



**Scottish
Water**

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Welcome

Thank you for attending today's information event about proposals for waste water treatment in Gairloch.

Today's event is being held to provide an update, following Scottish Water's decision earlier this year to review its plans in consultation with a local stakeholder group under an independent chair.

The stakeholder group has met over the summer and includes representatives from Gairloch Community Council, Highland Council and the Scottish Environment Protection Agency.

The group's work has been informed by an independent technical review, completed by a specialist consultant, m², a partnership between Mott MacDonald and Stantec (formerly MWH).

The objectives of today's event are:

- To present a summary of the independent technical review and its conclusions
- To update customers on an outline agreement which has been reached by the stakeholder group
- To answer questions and discuss any concerns
- To outline the proposed next steps

We want to continue to keep in touch as our plans progress and will post updates on our dedicated webpage:

www.scottishwater.co.uk/Gairloch



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Overview

The map below shows the main elements of Scottish Water's existing waste water network in Gairloch.



High level overview of Scottish Water's waste water network in Gairloch

The proposed work that has been under consideration is at the Waste Water Treatment Works and Lonemore pumping station. A 25 metre extension to the existing outfall is also included.

The rest of the network, which transports waste water to the Works for treatment, would not be affected.



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Background

Towards the end of 2015, Scottish Water put forward its original proposals for Gairloch Waste Water Treatment Works.

Although the plans met the environmental discharge quality requirements in place at the time, early engagement with the local community identified clear concerns.

Bathing Waters designation

Following further discussions, in 2016 Gairloch Community Council applied via the Scottish Environment Protection Agency (SEPA) for the Gairloch and Sand beaches to be designated as bathing waters. In December 2016, it was confirmed that both Gairloch and Sand beaches had been granted bathing water status.

Scottish Water then carried out additional design work and modelling to meet the bathing waters environmental standard. It also invested around £90,000 in Spring 2017 to maintain the existing Waste Water Treatment Works and minimise environmental risks associated with its continued operation for an interim period.



Sand Beach



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Bathing water designations

Water quality at designated bathing waters is regulated under the European Bathing Water Directive.

The Scottish Environment Protection Agency (SEPA) takes quality samples at each bathing water throughout the bathing season, from 1 June to 15 September. A pre-season sample is also taken in the last fortnight in May.

Sampling results from Gairloch and Sand beaches in 2017 and 2018 mean that both will be classified as 'excellent'.



The maps above show the areas designated as bathing waters at Sand and Gairloch beaches.



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Stakeholder Group

In April 2018, Scottish Water announced that it would seek to establish a local stakeholder group to review its plans.

Members of the local community had continued to raise a number of strong concerns and it was recognised that these had not been addressed sufficiently.

Representatives of Gairloch Community Council, Highland Council and SEPA agreed to take part in the group, with independent oversight from the Scottish Government and Gail Ross MSP. Members of the group agreed that their role should be:

- To allow closer engagement with key local stakeholders about plans to provide a long-term, sustainable waste water treatment system for Gairloch that meets all regulatory requirements and exceeds them where possible.
- To enable questions and issues to be addressed, in order to build a shared understanding of the current situation, the aspirations of stakeholders and what is needed for the future.
- To take into consideration key factors including environmental compliance, technical considerations, socio-economic impacts and cost.
- To seek to identify the most appropriate way forward for Scottish Water customers and the community in Gairloch as a whole, based on consideration of evidence.
- To allow all views and opinions to be expressed and discussed openly and respectfully in order to work towards an acceptable solution.



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Technical review

To inform the stakeholder group's work, Scottish Water engaged a specialist consultant to carry out an independent technical review.

Scottish Water asked the consultant, m², to consider three main areas:

- The current issues facing the existing Waste Water Treatment Works at Gairloch and whether these could be mitigated effectively.
- The technical suitability of Scottish Water's proposal to install a new treatment process made up of septic tanks, disc filters and ultraviolet (UV) light disinfection.
- Any potential alternatives that could be considered for the site.

m² completed its review in mid-August and its findings are summarised in the following posters. Copies of the full report are available upon request.



One of the problems experienced at Gairloch Waste Water Treatment Works, and at other coastal sites served by this time of plant, is foaming which occurs when sudden changes in salinity disrupt the biological treatment process.



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Current issues

The review investigated the performance issues facing the current plant and what could be done to address these.

Surface water infiltration: The report identified a relatively high level of surface water in Gairloch's sewers, resulting in a high volume of relatively dilute sewage. There are likely to be many sources, including both public sewers and private drains.

Saline intrusion: Despite substantial work to prevent seawater entering the sewers, this still occurs at higher tides. Again, there are likely to be many small sources, both public and private. Sudden changes in salinity disrupt the biological treatment process.

Fouling / ragging of membranes: Membranes were found to be fouling faster than expected, reducing capacity to treat the required flows. In order to address this, banks of membranes have to be taken off-line for more regular maintenance, halving the capacity of the Waste Water Treatment Works (WWTW).



One of the types of fouling that hampers performance of the membranes at Gairloch WWTW

Premature spillage to the environment: The issues identified all contribute to a risk of premature spills of screened but otherwise untreated waste water into Loch Gairloch during normal operating conditions.

While m² considered remedial measures to address these issues, they concluded that these could not succeed in removing the risk of premature spills to the environment. The WWTW does not have capacity to treat required flows during necessary maintenance and could not be expanded without starving the biological process.



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Proposed process

m² then reviewed the technical suitability of the new treatment process proposed by Scottish Water.

The diagram below shows the three stages of the new treatment process, which uses tried and tested treatment technologies in a relatively innovative combination.



Stage 1: Septic Tanks

In the septic tanks, heavy solids will settle to the bottom, where bacterial action produces digested sludge which is retained for removal by tanker. Lighter solids that float - such as grease, oils and fats - rise to the top and form a scum layer which is again retained for removal by tanker.



Stage 2: Disc filters

The liquid effluent from the tanks will pass through a mechanical filter to remove remaining particles of 10 micron (0.01mm) and above.



Stage 3: Ultraviolet treatment

Finally, the effluent will pass through banks of ultraviolet (UV) lights for disinfection. These are designed to kill 99% of the bacteria present by irreparably damaging their DNA. The process as a whole kills 99.9% of the bacteria present in the waste water.



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Proposed process review

m² found that the proposed new process had been designed to exceed the required effluent quality standards.

In light of the innovative combination of three well established treatment technologies, m² also investigated whether there are any technical risks that should be investigated further or mitigated.

They confirmed that the suppliers of the proposed equipment had provided process guarantees to Scottish Water, which would exceed the required effluent quality standard to maintain the “excellent” status of Gairloch’s bathing waters.

In order to improve confidence in the guarantees, they advised Scottish Water to confirm the ultraviolet transmissivity (UVT) of septic tank effluent from a comparable catchment. UVT is a measure of how well ultraviolet light penetrates a fluid even once fine particles have been removed.

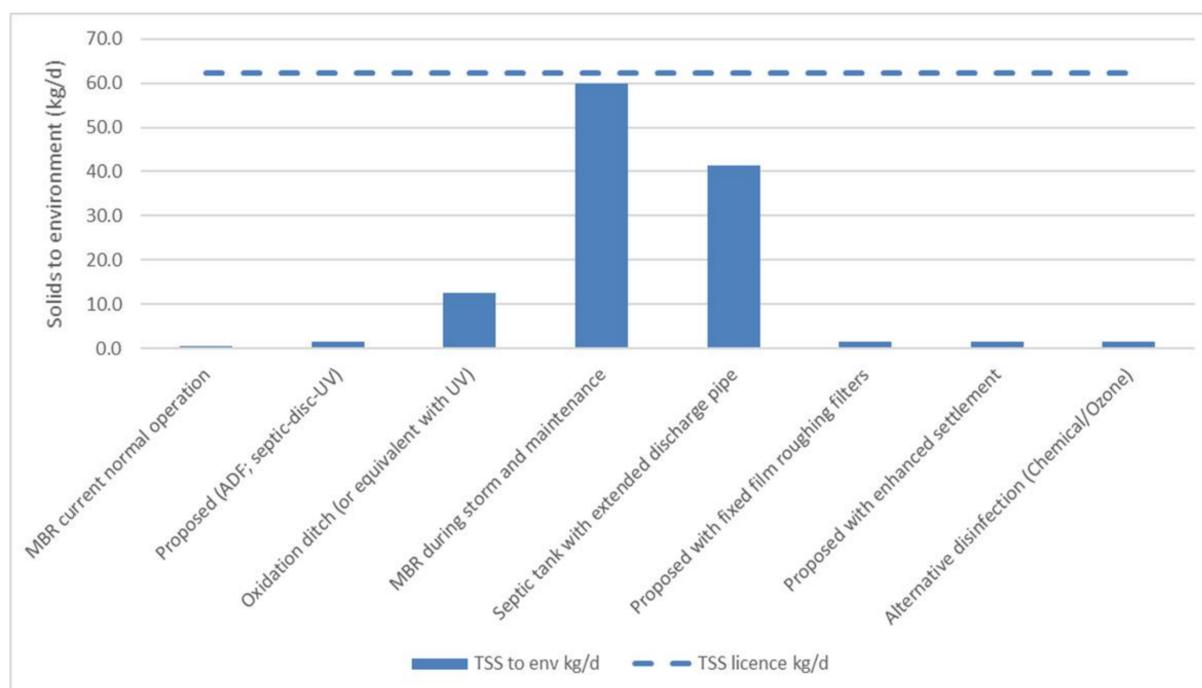
m² also identified additional treatment using a submerged aerated filter (SAF) which could be added between the septic tanks and disc filters if any unforeseen issues were experienced in operation. Scottish Water has confirmed that this could be accommodated within the proposed site layout if it was required.



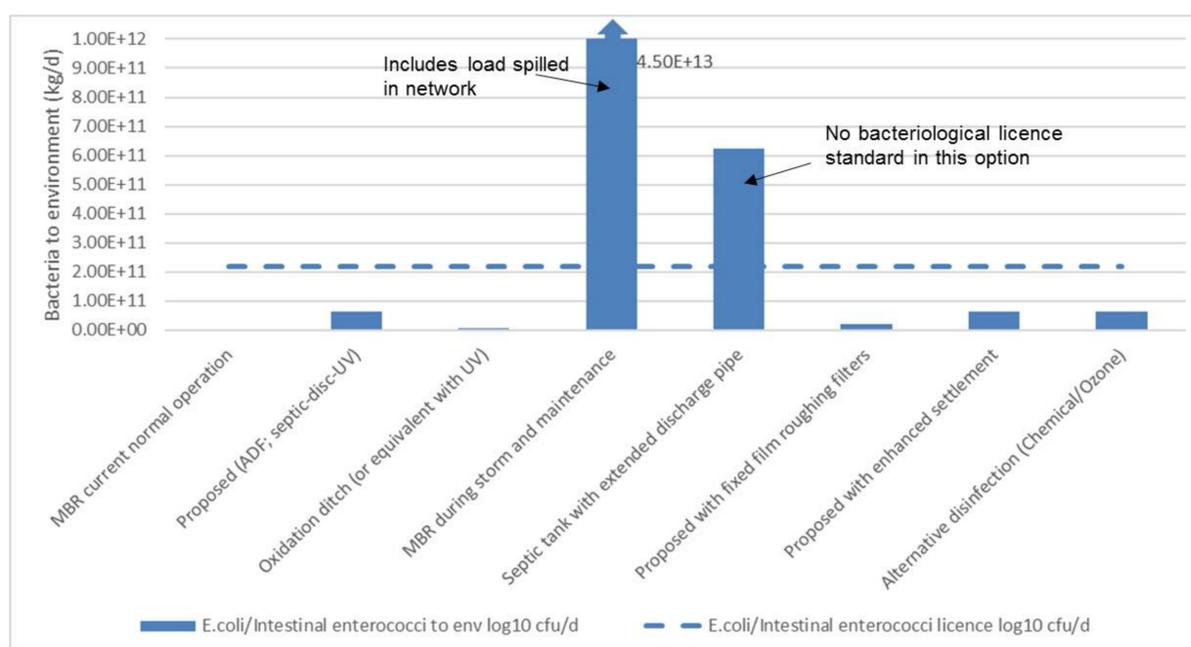
Alternative options

Finally m² compared the existing plant and proposed new process with a number of alternative treatment processes.

The two graphs below summarise their findings. The dashed lines indicate the maximum level to meet the required quality standards, including the bathing water environmental standard.



Option comparison: solids to environment



Option comparison: bacteria to environment



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Review conclusions

The review concluded that the existing plant at Gairloch is only sufficient when operating at full capacity.

m² noted that: “There is minimal safety factor in the design, little or no capacity for catchment growth, little or no capacity to accept increased infiltration of groundwater or seawater into the system, and insufficient hydraulic capacity when one process train is taken offline for necessary maintenance.”

Any feasible options to improve performance were only expected to marginally extend the time between off-line maintenance periods, so could not remove the risk of spills from the sewer network.

The consultant confirmed that the proposed replacement process was designed to exceed the required effluent quality, which had been determined to prevent the change impacting on the “excellent” status of the bathing waters at Gairloch and Sand beaches.



Gairloch Waste Water Treatment Works, viewed from the West



Outline agreement

In light of the findings of the independent technical review, the stakeholder group has identified a basis to move forward.

- The Group agreed that Scottish Water should proceed with installation of the proposed new treatment process, which would comprise septic tanks, disc filters and ultraviolet light disinfection. This would remove the current risk of premature spills from the network during normal operating conditions.
- Scottish Water agreed that, once built, it will operate ultraviolet treatment year-round on a pilot basis for an initial 2 year period.
- Towards the end of this pilot, Scottish Water will operate for an agreed period in midwinter without ultraviolet treatment to allow evidence to be gathered of the difference made to water quality at the designated sampling points when operating outwith the bathing season.
- Additional sampling would be arranged throughout this period, beyond the bathing season monitoring that SEPA currently carries out, to build a better understanding of the overall water quality at the bathing beaches in Loch Gairloch. The additional sampling will follow SEPA's methodology as closely as possible and use the established SEPA sampling points.
- The evidence collected via sampling will provide a basis to agree the appropriate long term operating regime in consultation with the Stakeholder Group. Scottish Water and other members of the group agreed to approach this with an open mind.



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Next steps

Following today's event, Scottish Water intends to make final preparations for enabling work to begin at the WWTW site.

We are currently working to establish whether the new treatment process can be built and made operational during 2019 in order to minimise the risk to the environment from spills.

Our local operational team will continue to operate the existing plant as effectively as possible until the more suitable and reliable treatment process is able to take over.

Our project team will make every effort to manage the impacts of construction, both at the WWTW site and at Lonemore, in order to keep any disruption to a minimum. Please speak to us or leave us comments if you have any particular questions or concerns.



Stakeholder Group

We hope that the Stakeholder Group that has been established will continue to meet regularly during construction and over the course of the pilot period to maintain dialogue and allow any issues to be addressed.

This will allow progress and the results of sampling to be regularly reviewed and discussed.



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Keeping in touch

Scottish Water is committed to keeping you and the local community fully informed about the work we are doing.

We will continue to work with the Stakeholder Group and listen to feedback that we receive.

Our first responsibility is to provide our customers with water and waste water services that are reliable, sustainable and affordable - 24 hours a day and 365 days a year.

We are a publicly owned company, accountable to the Scottish Parliament and to the people of Scotland. We operate within a policy and regulatory framework, but that makes it no less important that we listen to our customers.

Volunteering programme



Every Scottish Water employee can take up to 2 days a year to get involved in education, conservation or community activities.

Get in touch if there are volunteering opportunities locally that you think would benefit from our support.

Keep in touch

If you have any questions or comments after today's event, please don't hesitate to contact us:

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