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Dear Adam

The EPA welcomes the opportunity to make a formal submission towards SA Waters Regulatory Determination 2020. 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 establishment of this group by ESCOSA has ensured that all regulators involved with SA Water have been able to understand and contribute to the ESCOSA process. This greater level of communication has helped enable the EPA to provide robust and effective input to ESCOSA and the other regulators during this 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 8204 2023 or shaun.thomas@sa.gov.au.

Yours sincerely

PETER DOLAN

DIRECTOR REGULATION

ENVIRONMENT PROTECTION AUTHORITY

Date: 19/12/19

SA Water Regulatory Business Proposal 2020: Formal submission from the EPA

The EPA is pleased to provide a submission in response to the SA Water Regulatory Business Proposal for the 2020-24 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 (EP Act) and Environment Protection Policies (EPPs). For more information on the EPA and our regulation and compliance work, please visit:

https://www.epa.sa.gov.au/our_work/compliance_and_enforcement

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

ENGAGEMENT WITH SA WATER FOR RBP 2020

The EPA has a high level of engagement with SA Water. The engagement with SA Water has been consistent and collaborative with 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 this current Regulatory Business Proposal (RBP) 2020, the EPA has communicated expectations for SA Water to meet its obligations under the EP Act and subordinate EPPs. This approach has built upon the previous RBP, 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.

During this RBP the EPA has communicated the required outcomes SA Water are 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.

The EPA has identified areas of concern and required improvement, which it believes should be addressed during this RBP. These are broadly included within RBP 2020, 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 $534 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 $22 million capex and $1.2 million opex on a program of upgrading and improving WWTPs to meet compliance with the Environmental Protection Act 1993 and EPA licence conditions for required Environment Improvement Programmes (EIPs).

The EPA understands that this $23 million will be used for a range of projects and activities to improve WWTP performance (e.g. process improvements, lagoon leakage monitoring network grit and debris storage, algal management and biosolids management) to improve environmental outcomes.

The main items include improvements in:

- biosolids handling at various sites across the State,
- treating Seafood Industry Waste at Port Lincoln,
- treatment processes at Bolivar WWTP,
- storage of network waste and grit management at various locations.

The EPA supports this investment. The improvements in management of solid wastes will enable SA Water to better meet the EPA's expectations. For biosolids, SA Water is proposing to establish dedicated biosolids storage areas at a number of regional WWTPs to ensure this material is stockpiled appropriately on an impervious base. This approach will ensure leachate is contained and directed back to the WWTP and that odour impacts are appropriately managed, which will be significant environmental outcomes.

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 plan 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 Adelaide Coastal Water Quality Improvement Plan (ACWQIP) 2013, 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 each metropolitan WWTP to reduce the volume of nitrogen and suspended solids being discharged to the Gulf. SA Water provided the EPA with an EIP in July 2017 outlining a timetable and actions to best meet the outcomes in the ACWQIP.

RBP 2020 includes capital and operating expenditure related to the metropolitan WWTPs which are supported by the EPA. These include:

- Bolivar WWTP capacity upgrade ($38 m)
- WWTP renewal $115m – which includes membrane upgrade at Glenelg WWTP
- 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 this RBP, as they will inform future requirements for the RBP 2024-28, SA Water has proposed $1.2 million for the studies to be undertaken to inform work in the EIPs for the metropolitan WWTPs to meet long term targets in the ACWQIP

The EPA understands that the focus of the research will cover:

- Concept feasibility
- AREM modelling of alternative management solutions (including stormwater initiatives, or eco-hydrology solutions)
- Site trials to improve seagrass restoration success in areas limited by waves / currents / sediment movement (i.e. not 'seagrass-ready') through marine interventions (e.g. oyster reefs)
- Site trials to accelerate natural seagrass restoration in areas with suitable conditions (i.e. 'seagrass-ready')
- Targeted monitoring that includes:
    - Seagrass mapping from aerial photography in 2022
    - Development of a more agile remote sensing technique for large-scale monitoring using new high-resolution satellite imagery
    - Development of very high resolution drone methodology to monitor small-scale changes (e.g. metre-scale changes in the blue line of seagrass)

Regional WWTPs

Based on risk assessments undertaken by the EPA, three regional WWTPs have been identified as priorities for upgrades for this RBP and they are Hahndorf, Millicent, and Port Augusta East. These sites are required to implement EIPs as conditions of licence to reduce the harm to receiving environments. These EIPs include a range of measures to address these requirements including minimising the discharge of treated effluent to waters, identifying and reducing lagoon seepage as well as improving wastewater treatment.

SA Water has proposed $11 million towards these WWTPs in RBP 2020 with a focus on applying the waste management hierarchy through the development reuse systems.

The major investment in RBP 2020 will be at Hahndorf WWTP which is to deliver the preferred option by 2024. Through the EIP, SA Water have identified that the preferred option is a combination of SA Water owned irrigation scheme with new third party commercial customers' irrigation also being realised. Further details of the upgrades to Hahndorf WWTP are included in Appendix A of this letter.

The focus of the investment at Millicent and Port Augusta East WWTP in RBP 2020 involves preliminary work to identify the preferred options to address EIP objectives. It is expected that the preferred options will be delivered in the 2024-28 Regulatory Business Period.

The EPA supports the proposed line items to be addressed in the RBP 2020-24 for priority regional WWTPs.

NETWORK UPGRADES AND MAINTENANCE ACTIVITY

Feeding SA Water's 23 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. Subordinate regulation under the EP Act in the form of the *Environment Protection (Water Quality) Policy 2015* (the Policy) further defines the environmental obligations on SA Water to manage the sewerage network to ensure overflows are minimised. The Code of Practice for Wastewater Overflows is called up within the Policy to further define the EPAs expectations of what actions are required to ensure wastewater overflows and the potential harm that results are minimised. In meeting the requirements of the Code of Practice SA Water is required to maintain and deliver an overflow abatement plan.

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 the 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.

Addressing Network Faults and Overflows

RBP 2020 includes capital and operating expenditure related to network upgrades to reduce overflows. SA Water has undertaken a body of work to ensure that hotspot areas in the network are captured in the wastewater overflows capital works proposals. Further provision of backup power generation, increased capacity of pump stations, network modelling, use of smart networks/integrated operations are proposed to reduce the number of incidents, the scale of impacts and improve responsiveness to incidents. The proposed investment of $31m (+ 2.2m OPEX) to reduce environmental wastewater overflows is supported.

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 $10 Million to address this issue, and in regards to this amount, the EPA would support 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—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.

The EPA supports the proposed odour management operation and capital program for wastewater networks within RBP 2020 as an approach that begins to address the worst odour cluster locations, as well as wider network odour issues.

The EPA understands that SA Water is proposing to spend $20m on network management for addressing odour, as well as $1m/year in operational costs, allied with the additional budget line for improved digital services which look at smart networks and integrated operations. A proactive approach (modelling, monitoring and identification of hot spots) and a targeted response approach (reactive monitoring and smart networks) to manage the severity and scope of odour is supported.

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. 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.

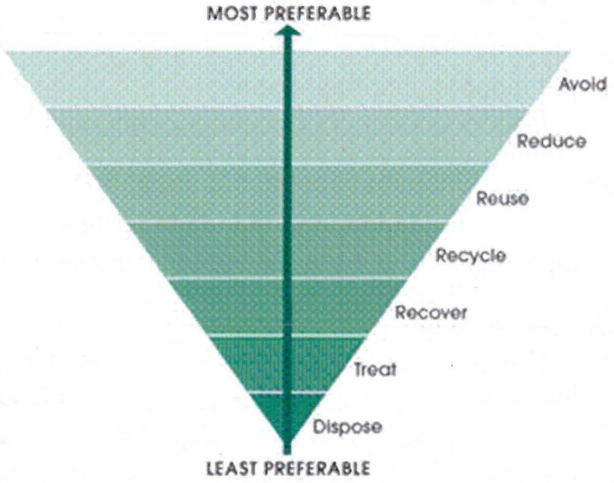

Figure 1: The waste management hierarchy.

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.

RBP 2020 includes capital and operating expenditure related to expansion of wastewater reuse by SA Water, including for the NAIS scheme. This proposal is supported by the EPA as a means to avoid environmental discharge, particularly into the Gulf of St Vincent and as a means of productive, beneficial and sustainable use of recycled water, and is key to delivery of part of the metropolitan EIP requirements derived from the ACWQIP Targets.

As well as NAIS, expenditure is identified for the Glenelg to Adelaide Pipeline, linked to extending this scheme. As there is smaller scope for achieving the EIP targets from Glenelg plant without significant investment in operational and infrastructure improvements, expansion of the scheme will be key to delivering on compliance for the EIP, and again is supported by the EPA. This scheme is important, not only for the reduction of harm to the Gulf and increased use of a precious resource, it also delivers recycled water to the metropolitan area, and can demonstrate to the wider Adelaide community the value of the use of this water.

SOLID WASTE MANAGEMENT

It is worth noting that some of the proposed expenditure will provide indirect environmental improvements from SA Water's activities. While they may not be directly required by the EPA, they result in outcomes consistent with the objects of the EP Act. An example of this is the replacement of treatment method at Happy Valley Reservoir for algae bloom incidents from a copper sulphate based treatment to an ozone based treatment. Whilst aesthetic outcome is the primary driver (the reduction of taste and odour issues within the drinking water network), another likely outcome is that water treatment residuals from Happy Valley WTP will have reduced copper contamination.

Water treatment residuals are a by-product of water treatment processes, and have elevated concentrations of heavy metals, which trigger criteria in the Standard for the production and use of Waste Derived Fill, ultimately leading to the need for landfill disposal. Reducing copper contamination increases the potential for beneficial reuse of the water treatment residuals, aligning with the waste hierarchy, and potential reducing disposal costs.

The proposed regional biosolids handling at various sites across the State will likely create efficiencies of scale for the proper management and reuse of biosolids in regional areas, and make this resource more readily available in the areas where it most useable, and this is supported by the EPA.

ADDITIONAL ITEMS

The Desalination Plants proposed for Eyre Peninsula and Kangaroo Island are driven by water supply issues. However the new infrastructure will be licensed by the EPA and required to meet a range of environmental outcomes, which would be a significant component of the cost to develop and operate this infrastructure.

APPENDIX A

Hahndorf WWTP

Summary of the proposal by SA Water

SA Water has undertaken an options assessment to reduce the harm to Hahndorf Creek and the Onkaparinga River. The preferred option has been identified as a combination of a SA Water owned irrigation scheme and additional third party commercial customers' irrigation.

The RBP 2020 proposes to invest $6.6M on the Hahndorf WWTP to deliver the irrigation scheme.

Link to regulatory tools

The requirement to develop and implement an EIP was imposed on SA Water Licence (number 1766) to set the required outcomes to address the ongoing impacts from discharge of treated wastewater to Hahndorf Creek.

A Compliance action from the EIP was to undertake an options assessment based on a multi criteria analysis to identify the preferred solution to reduce the impacts to Hahndorf Creek. In accordance with Compliance action 3 of the EIP, SA Water has written to the EPA to confirm the preferred option of establishing a joint irrigation scheme. The EIP will be reviewed and updated to confirm the details of the preferred solution, and require the outcomes to be met as a condition of licence.

Background and Environmental outcome

The Hahndorf WWTP is located within Mount Lofty Ranges Water Protection Area and accepts wastewater from both the township and surrounding rural allotments. This plant was identified by the EPA to be one of the three priority sites following attention at Murray Bridge and Port Lincoln.

An eco-toxicity assessment conducted by CSIRO (May 2018) of the effect of the Hahndorf treated effluent on the Hahndorf Creek concluded that effluent from Hahndorf WWTP exhibited chronic toxicity to freshwater species, and that metals could be contributing to the observed toxicity.

CSIRO recommended a safe dilution of the effluent of at least 1:5 in summer as a suitable future management target. This implies a zero discharge of the effluent in dry seasons would be required. The EPA considers that the preferred option of establishing an irrigation scheme for reuse of treated wastewater will achieve the outcomes required by the CSIRO study and the EPA.

It is expected that the EIP will be implemented in full by June 2024 and that increased re-use will ensure that the discharge of treated wastewater to Hahndorf Creek will be reasonably minimised.