

Deputy D Johnson
 Environment, Housing and Infrastructure Scrutiny Panel
 Scrutiny Office
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 Morier House
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20 January 2017

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Dear Deputy

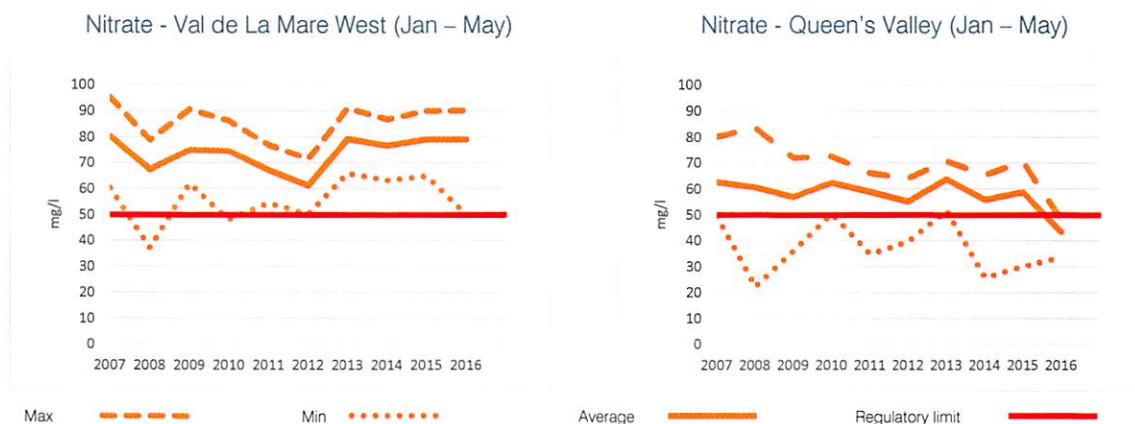
Scrutiny Review of Nitrates in Jersey’s Water

I write further to your invitation to make a written submission to your review of Nitrates in Jersey’s streams and watercourses. Below I have provided a synopsis of the current situation, an explanation of how Jersey Water manage nitrates in treated water and our views regarding the States of Jersey Water Management Plan.

1) Nitrate Pollution in Jersey

Jersey’s surface (streams, reservoirs, etc) and ground water (boreholes, wells, etc) resources are widely polluted with nitrate from agricultural fertilizer used predominantly in the potato-growing sector to the extent that nitrate levels are amongst the highest in Europe. Nitrate concentrations peak in the potato growing season between January and May at levels consistently well in excess of the 50mg/l regulatory limit for drinking water. Some important resources can peak at over twice the limit.

A considerable volume of historic data is available to support this. As an example, the graph below shows the maximum, mean and minimum nitrate concentrations entering Val de La Mare West inlet and Queen’s Valley, our two largest reservoirs.



The graphs show that the situation in Queen’s Valley stream appears to be improving. However, average concentrations in both streams during the growing season are consistently above 50mg/l

until 2016¹. Peak concentrations are in excess of 50mg/l in all years and the situation in Val De La Mare West is showing no signs of improvement and could be construed as getting worse.

In summary, whilst the overall nitrate situation is improving, the current position is far from acceptable. In order to safeguard the quality of the Island’s potable mains water supply, there is a pressing need for action to reduce the average and peak nitrate concentrations in the Island’s water resources.

2) Managing nitrates in treated water

Jersey Water’s treatment processes do not include a means for the removal of nitrate. Instead, the Company adopts a nitrate control philosophy centred around the management of reservoir storage and the selection, blending and dilution of water in order to achieve regulatory compliance.

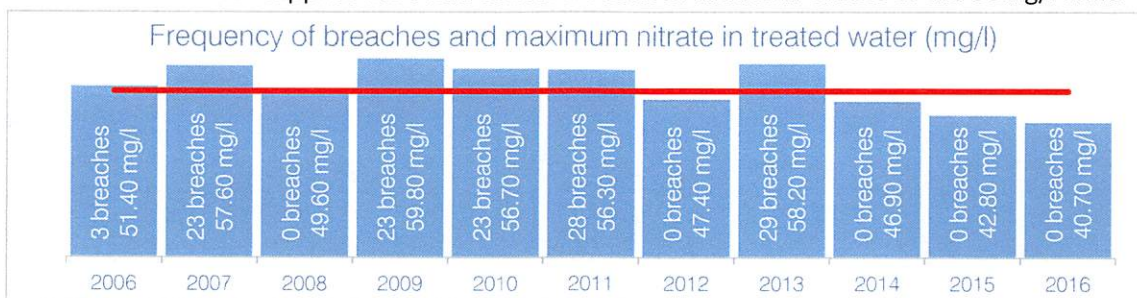
The effectiveness of this strategy is subject to nitrate concentrations in water resources being low enough to enable blending and dilution. The nitrate concentration of water entering our reservoirs is largely outside of Jersey Water’s control and does vary depending on a number of factors including:

- **Fertiliser application and land use** – Stream nitrate concentrations vary with levels of agricultural use and application rates.
- **Rainfall** – Rainfall has a two-fold effect; it causes surface water run-off from fields, which supplements nitrate concentrations from ground water sources, but can also reduce nitrate concentrations through dilution during periods of above average rainfall.

The strategy is also constrained by other factors:

- **Water resources** - The ability to blend water resources, bypass reservoirs and bring reservoirs in and out of service requires sufficient water resources. In the event that reservoir levels are low, there may be the need to impound the water causing nitrate concentrations in reservoirs to increase and threatening the ability to manage nitrate levels in treated water.
- **Pesticide pollution** - Following the discovery of Oxadixyl in 2016, water quality now needs to be managed to blend it and any other pesticides out from water supplies before treatment. The presence of Oxadixyl restricts the choice of source waters or blending that can take place and may inhibit the ability to manage nitrate concentrations.

In some years, due to factors outside of Jersey Water’s control, nitrate in water resources can increase to levels where the Company has no choice but to supply water that exceeds the regulatory limit (whilst remaining well within prescribed health based and regulatory dispensation limits). The graph below shows the number of incidences over the past decade where treated water supplies have had concentrations of nitrate in excess of the 50mg/l limit.



¹ One should note that 2016 was unusual due to heavy rainfall during the growing season diluting stream flows and reducing nitrate concentrations.

It should be noted that there have been no nitrate breaches in treated water since May 2013. This is explained by having enough rainfall in the autumn to get reservoirs full by the start of the growing season (enabling reservoirs to be bypassed where possible) coupled with the predominantly higher than average rainfall diluting water entering reservoirs not on bypass (e.g. Val De La Mare West).

The absence of a breach during the last three years should not be misconstrued as an amelioration of the nitrate situation in Jersey. Until underlying nitrate concentrations are reduced significantly (especially in the Western catchments) there will be vulnerability to nitrate breaches in treated water.

Jersey Water has thoroughly investigated treatment options available for the removal of nitrate from mains water. These solutions are in use in the UK and elsewhere and are generally used to deal with persistent ground water pollution where catchment management measures will take decades to have effect. The technology often involves removal of nitrate through an ion exchange process. Treatment presents a number of significant disadvantages that render it a solution of last resort for Jersey.

- The treatment process waste stream would have concentrations of nitrate of approximately 3,200mg/l (64 times the drinking water regulatory limit) and chloride concentrations of 38,000mg/l (akin to seawater). The waste stream would not be able to be discharged to streams or to the sewer network and discharging to sea would be highly controversial even if it were permissible.
- Costs for the development and operation of a treatment process would be considerable.
- Treatment solutions do not support the Environment Department's objectives of improving stream water quality. They would not improve water quality for those on boreholes or wells and would not reduce the nitrate concentration of streams discharging onto the shoreline.

Jersey Water has a number of initiatives underway to manage nitrate levels in the treated water supply:

- [Catchment Management Activity](#) – Jersey Water is a member of the “Action for Cleaner Water Group” which also includes the representatives from the farming community and the Environment Department. To date the activities of the group have resulted in voluntary measures by the farming community to reduce inputs of fertilisers and pesticides. Jersey Water is working closely with the farmers providing them with water quality data to enable them to develop pollution mitigation strategies. Further similar initiatives are planned.
- [Bypass Val De La Mare and Queen's Valley](#) - Jersey Water has plans to install bypass arrangements on the West Stream at Val De La Mare and Queen's Valley. Where reservoir levels permit, bypasses allow water polluted with nitrate, pesticides or other pollutants in the streams feeding the reservoirs to be diverted around the reservoir and sent to sea.

3) States of Jersey Water Plan

For the last two decades, Jersey Water has been advocating the use of catchment management measures to reduce the inputs of fertilisers on the land and reduce the risk of applied fertilisers entering streams and reservoirs. Whilst there have been a number of initiatives and working groups looking at the nitrates problem over that period, there hasn't, until now, been a comprehensive plan by the States of Jersey as to how the quality of the Island's untreated water could be improved to an acceptable standard.

We therefore support and endorse the measures set out in the States of Jersey Water Management Plan. We specifically note the following:

- The Water Management Plan includes the enhancement of the existing regulatory framework, designed to improve water quality within which the other stakeholders can operate; encouraging voluntary initiatives but also with the powers to enforce minimum acceptable standards. We see the enhancement of the regulatory framework as fundamental to the overall success of the plan.
- Following best practice models elsewhere, the States of Jersey Water Management Plan has adopted a catchment management strategy for improving water quality. This strategy has significant benefits over traditional engineered solutions and enables a holistic and sustainable approach to managing water quality
- The plan involves action to improve water quality by all stakeholders. The plan stands the most likelihood of success if they the stakeholders continue to work together toward the common goal. It is heartening to note what the voluntary initiatives have achieved so far.

Whilst we fully support the plan and its goal of improving water quality, it is still just a plan. The challenge will be implementing it over the next five years, maintaining momentum and achieving the target outcomes. To this end, it is vital that the strong leadership that has resulted in the creation of the plan is carried forward to the implementation stage. Water quality needs to remain a top priority for the Council of Ministers and there needs to be sufficient financial resources to fund the implementation and ongoing costs.

In closing, it is clear that there is a genuine issue with the quality of Jersey's water resources and remedial action is long overdue. The impact of nitrate and other pollution on treated mains water, private supplies and the environment is becoming increasingly unacceptable. During the past year, there has been a growing commitment amongst all stakeholders to improve water quality and by working closely together significant progress has been made. The project now has a momentum previously unseen, providing a window of opportunity to make the changes that are required. We would recommend that the States of Jersey seize that opportunity and push forward with the Water Management Plan in order to deliver water quality that every islander expects and deserves.

Yours Sincerely



Helier Smith
Chief Executive