renewal
- Wastewater inflow and infiltration management
- Wastewater pump station improve performance
- Finger Point sludge management

Improve Services

- Improve environmental performance of wastewater and recycled water systems
- Wastewater network odour management

Enable Growth

- Bolivar activated sludge reactors capacity upgrade
- Bolivar wastewater network growth
- Wastewater and recycled water treatment plants support growth
- Glenelg wastewater network growth
- Growth of the wastewater and recycled water networks

The proposed expenditure demonstrates that SA Water has considered how it can meet the following:

- The Waste Management Hierarchy
- Section 25 of the EP Act (general environmental duty)
- The Environment Protection (Water Quality) Policy 2015
- Conditions of licence (where they apply, including any EIP requirements)
- Addressing ongoing odour requirements associated with networks and pump stations.

Addressing Network Faults and Overflows

In RBP 2020, SA Water undertook a body of work to ensure that hotspot areas in the network were captured in the wastewater overflows capital works proposals. Provision of backup power generation, increased capacity of pump stations, network modelling, use of smart networks/integrated operations are being implemented to reduce the number of incidents, the scale of impacts and improve responsiveness to incidents. RPB 2024s focus has shifted to maintenance of the improved systems and enabling growth including capital and operating expenditure related to network maintenance to manage network risks.

SA Water have proposed minor amendments to the response service standards for Regional and Metropolitan Areas. Most service standards are the same as previous years and supported by the EPA. In this RBP SA Water have provided the following variation in regard to service standards:

- Regional response measures
    - Long travel time to remote locations
- Overflow clean-up
    - Customer requested delays
    - Safety risks (based on overflow locations and times of occurrence
    - Access issues (i.e., locked gates)

The EPA does not have concerns with this reasoning and considers that the proposed service standards are acceptable. Where there are instances where the response time is not met due to the above reasons, then this should be included in any reporting back on the levels of service achieved.

Major Maintenance

SA Water has proposed spending an additional $1.2 million per year ($4.7 million over the RBP 2024 period) to the base year on major maintenance activities which includes submersible wastewater pumps, water high voltage motor and heat exchanger, and water pumps in major pipelines and high voltage pump stations. This investment is to minimise failure frequency and duration of water and wastewater interruptions. The reasons given by SA Water for the incremental increase to the base year spend is to improve operational performance, meet service standards, meet environmental legislative requirements, reduce maintenance costs and downtime, and maximise asset life. The EPA supports this as it indicates SA Water's commitment to its general environmental duty.

Addressing Network Infiltration

The aging wastewater infrastructure is also affected by infiltration by groundwater and stormwater. The EPA is aware the infiltration into the network perturbs the operation of the whole wastewater treatment system in a number of ways:

- Increased chance of overflows
- Increased discharges to the environment, which often occurs during wet conditions, at a time when potential reuse is at a minimum
- Hydraulic loading reducing treatment efficiency, whilst dilution is achieved, nutrient and sediment loads are not reduced, and may increase
- Saline intrusion limiting the capacity for reuse of treated effluent

There is a proposed spend of $5.3 million to address this issue. The EPA supports an increase to this budget line, due to the potential outcomes for water quality improvements, increased reuse and reduced incidents and efficiencies that could be gained.

Addressing Odour from the Network

The nature of an open sewer network with aging infrastructure means that there are a number of clusters within the network where odour complaints are particularly prevalent, and without constant management the issue will only increase in intensity and scale. As the principle environmental regulator in SA, the EPA plays a lead role in regulation of odour. Odour complaints occur when individuals consider the odour to be unacceptable and are sufficiently annoyed by it to take action. As well as an individual's sensitivity, there are five factors that influence odour complaints:

- Frequency of occurrence
- Intensity
- Duration of exposure
- Offensiveness
- Location of the odour

The offensiveness of an odour is very subjective and relates closely to an odour's hedonic tone, that is the degree to which an odour is perceived as pleasant or unpleasant. Such perceptions differ widely from person to person and are strongly influenced by previous experience and by emotions at the time of odour perception. Understandably, sewage network odour is considered particularly offensive by the community. SA Water is accountable under the EP Act to take all reasonable and practicable actions to identify and mitigate key odour sources from its wastewater infrastructure.

In RBP 2020 SA Water invested around $20 million to improve the management of odour from its wastewater network infrastructure. This investment was successful on making a number of step change improvements to reducing odour emissions from hotspot locations and met the EPAs expectations for reasonable and practicable interventions. The EPA understands that SA Water is proposing to spend $21.5 million on network management for addressing odour, as well as $0.5 million in operational costs. The EPA supports the proposed odour management operation and capital program for wastewater networks within RBP 2024 as an approach that begins to address the worst odour cluster locations, as well as wider network odour issues.

WASTEWATER RE-USE EXPANSION

The EPA advocates productive, beneficial, and sustainable use of recycled wastewater from a WWTP to reduce the State's reliance on traditional water supplies. In a changing climate water security is an increasingly important consideration and climate independent sources are key to providing reliable water supply to cope with reductions in water sources, and to provide for increasing demands. SA Water have investigated Adelaide's future water supply and demand balance and identified a resource gap beginning to emerge in 2032, growing into a larger supply deficit of up to 51 gigalitres a year by 2050.

The use of recycled wastewater can assist to avoid discharge to surface and ground waters and provides an environmental and economic benefit if undertaken sustainably. The EPA's advocacy for reuse is supported by and drawn from the waste management hierarchy which is outlined in the EP Act and EPPs. Recycled wastewater use is a very significant component of the waste management hierarchy; it can supply water demand for many purposes often without the need for complex treatment performance.

It is the EPA's preference that treated wastewater be reused as it can offer recreational, social, and economic benefits. In addition, recycled wastewater use is likely to be greatest in dry months (i.e. when traditional water supplies are diminished). During wet months, there is less water supply demand and there is the potential for stormwater ingress into the wastewater network. For these

reasons, one of the greatest limitations to increasing wastewater reuse is the lack of adequate treated wastewater storage during wet months.

In RBP 2024, SA Water is proposing a purified recycled water (PRW) pilot plant to supply potable water with a total capital expenditure of $4.7 million and total operating expenditure of $6.4 million over the RBP 2024 period. The EPA supports the trial as it demonstrates a reuse pathway for treated wastewater, is in line with the waste management hierarchy and is exploring a new climate independent drinking water source . Allied benefits will be the expansion of the Glenelg to Adelaide Pipeline (GAP) recycled water pipeline to supply the pilot plant which will allow for expanded use of recycled water.

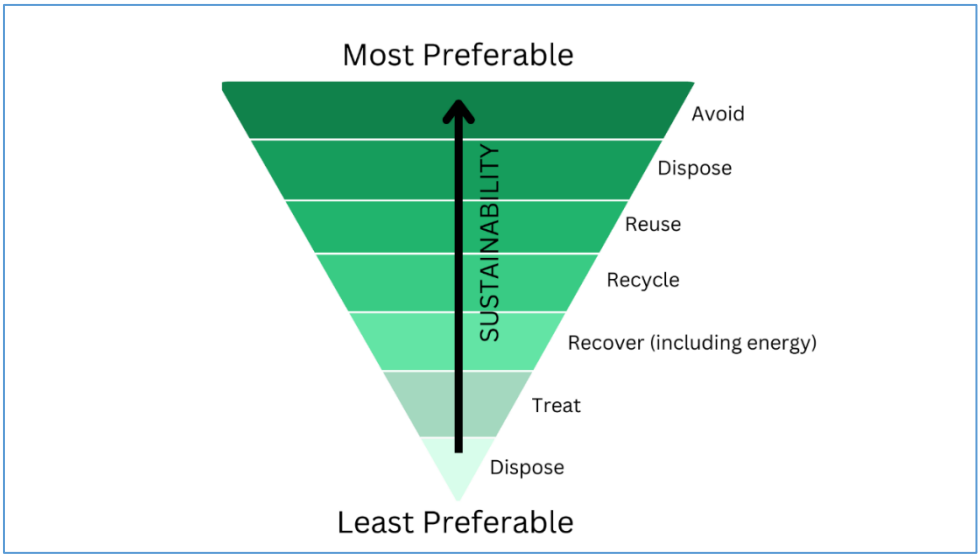

Figure 1: The waste management hierarchy.

EMERGING CONTAMINANTS IN BIOSOLIDS - PFAS

Per- and polyfluoroalkyl substances (PFAS) are manufactured chemicals that do not occur naturally. Perfluorooctane sulfonate (PFOS), perfluorohexane sulfonate (PFHxS) and perfluorooctanoic acid (PFOA) are specific types of PFAS that have been used, since the 1950s, in a range of products including firefighting foams, pesticides, carpets, clothing and paper. There are thousands of chemicals that can be classed as PFAS, and a large number are still used in products and articles.

PFAS are a contaminant of concern for environmental regulators worldwide. In Australia, guidance on PFAS is provided through the PFAS National Environment Management Plan (NEMP) that has been developed by the National Chemicals Working Group of the Heads of EPAs Australia and New Zealand, at the request of all Australian environment ministers. It provides governments with a consistent, practical, risk-based framework for the environmental regulation of PFAS-contaminated materials and sites.

The PFAS NEMP is designed to be an adaptive plan, able to respond to emerging research and knowledge while allowing for the implementation of actions. The latest version, PFAS NEMP v3.0 was released for public consultation for four months in late 2022, early 2023. The draft PFAS NEMP 3.0 included updated guidance on managing PFAS in wastewater treatments systems and proposed some criteria for biosolids and soils to be protective of their ongoing beneficial re-use. Whilst this work has not been completed, when finalised it will be used to inform the regulation of biosolids in South

Australia. The EPA will continue to engage with SA Water on the potential risks from PFAS in its wastewater treatment systems.

ADDITIONAL ITEMS

Eyre Peninsula Desalination Plant - Billy Lights Point

SA Water is proposing to construct a seawater desalination plant at Billy Lights Point on the Eyre Peninsula to supplement supplies from the Uley South Basin which is reaching its sustainable limit.

The plant will initially produce 5.3 gigalitres per annum with marine works constructed to enable production of up to 8 gigalitres per annum when required. Ancillary works will include construction of 7.4 kilometres of pipeline infrastructure to connect into the existing water network and 4 kilometres of electricity infrastructure. Proposed total capital expenditure of $238.0 million and operating expenditure of $35.9 million to fund activities including construction, commissioning, and operation and to undertake ongoing marine monitoring during RBP 2024.

The new infrastructure will require authorisation in the form of a licence under the EP Act and will be required to meet a range of environmental outcomes, which would be a significant component of the cost to develop and operate this infrastructure. The requirements for design and construction will be assessed by the EPA through the Development Application, and operating conditions will be imposed through the EPA licensing process.. Given the sensitive location for the proposed plant, there will be stringent requirements for minimising impacts from construction and operations, including habitat monitoring to inform design and operational monitoring to validate assumptions and confirm environmental outcomes. Best practice community engagement will also be encouraged by the EPA.

Climate Change Amendment

The Government has recently amended the EP Act to more explicitly include Climate Change in the objects of the Act. The amendments to the objects of the EP Act have clarified the existing role of the EPA and its application towards climate change to ensure that all stakeholders; business, government and the community are aware of its ability to assist in pivoting the state to a net zero future. Now that these amendments have been completed the EPA will commence developing a Climate Change focused Environment Protection Policy to provide additional clarity on actions required to reduce greenhouse gas emissions and to take steps to ensure plans are in place to adapt to the impacts of climate change where needed. The expanding use of recycled water generally and the proposal to construct a potable recycled water pilot plant more specifically are important steps towards increasing the use of climate independent water sources.

APPENDIX A

Millicent WWTP (1768)

Summary of the proposal by SA Water

SA Water has undertaken an options assessment to minimise the harm from discharge of treated wastewater from the treatment plant to the environment. The preferred option has been identified as undertaking construction of a new treatment process to maximise the ability for reuse of water and reduce discharge to the local environment.

The RBP 2024 proposes to invest $50M in the Millicent WWTP to deliver significant upgrades to the plant.

Link to regulatory tools

The requirement to develop and implement an EIP was imposed on the Millicent WWTP EPA Licence (number 1768) to set the required outcomes to address the high levels of discharge to the environment, low effluent quality and groundwater infiltration.

Background and Environmental outcome

The Millicent WWTP was commissioned in 1968 and accepts wastewater from approximately 4500 people from the township. This plant was identified by the EPA to be a priority site requiring attention and potential works due to the age of the site and associated decline in environmental performance. Treated effluent is reused for irrigation by an adjacent landholder, and surplus treated effluent is discharged into the environment, including the south east drainage system (‘drain 31’) that flows into Lake Bonney. Due to the plant having issues operating above hydraulic design capacity, high nutrient loads are observed in outflows, causing the potential for environmental harm.

An options assessment was undertaken as part of a Compliance action within the EPA EIP, where it was identified significant works at the site were required to achieve improved environmental outcomes. It is expected that the EIP will be implemented in full by June 2028 and that increased re-use will ensure that the discharge of treated wastewater to ‘drain 31’ will be reasonably minimised.

Port Augusta East WWTP (1532)

Summary of the proposal by SA Water

SA Water is undertaking an options assessment to minimise the harm from discharge of treated wastewater from the treatment plant to the environment. The preferred option is likely to include significant plan upgrades, as the effluent quality is one of SA Waters' poorest due to the rudimentary nature of the treatment process and limiting environmental factors. The RBP 2024 proposes to invest $30.2M in the Port Augusta East WWTP to deliver significant upgrades to the plant.

Link to regulatory tools

The requirement to develop and implement an EIP was imposed on Port Augusta East WWTP EPA Licence (number 1532) to set the required outcomes to address the low effluent quality and potential groundwater infiltration.

Background and Environmental outcome

The Port Augusta East WWTP was commissioned in 1981 and receives domestic wastewater from the eastern side of Port Augusta. The discharge quality is one of the poorest of all SA Water wastewater facilities and this site has been identified as being in the top three priority sites for EPA focus on improvement since RBP 2016-2020. Lagoons are clay lined and integrity has not been verified, reuse is limited due to high salinity, and final treated effluent is discharged through a tidal creek into the Spencer Gulf.
An options assessment was undertaken as part of a Compliance action within the EPA EIP, where it was identified significant works at the site were required to achieve improved environmental outcomes.

It is expected that the EIP will be implemented in full by June 2028 and that improvements to all stages of treatment will significantly improve treated wastewater quality, reasonably reducing potential environmental impacts.