



THE WATER MANAGEMENT PLAN FOR JERSEY

Overview document

November 2016

States 
of Jersey

Contents

1. Why we need a plan to manage our water?	2
2. Main types of pollution affecting our water	3
3. Examples of diffuse pollution in Jersey	3
4. Current condition of our water	4
5. Implications of not having 'good status'	5
6. Progress on point and diffuse pollution	6
7. Proposed solutions	7
8. Delivering the Plan objectives	8
9. Ensuring the approach is cost effective	8
10. Sharing the costs of implementing the Plan	10
11. Measuring success.....	10
12. Conclusion	11
13. More information	11

1. Why we need a plan to manage our water?

Water scarcity and water pollution are two of the most pressing problems faced by the world today.

Clean and available water underpins a sustainable future. Our health, economic activity and biodiversity are reliant on it.

Jersey depends almost entirely on rainfall for its water. Jersey Water are already storing and abstracting water from most of the island streams. The Island's geology means that the storage capacity of groundwater in underground fractures is limited. If things go wrong, we cannot easily ship or pipe in additional water.

Our island's water represents a vital and vulnerable resource. The first step to safeguarding it is to appreciate the true 'value' of clean water.

The main use of water in Jersey is for the public water supply. Most households and businesses are connected to the public supply. However, around 3400 households (some 8%) are reliant on private boreholes and wells. These water sources are not tested or treated to the same standard as the public water supply and are vulnerable to localised pollution. Agriculture is a key business user of water and the tourism, recreation, fisheries and aquaculture sectors are wholly or partially dependant on it.

Land use and water quality are inherently linked. The built environment covers nearly one quarter of the island's area and more than half of our countryside is intensively farmed. This means that the impact of human activity is quickly reflected in our water courses, our reservoirs and potentially our drinking water. The impacts of pollution cannot be ignored: the problems can last for decades.

The recent closure of reservoirs due to pesticide pollution has highlighted the vulnerability of our water resources. The island also has one of the highest levels of nitrates in Europe; this is not a claim to be proud of. The predominant source of this pollution is agricultural activity. Leaks from household oil tanks and the septic tanks can also cause localised or sometimes extensive pollution.

Climate change is already changing the expected pattern of rainfall. Longer drier periods, more unpredictable and intense rainfall all add to the complexity of managing the quantity, as well as, the quality of our water resources.

High intensity rainfall events lead to soil run-off, high silt loads and pollution in streams. Storms also cause an increase in spills from the island's sewage network. With a changing climate, this is only likely to get worse and further intervention to manage those risks is required.

Maintaining a sufficient quantity of 'clean' water is already a challenge. We need to plan in order to be able to assess, manage and improve our water resources effectively. This Water Plan provides the means to do this. The Plan's importance is recognised as an output of the States Strategic Plan.

2. Main types of pollution affecting our water

Pollution can be broadly categorised into two types:

- i. **Point source**, which arises from a defined ‘point’ source. Examples of these include leaking domestic oil tanks, slurry run-off and leaking sewage systems.
- ii. **Diffuse source**, is made up of many small sources, which collectively have a large impact. This includes widespread land use or practices such as fertiliser or pesticide applications to many fields.

Point source pollution is typically reported as a pollution incident and can be dealt with using the Water Pollution (Jersey) Law, 2000. Around 80 incidents (those that cause pollution) are reported to Environmental Protection¹ each year.

Dealing with diffuse pollution is problematic within the current provisions of the Law. This is because it is difficult to demonstrate that the impact is attributable to any individual case, which is a prerequisite for formal enforcement action.

3. Examples of diffuse pollution in Jersey

High levels of nitrates in our streams and groundwater are a consequence of diffuse pollution.

The high level of nitrate in Jersey’s surface and groundwater is predominantly caused by the intensive agriculture over a large area of the Island. However, other population pressures such as domestic and amenity sources of nitrogen (septic tanks or golf courses / gardens) also exacerbate it.

Despite improvements over the last 15 years, Jersey’s groundwater and streams still have some of the highest levels of nitrate in the whole of Europe.

By law, Jersey Water must supply drinking water with a nitrate concentration of below 50 mg/L. The Company regularly needs to blend water from different sources to meet this level. Even so, it cannot guarantee a low nitrate supply to households and needs to apply to the Minister for the Environment for a ‘dispensation²’ to supply water to the public when concentrations are higher than 50 mg/L. The Medical Officer for Health is no longer willing to support this position indefinitely.

People that rely on private boreholes and wells do not have the option to blend water with cleaner sources, and rarely treat their supply to remove nitrates. We estimate that almost half of such households are using water that is above the nitrate limit set by EU and local legislation.

¹ Part of the Department of the Environment, regulator of the Water Pollution (Jersey) Law and other laws

² A dispensation is issued under the Water (Jersey) Law 1972 and allows Jersey Water to supply water that is above the legal limit (wholesome water) for those defined parameters.

The problem is not restricted to nitrate. Pesticides³ can get into water by spray drift, leaching (percolating down through soil to groundwater) or run-off.

Some pesticides do not easily break down in water and can remain for long periods. Traces of pesticides and their breakdown products that were used in the past, but that have now been withdrawn are still found in some island boreholes (for example, atrazine and chlorthal).

Another example of a legacy pesticide is oxadixyl that was used to control potato blight and was withdrawn in 2003. Recent testing has identified that it is still present in island streams and boreholes. The highest levels have been recorded in those streams entering Val de la Mare reservoir. This has meant that Jersey Water has had to apply to the Minister for the Environment for a dispensation² for oxadixyl in order that they can continue to satisfy the island's water needs.



Pesticides currently being used can also cause problems. In March 2016, Jersey Water took Val de la Mare out of service due to four different pesticides being identified above the permitted legal limit (0.1ug/L). These pesticides were all used during the seasons planting of Jersey Royal potatoes. This has highlighted the need for action, both in terms of assessment and understanding and in terms of measures to reduce pesticide losses to water.

Another nutrient also causes problems in water in excess quantities. Phosphates are commonly used as part of the fertiliser mix for growing potatoes and are also in manures and sewage. Island fields now contain high levels in the soil due to historic over-application. The run-off of muddy soil from fields, which enters streams and reservoirs during high rainfall events, can contain phosphates. Phosphates cause algae growth and consequently, Jersey Water must periodically spray or close reservoirs to prevent algae tainting the water, and biodiversity is affected.

4. Current condition of our water

The condition of the island's streams, ground and coastal waters have been classified according to a system used throughout Europe. **Most of our water bodies are currently of 'moderate' status⁴.** This is despite the improvements in water quality that have been achieved over the past 10-15 years.

³ Pesticides is an umbrella terms that covers other substances like fungicides and herbicides.

⁴ **Good status** indicates that the classification assessment shows that the relevant biological quality elements are only **slightly** disturbed compared with the natural, undisturbed, condition. **Moderate status** indicates that the relevant biological quality elements are moderately changed from natural conditions. **Poor status** indicates a progressively more disturbed quality status compared with Moderate. **Bad status** indicates that these components are shown to be severely changed from the natural example as a result of human activities

We should not be content with ‘moderate status’. We must continue to improve our waters and ensure that water bodies are protected from anything that would cause their status to deteriorate. Our water should be at ‘Good Status’ to underpin the sustainable economic growth and health we require it for.

Wherever possible and practical, we should aim to improve the quality of our water bodies if they are currently below ‘Good Status’.

5. Implications of not having ‘good status’

Sufficient good quality water is vital for our health; it sustains our quality of life and underpins economic growth.

If we do not address water quality problems at source, then water must be retrospectively treated. This is more expensive than simply avoiding the problem in the first place. We also need to consider the impacts to the ecosystem⁵ of reduced water quality. Treatment does not address this and impacts are difficult to predict.

Controlling pollution at source (where it happens) is key and is far less costly than ‘end of pipe’ treatment options.

If nitrate levels do not reduce, then Jersey Water will need to add a nitrate removal process as part of their treatment. This could increase annual water bills by £40 per household. The treatment will result in a high nitrate waste stream that will need to be disposed of or treated further. Even now, Jersey Water are incurring extra energy costs required for blending (pumping costs) and costs for enhanced treatment and analysis to deal with the pesticide exceedances mentioned above.

Not doing anything will result in a higher costs that will likely be passed onto the public.

A further example of potential costs caused by not addressing nitrates at source is the proposed replacement Sewage Treatment Works at Bellozanne. Green seaweed in St Aubin’s Bay needs nitrates to grow. Currently, Phase 1 of the replacement works does not include a nitrate removal plant.

Research is being undertaken that will better justify whether or not such a facility is required (or would make a difference to the seaweed problem). Should evidence show that nitrate removal is required then the capital cost (excluding daily running costs) is £30m.

⁵ Ecosystem; all living things, from plants and animals to microscopic organisms and their interaction with the environment.

Controlling nitrates at source is therefore key. Lower nitrates entering the Bay through the works and through streams may result in less green seaweed in St Aubin's Bay. This will save the clean-up costs, make the bay more accessible and boost local business.

Lastly, a key consideration for people when choosing to visit or relocate to Jersey is the unique coastal and inland environment. Diminished water quality is not in line with our aim to be a sustainable and environmentally responsible jurisdiction and could damage the island's international reputation.



6. Progress on point and diffuse pollution

For more than 15 years, the Environmental Protection section has developed a system of safeguarding the Island's Water Resources against pollution. Since the introduction of the Water Pollution (Jersey) Law 2000, work has focussed on reducing point source and monitoring the Island's surface, groundwater and coastal waters.

The work to tackle diffuse pollution was started in 2009 by the Department of the Environment working with the farming community through the Diffuse Pollution Project (DPP). This used a mixture of education, advice and incentives to better understand the barriers to good agricultural practices and to see what improvements in water quality could be achieved.

The measures in the DPP were mainly delivered at no additional cost to the States through initiatives linked to the Rural Economy Strategy 2011-2015. These have included economic incentives, a tightening of the Single Area Payment⁶ subsidy compliance for good practice and the Countryside Enhancement Scheme⁷.

Regulation, whilst effective and necessary, is not a magic bullet. Even with the correct legislation in place diffuse pollution is difficult to regulate without complementary incentives and educational and advisory support. Regulation on its own has been demonstrated to not be that effective in changing behaviour.

⁶ An annual subsidy payment made to all commercial growers of crops

⁷ A scheme that gives grants for work to enhance the countryside

Stakeholders and decision makers have helped develop the Water Plan. In 2014, a ‘Nitrate Working Group’⁸ was formed to examine nitrate pollution and make recommendations. The group met at regular intervals for over a year and delivered recommendations for action. These recommendations have been incorporated and form part of this Water Plan.

A five-year review of the DPP showed that average nitrate levels had reduced in both ground and surface water. Historically the level of nitrates shared the same trend as the area of Jersey Royals planted. This has recently decoupled and levels of nitrates are now reducing. However, concerns remain about the occasional spikes of nitrate in the mains water supply and the setting of future dispensations for nitrate.

A wide-ranging assessment of the status of our water has been undertaken as part of the preparation of this Water Plan⁹. This underlined that nitrates in both ground and surface waters are key challenges that require further work. Other problem pollutants such as pesticides and phosphates require further investigation and monitoring.

7. Proposed solutions

This new Water Plan for Jersey is based on an ‘integrated water management planning’ approach. This approach is more effective because all stakeholders contribute and work together towards the common goal of better water quality and managing water resources sustainably.

Future rural policies will underpin the Water Plan and encourage farming business to become more sustainable through the implementation of a suite of measures that are designed to reduce the environmental cost of agriculture, some of which are directly related to water quality.

Land use and water quality in Jersey are linked and need to be managed together. Key users must play their part in securing a healthy and usable water environment into the future.

Greater focus will be placed on best practice through revised Codes of Good Agricultural Practice for the Protection of Water and through linking financial support provided to farmers to improved environmental outcomes that are relevant to markets.

The identified water quality issues in the island are longstanding and complex to resolve. It is therefore proposed to set and stagger the objectives in this Plan into short-term (measures that can be implemented immediately or are preparatory), medium-term (those relating to this Plan) and long-term (those extending into future Water Plans).

⁸ The group comprised of members of the Environment and Health Departments, Jersey Water and representatives of the potato and dairy industry

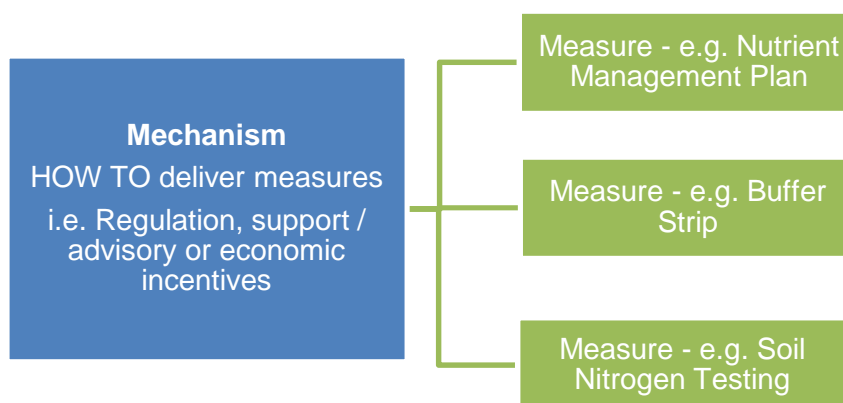
⁹ Challenges for the Water Environment of Jersey, 2014, copies available from the Department of the Environment

Table 1. Objectives of this Water Plan (medium-term objectives)

- ✓ Reduce the levels of nitrate found in surface waters and groundwaters (maximum and average levels).
- ✓ Remove the need for the nitrate dispensation.
- ✓ Reduce the number of pesticide breaches in streams.
- ✓ Increase compliance monitoring for the measures identified in the Plan across the land based sectors in respect of losses of nutrients and pesticides to water (% compliance with mandatory measures).
- ✓ Increase frequency and coverage of existing environmental monitoring for pesticides and phosphorus such that a higher number of Jersey's water bodies can undergo classification in 2020 ready for the next round of the Water Plan.
- ✓ Implement additional compliance and advisory capabilities and capacity to ensure adherence to new regulations and provide internal advice to the Department of the Environment.

8. Delivering the Plan objectives

A wide range of measures and mechanisms that are known to help address the priority issues (nitrates, pesticides and phosphates)¹⁰ have been assessed in the Plan. This included a review of past and present work and examples of what worked to tackle diffuse pollution from other countries.



9. Ensuring the approach is cost effective

The Plan has assessed differing approaches (scenarios) for the implementation of the chosen measures. These scenarios reflect the most likely policy environments over the next five years.

¹⁰ The measures were considered using the source-pathway-receptor model, where source control (control where it happens) is the preferred option in the first instance.

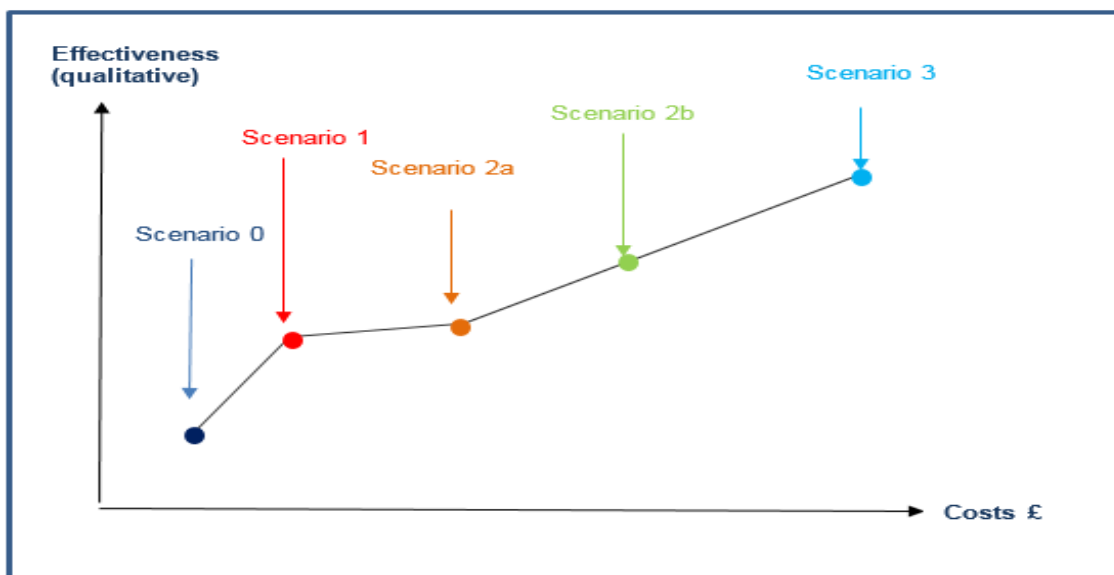
The recommended scenario identified in the Plan is Scenario 2b in which rural payments will continue¹¹ and Water Catchment Management Orders (WCMO's) are introduced.

The Plan requires that changes to the existing legislation are made so that the measures can be implemented. In Scenario 2b, a core set of measures will be implemented through Water Catchment Management Orders (WCMO). These enable good practice to become legislative requirements across all sectors.

Based on careful consideration of effectiveness and costs the recommended scenario for implementation is 2b. Key aspects of this are that rural payments should continue and Water Catchment Management Orders (WCMO's) are introduced.

Scenario 3, which is the measures in Scenario 2b plus additional targeted incentives and action¹² should only be introduced at a later date if Scenario 2b fails to deliver the expected outcomes in the right timeframe or if more resources are available for implementation.

The mechanism available to deliver the differing measures dictates how widely each measure would be implemented and who it would affect. This level of uptake was used to estimate how effective each scenario would be in reducing the priority pollutants in Jersey.



Schematic showing the incremental increase in both effectiveness and costs of the five scenarios appraised (costs excluding the rural payment from EDD).

¹¹ This may be at current or somewhat reduced levels and delivered differently under the new Rural Economy Strategy

¹² Targeted measures include the requirement to take areas out of farming in specific problem areas and the introduction of a capital grant fund.

10. Sharing the costs of implementing the Plan

The table below gives the additional costs for each of the different sectors over the five years of this Plan as a result of adoption of Scenario 2b, relative to the current position (Scenario 1). This represents the polluter pays principal that underpins the Water Pollution (Jersey) Law 2000.

Annual Government costs, at just under £100k per year come mainly from making sure the legislation and supporting codes of practice are fit-for-purpose and funding the increasing compliance burden (employment of a compliance officer), as well as increased water monitoring costs.

The additional annual costs for the Land Management sector of approximately £130k per year for the whole sector are associated with demonstrating compliance with the new regulatory baseline of good practice. This compliance and environmental safeguard is consistent with the market expectations demanded of the potato and dairy industry.

The additional water industry costs (which includes Jersey Water and the Department for Infrastructure) are mainly for the implementation of a reservoir bypass scheme by Jersey Water. This is a large £1M one-off cost item that Jersey Water are already implementing.

Additional costs borne by different sectors as a result of adoption of Scenario 2b, relative to the current position (Scenario 1), over the five years of the Plan

Water industry	Average cost over five years £1,188k
Government	Average cost over five years £494k
Land managers, including farmers	Average cost over five years £648k
Industry	Average cost over five years £188k

11. Measuring success

The Plan includes a set of Key Performance Indicators (KPIs) to evaluate how successful the implementation of the Plan has been. These KPIs reflect the need to recognise success based on both activity as well as outcome. This is particularly important as there is very likely to be a time delay of several years between policy implementation and improvements in water status as changes take time to work their way through.

Key performance indicators to measure success

- ✓ Increased communications and awareness of the water management challenges in Jersey
- ✓ Behavioural change to adopt more sustainable water management
- ✓ Increased compliance checking
- ✓ Optimising phosphate levels in soils
- ✓ Continued trend of reductions in groundwater and surface water nitrate levels
- ✓ Progressive reduction in the number of nitrate dispensations required
- ✓ Reduction in the pesticide levels in raw water supplies
- ✓ Enhanced and more focused environmental monitoring programme

12. Conclusion

This overview document and the more detailed Water Plan set out a low cost approach to tackling the long-standing water quality issues of nitrate, phosphates and pesticide pollution that our island faces.

The Plan will tackle these through a shared approach that recognises that key users must play their part in securing a healthy and usable water environment into the future.

Addressing these issues at source (where the problem happens) in an integrated manner will be cheaper in the long term and underpin a sustainable economy, better public health and benefits to the environment. Carrying on as we are is not an option.

13. More information

For more details of the Plan, please see the following documents;

‘The Challenges for the Water Environment of Jersey’ report published by Environmental Protection, Environment Department.

<http://www.gov.je/Government/Pages/StatesReports.aspx?ReportID=1123>

The Water Plan for Jersey report published by Environmental Protection, Environment Department.

<http://www.gov.je/Government/Departments/PlanningEnvironment/Pages/Reports.aspx?ReportYear=2016>