

# Geeveston Outfall Relocation Project

Geeveston Public Meeting – TasWater responses

September 2022



**TasWater's decision to relocate the Geeveston Sewage Treatment Plant outfall to Shipwrights Point has been made in direct consultation with the Environmental Protection Authority (EPA).**

**Why are we moving the outfall without upgrading the STP first?**

The relocation of the outfall from the Geeveston Sewage Treatment Plant (STP) is being delivered as a commitment to the Environmental Protection Authority (EPA) to improve compliance. The current outfall is situated in the Kermadie River and has been identified as posing an unacceptable risk to the environment by the EPA due to poor dispersion of the effluent, especially during low seasonal river flows.

The relocation of the outfall is the first step in a staged approach to sewage management in the area and is necessary to provide data to indicate what future upgrades may be required to the current sewage treatment plant. If the effluent was deemed a risk to the environment or public health, the relocation project would not have been approved. As part of this project a commitment has been made to the EPA to undertake operational monitoring which will provide data to our regulator, ensuring we are complying with standards.

This project does not preclude TasWater from making further infrastructure and performance upgrades to the Geeveston STP in the future.

**What other options were considered? Did we consider a wetlands?**

During the project development phase, several outfall options were considered, including a Reuse Scheme, a full STP upgrade, and several alternative locations for the new outfall, including Hospital Bay and Whale Point. None of these options were viable.

- Reuse Scheme – Pitt & Sherry were engaged to conduct a Geeveston Reuse Feasibility Study. This was deemed unfeasible due to limited reuse opportunities.
- Full STP upgrade - A full upgrade to the current STP was estimated to cost approximately four times the expense of the relocation project, noting an upgraded treatment facility would still require the outfall to be relocated. It is also not confirmed that a full upgrade to the STP is required.
- A Wetland was not considered as an option for this project. It would require a very large footprint beyond what is available at the existing site. It would also require mechanical screening, disinfection, pump stations and pipelines to redirect treated effluent to the new site. An outfall would still be required. This means a lot of new infrastructure and land acquisition, rendering the option cost prohibitive. The information provided at the community meeting was for a stormwater network and based on different environmental risk.

**Concerns raised regarding effluent quantity, in particular with future population growth.**

The Geeveston STP is currently operating under capacity. The STP has a hydraulic design capacity of 500k/L daily and the current average daily inflow is 296k/L. We have engaged with the Huon Valley Council regarding the proposed application for a 1200 – 1500 new home subdivision within Port Huon. Council have not been able to provide us with any record of this development.

We are aware of new developments in the Huon Valley, including the new 400 home sub-division in Huonville, however we have not identified any that will be located in the Geeveston catchment area.

We have a dedicated Development Service department who assess impacts that development may have on TasWater's infrastructure. The Development Service team would work with developers to determine what additional infrastructure may be required for future growth.

Planning for infrastructure upgrades includes future growth rates of at least a 30-year design horizon. Once the outfall is installed the ambient monitoring will look at what technology and treatment is required for a low risk discharge to the new location for the future flow scenario.

**Request for cost estimations and Strategic Business Case (SBC) to be made available.**

Our Strategic Business Case and cost estimations are commercially confidential. Business decisions are approved by the TasWater board, based on recommendations from internal and external reports.

**Why is the outfall only going 45 meters offshore? Is there an option to go further?**

The investigative studies completed have indicated the depth of 8 – 9 meters will achieve effective mixing and dilution for the treated effluent. We are exploring the option of going further offshore – but not necessarily deeper. To allow for the extension of the pipeline we will need to ensure the seabed is at the same depth. There is a 25-meter diffuser attached to the end of the pipeline, which will also provide extra distance from the shoreline.

**Is Shipwrights Point being used as a crash-test dummy? Are there other locations with a similar set up to this proposal?**

We have 9 STP outfalls discharging to the Derwent River/Estuary. These are of varying outfall designs and depths and near recreational areas. The mixing zone modelling we have completed at these sites is conservative and often the ambient monitoring shows minimal environmental impact. Especially in the mid/lower estuary where there is considerable mixing and dilution, as is the case with this outfall location in the Huon Estuary.

We have many estuarine outfalls across the state (25 STPs rated the same as Geeveston, which discharge >100kL/day), these provide good dilution and mixing due to the larger passing flows than compared with inland waterways.

We will be delivering many outfall relocation projects over the next few years to improve our compliance and performance with the EPA. It is important to note that all of our current outfall locations are monitored and regulated by the EPA and commitments have been made to reduce future environmental risks.

**Can these issues be raised at the TasWater Annual General Meeting (AGM) in November – along with concerns regarding the whole Huon catchment area?**

The community can address their concerns with their owner representative (Huon Valley Council) and request that the owner representative seek to have it added as an agenda item. AGM Agenda items cannot be raised by the community, nor TasWater employees.

In consultation with the TasWater Board, owner representatives and the executive team, we are constantly monitoring our infrastructure and working on long term strategies and initiatives to continuously improve and ensure the best outcomes for the environment, our customers and the Tasmanian community.

**Why are we not working with Huon Aquaculture?**

TasWater's decision on the outfall location which has been approved by the EPA was made following stringent testing and environmental assessments. A business decision was made not to pursue further investigations to work with Huon Aquaculture.

**What will happen to Flora and Fauna in and around the river? Could the outfall lead to the shutdown of fisheries and shellfish leases?**

A Far-field risk analysis of the outfall location was conducted and based on the analysis 'the risk to the receiving environment is considered to be low provided monitoring of the receiving waters continues, including ongoing monitoring of water quality, sediment quality, and infaunal communities and the plant performance is actively monitored and managed' (page 247 EIS Report)

There are no shellfish leases located in the area. The nearest marine farm is located over 2km away. The dilution of the effluent at the outfall location will prevent risks to marine farms and oyster leases.

**The deed to Shipwrights Point is to be reserved for recreational use. How was permission given from council?**

The outfall will have no impact to the recreational use of Shipwrights Point land as shown on the title or deed. There will be a temporary disruption to a small section while the horizontal directional drilling is undertaken, and we will work to keep these disruptions to a minimum. We will ensure any disturbance to the land is respectfully reinstated.

*Installation of TasWater assets on public land is exempt from needing approval under Section 56E of the Water and Sewerage Industry Act 2008. Planning of underground pipeline is exempt from needing approval.*

**Can testing be done before the pipe goes in? In the past how much have the environmental results differed from the modelling?**

Water quality testing has to be undertaken in the receiving environment (ie when effluent discharges into the marine water). We can't test before the pipe goes in. The outfall is constructed to the most appropriate location determined by extensive environmental assessments and monitoring.

We will then undertake continuous monitoring once the outfall has been commissioned to validate the modelling and determine the extent of upgrades required at the STP. This modelling will be based on the capacity of the receiving environment. We can make predictions based on modelling and dilutions, but real water quality data will provide the evidence to determine the actual risk. Some testing can be undertaken at the STP to make predictions on what will happen when the effluent is discharged into seawater, but these are forecasts only.

Investigations and testing will be defined within the Chlorine Disinfection Investigation Plan (EPA requirement). The modelling is conservative and at other sites we often see that the monitoring results show reduced impact compared to predicted.

**Concerns raised regarding effluent quality, chlorine levels.**

Effluent microbial and chemical limits are within EPA approved guidelines, except in cases of extreme wet weather events.

We use chlorine at the same levels at many of our other inland, estuarine and marine outfalls. We acknowledge the EPA's position that chlorine is not considered a contemporary form of disinfection. The most appropriate alternative method of disinfection will be considered during the design and development of the STP upgrade in the future. We are confident that due to the limited discharge periods (batch discharging for a total of 90 minutes per day) and the levels of passing flow in the waterway, any remaining "available" chlorine (that is the chlorine which can react in the environment) will be minimal. To add to the conservatism, there will also be a reduction in this "available" chlorine during its 4.3km journey down the outfall pipeline.

### **What does chlorine break down into?**

Chlorine is highly reactive and does not persist for extended periods in water. Effluent and drinking water concentrations are reduced through chemical and physical pathways.

These variables include other compounds in the effluent, temperature, freshwater or estuarine water etc.

Generally, a range of things can happen with chlorine when it is placed in effluent, drinking water or marine waters.

- Dissociation: chlorine (Cl<sub>2</sub>) disassociates to hypochlorous acid (HOCl) and the hypochlorite ion (OCl<sup>-</sup>), also chlorate (ClO<sub>3</sub><sup>-</sup>) ions. This is part of the normal process of adding chlorine to water.
- Volatilisation: chlorine (Cl<sub>2</sub>) off-gasses to the atmosphere. This mostly occurs within the STP chlorine contact tank.
- Chloramine formation: Reaction with ammonia to form chloramines and N-nitrosodimethylamine (NDMA). This mostly occurs within the STP chlorine contact tank and will depend on ammonia levels and retention time.
- Bromination: Reaction with bromine present in seawater to form hypobromite (OBr<sup>-</sup>) and hypobromous acid (HOBr) and bromoform (CHBr<sub>3</sub>); bromamines can also form. This only occurs once the chlorinated effluent reaches the seawater.
- Oxidation: Reaction with organic matter including fulvic and humic acids, and amino acids, to produce a range of chlorine disinfection by-products (DBPs) including trihalomethanes (THMs), haloacetic acids (HAA) and chlorophenols. This can occur both at the STP and in the receiving environment depending on how much organic matter, chlorine and/or competing reactions are occurring.

Studies indicate ~ 5% of chlorine ends up as disinfection by-products. Some of the chlorine will volatilise but most of this will occur prior to discharge. Chloramine production will depend on how much ammonia is present and retention time. If this is low, then not many chloramines will be formed. In seawater, chlorine is exchanged with bromine forming equivalent brominated by-products. This releases the chlorine ion which will then react with ions in the seawater to eventually form sodium chloride (sea salt) or other halogen salts. The only thing potentially remaining longer term are the oxidation by-products and/or chloramine by-products.

### **How are we going to respond if monitoring indicates high levels of toxicity in the water?**

Based on our current understanding of effluent and chlorine, we expect chlorine to disappear rapidly in a marine environment. However, due to the nature of chlorine breakdown it is very difficult to measure some of these compounds in the marine receiving environment.

The compounds we can measure suggest very low levels of these compounds (DBPs) are present in the effluent and consequently we expect the risk posed once the effluent is discharged into the receiving environment is also low.

Investigations at another TasWater STP found that even if the effluent contained these compounds they could not be detected in the estuarine receiving environment and consequently posed no risk. It is very unlikely that high levels of chlorine toxicity will be encountered around the outfall.

The outfall project is the first step of a staged approach and part of the ongoing work under the approval is to review the current disinfection process. If a significant risk attributable to chlorine

(and its by-products) still exists, then further action will be undertaken by TasWater, both in the short and long term.

**Concerns regarding swimming in the river during rain events.**

Further to the information below, more information and reports can be found on the Department of Health (DoH) website. Huon Valley Council have reports on their monitored recreational water locations available on their website. These reports highlight the pollution in water after heavy rain events, even without the presence of an outfall. DoH recommend that people do not swim in recreational waters for 3 days after heavy rain events. This advice relates to all waterways, not just those with an outfall.

“These Guidelines apply to a wide range of recreational water environments, including: coastal and estuarine waters; tidal washed pools and marine baths that interchange with seawater; natural freshwater environs such as rivers or streams, lakes, weirs and dams; and public pools and spas. The Guidelines are concerned with the public health and safety of recreational water from a health point of view and are intended to protect public health. The community should note that heavy rainfall affects the water quality of recreational areas, especially near storm water outfalls. This is due to contaminants on the land being washed into the water with the heavy rainfall.”

As part of this project, we can commit to working with Council to consider installation of signage at Shipwrights Point (similar to the signage at Verona Sands, Randalls Bay and other popular swimming locations) to provide the public health recommendation – ‘It is not recommended to swim for 3 days after an extreme rain event.’

**TasWater notifications process for spills and overflows.**

TasWater monitor weather and have an incident team formed prior to any forecast rain events that includes having contractors on stand-by to ensure we can respond quickly to any incidents. In the event of a sewage incident, we follow the EPA published Sewage Spill Notification Guidelines. In addition to notifying the EPA we notify the Local Council’s Environmental Health Officer, DoH, and ShellMAP Regulatory Services. If there are any concerns for public health this will always be communicated.

**What lessons have we learned from recent wet weather events, and what are we doing to stop overflow?**

The management of wet weather events across the state has continuously improved since our formation in 2013. We have incident and emergency management plans in place, and these are strictly followed.

We have several initiatives underway which complement inflow and infiltration reduction efforts, across Tasmania. For this project specifically, the installation of an emergency storage tank will dramatically reduce overflow events. The Geeveston sewage network is scheduled for smoke testing and manhole audits this financial year. This forms the first step in assessing options for remediation to be undertaken.

**Concerns the community have not been informed about the current state of the Kermadie River.**

The Kermadie River is in poor health for many reasons. We are doing our bit to improve the environmental condition of the river.

**How will the effluent mix with the historical DDT located in the seabed.**

The ports on the diffuser will be angled upwards therefore this will avoid disturbance of the sediments.