

Nitrate Working Group 2014/2015 report and recommendations

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Introduction

Since at least the mid 1980's Jersey has had some of the highest ground and surface water nitrate levels in Europe. These nitrate levels have declined somewhat in the last ten years but broadly speaking, approximately 50% of samples taken are currently still over the limit of 50 mg/l nitrate that is required by the EU and the World Health Organisation as well as by local legislation. This situation should not continue. A concerted effort to tackle sources of nitrate needs to be a high priority for the Island.

As well as having unwanted impacts on drinking water quality, excess nitrate in natural waters has other undesirable consequences which include growth of algal or bacterial populations leading to unsightly blooms and de-oxygenation of the water which can cause harm to fish and other animals. The socio-economic costs of nitrate pollution are often borne 'downstream' by other sectors and can include impacts on the water services and supply (public and private water supply, sewage treatment) on recreational water use and on fisheries and shellfish production.

Nitrate Working Group 2014-2015

In 2014 the formation of a 'Nitrate Working Group' was proposed by the Minister for Planning and Environment to examine the issue again and make recommendations. The group met at regular (approx. 4-6 weekly) intervals from June 2014 to the present time (May 2015).

This is the second report written for that group and contains its findings and recommendations. A previous report compiled and written for group members by the Department of the Environment gave the background, a chronological summary of relevant nitrate related events, local evidence and policy as well as references to the documents that were reviewed and will not be repeated here¹.

The group was composed of:

Independent Chair:

- Mr Andrew Redhead

Members:

- Mr Helier Smith, Chief Operating Officer, Jersey Water (Now CEO as of 2015)
- Mr Howard Snowden, CEO, Jersey Water (Now Retired)
- Ms Kate Roberts, Water Resource Management and Regulation Officer
- Mr Iain Norris, Land and Horticultural Development Manager
- Mr John Jackson, Rural Economy Manager
- Mr Scott Meadows, Assistant Director Rural Economy & Head of Plant Health
- Dr Tim du Feu, Director - Environmental Protection
- Mr Jody Robert, Head of Water Resource Management and Regulation
- Mr Colin Cheney, States of Jersey Hydrogeologist
- Mr James Godfrey, Chief Executive Officer, Royal Jersey Agricultural & Horticultural Society
- Mr Paul Houze, Vice President, Royal Jersey Agricultural & Horticultural Society
- Mr Doug Richardson, Vice President, Jersey Farmers Union

¹ EPR-R-2015-05-07 Background for NWG Final, copies available from the Department of the Environment

- Mr Graham Le Lay, President, Jersey Farmers Union
- Mr Simon Taylor, Jersey Royal Company Ltd.
- Mr Stewart Petrie, Interim Head of Environmental Health
- Mr Alan Irving, Environmental Health Officer

The terms of reference and expected outcomes for the Nitrate Working Group

The terms of reference and expected outcomes of the working group were as follows (as agreed at first meeting on the 16th June 2014):

Terms of reference:

1. Nitrate levels in many surface and ground waters in Jersey are still not meeting the EU environmental standard and objectives for nitrate of 50mg/l NO₃.
2. Nitrate in the public water supply in Jersey is currently not meeting the UK/EU standard for nitrate of 50mg/l NO₃ at all times. It is however currently meeting local standards for wholesomeness with a dispensation under the relevant local legislation.
3. Up to 10% of households in Jersey are reliant upon private water supplies (boreholes and wells) for their water. Many of these sources are likely to have levels of nitrate well in excess of UK/EU standard for nitrate of 50mg/l NO₃.

Expected outcomes:

1. To make recommendations in respect of how best to achieve a nitrate level (NO₃) in groundwater and surface water of less than 50mg/l.
2. To make recommendations for any necessary interim measures in respect of private water supplies and the public water supply.
3. To propose possible mechanisms for delivery of those measures.
4. To propose a timescale over which these recommendations should be implemented.
5. Produce a report containing the recommendations and proposed measures.
6. Any other recommendations which may be appropriate.

Recommendations and findings

The group made the following recommendations and findings. The group have made it clear that the recommendations should be taken together as a package of measures.

1. **How best to achieve a nitrate level (NO₃) in groundwater and surface water of less than 50mg/l**
 - a. **General measures to inform, encourage and incentivise and codes of good practice**
 - i. A code of good practice should be introduced for everyone who discharges domestic waste water to a private system. This could replace the current system of (non-mandatory) discharge permits.
 - ii. Bio-solid production and spreading to land on the Island should comply with sewage sludge regulations and the safe sludge matrix. All applications must be recorded in commercial user's nutrient management plans.
 - iii. The Code of Good Agricultural Practice for the Protection of Water should be updated by the States of Jersey. Adherence to the Water Code is currently a condition for the receipt of Single Area Payment (or future States agricultural support) and this should continue to be a condition of any States of Jersey financial support to agriculturalists.
 - iv. The States of Jersey should continue to invest in the sewerage network and facilities and the extension of mains drains.
 - v. All imports, sales and use of inorganic fertilisers and lime should be recorded. This will include non-agricultural commercial activity such as golf courses, garden centres, TTS Parks and Gardens etc.
 - vi. Advice and training on good practice should continue to be provided for farmers.
 - vii. Uptake of precision agricultural systems (especially fertiliser placement machinery) designed to help increase productivity and protect the environment by minimising nutrient use and leaching should be encouraged.
 - viii. An advisory leaflet for domestic users of herbicides, pesticides and fertilisers should be produced (to be distributed via retail outlets).
 - ix. The catchment protection measures recommended by the Nitrates Working Group should be monitored (this increased compliance checking to be supported by SOJ & JW).
 - x. Where voluntary measures are insufficient then regulation/legislation to achieve the desired outcome should be considered.
 - b. **Cultivations and land use**
 - i. Autumn agricultural cultivations should only be carried out prior to planting an autumn sown crop.
 - ii. Cover crops or second crops should be sown or planted as soon as possible after harvest.
 - iii. Selected vulnerable water courses that are permanently grazed and accessed directly by cattle should be fenced off.
 - c. **Soil Testing**

Soil testing is an integral part of planning nutrient use and targeting applications.

- i. Representative Soil Mineral Nitrogen testing prior to the planting season for the Jersey Royal potato should be continued so that the available soil nitrogen is assessed in a number of fields.
- ii. Soil testing on all fields/areas used by commercial agricultural and commercial non-agricultural users of fertilisers and/or organic manures should be undertaken once every three years to provide an analysis of the soil pH, P and K indices.

d. Nutrient Management and Planning

Comprehensive nutrient and soil management and planning is essential to reduce nitrogen usage and to minimise nitrates in Jersey's water.

- i. The pH of Jersey soils is generally below the optimum for nutrient uptake by plants. The pH of local agricultural soil needs correcting with lime applications to achieve a pH of at least 5.5, preferably 6 to 6.5 for optimum nutrient availability and efficiency of use.
- ii. Nutrient management planning and recording is currently a requirement for all those claiming Single Area Payment (SAP). Organic manure management planning and recording is currently a requirement for those claimants of the SAP who import or produce and utilise organic wastes but is not being carried out effectively by some. This should be extended to a requirement for ALL commercial producers and appliers of organic manures and wastes to land to record and account for production and disposal/spreading.
- iii. It is recommended that in Jersey all commercial users (e.g. SOJ Parks and Gardens, Golf Courses, Agriculturalists etc.) of nutrients should be planning and recording nutrient use annually including any organic manures applied. Evidence should be provided as to how the amount of fertiliser applied to each field/area was calculated under good practice guidelines (e.g. crop need using (RB209). This plan will include a requirement for record keeping for 3-5 years and records of actual applications.
- iv. Precision use of Nitrogen. There is no advantage to applying more than the economic optimum to potatoes or any other crop. The response of crop production to fertiliser N and P is relatively flat in the region of the economic optimum but over-fertilising has a disproportionately great impact on N leaching losses. There is an opportunity to make a *small* reduction in N fertilisation that would have little impact on the economic return but reduce the risk of inadvertent over fertilisation and subsequent nitrogen leaching. The industry has proposed to adopt a target to reduce applied nitrogen by between 5 and 10% over the next 3 years. It is recommended that this is done by working out the whole farm fertiliser requirement from the nutrient management plan (NMP), including taking into account organic manure application, and then apply 95% of that for the 2015-16 season. This amount to decrease to 90% of an individual users NMP being applied by 2018/2019.

e. Precision Fertiliser and Organic Manure applications

Precision application is key to reducing Nitrogen losses and making sure the fertiliser or manure is applied in the right place, at the right time in the right quantity. Targeted, planned and integrated organic manure application is key to good use of nutrients and avoiding losses to water.

- i. There should be a move to fertiliser placement rather than spinning disc application where the crop is suitable for this method.
- ii. All current fertiliser spreaders should have deflector plates fitted, properly trained drivers and all commercial spreaders should have a regular (annual) calibration certificate.
- iii. A 5m 'no spread' buffer strip for fertiliser should be introduced in areas next to watercourses (a 10m buffer already applies to manures and wastes)
- iv. A 1m 'no spread' buffer strip for fertiliser spreading next to banks and hedges should be introduced.
- v. Splash plates for slurry application should be checked and calibrated annually to ensure the spread pattern and quantity are calculated correctly.
- vi. Slurry, FYM and other organic manures should be incorporated within 24-48 hours except when applied to a growing crop.
- vii. A maximum field application limit of 170kgN/Ha per annum for animal manure should be introduced.
- viii. Closed period. All the evidence from Europe points to a closed autumn period for the spreading of liquid manures being necessary for nitrate pollution reduction. The recommendation is that Jersey continues with the closed period. There may be some negotiation possible for flexibility dependant on October weather conditions as long as stores are empty at the start of the closed period.
- ix. No slurry applications to loafing paddocks and other heavily grazed fields as deposition loading is high on these fields.

f. Organic Manure Storage Facilities

- i. There should continue to be a periodic review of slurry storage capacity by all producers to ensure storage is adequate for livestock numbers as part of their manure management planning process.
- ii. Limits to storage facilities should not lead to applications to land of organic manures (OM) (FYM, sewage sludge, compost, WTW sludge, slurry) in unsuitable conditions e.g when the soil is waterlogged or compacted.
- iii. Field storage of commercially produced organic manures (OM). Organic manure to be stored for a maximum of 12 months at the same location. Within 2 years of removal from that location, new heaps must not be placed at the same location. The producer or holder of the OM should maintain annual records of the heaps. The records should include information of the period of storage and location at the fields.

2. Recommendations and findings in respect of any necessary interim measures in respect of private water supplies and the public water supply.

a. Human Health Report

The group asked for clarification on the evidence in respect of the impact of excessive nitrates on human health and duly received from the Public Health directorate (States of Jersey) a report entitled 'Impact of excessive Nitrate

consumption on human health² that had been commissioned to review the health effects of nitrates in water following concerns raised about high levels of nitrates in the Jersey water supply.

The report recommended that work continues through the Nitrates Working Group to examine all possible interventions to ensure that Nitrate levels in Jersey water are within WHO guidelines. It also stated that the Public Health Department should continue to research cancer data, particularly around those cancers which have been linked to elevated nitrate levels in drinking water, and revise advice given to consumers with a private water supply.

b. Private water supply water quality data

The group found that no collation or analysis was currently being carried out on data held by the States of Jersey Official Analyst, where private householders take samples of their drinking water to be analysed.

The available records were subsequently retrieved from the SOJAA and analysed. A total of 468 water tests of borehole and well water between 2008 and 2014 by the Official States Analyst's Department were analysed. All years data combined (2008-2014) shows that just under half (49%) of sampled households on boreholes and wells had a water supply that is in excess of the EU Drinking Water and Island limit for nitrate (50 mg/l). Taking the years with large data sets (2012-2014), show little variation in nitrate levels between years.

Raising this figure to the estimated island total number of registered boreholes and wells equates to approximately 1544 households (approx. 4257 people³) likely having a water supply in excess of the EU and Island Drinking Water limit. Three quarters of all sampled boreholes and wells had a nitrate concentration between 0 and 74.9mg/l. The maximum recorded nitrate level was 229 mg/l.

c. Communication and clear messaging

The group found that current messaging was not clear and recommended that there should be a clear and consistent message to Islanders about the Nitrate issue in local waters, some clear information about nitrates and private drinking water supplies and that all parties continue to communicate a clear message of stakeholder responsibilities and good practice. This is also constant with the recommendations in the health report outlined in a. above.

It was proposed that an information leaflet should be produced with input from the States of Jersey Analyst (on water sample pricing), Health and Social Services Department, the Department of the Environment and Jersey Water. At the time of writing this is almost complete and is due to be distributed shortly to householders and those responsible for providing a private water supply.

d. Public water supply interim measures

The Jersey Water laboratory carries out tests on approximately 7,000 samples taken throughout the year from water sources, treatment works, storage reservoirs and customers' taps. In 2014 the treated water supplied was 99.99%

² EPR-R-2014-11-12 Impacts of excessive nitrate on human health – final

³ Based on the number of households at 3151 and the number of people 8688 - source Water Resources Law database. DoE, 2015.

compliant with all physical, chemical and bacteriological standards under the Water (Jersey) Law, 1972. Although in 2014 it was not utilised, Jersey Water has dispensations for nitrates under the Water (Jersey) Law 1972, which allows for a maximum concentration of 65mg/l and places additional restrictions on the number of samples exceeding the 50mg/l limit.

The dispensation expires on 31 December 2016. The recommendations to reduce nitrates at source contained within this report need to be implemented with some urgency to ensure that levels of nitrate reduce in raw water supplies. As an interim measure, for the remainder of the dispensation period, Jersey Water should continue to use their water transfer network to blend water sources to meet the 50mg/l limit for nitrate and, where practical, use desalinated water to help remain within dispensation limits. Blending and diverting high nitrate sources around reservoirs during certain times of year may not in themselves be sufficient to ensure the 50mg/l is achieved and does increase the risks relating to water resource availability and should not be viewed as a long term solution.

3. Mechanisms for delivery of these measures

a. Mechanisms

Water is a shared and essential resource. All stakeholders have a part to play in voluntarily taking up measures to protect water quality.

The States of Jersey are going into the next Medium Financial Plan period (2016-2019) with a projected deficit to 2019 and this will likely necessitate considerable savings and service redesign. However, notwithstanding this uncertainty it is recommended by the group that government continues to employ a mix of incentives and advice/education (including codes of practice) backed up by regulation where necessary. These measures and mechanisms should be underpinned and/or delivered by the following States policies and plans.

- i. The States of Jersey Strategic Plan 2016-19??
- ii. The Island Vision (due 2015)
- iii. The Rural Economy Strategy 2016-20
- iv. The Water Strategy 2016-20

4. To propose a timescale over which these recommendations should be implemented

a. Proposed timescale

The Jersey Water dispensation expires on 31 December 2016. The recommendations that can be implemented straight away should happen in 2015. Those with a longer lead in time should in any event be delivered in their entirety during the period covered by the RES and the Water Strategy 2016 – 2020, with a regular review of progress during this time.

⁴ Water Quality Report, 2014, Jersey Water www.jerseywater.je