

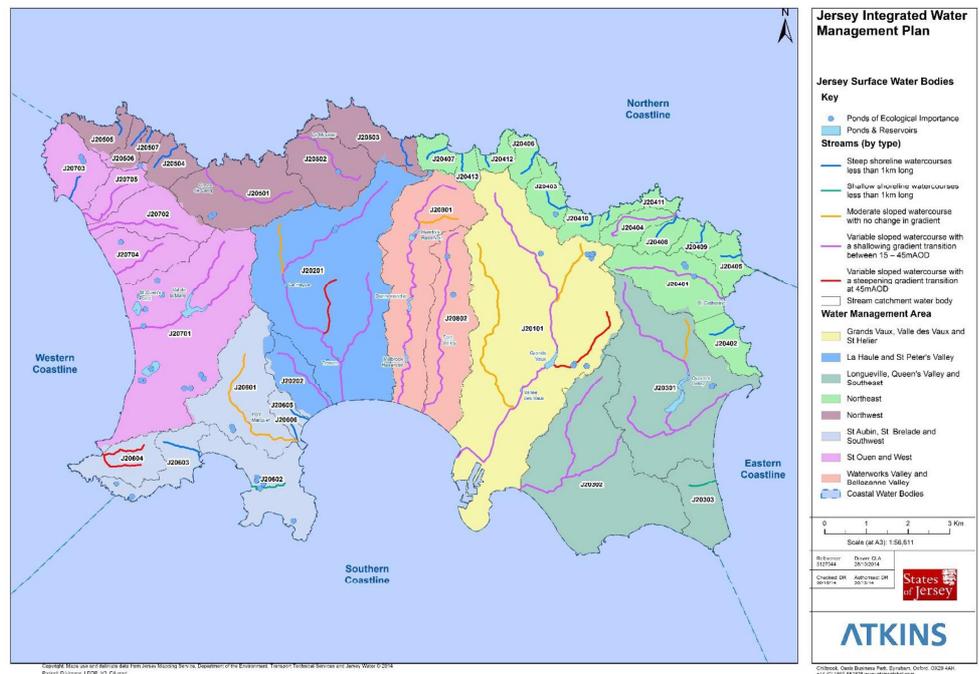
## Challenges for the water environment of Jersey - Executive Summary

An adequate supply of good quality water is essential for a healthy and functional natural environment, for recreation and to support Jersey’s economy. We all need to ensure that the water that we use, and the way in which we use it, is sustainable. Our current activities should not jeopardise water’s vital uses and benefits in the future. By managing the Island’s waters appropriately, the ecosystem services that water provides us can be safeguarded for the future.

To help achieve this, we<sup>1</sup> are developing an Integrated Water Management Plan. This report sets out the current status of the water environment and the key pressures acting upon it and is the first report of a two part series – the Integrated Water Management Plan (IWMP) will follow in 2015. The strategy will set out the steps we need to take to protect and enhance the water environment over the period 2016 – 2020.

The Integrated Water Management Plan (IWMP) approach will facilitate a more progressive and integrated way of planning and coordinating improvements to the freshwater and marine environment. However, there has already been a considerable amount of work undertaken to protect and improve the aquatic environment in Jersey. Much of this is driven and facilitated by the requirements of existing legislation and Multilateral Environmental Agreements (MEA) and the associated regulatory activities arising from these. Those involved directly or indirectly in water management in Jersey include various directorates in the Department of the Environment, Jersey Water, the Transport and Technical Services Department, the Health and Social Services Department and some third sector bodies. We all need to continue to work together and work together better to deliver the healthy sustainable water resource the Island wants and needs.

The IWMP is being targeted at the ‘water body’ level as the basic planning unit. On land, the catchment areas of individual streams have been defined and grouped appropriately into “stream catchment water bodies” which in turn are further combined to form eight larger catchments referred to as Water Management Areas (WMA’s). The main water supply reservoirs along with the identification of key ponds form the “ponds and reservoirs” water body category. Coastal waters and groundwater have also been similarly delineated into water bodies for monitoring and management purposes.



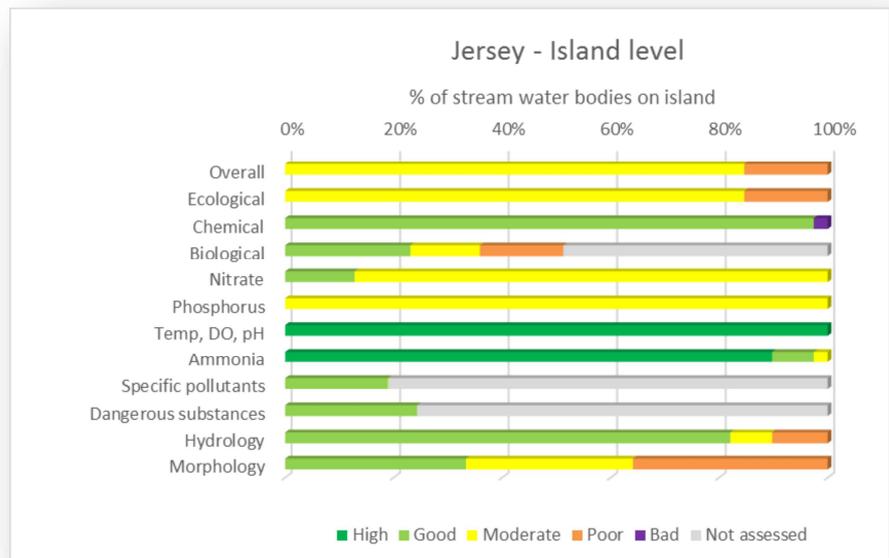
<sup>1</sup> The States of Jersey Department of the Environment and Atkins Ltd

## The Current Status of the Water Environment

Existing environmental monitoring data has been used to understand the current status of the water bodies. Various different types of environmental data (for example water quality, quantity and biological records such as invertebrate monitoring data) have been combined and compared against environmental standards to report status results in the categories of: High; Good; Moderate; Poor and Bad. A further category of “not assessed” has been assigned where there is insufficient data to carry out a robust assessment. Any water body that is reported as having a status lower than Good (so that’s Moderate, Poor or Bad) we plan to address through the IWMP.

**Stream catchment water bodies:** The majority of stream catchment water bodies are not at ‘Good’ overall<sup>2</sup> status (33 out of the 39 stream water bodies are at Moderate status and six are at Poor status).

**Chemical status** across the Island’s stream catchment water bodies is ‘Good’, in that the majority of stream water bodies pass the chemical standards widely adopted across Europe. One water body is assigned ‘Bad’ status due to an historic pollution incident near the airport. A further risk assessment was undertaken for **pesticides** related to drinking waters in streams and, when combined with the groundwater chemical assessment, this highlighted that further investigation is needed into Island-wide pesticide levels.



**Biological classification** has been driven by the invertebrate monitoring and data availability has allowed a biological classification in just over 50% of the Island’s streams. Of those classified nearly half were considered to be at ‘Good’ status for biology. Six streams were considered to be at ‘Poor’ status for biology.

The **nitrate assessment** has shown that the majority of streams on the Island are at less than ‘Good’ status for nitrates. Phosphorus monitoring is not widespread or longstanding on the Island, on the basis of limited monitoring data all stream water bodies are assessed as ‘Moderate’ status. The **ammonia** classification shows that most stream water bodies are at ‘High’ status (35 water bodies) or ‘Good’ status (three water bodies). **Temperature, pH and dissolved oxygen** are considered to be of ‘High’ status in all IWMP stream water bodies.

<sup>2</sup> Overall status is a combination of the individual classification assessments for chemical, biological, nitrate, phosphorus, temperature, dissolved oxygen, ammonia, pH, specific pollutants and dangerous substances. The overall classification is driven by the lowest classification score of the component parts.

The majority of catchments have a 'Slight' impact **hydrology status** where impacts are generally limited to private abstraction boreholes and land drainage modifications. Three stream catchments have a 'Moderate' impact hydrology status; these are affected by public water supply stream abstraction points in the upper or middle catchments. Four of the stream catchments on the Island have a 'Severe' impact hydrology status due to the presence of the six main water supply reservoirs in the catchments, and the location of groundwater abstractions. Just under two thirds of the stream catchments on the Island are classified as having a 'Slight' or 'Moderate' proportion of **morphology impact** encompassing approximately 4 km of water course. About one third of the stream catchments have a larger proportion of modification from urbanisation, reservoirs and /or stream abstraction points. The four stream catchments which contain the six main water supply reservoirs are classified as having 'Severe' impacts for modification as are the large urbanised catchments surround St Aubin's Bay.

**Jersey's Reservoirs and Ponds:** Availability of data has limited the number of ponds and reservoirs for which we are able to generate a status classification. Although classification in lakes often uses a wide range of parameters (e.g. nitrogen, phosphorus, invertebrates, phytoplankton etc) data availability has meant that the classification in Jersey is driven by phosphorus data alone

Five of the six water supply reservoirs have phosphorus monitoring data which indicate that none of these are achieving the required standard for 'Good' status. One is of 'Moderate' status and the other four main water supply reservoirs are all at 'Bad' status for phosphorous. No data were available for the sixth and so a precautionary approach was taken to assign a 'Moderate' status for this water body too.

The smaller ponds are not currently monitored and thus are assigned 'not assessed'.

**Jersey's coastal waters:** To assist with the classification process the coastline has initially been divided up into four suggested water bodies. These coastal delineations are preliminary and will need to be refined to better reflect the characteristics, pressures, inputs and expected quality in each coastal water body. A Water Framework Directive based system of coastal monitoring and classification has already been developed in Jersey for St Aubin's Bay (Southern Coastline water body). This coastal classification system assigns a status class for each of the following elements: dissolved oxygen; total inorganic nitrogen; phytoplankton; macroinvertebrates; seagrass; and seaweed. The overall combined interim classification of this water body is 'Moderate' status. The less than 'Good' status has been driven by the seaweed assessment – all the other elements were classed as 'High' or 'Good'.

**Groundwater:** In Jersey, in recognition of the close linkages between groundwater and surface waters, the eight surface Water Management Areas (WMAs) have been used to define groundwater bodies.

**Groundwater quantitative status** results are that groundwater quantitative status is good in all WMAs. However, It is important to note that although groundwater quantitative status is assessed as good, this does not mean that there are no abstraction pressures on groundwater, or that groundwater resources will not become stressed during droughts.

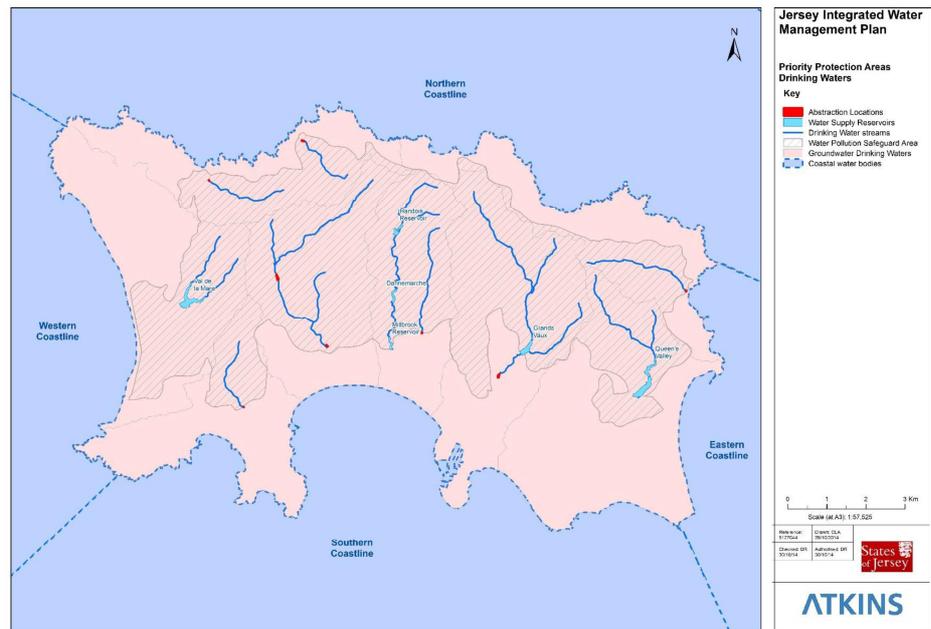
Overall, the **chemical classification** results for groundwater indicate that nitrates, pesticides and locally PFOS require further consideration in the next stages of the integrated water management planning process. Alongside this, more widespread groundwater monitoring over the course of the IWMP would help understand the baseline groundwater status and remove any potential bias towards monitoring only where there are suspected issues or failures.

### Priority Protection Areas in Jersey:

Protected Areas are usually designated as requiring a higher degree of protection either for their surface water or groundwater, or to conserve habitats and species that directly depend on those waters.

A pragmatic approach has been adopted for Jersey, with a system of **Priority Protection Areas** being identified, so that the sites with special features (either features of ecological or social importance) can be afforded priority for action in the future. This will help ensure that where resources are limited, action is targeted according to local priorities. The Priority Protection Areas are as follows:

- Water bodies used for the abstraction of drinking water
- Nutrient Sensitive Areas
- Areas for the protection of habitats and species
- Recreational waters
- Areas designed to protect economically significant aquatic species



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### Key challenges for the management of Jersey's water environment

This section summarises the key challenges for managing the water environment in Jersey as informed by a combination of: the predominant land use on the Island; expert judgement from local water quality specialists; known water environment pressures for example pollution incidents and location of certain risk factors; experience drawn from the implementation of the IWMP process elsewhere; known sector pressures; and the outputs from the classification results described previously.

**It is a pressure assessment and not an impact assessment and simply identifies the range of activities occurring on the Island and the types of pressures these are known to exert on the water environment.**

For simplicity, and to understand the challenges in relation to the sectors involved, the key challenges for Jersey have been categorised as follows:

- **Water supply**
- **Wastewater management**
- **Industry**
- **The rural environment**
- **The urban environment**
- **Tourism and recreation**
- **Physical modifications and changes to the natural flow and level of water courses**
- **Invasive non-native species**

The sections look at each of the individual categories in turn and how they can affect the status of the water environment by acting as a pressure and also, where relevant and appropriate, where a category is acting as a receptor.

**Water supply:** Water supply is a key issue for Jersey to address through the IWMP, where a steadily growing population needs to be served with water supplies of a suitable standard for human consumption taken from an already carefully balanced resource.

Water supply can act as both a pressure on the water environment and a receptor. There are two key components to water supply: water **quantity** and water **quality**. Both are key challenges for the Island's resources and each has the potential to affect the other; for example pressure on water quantity from abstraction can then exacerbate any existing quality issues (for instance by reducing dilution capacity in streams) and this can then result in restricted options to mitigate quality issues, such as the ability to blend water supplies containing high nitrate concentrations to bring down the levels to those acceptable for drinking water supply. Climate change and population growth can only exacerbate these issues, both in relation to public and private water supplies.

**Wastewater management:** Wastewater management on Jersey differs between urban and rural areas and each pose different risks to the water environment.

Mains sewerage serves the key urban areas with wastewater facilities, which are administered by the Jersey Transport and Technical Service (TTS) for the majority of the Island's population. In recent years TTS have been unable to meet the nutrient standards set by their discharge permit of 10 mg/l (the standard set in the EU Urban Waste Water Treatment Directive), with annual averages of total nitrogen ranging from between 22 – 39 mg/l from 2009 to 2013. Wastewater can contribute sources of pollutants to the water environment; in this case the coastal waters around the Island.

Aside from the mains wastewater network, approximately 10% of the Island's households, mainly in the rural areas, are served by private systems such as septic tank and soak-away systems, private package treatment plants and tight tanks. There is a potential risk that, when poorly placed in relation to a water course, or when inappropriately managed, private wastewater systems can contribute to water pollution in surface waters and groundwaters, for example nitrates, phosphates, microbial loading and metals from seepage of sewage effluent

**Industry:** Jersey does not have a strong industrial past or present; there are no large or widespread manufacturing industries on the island; this is reflected in the chemical classification results with a lack of failures against industrial contaminants in the catchment and coastal waters.

Industrial processes on a smaller scale can, however, exert pressure on the water environment if they are unregulated, utilising key substances of concern or if they are present in large numbers on the Island that collectively could have an effect. As such, industry is still considered a key challenge to the water environment both today, and into the future.

**Coastal fisheries and aquaculture:** This industry is important to Island life; in 2012 the value of the shellfish and wetfish combined catch was estimated at just over £6million. In terms of environmental quality, the industry can be considered as both a receptor and a pressure.

The land-based activities exerting potential pressure on coastal water quality will therefore need to be carefully managed to ensure that the fisheries and aquaculture industry is sustained into the future. Much work is already underway through existing Department of Environment work programmes, however the IWMP will bring renewed focus to integration between land management and coastal water quality to help achieve this. Alongside this, the IWMP will help existing initiatives designed to address fisheries and aquaculture as a pressure, for example by identifying Priority Protection Areas with specific measures to protect coastal habitats and species such as Seagrass beds.

**The rural environment:** In Jersey, the main sources of water pollution from the rural environment include rural road run off, non-mains wastewater systems, pollution incidents such as oil spills and agriculture. Agriculture needs to be considered separately as 57% of the total Island area is farmed, and farming has a very significant impact, particularly in respect of nitrate. Although nitrates remains a priority because of the implications on drinking water standards, The status assessment has confirmed the already-known and well documented issues concerning nitrates on the Island, with more than 80% of stream catchment water bodies failing to achieve Good status for the nitrate and six of the eight WMA's classified as 'at risk' for pesticides. The groundwater assessment also highlighted this pressure from nitrates and pesticides. The high nitrate levels are causing an ongoing issue for Jersey Water in meeting the Island's drinking water standard in respect of nitrate.

**The urban environment:** Although the Island is predominantly rural, approximately 24% of the island area is considered to be urban (that is buildings, gardens and roads). Diffuse pollution from the urban environment can contribute substances such as suspended solids, pesticides, poly-aromatic hydrocarbons (PAHs) and metals to the water environment and the specific sources of these contaminants are often hard to pinpoint. Sources can include run off from roads and urban public spaces, light industrial / trading estate sources, misconnections, misuse of drainage systems, historical sediment build up and combined sewerage overflows. The review of chemical monitoring data undertaken as part of the classification process showed some evidence of chemical pressures associated with more urban areas.

A further analysis was undertaken to investigate the nitrates issue in relation to urban areas on Jersey; this indicated that the locations with the lowest nitrate levels in stream monitoring data were associated with the catchments that had the highest urban land use. This observation is supported by the groundwater assessment, which indicates lower nitrate concentrations in groundwaters in more urbanised areas.

**Tourism and recreation:** Aside from the additional water supply needed and wastewater treatment, the tourism industry can place more direct pressures on the Island's water bodies. The IWMP includes coastal

waters and as such will seek to address any significant sources of coastal pollution from the tourist industry, alongside land and freshwater based pressures, in the objectives and measures set out.

**Physical modifications and changes to natural flow and level of water courses:** The majority of Jersey's streams and ponds have been modified to some degree either with respect to morphology (physical form and function of the stream) or hydrology (water flow and level). Overall, morphology and hydrology pressures can affect water quality, habitat availability, biological communities, flood capacity and can also serve to reduce the stream's resilience to seasonal extremes of flow. The coastal environment is also susceptible to physical modification; coastal defences and sea walls serve to reduce connectivity between the sea and the land, reducing habitat availability such as sand dunes; dredging activities and ports and harbours also affect the natural coastline of the Island.

**Invasive non-native species:** Invasive non-native species of plants and animals are recognised as one of the biggest threats to biodiversity world-wide after habitat loss. Invasive species can often spread vigorously and once established can have very significant impacts on native plants and animals, outcompeting native species for space and food with subsequent damage to local biological communities. Jersey already has issues with invasive non-native species; some of which are relevant to the IWMP for instance Himalayan Balsam.

**Future trends and risks:** In order to manage the Island's water resources sustainably into the future, it is important to consider what the future may present in terms of pressures and risks; these trends can be natural, anthropogenic or even economic. For example, upward trends in the Island's population will place more pressure on drinking water availability and wastewater treatment; increased urbanisation to house the population may further contribute to diffuse urban pollution; climate change may result in rising water temperatures and more extreme weather events; economic trends may result in a changing agricultural focus of the Island. All these serve to increase uncertainty about the future pressures on the water environment and it's also important to consider these when putting together the IWMP.

***We invite you to review the information contained within this report and respond to the following consultation questions:***

***1) Do you agree with the key water management challenges set out and how they are affecting the environment and society? (Please be specific when responding, setting out which challenges your response refers to, whether your response refers to the whole island or specific catchments, and provide supporting information to fully explain your answer)***

***2) What do you consider to be the biggest challenges facing the water environment on Jersey?***

***3) How do you think these challenges should be addressed and in what order? (Please specify which challenges your response refers to and bear in mind any resource implications such as public water supply etc.)***

**Please respond before the end of December 2014 to:**

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