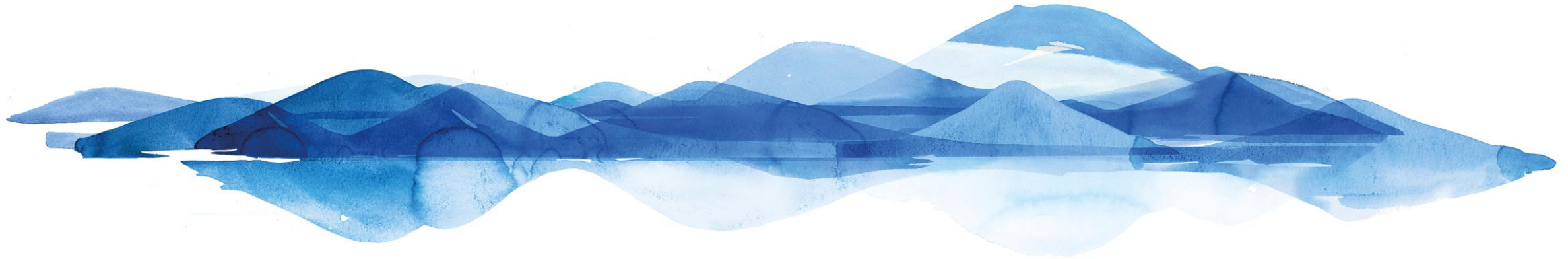


SCOTTISH WATER

LOWER LARGO BATHING WATER – JULY 23 UPDATE



# Lower Largo

2023 is the second year that Lower Largo bay has been an official designated bathing water and Scottish Water continues to liaise with SEPA and others with regards to understanding the improvements needed to the waste water network and assets to meet Sufficient status as a minimum.

## **Scottish Water network and assets**

The Scottish Water system (sewers and treatment) in Lower Largo is not designed to meet bathing water standards.

There are assets within the catchment which have the potential to impact on bathing water quality.

The Lower Largo network is almost entirely a combined sewerage system. There are four combined sewer overflows (CSOs) which act as relief points during wet weather to prevent flooding. There is one pumping station (Temple) which pumps flow to Lower Largo Wastewater Treatment Works (WWTW). Lower Largo WWTW is a primary treatment works, where sewage is settled to remove solids before being discharged via an outfall to Largo Bay.

The current outfall for Temple Sewage Pumping Station and Lower Largo WWTW discharges prior to Mean Low Water Springs (MLWS), which means that there is no adequate dispersal of effluent during low tides.

# Lower Largo – drainage network



# Lower Largo – bathing water study

We initiated the bathing water study in Autumn 2021 and the study follows the similar format to all other bathing water studies that Scottish Water have carried out.

A bathing water study is the most complex type of study that Scottish Water undertakes and usually requires 4 years worth of data for accurate modelling and analysis. This is to allow for natural variations in the seasons to be captured and accounted for in the model e.g. drier or wetter than average months which can impact bathing water samples.

However, we have attempted to accelerate the study for the community and try to calibrate the model on one year's worth of data, although there is a risk in doing this.

There are many strands to this work. We significantly increased the level of sampling (SW assets, watercourses and bathing water) to attempt to collect data to calibrate the bathing water model in one year.

## 2022 Bathing Season work:

- Carried out manhole surveys & CCTV surveys
- Flow survey ongoing. A flow survey requires 3 storm events, as it has been a dry summer the survey has been extended in November
- Intensive water quality sampling programme at the bathing water and burns which flow into the bathing water
- Bathymetric survey (via boats) – to map the seabed
- Current profile and dispersion testing – to understand how discharges disperse in the water environment
- Updating the sewer network hydraulic model and building the marine model

# What do we mean by modelling

- We create a digital twin (**hydrodynamic model**) of the waterbody which includes the BW by measuring tide, currents, wind etc to show the fate of discharges at different depths.
- We measure the flows and concentrations of our spills and final effluents in different rainfall scenarios and we input these into the hydrodynamic model. We input any other sources of bacteria that we can find – ie from agriculture, private treatment, etc
- We calibrate the model by comparing model predictions over different years (of rainfall) against the measured water quality record. So we have a 'twin' that reflects reality.
- We then split out the sources to see to what extent we (Scottish Water assets) are impacting water quality.
- If we are a significant source of bacteria, we look at how we'd have to change our inputs to get a predicted improvement in WQ to the required standards by running the model with different inputs.
- We can look at different scenarios – ie removing continuous discharges, improving continuous discharges and reducing spill frequencies to ensure that through investment, we'll make a difference. We also look at what impact there would be from reducing non-SW sources of bacteria.
- We then initiate projects to develop the high-level scenarios into solution scopes.

# Operational impacts

- In Sept 2022 we responded to a drainage issue around the Temple Car Park in Lower Largo.
- Response to sewer issue which caused sewer flooding to properties beside Temple Car Park and on the road
- We carried out a repair on a broken trap at the start of Sept after some flooding. This did not solve the issue and further CCTV was carried out and it was discovered that there is a possible collapsed sewer which is under the sand dunes on the beach.
- SW and our contractor partners carried out work at the start of Oct and fixed the problem.
- Coincided with a very busy period for us in second half of Sept and early Oct in terms of sewer blockages/heavy rain when resources were stretched
- Unlikely to have had impact on bathing water samples

## Spring/Summer 2023 –

As part of our ongoing study into the drainage network for the village we have identified an anomaly in the way the network drains and connects to the Temple pumping station.

We believe that there are approx. a dozen properties which are potentially connected in to the long sea outfall and therefore their waste water does not get pumped up to the primary treatment works.

This will likely be having a negative impact on bathing water samples being collected at the moment

To confirm this we are now carrying out work to fully understand what is happening and how this can be rectified, which includes installing a new manhole at the beach (scheduled for week commencing 7<sup>th</sup> Aug).

If confirmed we will fix this problem as soon as possible.

This may include a temporary solution as well as a more permanent fix.

# Operational update and communications

- April this year we provided an update where we highlighted a suspected issue with the network around Temple Pumping Station
- The historic issue highlighted in the last update was that the network arrangement at the Temple Pumping station was not clear to us and our study work made us suspect that it was not as we have in our network records.
- Since then we have been doing further work to get an accurate picture of what the pipework arrangement actually is.
- In April and May our operations teams attempted to investigate the connections and resolve at pace, however there was much difficulty with the job.
- Site visit on 22nd May found a vast amount of concrete under the beach near the pumping station and we were having difficulty locating a buried manhole under the beach near the pumping station (approx 2m below the surface).
- After understanding the complexities in access, it was clear that a larger engineering construction team was required, which is now in place.
- There has been further site visit and work now planned for the start of August. This will be excavation on the beach in line with tidal movements. This work is to raise the manhole level to the surface to allow further investigation and ultimately confirm if network issue exists.

## Community Council questions (July23):

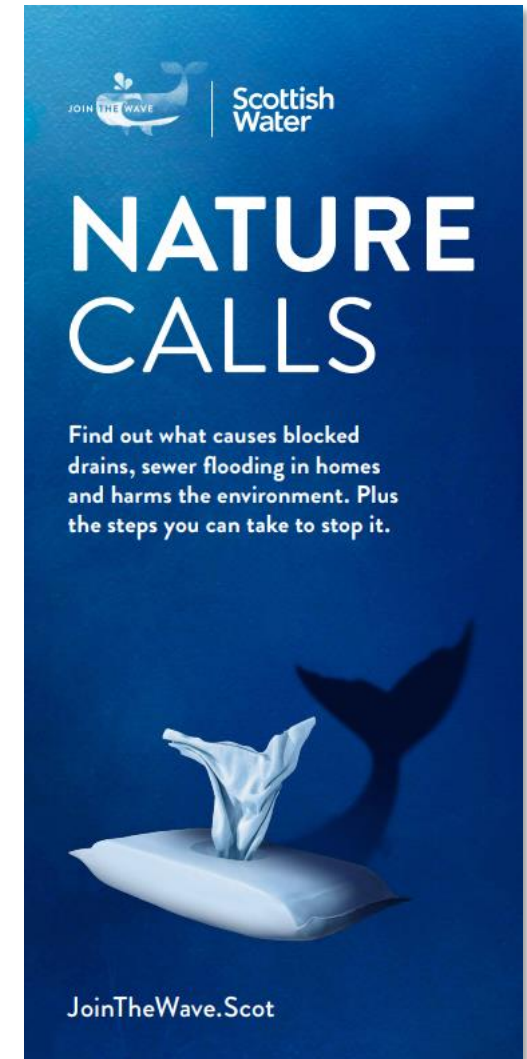
- **Which days in the month of June did the Water board empty the treatment tank at Temple?**
  - In June emptied between the 13<sup>th</sup> and 19<sup>th</sup>. At Temple there is one big tank, split into two halves. Each half is emptied every 4 weeks
- **Has the Water Board fitted telemetry that measures the time and volume of discharge entering the sea from the tank?**
  - No. There is no telemetry that measures this
- **Does the water board have any information that would explain the poor result in relation to the three positive results shown on the SEPA report.**
  - No. We know there was constantly easterly winds and no rain around the 6<sup>th</sup>
- **Does the poor result coincide with the treatment tank discharging into the sea?**
  - The treatment works is designed to discharge treated effluent 24hours a day to the sea
  - The pumping station was operating as normal

# Community work

On the 8<sup>th</sup> June we celebrated World Ocean Day with a visit to Lundin Mill and Kirkton Primary Schools. We spent the morning speaking to enthusiastic young people about:

- Where their water comes from
- Why we should use less and try and save water
- How waste water is treated and where it goes
- Our [Nature calls campaign](#)

Thank you to **Largo Communities Together** for helping arrange and everyone at the schools for the warm welcome



All pupils were given a Scottish Water Nature Calls leaflet to take home to help spread the message in the community.

# Lower Largo – what next

- Carrying out work at Temple pumping station to confirm issue and resolve
- Run model to inform impact of Scottish Water assets at Lower Largo
- Identify options for improvements if assets are shown to be impacting
- Provide improved communications to help explain process and understanding for all those who live by and visit Lower Largo bay

