

ADDITIONAL OUTFALL INFORMATION

HOW ARE OUTFALLS MANAGED

WHAT ARE THE HUMAN HEALTH RISKS?

The key risk to human health from wastewater releases is generally through contact with water containing elevated levels of faecal contamination such as bacteria and viruses. Such contact can be classified as either primary or secondary in nature. Primary contact usually being defined as activities that have a high probability of water being swallowed e.g. swimming, windsurfing, diving and water-skiing, while secondary contact activities involve a lower probability of water being swallowed e.g. boating, rowing and fishing.

HOW ARE OUTFALLS MANAGED?

A two step approach will address health risks at the proposed Pulgul outfall.

- > The treatment processes at the Sewage Treatment Plant (STP) (including continuous disinfection) will reduce concentrations to below harmful risk levels and the agreed strict limits set in the environmental licence.
- > The second step will involve the effective operation of the new marine outfall which will be designed to maximise dilution of the treated wastewater and utilise northerly flowing currents offshore of the marina to further disperse and transport any remaining bacteria away from the coastline and towards the open waters of Hervey Bay, where they will decay naturally.

In summary, the STP and outfall would be designed so that the sewage is efficiently treated, diluted and dispersed and does not pose a risk to local recreational areas. This will represent a similar scheme to many existing STPs and outfalls that are located along the Queensland coastline including those on the Gold Coast and Sunshine Coast.

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WHAT ARE THE ENVIRONMENTAL RISKS?

Key environmental risks associated with marine outfalls are a product of the elevated concentrations of contaminants being released from the treatment plant process. Some of key risks commonly associated with such releases include the following:

- > Oxygen depletion in the surrounding waters that may prove harmful to marine flora and fauna
- > Nutrient enrichment that may trigger algal blooms
- > Generation of toxic zones due to the presence of toxicants in the releases
- > Settlement of particulate matter and sediment on flora and fauna



HOW WILL ENVIRONMENTAL RISKS BE MANAGED?

It is important to note that these problems only usually arise when treatment has not been adequate and/or the outfall has not been appropriately designed. The Pulgul STP upgrade will take a multiple step approach.

- > Treatment and monitoring at the STP which is regulated under stringent licence conditions set by the Department of Environment and Science. This licence sets specific limits for the amount of contaminants being released to the environment including nutrients, oxygen demand, suspended solids and toxicants. These limits are based on either national or locally accredited guidelines to prevent environmental harm and ultimately regulate the concentrations that are allowed to be released from the treatment plant into the outfall.
- > A new outfall for the Pulgul STP would consist of a multiple release port diffuser which will be located on the seabed in the naturally formed channel that exists between Urangan and Round Island. Under typical operational conditions, the treated recycled water from the STP will only be released for a limited duration of a few hours every tide, timed to coincide with the most optimal tidal currents.
- > Immediately after being released from the diffuser, the concentration of nutrients in the recycled water will be around 100 times less. Any remaining contaminants in the recycled water will therefore be diluted, dispersed and transported northward towards the open waters of Hervey Bay, where they again will decay and break down naturally.
- > Ongoing monitoring at the release location and surrounding areas means that if any negative impacts did start to occur proactive changes would be made to ensure that they are fixed before they become an issue.

Using this stepped approach of effective treatment and outfall design, initial modelling investigations have shown that would be minimal risk of harm to immediate environment and the high ecological value waters of Hervey Bay. A STP and outfall can be scientifically proven (and monitored) to show it will not cause adverse environmental effects or any other type of damage.



WHAT HAPPENS AT THE PROPOSED MARINA OUTFALL?

In the Options document, you can compare the current Pulgul Creek outfall with the proposed offshore marina outfall, with modelling showing how nutrients may accumulate in coastal waters. Those figures show modelling based on the current wet weather release limit of 6ML per day.

The following figures show modelled nutrient accumulation in coastal waters for two additional release scenarios. These scenarios look at higher potential release volumes that may be required during wet weather periods for an upgraded treatment capacity at Pulgul. As with the scenarios in the 'Options for STP Upgrade' booklet:

- > scenarios have been run for 30 days consecutively
- > figures show the maximum nutrient levels that occurred in the model
- > nitrogen levels are indicated by varying degrees of shading depending on accumulation levels



FIGURE 1
10ML/DAY RELEASE OFFSHORE FROM THE MARINA

10ML/day has been modelled because it would represent the full amount of flow into the 'upgraded' treatment plant during dry weather conditions. This amount would not be discharged during dry weather however as much, if not all would be reused for irrigation or other purposes. As such this discharge volume is likely to only occur during wet weather periods.

This scenario assumes improved recycled water quality (lower nutrient concentration) that would be associated with an upgraded treatment plant. It also optimises the release of recycled water to coincide with tidal flows to maximise dispersion.

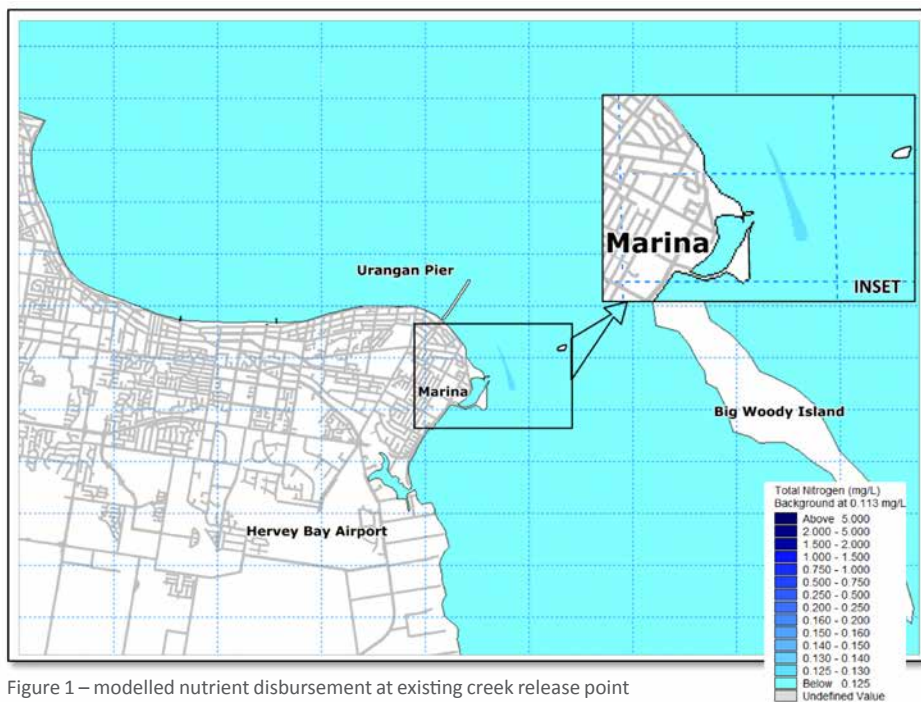


Figure 1 – modelled nutrient disbursement at existing creek release point into Pulgul Creek

FIGURE 2
HEAVY RAINFALL RELEASE SIMULATION

This scenario replicates the 10ML/day discharge of the previous scenario. However for a 5 day period it discharges 30ML/day, reflecting the amount of recycled water that may be released in an extreme wet weather event. This theoretical event is worse than any release Wide Bay Water has recorded to date.

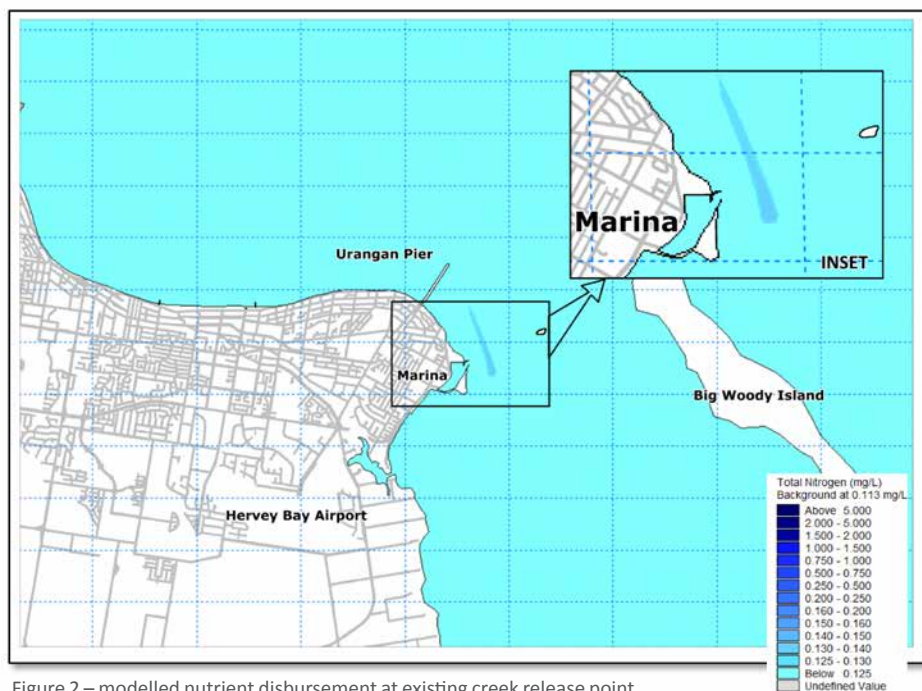


Figure 2 – modelled nutrient disbursement at existing creek release point into Pulgul Creek

HAVE ANY QUESTIONS, FEEDBACK OR NEED MORE INFORMATION?
 CONTACT THE PROJECT TEAM AT WBWENGAGEMENT@FRASERCOAST.QLD.GOV.AU
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A Business Unit of Fraser Coast REGIONAL COUNCIL