



2022 Winter Bathing Water Report

Department of Environment, Food and Agriculture
Environmental Protection Unit
June 2023

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1. Introduction

As part of the [Island Plan](#) published in 2022 a commitment was made to ‘Undertake and complete a trial for year round bathing water quality testing’. Therefore, the Department undertook bathing water sampling from October 2022 through to April 2023. This was outside of the normal bathing season which typically runs from the 1st May to 18th September, in accordance with the [EU Bathing Water Directive \(2006/7/EC\)](#).

The desire for out of bathing season monitoring arose due to a renewed popularity of open swimming, which is undertaken by some bathers all year round. The additional monitoring was intended to assist year round bathers in deciding whether the water quality was suitable for bathing.

The Department decided that ‘out of season’ bathing water sampling would be undertaken on a monthly basis at the expected designated bathing waters for the 2023 bathing season. Due to the issues around officer safety during the winter whilst collecting the samples it was decided the ‘out of season’ sampling would be undertaken as a trial.

Only the designated bathing water locations were sampled;

- Port Erin
- Port St Mary
- Bay ny Carrickey
- Castletown
- Douglas Central
- South Ramsey
- Glen Wyllin

The standards used to assess the summer bathing water samples are determined by the World Health Organisation as they are designed for the protection of public health. The bathing water standards are detailed with the [EU Bathing Water Directive 2006 \(2006/7/EC\)](#) and are used to assess bathing waters during the bathing season in the UK and across Europe. The Isle of Man adopted the same standards, which are detailed in the [Water Pollution \(Bathing Water Standards and Objectives\) Scheme 2021](#). Out of season bathing water sampling has been discussed for a long time within the UK and Europe, however no standards to assess the data have been agreed; therefore the assessment of the data detailed within this report is limited.

2. Health and Safety

Bathing water sampling is co-ordinated and collected by officers within the Environmental Protection Unit. This is the first time ‘out of season’ bathing water sampling has been completed and therefore detailed discussions were held with the Isle of Man (IoM) Coastguard to understand the risks and mitigate these where possible. Sampling officer safety was an important part of undertaking this Island Plan objective and therefore all of the risk assessments were discussed with the IoM Coastguard to ensure in the event of an emergency a quick response could be achieved.

3. IoM Coastguard Advise

After reviewing the risk assessments and sampling protocol with the IoM Coastguard the following additional measures were advised;

- Additional water safety training provided by the IoM Coastguard including throw bag training/practice.

- Two samplers – one for shore cover and one collecting the sample
- Shore cover carries two throw bags in the event of the sampler losing their footing and drifting off shore.
- Officers to contact the Marine Operations Centre (MOC) prior to commencing sampling to advice of the sampling and contact when completed. This would speed up a response in the event of an emergency. A list of the sampling locations including grid references were sent to the MOC prior to the start of this sampling.
- Samples only to be collected in sea state 1 or 2 and sampling to be determined by the two officers at the time as frequency of the waves even when small can cause issues.

3.1. Weather

As samples were collected between October and April officers did not specify the day of sampling and instead chose to state a week. The week before sampling officers would review the weather forecast and chose the most suitable day. If samples were unable to be collected due to unsafe sampling conditions this was stated on the webpage and re-sampling did not occur.

Section 4 details the number of samples that weren't able to be collected due to unsafe sampling conditions.

4. Sampling

A maximum of 42 samples were scheduled to be collected between October 2022 and April 2023. Due to adverse weather (mainly increased wind speed and direction causing waves) only 62% of samples were collected.

Table 1. Breakdown of percentage of samples collected

Maximum number of samples	42	
Number of samples collected	26	62%
Number of samples not collected due to unsafe sampling conditions	16	38%

Table 2 details the number of samples collected from each monitored location and the percentage of samples collected during the 'out of season' sampling period, with 6 being the maximum. All (100%) samples were collected from Port St Mary which is thought to be due to the fact that it is a sheltered bay. 83% of samples were collected from Port Erin and South Ramsey. From the remaining locations, only 50% or less of samples were collected which was due to the size of the bays and the associated bigger wave propagation.

Table 2. Breakdown of number of samples collected from each 'out of season' bathing water

Monitored Locations	Number of Samples Collected	Percentage of Samples Collected
Bay ny Carrickey	2	33%
Castletown	3	50%
Douglas Central	2	33%
Glen Wyllin	3	50%
Port Erin	5	83%
Port St Mary	6	100%
South Ramsey	5	83%

The 'out of season' bathing water sampling took each officer 50 hours to visit all sites and collect samples. With only 62% of samples being collected due to sampling conditions the Department spent 3h 40 min per sample.

Sampling efficiency is at an all-time low, due to the number of samples which could not be collected. All sampling locations were visited on sampling days, and reviewed by officers for safety prior to entering the waters. On a per sample basis, the Department spent 1 hr 50 min per sample. During the bathing water season, per sample collection, less than 1 hr of officer time is spent.

5. Results

A maximum of 42 samples could be collected during the monthly 'out of season' bathing water samples from the 7 monitored locations. 16 samples were not able to be collected due to unsafe sampling conditions.

From the 26 samples that were collected 85% recorded concentrations of *Escherichia coli* below 100 CFU/100 mL and 92% recorded concentrations of Intestinal Enterococci below 100 CFU/100 mL. The low concentrations of bacteria recorded would suggest good water quality however this data is likely to be skewed due to the selective sampling strategy, chosen due to weather or sea state conditions. Samples collected during adverse weather (heavy rain and high winds) would be expected to have elevated bacterial concentrations due to increased surface run off from agricultural land and possible overflows from Manx Utilities sewerage infrastructure. It is known that some land owners spread manure on their land all year round (even during wet weather) as there is limited storage for animal waste on site which increase nutrients and bacterial concentrations within our watercourses with some discharging into designated bathing waters.

For the purpose of this review of the bathing water quality data additional weather data has been provided by the Isle of Man Met Office, based at Ronaldsway. Figures 1 to 7 present the data collected at each of the sampled locations throughout the 'Out of Season' bathing water sampling.

The start of the 'out of season' bathing water sampling was delayed due to availability of EPU staff and the IoM Coastguard to undertake the additional water safety training requirements. This training was completed at the start of November and therefore, the first week of sampling was on the week commencing the 14th November 2022. Officers reviewed the weather forecast the week before and chose the day with the best weather forecast. Due to the SSE wind only 4 samples were collected. Of these samples 3 of the locations recorded very low concentrations of bacteria whereas Castletown's results were slightly elevated at 145 CFU/100 mL for *Escherichia coli* and 85 CFU/100 mL for Intestinal Enterococci. It is unclear why these results were elevated as the 48 hours prior to sampling there was no rainfall so run off from agricultural land would not likely be attributed as the source. There were also no known discharges from Manx Utilities infrastructure.

The second set of samples were collected on the 6th December 2022. There was a small amount of rainfall (1.3 mm) in the 48 hours prior to the samples being collected recorded by the Ronaldsway met office. Samples were collected from all 7 monitored locations and all results were below 100 CFU/100 mL for *Escherichia coli* and Intestinal Enterococci.

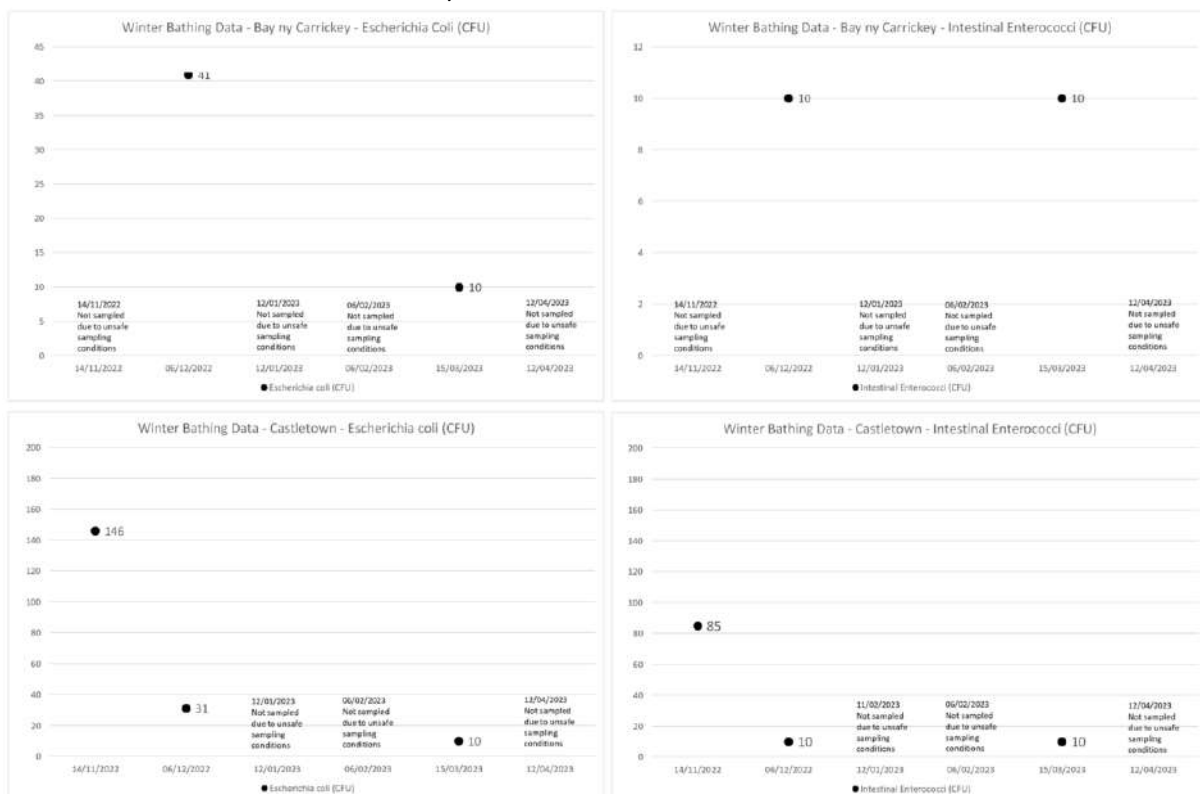
Sampling the week commencing the 9th January 2023 was difficult due to heavy rain and high wind speeds. Due to the weather officers went out on the 12th January 2023 and managed to collect just 3 samples. High concentrations of *E.coli* were recorded at Port Erin and Port St Mary which is likely to be due to run off from land as heavy rain fell for 48 hours prior to the samples being collected. South Ramsey samples were low for both bacterial parameters (20 CFU/100 mL) although there was heavy

rain and run off from agricultural land is likely to have been occurring. The wind direction of SSW is likely to have kept the river discharge offshore away from bathing area unlike in Port Erin where it would have been kept within the bay.

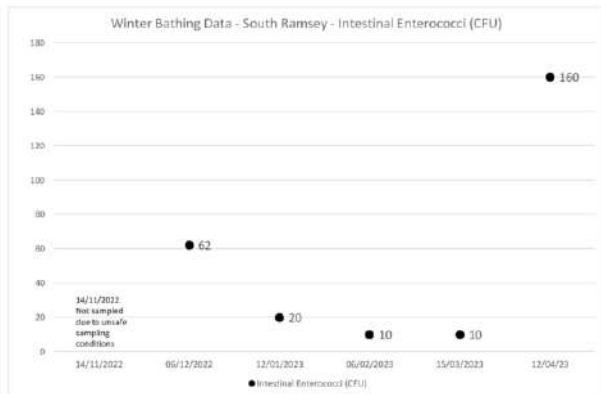
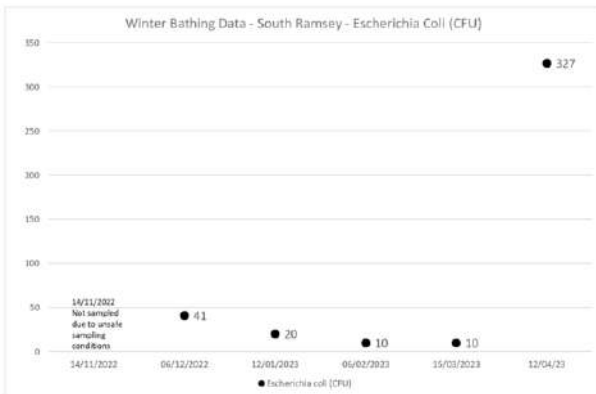
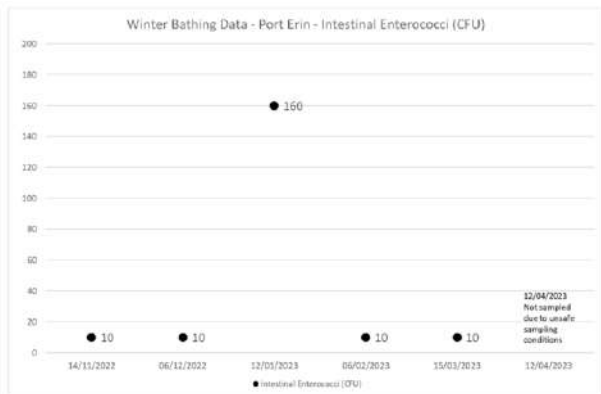
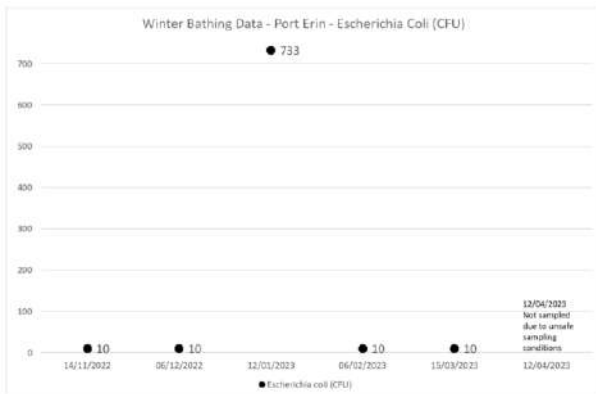
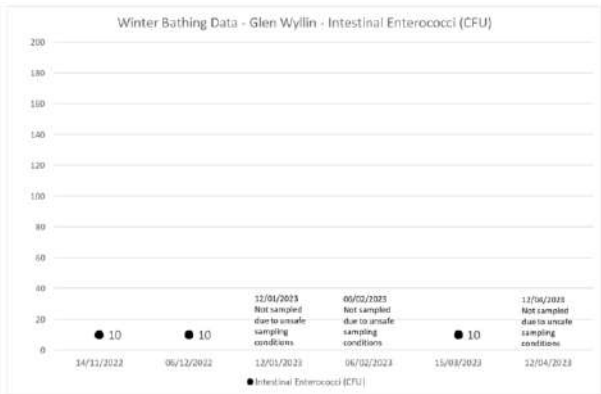
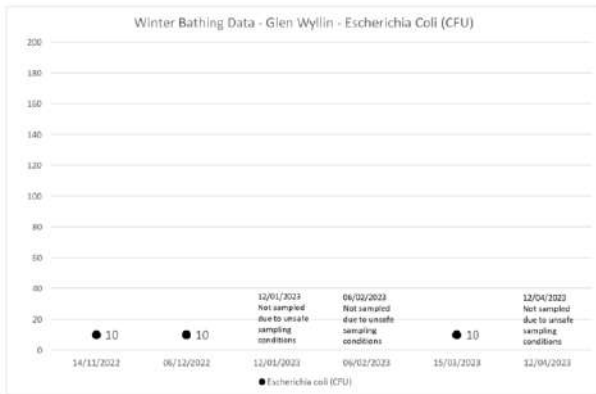
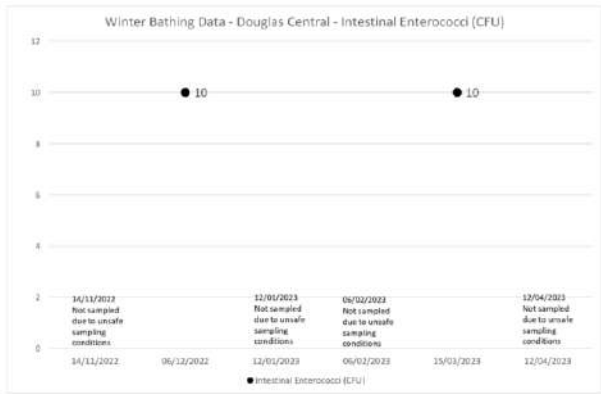
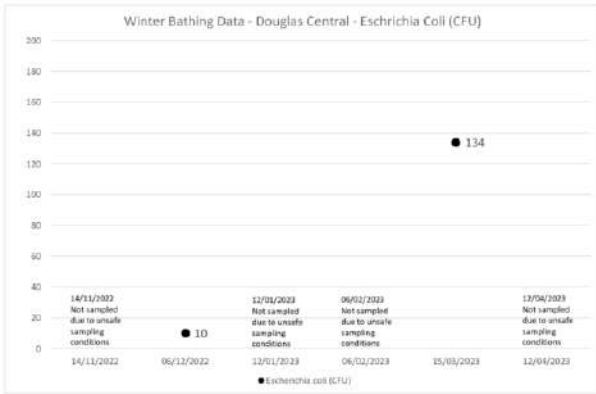
The fourth set of samples were collected on the 6th February 2023 but due to unsafe sampling conditions only 3 samples were collected from South Ramsey, Port Erin and Port St Mary. All of the samples recorded very low concentrations (10 CFU/100 mL) of the two bacterial parameters. This correlates with the dry weather for 36 hours prior to the samples being collected.

A complete set of samples were collected on the 15th March 2023 from all 7 locations. Prior to sampling there was rainfall for the previous week with 9.3 mm falling in the 48 hours prior to the samples being collected. Six of the seven sampled locations recorded very low concentrations of the two bacterial parameters (10 CFU/100 mL). The low concentrations of bacteria are surprising considering the rainfall recorded. Douglas central recorded a slightly elevated Escherichia coli concentrations at 134 CFU/100 mL. It has been confirmed by Manx Utilities that on the 13th March the Loch promenade pumping station overflowed into the sea which could have contributed to the elevated Escherichia coli recorded.

The last set of samples were collected on the 12th April 2023 which is a couple of weeks ahead of the summer bathing season which commences on the 1st May. Samples were only able to be collected in April from Port St Mary and South Ramsey due to a strong westerly wind causing unsafe sampling conditions at the majority of the locations. Heavy rain was also recorded with 25 mm recorded in the 48 hours prior to the samples being collected. South Ramsey recorded elevated Escherichia coli at 327 CFU/100 mL and Intestinal Enterococci at 160 CFU/100 mL. This increase in bacteria is likely to be due to agricultural run off or overflows from Manx Utilities sewerage infrastructure. The Port St Mary samples recorded an Escherichia coli concentration at 73 CFU/100 mL and Intestinal Enterococci concentrations at 31 CFU/100 mL.



Figures 1-2: Out of Season Bathing Water Quality for Bay ny Carrickey, and Castletown



Figures 3-6: Out of Season Bathing Water Quality for Douglas Central, Glen Wyllin, Port Erin and South Ramsey.

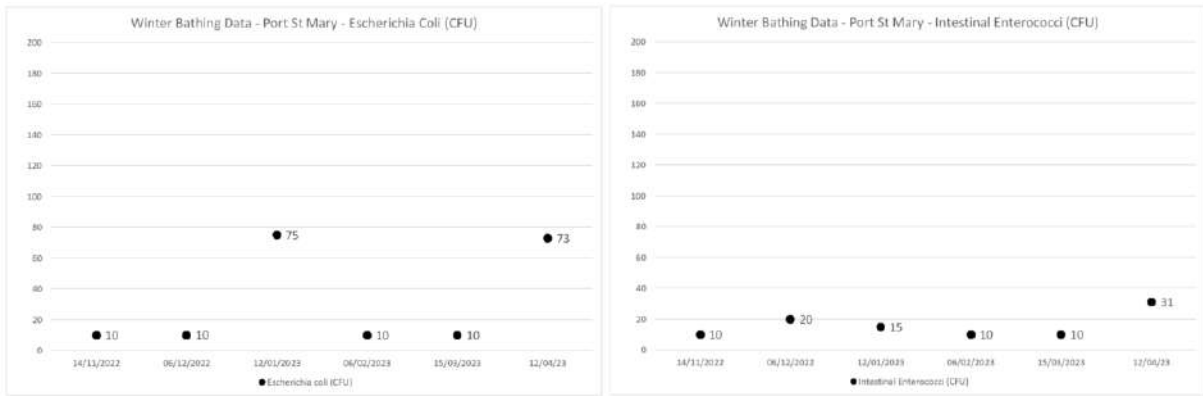


Figure 7 Out of Season Bathing Water Quality for Port St Mary.

6. Discussion

On comparison of the out of season bathing water quality to the bathing water season results, none of the bathing waters indicated significant differences between the bathing season and out of season results. However, this may be due to sampling not being conducted in extreme conditions (heavy rain or high sea states).

There were no other correlations found in the data between rainfall events in the past 48 hours and the results. This may be an effect of the higher river flow rates in the winter masking changes in surface run off throughout the month. Though the data sets are not considered representative, where less than 6 samples are available.

7. Website Views

The [winter bathing water webpage](#) was created at the end of October. Between then and the 26th April when the summer bathing water season commenced the webpage was viewed 228 times. With around 50% of the webpage views being recorded in November 2022.

Figure 9 shows the monthly views and shows that the majority of the views were in November when a social media post was completed by the Government Communications team at the Cabinet Office. The social media post released is shown in Figure 8.

Due to the limited number of webpage views in subsequent months throughout winter, it would suggest that not many members of the public utilised the data before entering the marine environment.

Isle of Man Government
3 November 2022

Scientists from the Department of Environment, Food and Agriculture (DEFA) will monitor the bathing water quality at seven Manx beaches this winter.

They include five bathing waters which are already designated for weekly summer monitoring and two under consideration.

- Bay ny Carrickey
- Castletown - Designated
- Douglas Central - Designated
- Glen Wyllin
- Port Erin - Designated
- Port St Mary (Chapel Beach) - Designated
- South Ramsey - Designated

Samples will only be taken when it is safe to do so and you can see the results here - <http://ow.ly/a9Qc50LrLU6>



Figure 8. Facebook post advertising the winter bathing water sampling

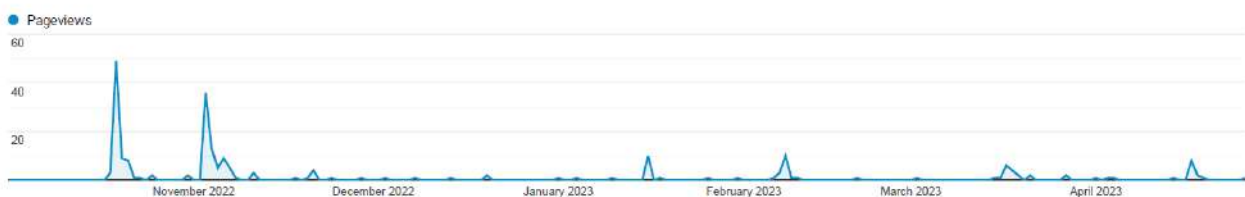


Figure 9. Page views provided by the Government Technology Service (GTS) for the following webpage; <https://www.gov.im/about-the-government/departments/environment-food-and-agriculture/environmental-protection-unit/bathing-water-quality/>

8. Conclusion

The long term viability of undertaking year round bathing water sampling needs to review the usefulness of the data alongside officer time and officer safety to collect the 'out of season' samples.

As the data is only collected monthly the usefulness of the data to the public is limited as the results are for that exact point in time and the water quality will change hourly/daily depending on the weather conditions, sea state, algal growth, hours of sunlight and presence of birds on the beach.

Over the 6 month sampling period, only 62% of samples were collected which took 50 hours of officer time.

The purpose of monitoring bathing water quality is for public health. Given the low sampling rate during out of season sampling, coupled with low public engagement with the data, the utility of performing the sampling is questionable. It is suggested that alternative, more effective and efficient public health campaigns could be reviewed to support year round bathers becoming better educated on potential risks and teach bathers how to make informed decisions on when to bathe, rather than relying upon monthly point source sampling that may no longer be relevant to the changing winter conditions.

Public information campaigns about swimming after heavy rainfall events, when and how to choose safe swimming conditions, and other advice could be provided to allow bathers to better interpret bathing conditions. Similar public advice is provided by other jurisdictions.

Alternatively, investment in modelling and real time sampling could provide better quality data and forecasting to the public. However, the cost to implement and operate the project may not be justified by the handful of individuals that utilise the data, nor by any extreme pollution events, which could have put public health in danger.

The overall recommendation is not to continue out of season bathing water sampling for the 2023/24 season based on time efficiency and officer safety. With officer time being put into completing other work, such as processing river invertebrates to enable a biological assessment of the Isle of Man's river water quality for use in targeting pollution sources to open waters.

9. Further Work

- Continue with bathing water sampling during the bathing season which runs from the 1st May to 18th September. Weekly sampling is undertaken at designated bathing waters and monthly sampling at 11 additional locations to inform the public of the quality.
- Work with the Manx Utilities and the local authorities to end the discharge of raw sewage into the marine environment at Laxey, Garwick and Peel. When the necessary sewerage infrastructure is constructed officers will work with the associated local authorities to designate Laxey, Fenella and Peel as bathing waters. When designated the beaches will be sampled on a weekly basis during the bathing season.
- Review increased bacterial concentrations recorded in the bathing water samples to determine the source. Check if any Manx Utilities infrastructure has discharged within 48 hours of sampling. Where long term elevated concentrations of bacteria is recorded officers will collect river samples to determine the source of the bacteria which could be associated with run off from agricultural land.
- Educate the public on bathing water quality and how to protect it through reducing agricultural run off during periods of adverse weather, year round. This will also assist with

reducing nutrient concentrations within the Islands Rivers. Any reduction in nutrient concentrations will be recorded in the routine river water quality monitoring programme.

- Continue discussions with Manx Utilities regarding the installation of signs or alerts where they have discharges into the marine environment from their sewerage infrastructure. This could be a treated sewage effluent discharge or overflow during adverse weather.