

Submission compiled for Scrutiny review concerning the protection of our marine environment and the monitoring and regulation of coastal waters, Jersey.

Compiled by Lara Luke BSc (Hons) Env Stud (Open) Dip Poll Con (Open) for and on behalf of Save Our Shoreline.

Scope of review:

Protecting Our Marine Environment
Monitoring and Regulation of Coastal Waters

Terms of Reference

This review is being undertaken by the Environment Scrutiny Panel to evaluate:

- the importance of protecting Jersey's marine environment against pollution, and in particular,
- concerns about marine water quality and the potential effect on Island residents, recreational users and the Island's fish farming industry of any potential for reduction in water quality, and
- the effectiveness of States monitoring and regulatory activities in protecting the marine environment.

The review will examine the following in respect of the marine environment:

1. applicable environmental legislation, including consideration of relevant international standards and any anticipated developments
2. the remit of Environmental Protection, Health Protection, Harbours, Fisheries and Marine Resources, States Veterinary Officer and Transport and Technical Services Department
3. existing and potential sources of pollution
4. pollution prevention work undertaken
5. regulatory powers including enforcement activities, procedures for investigation, prosecution and sanctions
6. monitoring activities, current testing regimes, planning controls, emergency planning and discharge consents
7. laboratory resources and arrangements for analysis of results
8. information available to the public on environmental protection and health issues
9. resources available for marine environmental monitoring, regulation and protection
10. the role of, and engagement with stakeholders.

The review will also:

- investigate the collation and assessment of scientifically based evidence of water quality impacts arising from the sewerage network, other outfalls and discharges from the Fort Regent cavern
- identify and consult where appropriate with stakeholders involved in dealing with any potential impacts of marine pollution on human health, marine eco-systems and aquaculture, and recreational use of beaches and local waters
- consider relevant current organisational structures and departmental responsibilities with respect to policy and operations affecting the marine environment
- compare these to alternative best-practice models of environmental protection and regulation elsewhere
- assess the benefits and resource implications of implementing possible operational or organisational change

The Panel will report its findings to the States.

1. Introduction:

A number of issues raised in our previous submission (to the Energy from Waste Plant and Ramsar: Review of Planning Process – Scrutiny report S.R. 1/2010) are pertinent to this review also.

In The Strategic Plan 2005-2010, under Strategic Aim Four, the States address the issue of contaminated land with the pledge to **‘ensure that unpolluted air, clean water and uncontaminated land exist as a basic right for all’**.

The Island Plan 2002 recognises that fishing for shellfish, wet fish and fish farming are important economic activities, which need safeguarding and supporting.

Good water quality in areas where shellfish live is essential to prevent contamination of shellfish. Bottom feeders, such as oysters and mussels, can be particularly sensitive to pollution and contaminants as they are filter-feeders (drawing water across their sieve-like gills which can rapidly accumulate micro-organisms, heavy metals and organic contaminants).

The monitoring of the quality of shellfish waters helps to prevent them becoming contaminated, as there is a risk poor water quality could mean that shellfish become contaminated, which could then affect the people who eat them.

The Island should also have a duty to protect areas such as the Ramsar sites from the adverse effects of environmental changes, especially from those that are human caused.

2. Pollution:

Marine pollution is a diversified term. Several factors have created the present dilapidated condition of the sea. Sources are many but the solutions are few. Because oceans are part of the food chain, marine pollution affects a wide variety of species, including humans. Ocean and human life is so inextricably interwoven that the effects of marine pollution are drastically visible on human life.

3. Pollutants that have an effect on the marine environment:

Addition Of Nutrients & Pathogens:

When organic matter is disposed of into the sea, the matter absorbs dissolved oxygen which reduces the level of oxygen in the ocean that marine organisms require. This organic matter also feeds algae blooms that are already present in the water, stimulating their growth. This decomposing algae not only depletes the oxygen content but also releases toxic substances that are harmful to marine organisms. The toxins can even enter food chain through fish or other sea organisms, which in turn, can poison humans. The main sources of organic matter pollution are sewage plants, forestry, farming, and also airborne nitrogen oxides from automobiles and power plants. Algae blooms that feed on human sewage also causes discoloration of water due to the decomposition of matter. Algae blooms can choke fish gills and even poison them with the chemicals created from the decomposition process.

Human sewage also contain bacteria and pathogens that contaminate the coastal areas by accumulating on shores and beaches. This might even enter the food chain or spread diseases like cholera, typhoid, or other dangerous diseases. One more source of pathogens is the water used to wash livestock that is disposed into the sea. This water contains high level of germs and bacteria.

Also, ocean organisms like mussels, oysters and clams that are consumed as food have a tendency of concentrating pathogens in their gut. Consumption of these foods will increase the possibility of food poisoning, creating possible health risks to many people.

Oil Pollution

Oil is the most dangerous form of marine pollutant. Its effects are not only the most harmful but are also permanent. The oil spills that we hear about are not the only source of oil pollution. Oil finds its way into the sea through many ways such as automobiles, waste discharge of heavy industries, and also from offshore structures. Even the slightest type of contamination can kill the larvae of marine animals and also spread diseases. The chemical ingredients of oil cause physiological changes in the organisms leading to changes in behavior.

With larger oil spills, the thick oil sticks to the body of marine organisms making them incapable of performing some necessary functions. Sea birds are the ones most affected by oil spills as the oil sticks to their wings, rendering them flightless. The oil floats on the top, forming a thick impermissible membrane. This thick layer prevents marine organisms to come to the surface for sunlight and oxygen, and eventually will kill them. As the layer is black and opaque, the sunlight cannot pass through the surface. This prevents the marine plants to photosynthesize sunlight into energy.



Sediments, Plastics, and Foreign Species

When heavy sediments, from for example dredging, settle on the ocean floor they can bury fish and other delicate species such as coral reefs. These sediments can also clog fish gills and smother a large part of the marine ecosystem.

Sources of plastics include landfills, plastic garbage from ships, and litter on beaches. Plastics can stick to marine life and affect their breathing or swimming. When settled on the sea bed, the plastics can also smother any life that calls the sea floor home. Discarded fishing nets can continue to catch huge numbers of fish. Small plastic fragments can be mistaken as food by fish or other sea life which can kill them by filling up or damaging their stomach or other digestive organs. Another common piece of plastic that holds together 6 packs of drinks cans often get stuck around the necks of birds, sea turtles, and other marine life.

Different parts of the oceans have different species. Thousands of gallons of water, along with any local species in the water, is transported by ships in their ballast tanks. When the water is released in a different area, the foreign species in the transported water can kill off native species.



Isn't the rubbish supposed to be going in the incinerator, not strewn across the coast line?

Chemical, Radioactive, and Thermal Pollution

Discarded radioactive materials from nuclear submarines and military waste have been a major source of radioactivity in the oceans, which causes fatal harm to marine life. They can also enter the food chain as some organisms like shell fish concentrate radioactivity in their bodies which are later consumed by humans.

Pesticides like DDT, PCBs etc can enter the oceans through waste water and industrial discharges from farms. Pesticides are easily absorbed by marine organisms causing numerous defects and reproductively problems. Pesticides that enter the food chain pose great risks to humans who consume fish and sea food.

Metals and acid and alkali; including chromium, manganese, iron, copper, zinc, silver, cadmium, antimony, mercury, lead, metals, phosphorus, arsenic and other non-metallic, and acid and alkali. They directly harm marine life and the impact of its use value.

The effects of mercury on humans are already pretty well understood. However, the more we learn, the worse the news gets, and US EPA keeps lowering its "safe exposure level." Young children and fetuses are most at risk because their systems are still developing. Exposure to mercury in the womb can cause neurological problems, including slower reflexes, learning deficits, delayed or incomplete mental development, autism, and brain damage. Mercury in adults is also a problem, causing:

- central nervous system effects like Parkinson's disease, multiple sclerosis, and Alzheimer's disease;
- heart disease;
- and, in severe cases, causing death or irreversibly damaging areas of the brain.

Animals in any part of the food chain affected by the bioaccumulation of mercury can also suffer the effects of mercury pollution. Possible effects include death, reduced reproduction, slower growth and development, and abnormal behavior.

Thermal pollution is when high or low temperature water is discharged from an industrial source. The difference in temperatures can kill corals and other sensitive marine organisms that are not developed to handle the different temperatures.

It's easy enough to see how discharging the heated-up water from a power plant into a river could cause problems for aquatic organisms used to having their water home stay at a fairly specific temperature. Indeed, industrial thermal pollution is a problem, fish and other organisms adapted to a particular temperature range can be killed from thermal shock, and the extra heat may disrupt spawning or kill young fish. Additionally, warmer water temperatures lower the dissolved oxygen content of the water. That's in effect a double dose to aquatic organisms, since the warmer water also causes them to increase their respiration rates and consume oxygen faster. All this increases aquatic organisms' susceptibility to disease, parasites, and the effects of toxic chemicals.

Noise Pollution

"Noise pollution" from ship engines and sonar systems make it difficult for marine mammals like whales, dolphins, and porpoises to communicate, find food, and avoid hazards. Powerful sonar systems operating at certain frequencies have been implicated in whale beachings and may cause damage to marine mammals' sound-sensitive internal structures, causing internal bleeding and even death.

Frequent or chronic exposure to both high- and low-intensity sounds may cause stress on all higher forms of marine life, potentially affecting growth, reproduction, and ability to resist disease.

4. Current monitoring programs:

For heavy metals, below is an extract from the States of Jersey website -

‘The lack of suitable inland disposal sites has meant that Jersey has increasingly turned to reclamation as the sole means of disposing of solid waste, with incineration playing an important role in reducing the volume of waste and prolonging the life of reclamation sites. However the possibility of leachate entering the marine environment is very real. If this occurred locally it would constitute a breach of the Dumping at Sea Law Sea Fisheries (Miscellaneous Provisions) 1974. This has led to the ash being dumped since 1987 above mean high water level at the reclamation sites.

When such leaching is excessive and/or prolonged, the metals can become concentrated up a marine food chain. Some bivalves, for example, concentrate certain metals tens of thousand times above the ambient level (Brooks and Rumsby, 1965). In extreme cases, potential public health risks arise because of the ingestion of contaminated seafood.

In Jersey the common limpet and brown fucoid seaweed have been sampled since 1994 at five locations (ie West of Albert, La Collette, St Aubin, Corbiere and Gorey). Samples have also been taken from Havre des Pas and Les Ecrehous.’

Source:

http://www.gov.je/Health/public_health/health_protection/pollution/Heavy+Metals.htm

An immediate question would be why do they not test any bivalves?

The current monitoring program is archaic and in need of updating to keep up with the advancing techniques in pollution monitoring. The current program being started some 16 years ago, needs updating it is wholly insufficient for this day and age.

Bathing water is also monitored and compared to national standards and an annual report compiled.

5. Sewage:

With heavy metals tankered off in the leachate from the ash pits etc, we are likely to see a problem with the treatment of the sewage. The treatment will not destroy or degrade these heavy metals and then will again enter the sea through the sewage out falls. This will only prove to move the problem around. It may a short term money saving idea but it will have long term environmental impacts which are likely over time to bioaccumulate in the fish that we eat.

6. Current Legislation:

There is legislation in place to protect the marine environment; however it is of little use if the regulator does not pursue prosecutions for unacceptable discharges into controlled waters within a reasonable time. This has happened in the case of alleged pollution incidents during the construction of the EfW plant early in 2009. As of August 2010 it is still not clear whether case files have been finalised and sent to the Law Officers' Department for consideration, which highlights a lack of commitment from the department to address the pollution incidents as it is some 16 months since the incidents occurred.

7. Communications with States Departments and the RMA – Ramsar Management Authority

(This section has been redacted by the Scrutiny Office for Data Protection reasons.)

8. Suggestions for improvements:

1. The Law does not require that the Regulator provides information behind the decision making process for discharge permits or provides information regarding how those representations have been considered within the final permit.

This may be the law but if so the law promotes secrecy and mistrust and needs changing. Where is the transparency?

2. The introduction of Marine Protected Zones.

3. Monitoring –

Marine pollution monitoring, to include quality monitoring, sediment monitoring, atmospheric monitoring, and biological monitoring.

Marine Pollution Prevention Measures are:

- the coordinated development of marine development and environmental protection, based on the control of pollution sources;
- further scientific research on the marine environment;
- a sound legal environment, strengthening the monitoring of surveillance and management;
- the establishment of the organization to eliminate pollution at sea;
- publicity and education;
- to strengthen international cooperation to protect the marine environment.

4. Establish the "polluter pays" principle. Taxpayers should not foot the bill for decades of industry abuses.

5. Eliminate all remaining industrial waste-water discharges to controlled waters, enforcing a "zero emissions" policy for the waste water from industrial plants.

6. Adopt the precautionary principle: Synthetic chemicals should be considered toxic unless it can be proved otherwise. This concept has already been incorporated into Europe's new "REACH" law on chemicals.

7. Upgrade water treatment plants so they can filter out chemicals and pharmaceuticals. Most plants do not handle either.

References

Hofer, T.N., Abessa, T.M.S., Acquiari, V.M.C., Alfonso, J.A. & Neto, J.A.B. (2008) *Marine Pollution: New Research*. New York: Nova Science Publishers.

Further Reading

1. Monitoring the Effect of Water Pollution on Four Bioindicators of Aquatic Resources of Sindh Pakistan
2. Monitoring PAH pollution in the marine environment after the *Prestige* oil-spill by means of seabird blood analysis
3. Effect of changing temperature on benthic marine life in Britain and Ireland
Marine Biological Association of the United Kingdom, Citadel Hill, Plymouth