Report on Pollutants and Contaminants, and their Impact on Jersey's Population and Environment

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SOS Jersey
April 2023

This report focuses on a number of threats to our population and environment

- Nitrogen pollution entering into St Aubin's Bay, giving rise to the sea lettuce problem
- Heavy metals pollution emanating from the land reclamation areas, and affecting our shellfish
- PFAS in our fresh water supply
- Pollution specifically of the Ramsar Area
- Asbestos

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Part 1: Nitrogen pollution entering into St Aubin's Bay, giving rise to the sea lettuce problem

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The following graphs have been compiled from data collected from samples taken at the discharge pipe at Bellozanne Sewage Treatment Works

Please note:

- The figures in the graphs relate to the levels of total nitrogen, measured in milligrams per litre of water.
- The pollution standard for nitrogen in treated water is 10mg/l.
- A red line on the following graphs indicates the 10mg/l level; ***any figures above this line exceed the discharge permit and are unacceptable.***

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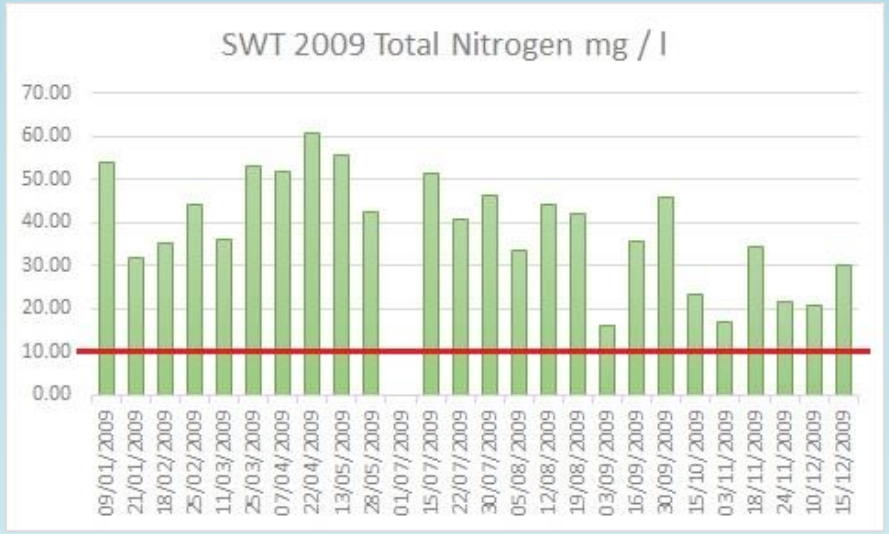
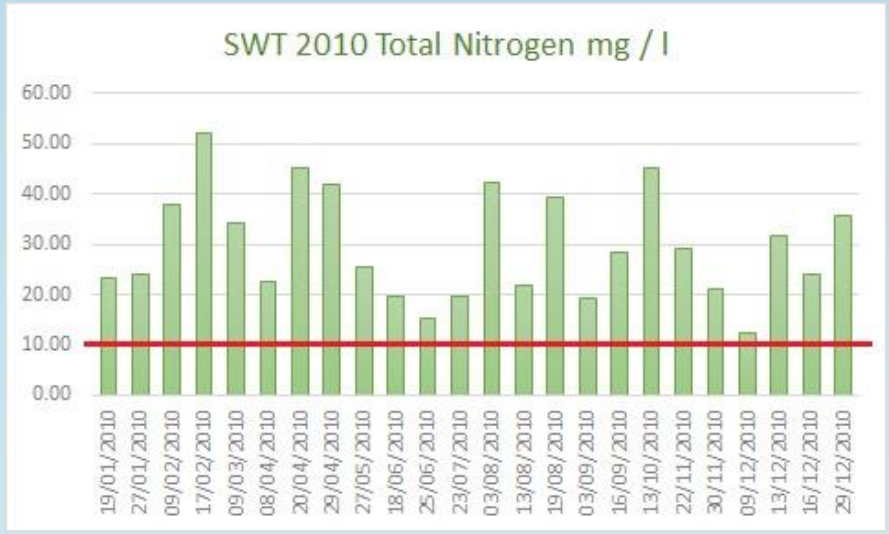
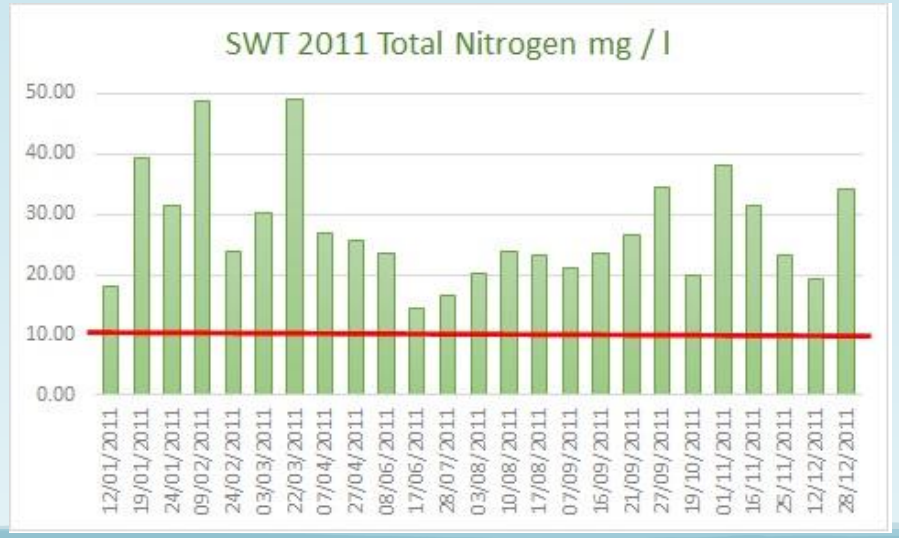
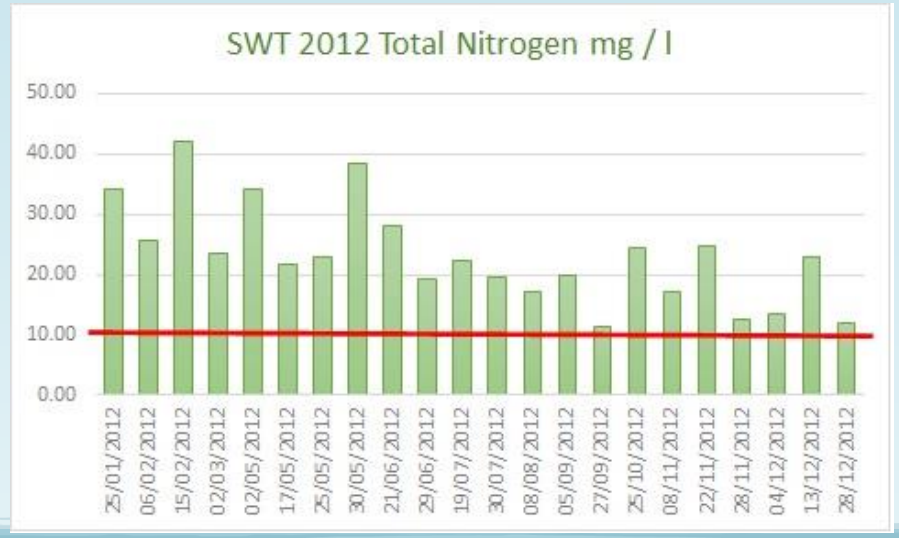
SWT Graphs 2009 - 2012









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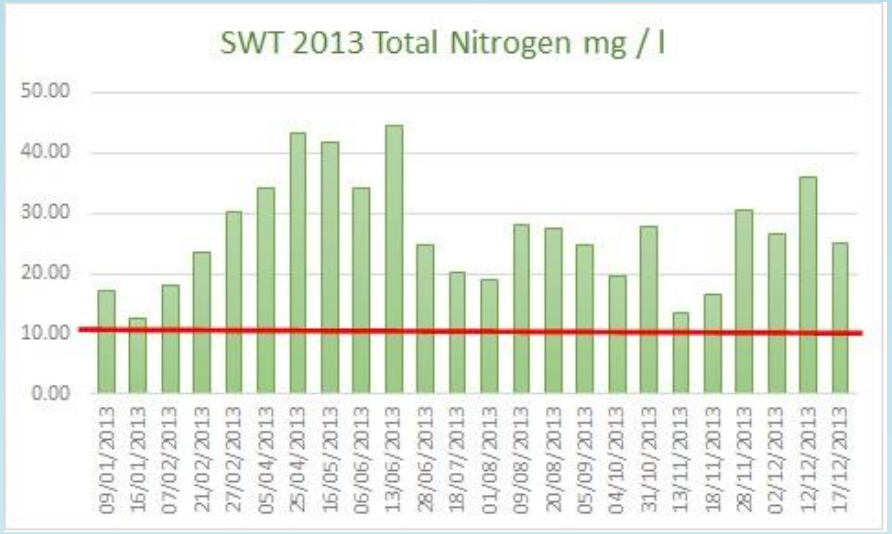
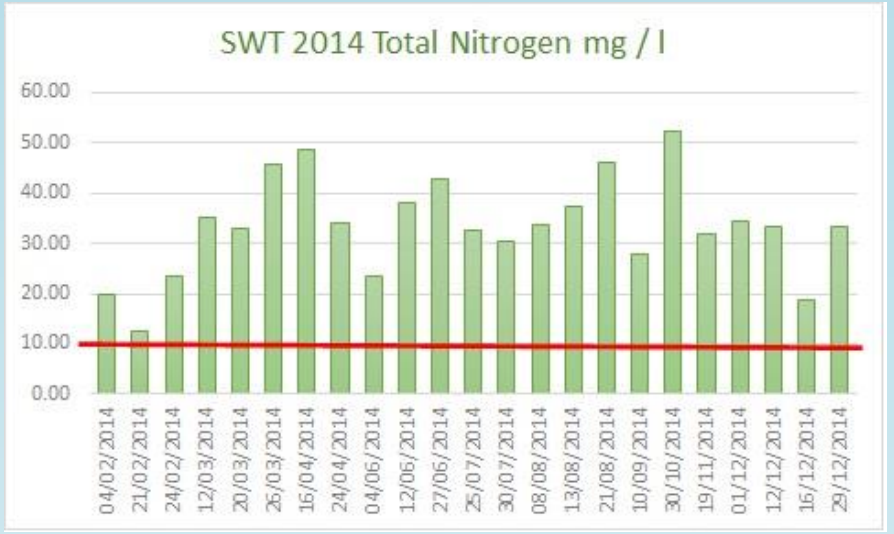
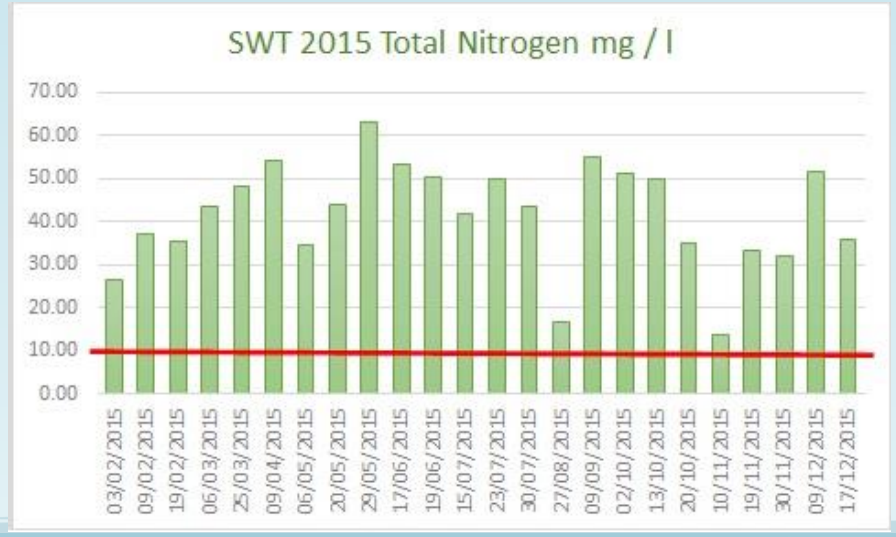
SWT Graphs 2013 - 2015







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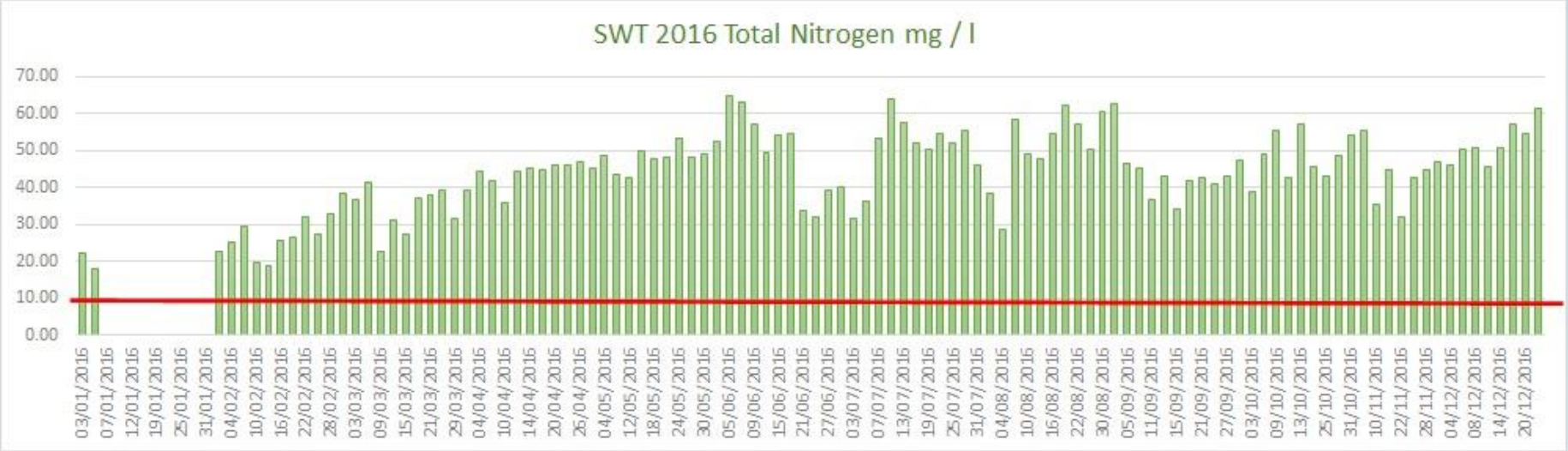
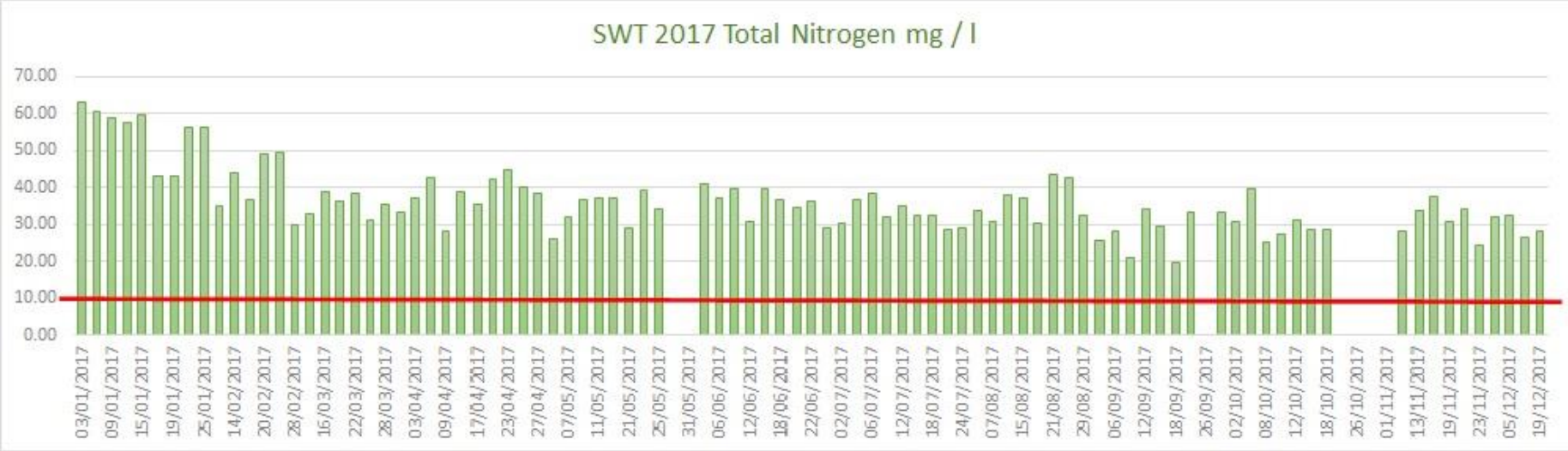
SWT Graphs 2016 - 2017





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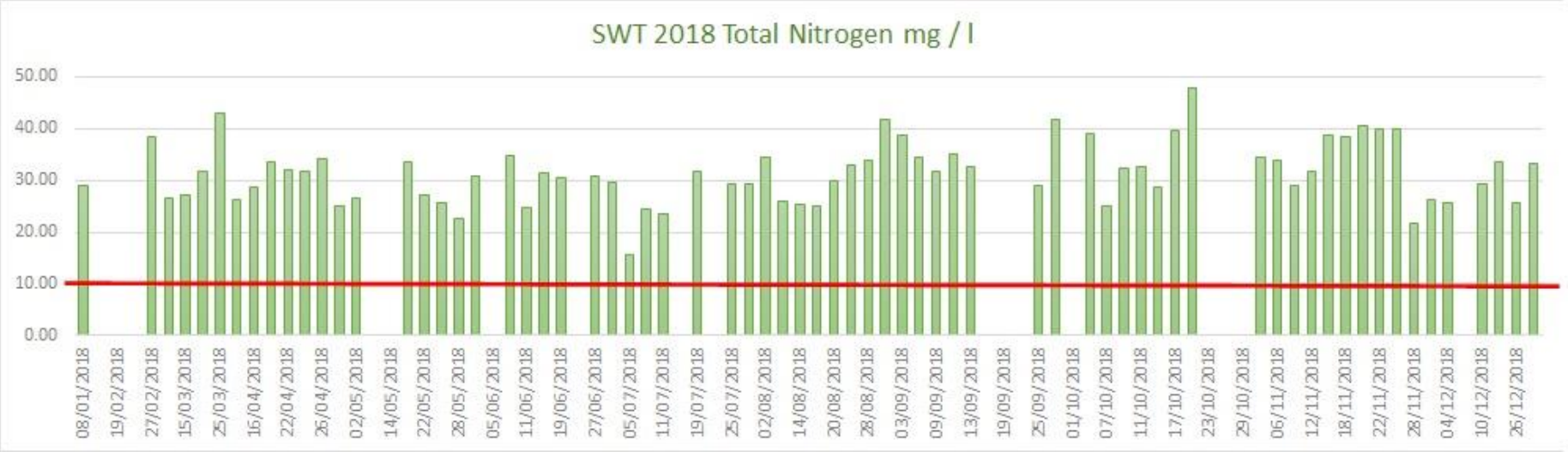
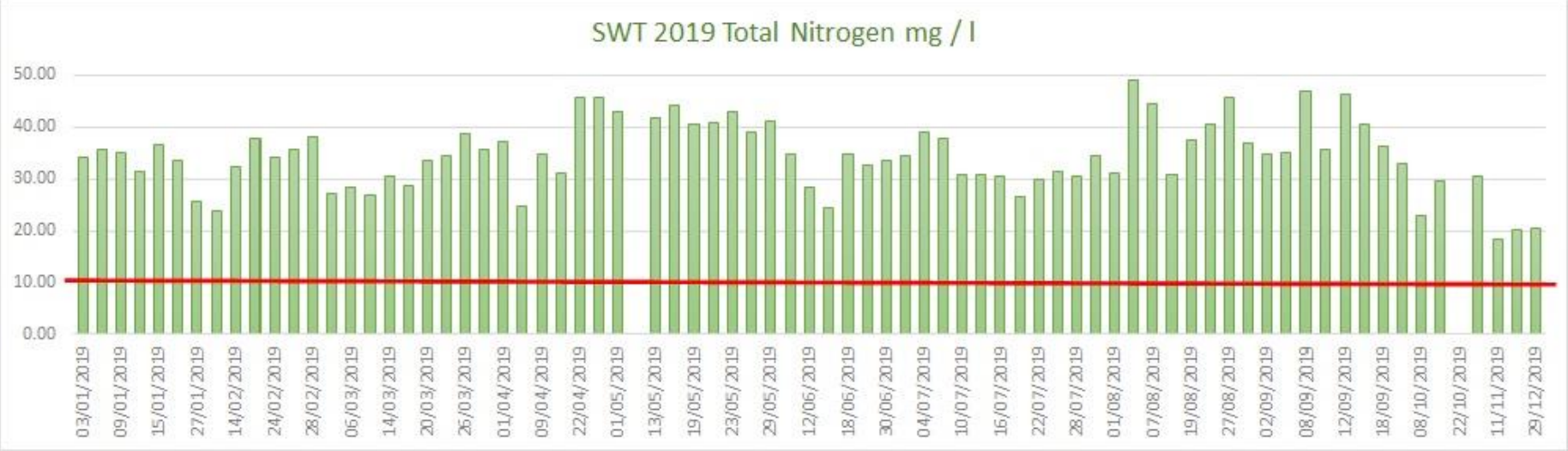
SWT Graphs 2018 - 2019





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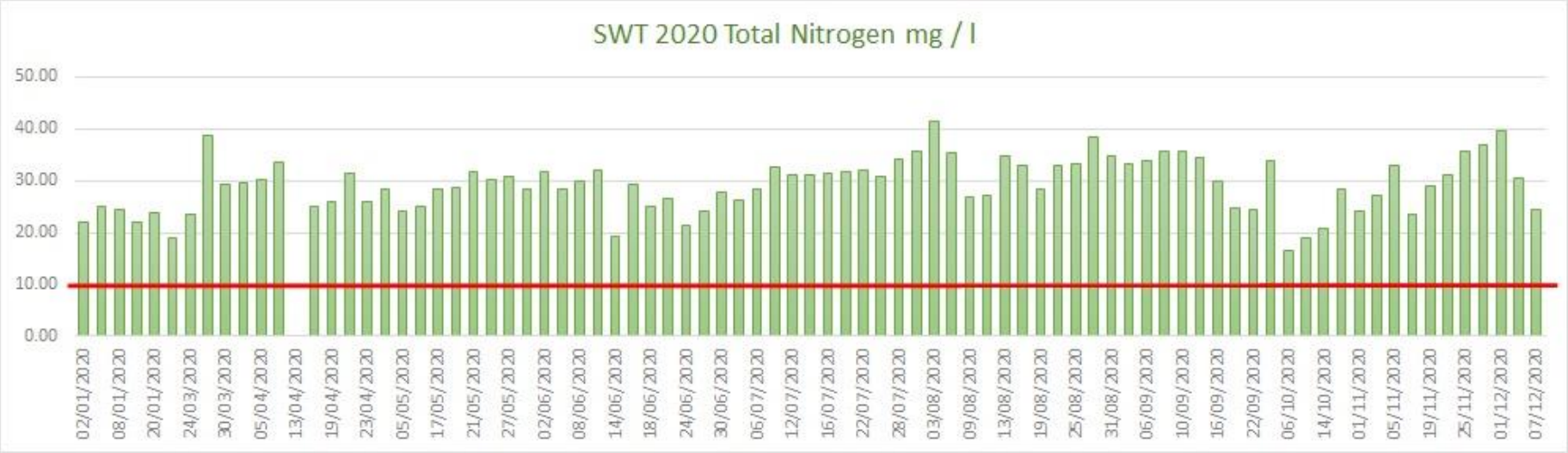
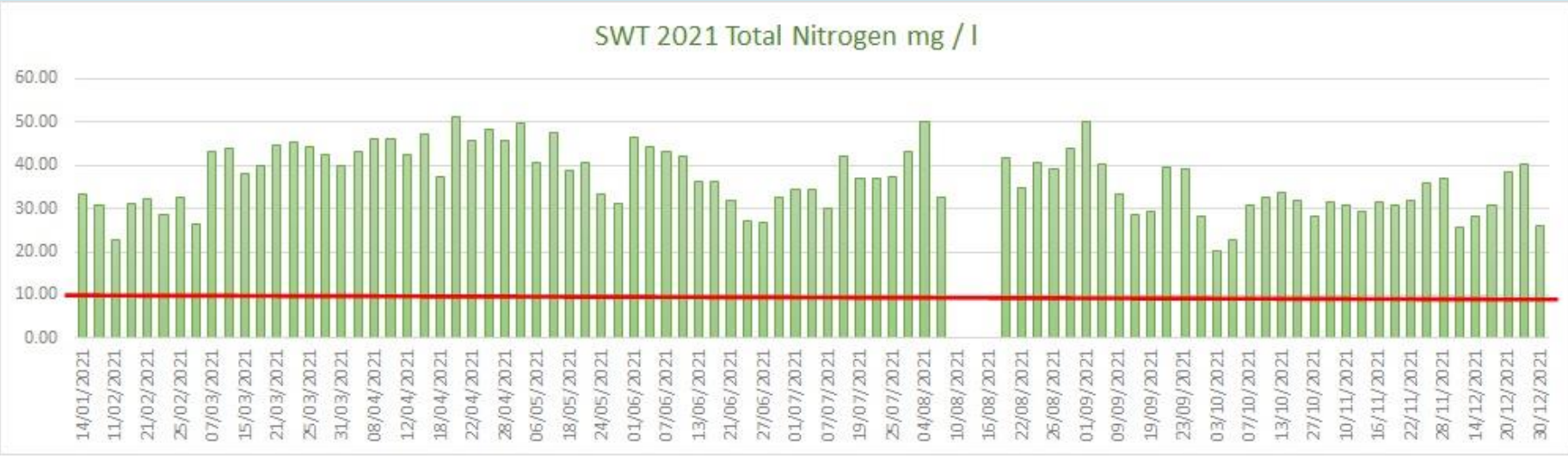
SWT Graphs 2020 - 2021





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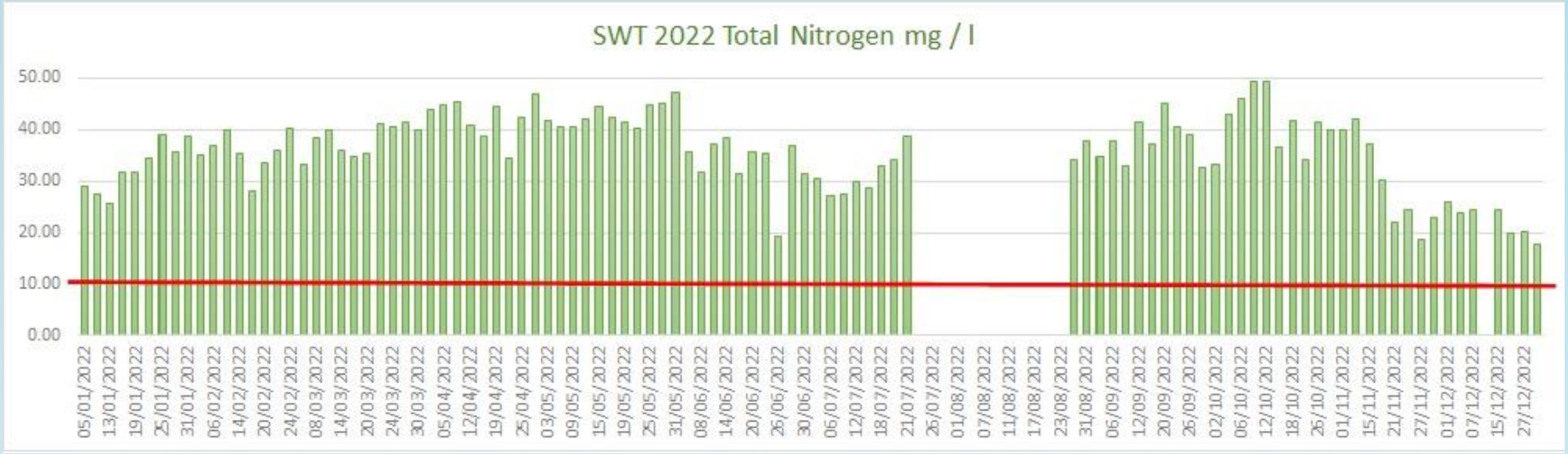
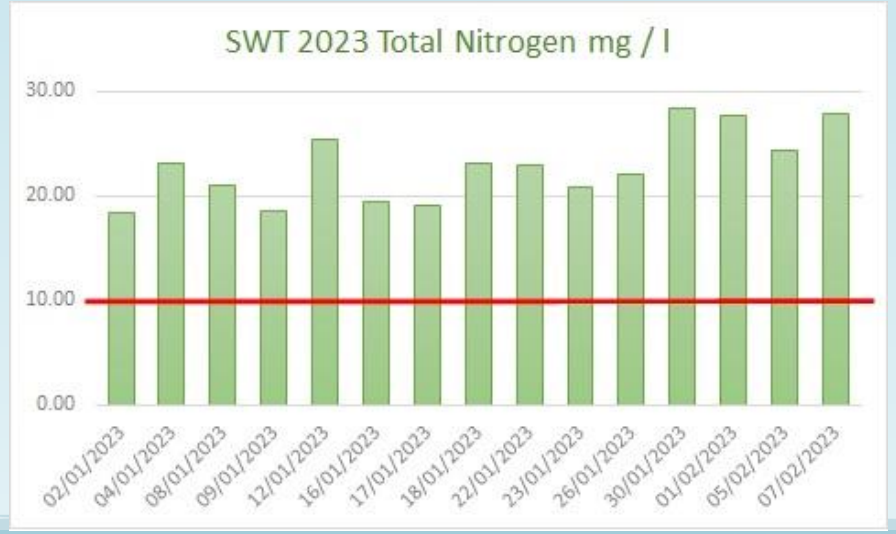
SWT Graphs 2022 – Part 2023





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Summary of these graphs based on Bellozanne Sewage Treatment Works data

It can be seen that :

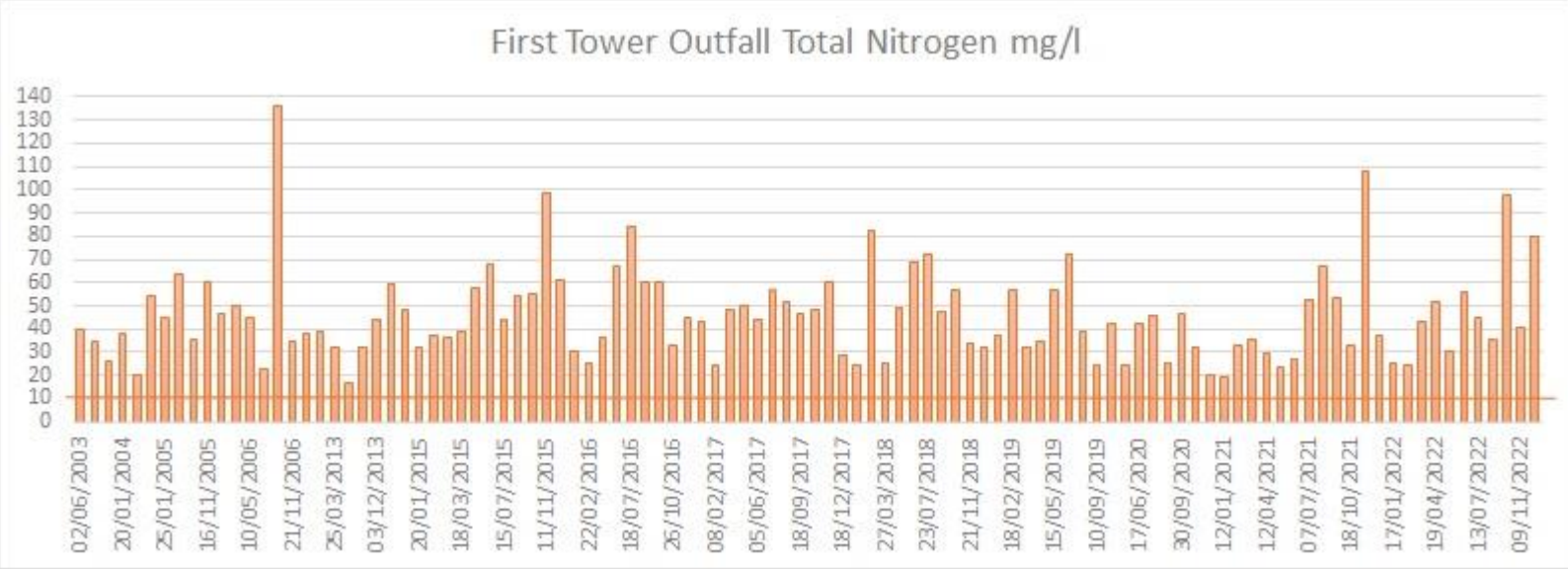
- ***Over the course of the fifteen years studied, involving 850 samples, there has not been a single measurement taken where the nitrogen level is within the discharge permit!***

The following graph has been compiled from data collected from samples taken at the First Tower outfall, which discharges into St Aubin's Bay

Please note, as before:

- The figures in the graphs relate to the levels of total nitrogen, measured in milligrams per litre of water.
- The pollution standard for nitrogen in treated water is 10mg/l.
- Levels higher than this figure exceed the discharge permit and are unacceptable.

First Tower Outfall Data



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Summary of graph based on outfall data

It can be seen that :

- The nitrogen levels are well above the permitted level, throughout the period of monitoring; however
- The data is very sparse and inconsistently gathered: the following analysis demonstrates this more clearly.

Analysis of frequency of outfall data sampling

Year	Samples taken	Year	Samples taken
2003	3	2013	5
2004	3	2014	2
2005	4	2015	11
2006	6	2016	9
2007	Nil	2017	11
2008	Nil	2018	10
2009	1	2019	8
2010	Nil	2020	8
2011	Nil	2021	12
2012	Nil	2022	11

Conclusions to be drawn from outfall data (1)

It was hoped that by comparing this First Tower outfall data with that taken at Bellozanne, the amount of nitrogen added between the two points as a result of, inter alia, run off from agriculture could be quantified.

The paucity of the data unfortunately makes this impossible. However the graphs do show that there is, unsurprisingly, between Bellozanne and the First Tower outfall, a clear increase in the levels of nitrogen being discharged into St Aubin's Bay.

Conclusions to be drawn from outfall data (2)

It is a depressing fact that there is a shameful lack of importance given to this situation, clearly demonstrated by the poor sampling regime.

Just as nitrogenous products fertilise crops on land, it has to be realised that the same applies to marine plant life.

SOSJ pointed out in 2016 the correlation between high nitrogen levels being discharged into St Aubin's Bay and the occurrence of the sea lettuce disaster the bay suffers.

Sadly, no remedial action has been taken to date.

Sea lettuce at St Aubin's Bay

Surely we all remember this?

Part 2: Heavy metals pollution emanating from the land reclamation areas, and affecting our shellfish ….. this could potentially be reaching dangerous levels. Our Ten Year study demonstrates this.

Since reclamation began, the dumping of toxic incinerator ash and building material at La Collette and the Waterfront has been causing invisible but serious marine pollution.

The St Helier foreshore has been used as a junkyard for toxic incinerator ash, and the unregulated dumping of unsorted building materials directly on to the beach or into the sea.

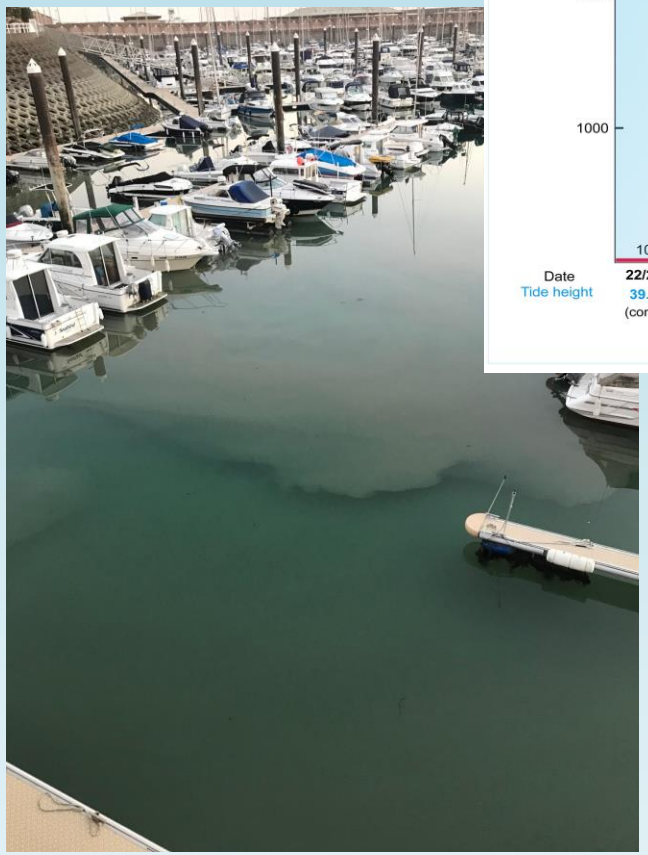
The Waterfront is, in effect, one gigantic toxic waste dump.

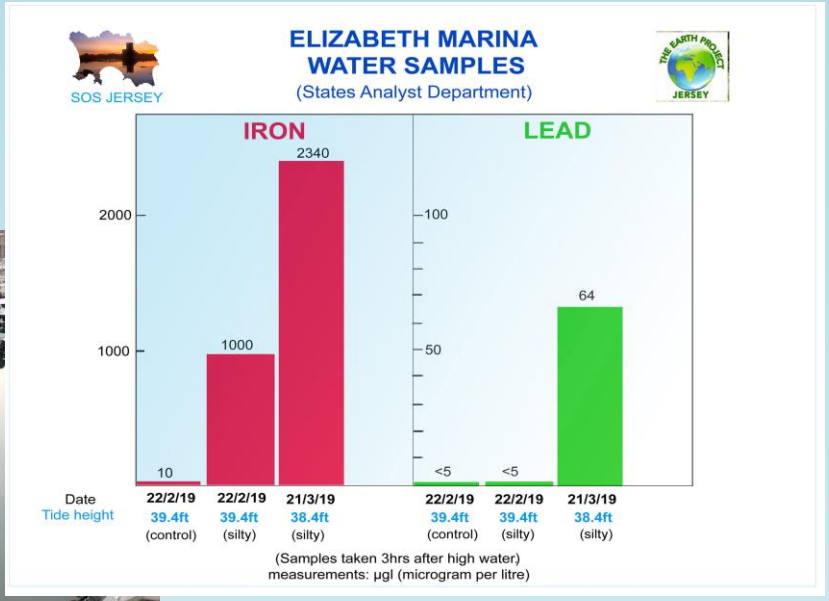
The resulting heavy metals pollution has had a considerable adverse on marine life. Examples follow.

The Horizon Site

The Jersey Development Company's Horizon project created 280 apartments and penthouses, a restaurant and retail space. It also gave rise to an enormous tonnage of waste, much of it toxic.

As a result of the absence of proper planning and regulation, in March 2019, leachate of suspended solids from this waste contaminated Elizabeth Marina and on the tide, out to sea.





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HORIZON SITE
SUNDAY 10 MARCH
9.30 a.m
'SUMP'

MARINA
SUNDAY 20 FEB
5.30 p.m.
MARINA
SUNDAY 10 MARCH
12.30 p.m.

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The Energy from Waste Plant

Under the terms of the Ramsar agreement, the States of Jersey was obliged to notify Ramsar that it was going to construct the island's new incinerator a few metres from the edge of the Ramsar Area, but failed to do so.

The incinerator under construction; the early ash mounds are on the right, rusting containers containing asbestos on the left
Photo: SOS Jersey, 10 April 2010

The Energy from Waste Plant

In March 2009, thousands of tonnes of contaminated leachate were pumped out of the foundations of the excavated pit of the new incinerator into the sea.

The plant abuts the south-east coast Ramsar Area; once again, the States of Jersey failed to report this serious pollution event in contravention of its agreement.

Above: Contractors illegally pumped toxic leachate into the Ramsar area of La Collette via the cooling culvert belonging to JEC (now Jersey Electricity)
Photo: SOS Jersey, 2009

This photo taken in 2011 shows a harmless dye being used in excess by the JEC whilst determining the flow of water through their cooling system.

If pollutants from heavy metals were this visible, would you take them more seriously?

Don’t forget

In addition to these major pollution events, there is ongoing contamination on a daily basis affecting our coastal waters and everything trying to live in it.

These events are having a cumulative and damaging effect, not only on marine life, but also the people who rely on its success to make a living.

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Ten Year Survey

SOS Jersey carried out two shellfish studies in 2009 and 2019.

The three species chosen were the Pacific oyster, common cockle, and common slipper limpet; they are all good indicators of the purity of seawater.

To ensure accuracy and relevance, the testing points, tides, times were replicated as accurately as possible.

All samples were sent to the States Analyst's department for testing.

Collection points:
1: La Collette/Havre des Pas; 2: Green Island; 3: Le Hocq.
(Map courtesy of Christian Guest)

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Ten Year Survey

Bottom feeding shellfish were chosen; although they purify seawater and remove excess nitrates, they absorb metals such as zinc, copper and lead and these elements are found in their flesh.

Shellfish retain heavy metals, and over time, these metals may accumulate to dangerous levels, when they are ingested by humans.

SOS Jersey Members and Hautlieu students prepare to collect samples at Le Hocq, July 2019 (Photo: SOS Jersey)

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Ten Year Survey

In the wild, these shellfish become part of the food chain and are eaten by wading birds and many species of fish and crustacea.

The common cockle particularly plays a major role as a source of food for crustaceans, fish and wading birds.

In the Ramsar Area, oysters, cockles and mussels are collected directly from the beach by low water fishermen and eaten without being treated.

Slipper Limpet

Pacific Oyster

Common Cockle

(Photos: Commons)

Ten Year Survey Results

The shellfish sampled at Havre des Pas, Green Island and Le Hocq, were tested for the presence of

- Cadmium
- Lead
- Copper
- Zinc
- Chromium
- Arsenic

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	**COCKLE**	**HP 2009**	**HP 2019**	**CHANGE**	**% INCREASE**		**GI 2009**	**GI 2019**	**CHANGE**	**% INCREASE**		**LH 2009**	**LH 2019**	**CHANGE**	**% INCREASE**
2	CADMIUM	*0.1*	*0.1*	0.0	0.00		*0.1*	*0.1*	0.0	0.00		*0.1*	*0.1*	0.0	0.00
3	LEAD	0.1	0.3	0.2	200.00		*0.1*	n/a	n/a	n/a		0.1	0.2	0.1	100.00
4	COPPER	0.9	0.9	0.0	0.00		0.5	0.7	0.2	40.00		0.6	0.8	0.2	33.33
5	ZINC	8.3	8.8	0.5	6.02		4.4	7.5	3.1	70.45		5.6	8.7	3.1	55.36
6	CHROMIUM	0.2	0.5	0.3	150.00		0.2	0.3	0.1	50.00		0.6	0.4	-0.2	-33.33
7	ARSENIC	1.3	1.8	0.5	38.46		0.8	1.4	0.6	75.00		1.5	2.1	0.6	40.00
8															
9	**OYSTER**	**HP 2009**	**HP 2019**	**CHANGE**	**% INCREASE**		**GI 2009**	**GI 2019**	**CHANGE**	**% INCREASE**		**LH 2009**	**LH 2019**	**CHANGE**	**% INCREASE**
10	CADMIUM	0.2	0.2	0.0	0.00		0.1	0.3	0.2	200.00		0.2	*0.1*	-0.1	-50.00
11	LEAD	0.3	0.2	-0.1	-33.33		0.2	0.3	0.1	50.00		0.3	0.2	-0.1	-33.33
12	COPPER	17.0	11.4	-5.6	-32.94		13.7	21.6	7.9	57.66		30.3	6.4	-23.9	-78.88
13	ZINC	400.0	281.0	-119.0	-29.75		292.0	617.0	325.0	111.30		848.0	239.0	-609.0	-71.82
14	CHROMIUM	0.2	*0.1*	-0.1	-50.00		0.1	0.4	0.3	300.00		0.2	*0.1*	-0.1	-50.00
15	ARSENIC	3.4	3.3	-0.1	-2.94		3.1	3.3	0.2	6.45		3.6	3.0	-0.6	-16.67
16															
17	**SLIPPER LIMPET**	**HP 2009**	**HP 2019**	**CHANGE**	**% INCREASE**		**GI 2009**	**GI 2019**	**CHANGE**	**% INCREASE**		**LH 2009**	**LH 2019**	**CHANGE**	**% INCREASE**
18	CADMIUM	*0.1*	*0.1*	0.0	0.00		n/a	*0.1*	n/a	n/a		n/a	*0.1*	n/a	n/a
19	LEAD	0.1	0.2	0.1	100.00		n/a	0.3	n/a	n/a		n/a	0.2	n/a	n/a
20	COPPER	4.8	6.1	1.3	27.08		n/a	3.4	n/a	n/a		n/a	2.4	n/a	n/a
21	ZINC	4.1	5.2	1.1	26.83		n/a	7.4	n/a	n/a		n/a	8.1	n/a	n/a
22	CHROMIUM	*0.1*	0.1	0.0	0.00		n/a	0.1	n/a	n/a		n/a	*0.1*	n/a	n/a
23	ARSENIC	1.5	3.2	1.7	113.33		n/a	2.8	n/a	n/a		n/a	2.9	n/a	n/a

The results, above, as revealed by the States Analyst and presented in a spreadsheet by SOS Jersey

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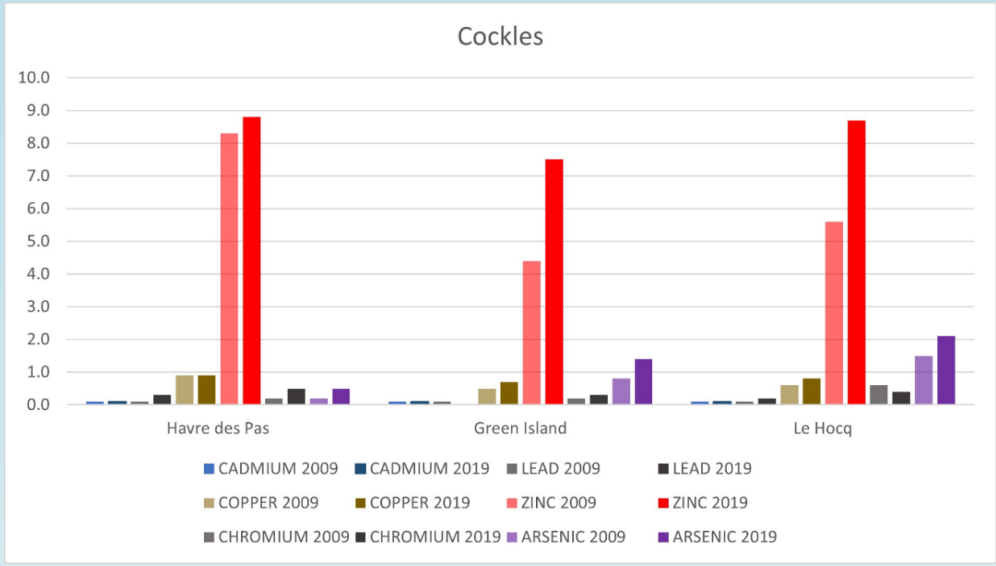
Ten Year Survey Findings

- There was been a marked elevation of heavy metals in the majority of shellfish between 2009 and 2019.
- There was a marked reduction in numbers and varieties of some species over the decade; no slipper limpets could be found to test at either Green Island or Le Hocq.
- In 2019 SOS Jersey counselled that as a result of these findings, there should be ongoing and stringent monitoring and measurement of shellfish contamination, particularly in the areas of high risk identified, with all the results being made public.



Cockles in particular showed a significant increase in the presence of heavy metals over the ten year period

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Part 3: PFAS

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PFAS. Even if you have not heard of them, the chances are you have them inside you.

PFAS (Per- and polyfluorinated alkyl substances), also known as the ‘Forever Chemicals’, are a large chemical family of over 12,000 diverse and highly persistent substances that do not occur in nature.

They earned their nickname because they are persistent; they not only survive for a very long time without breaking down, they have the worrying ability to accumulate within living organisms, particularly humans, where their half life is calculated in years.

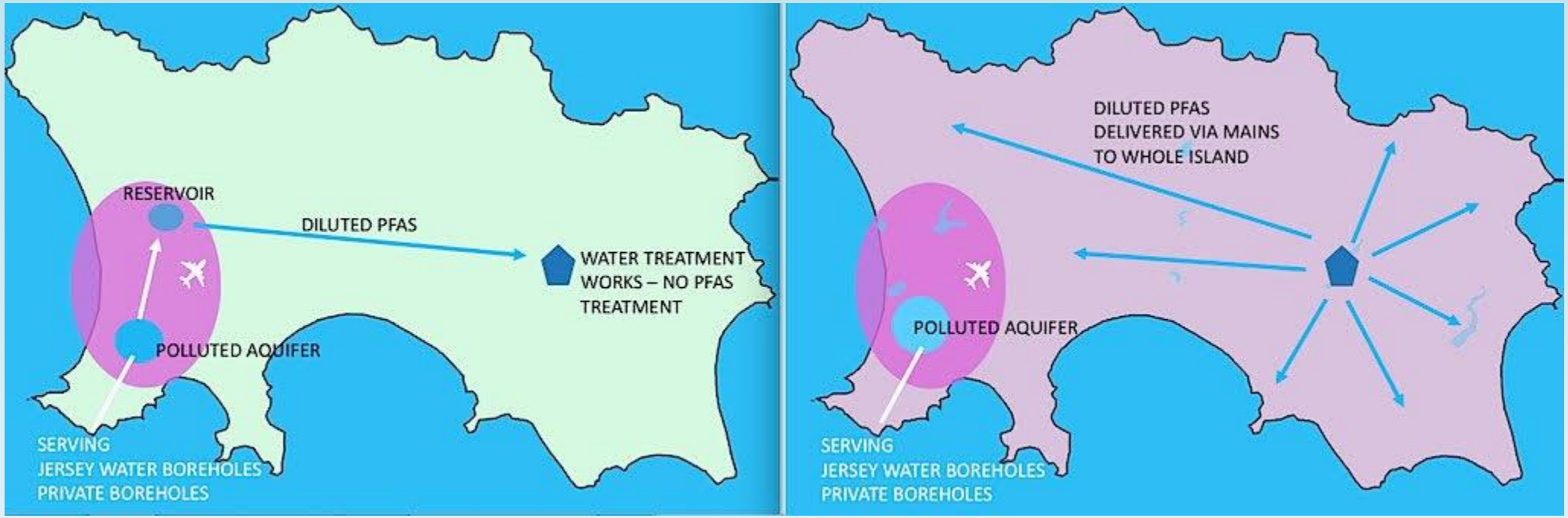
This means that even low levels of exposure can build over time to a point where they become harmful.

These persistent chemicals, give rise to human health concerns, include liver damage, thyroid disease, testicular cancer and reduced response to vaccines.

One of the uses of these substances, and the one that concerns us here, is in fire fighting foam and fire retardants.

Due to their weekly use in fire drill practice at the airport in the early 1980s, a vast accumulation of PFAS soaked into the soil and spread into a massive plume infiltrating the aquifer below St Ouen's Bay.

Water from heavily PFAS contaminated Jersey Water boreholes nearby, together with water from a polluted catchment area, continues to be pumped into a primary source for the Island's mains water supply, Val de la Mare reservoir, and subsequently, via the central treatment works to every mains outlet in the Island.



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Many residents had drunk contaminated water from private boreholes for years and when the pollution of their boreholes was discovered, the airport offered to pay for connection to mains water, little realising that this too was now contaminated with PFAS.

Some of the residents developed a range of worrying and serious illnesses. Despite pleas for help they were left to pay for their own blood tests at considerable expense. The Government finally agreed to fund the cost of such testing for 78 islanders late in 2022.

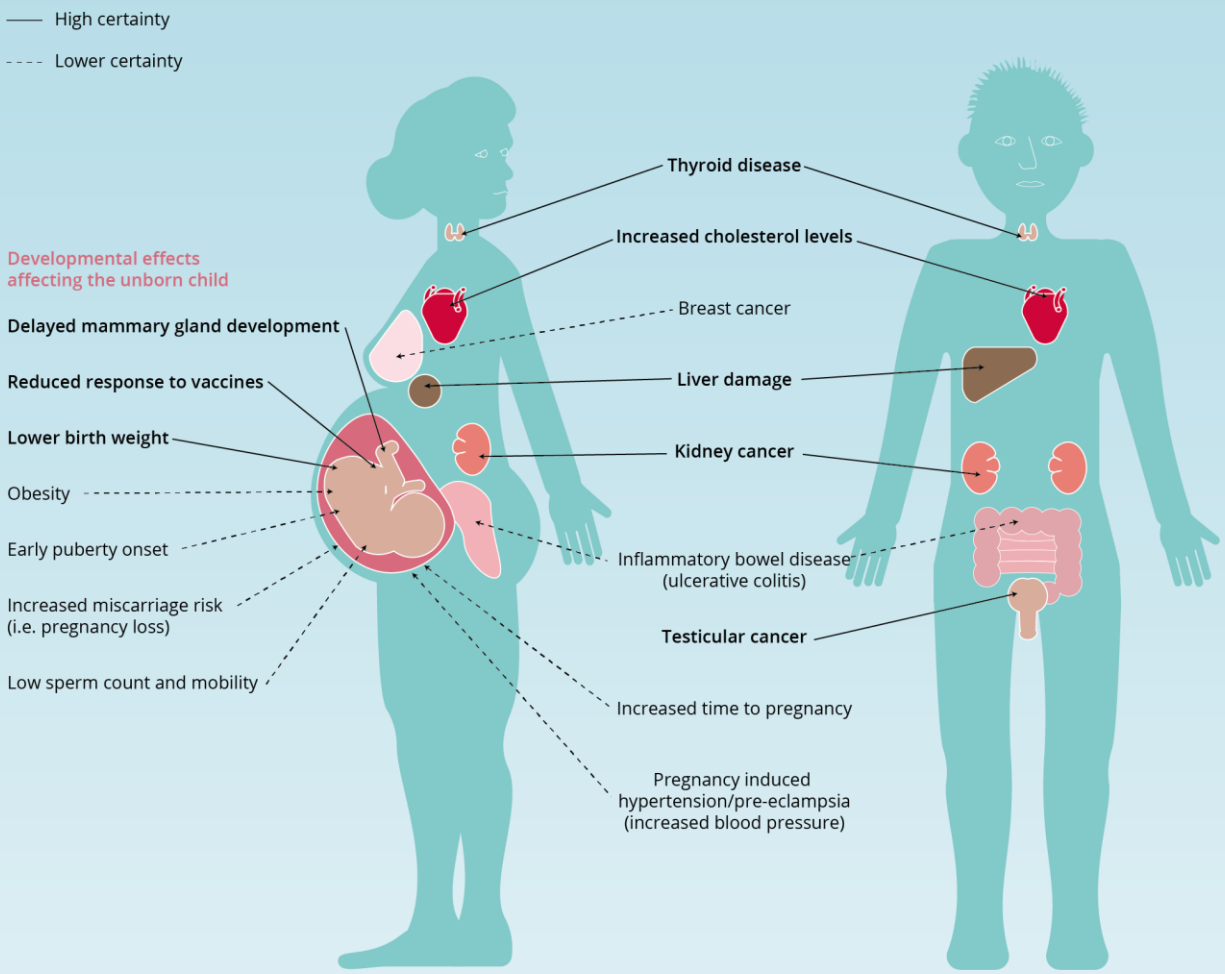
63 of the 78 tested had a higher level of PFAS in their blood, than the vast majority (95%) of a random population sample would have.

Despite this diluted PFAS contaminated water continues to be pumped into the mains supply serving the whole Island.

Independent research links PFAS to cancer, birth defects, liver disease, decreased immunity, kidney disease, higher cholesterol and a range of other serious health effects.

European Environment Agency

2019



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While monitoring continues, so does the presence of PFAS. Costly soil remediation is years overdue.

Runoff from farmland, streams, outfalls, water from boreholes and mains water from the reservoirs; these must be factored in as threats to the marine environment, because ***all this pollution finally arrives in our inshore waters***.

Once more, our marine environment suffers, alongside our population.

Part 4: Pollution of the Ramsar Area

… and the failure to fulfil contractual obligations

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Jersey is party to the Ramsar Convention; an intergovernmental treaty which came into being in 1971, for the conservation and wise use of wetlands and their resources. Worldwide there are 1,888 wetland sites, designated for inclusion in the Ramsar List of Wetlands of International Importance. Jersey is privileged to have four of these sites, one being its south east coast.

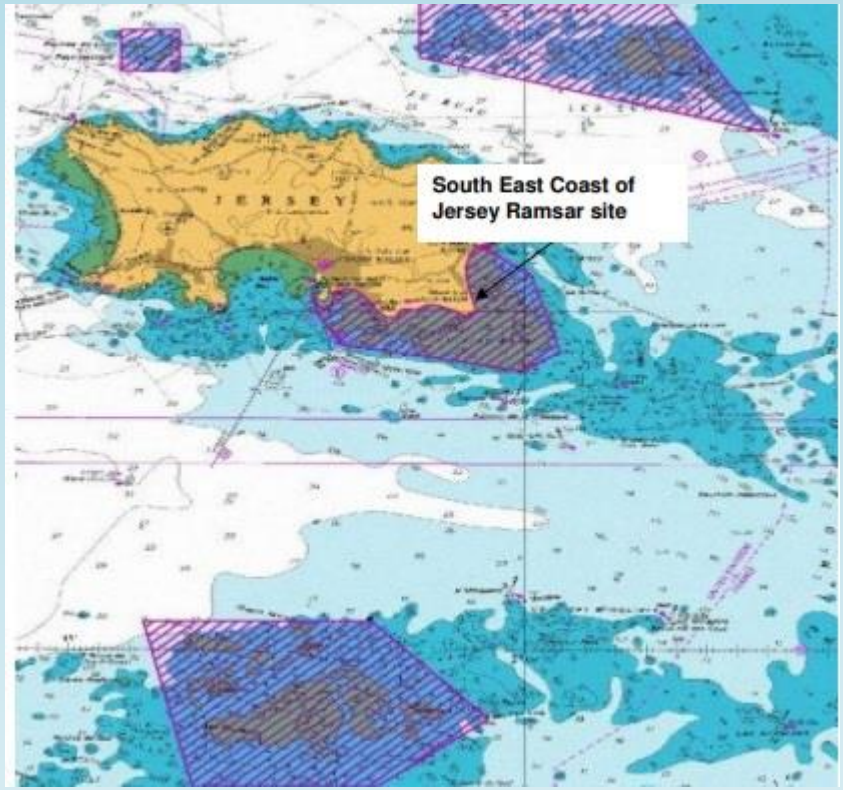

Image taken from the report by PML Applications Limited, commissioned by the Planning and Environment Department and the Waterfront Enterprise Board 2009

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All of the pollution events noted in this report have impacted on the Ramsar area to a greater or lesser degree. We have to realise that we are honoured to have been granted Ramsar status for our south east coast and have a duty of care.

In direct contravention of the terms of the Ramsar Convention, our Government has failed to report these incidents.

Flouting the terms of the agreement in this way is an international ecological disgrace.

One of the original pits, directly below the incinerator, lined with a thin membrane layer. Further pits to the south are now 'superfilled' (one on top of each other) to a height of 30m, without any planning consent – and are now illegally being raised still further, despite the current Planning Panel's objections. The old lower pits slowly leach heavy metals from the bottom into the Ramsar Area, south-east coast.
(Photo: Environment Department)

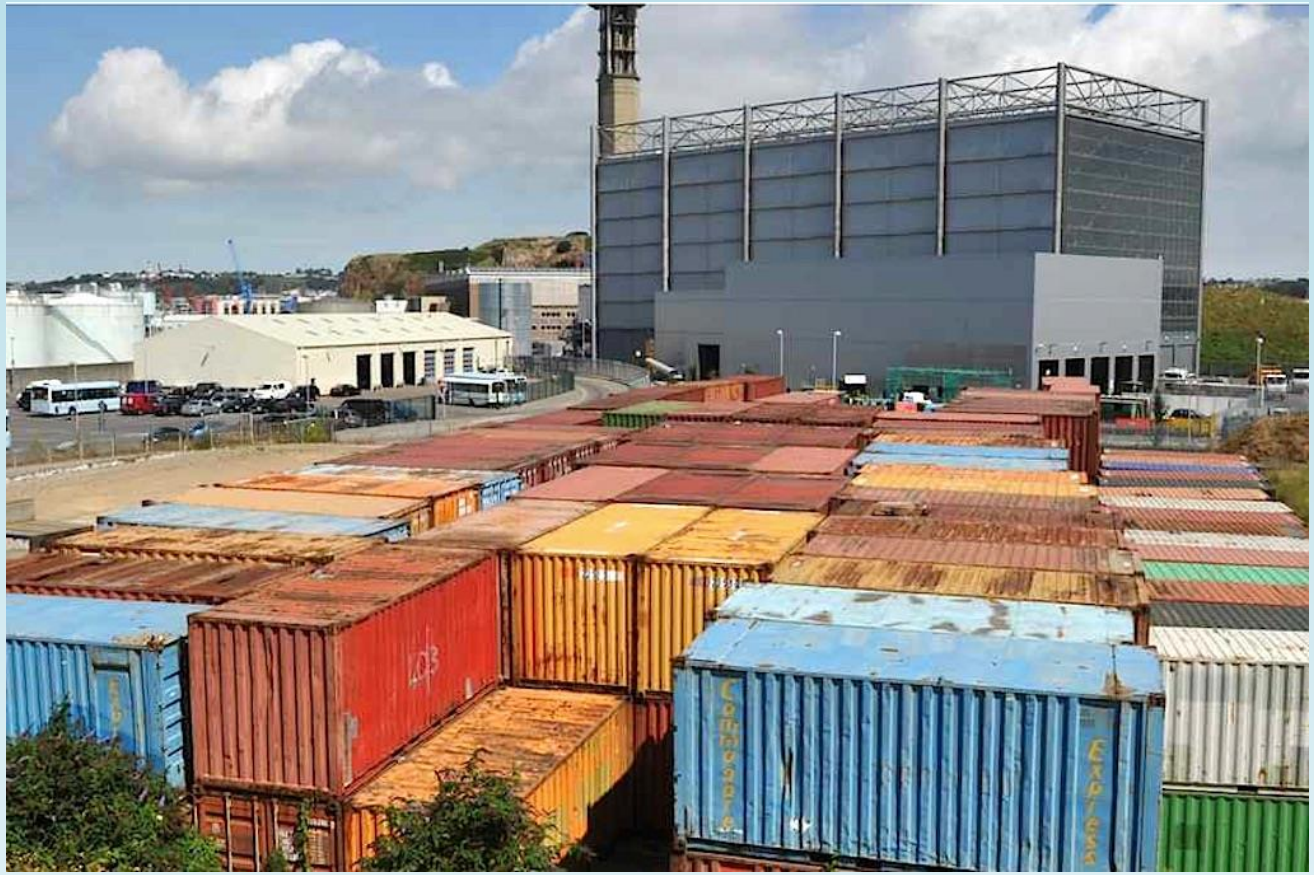
That these facts are recognised when drawing up the Marine Spatial Plan, and that steps are taken to ensure that our grandchildren inherit a healthy coastal ecosystem, is of paramount importance.

Perhaps measures will be put in place to see progress in our children's lifetime, if we all make our feelings known?

Before we can move forward with the Marine Spatial Plan, we have to acknowledge the damage already caused.

Part 5: Asbestos

Rusting shipping containers of asbestos waste 2015



The contents are now buried in sealed pits, following a campaign by SOS Jersey to have them removed from the headland.
(photo JEP)

The Basics – what is asbestos?

Asbestos is a mineral fibre that occurs naturally in some rock formations.

It was in the late 1870s that the use of the material started, mainly on ships, steam engines and in power generating plants.

It resists heat, fire and acid; and because of these properties, this ‘wonder product’ became used in a wide range of building products, including insulation, roofing shingles, ceiling and floor tiles and more.

Between the 1920s and around 1980, millions of tons were mined, and refined asbestos became widely used in the construction of homes, schools and public buildings, mainly for insulation and fireproofing. Its use probably peaked from the 1960s.

What are the dangers of asbestos?

Asbestos does not pose health risks unless it deteriorates and becomes crumbly, when it can release microscopic asbestos fibres into the air. This is highly likely to during repair or renovation of asbestos-containing structures. Asbestos fibres have a rough texture. They can break into microscopic pieces and are easily transported on clothing, hair and skin.

When asbestos fibres are inhaled, they can cause chronic health problems to the lungs, throat and gastrointestinal tract, including mesothelioma, that can take as long as five decades to become apparent after exposure.

What are the dangers of asbestos?

Any home built or refurbished before 1980 is highly likely to contain what we now know is deadly asbestos, predominantly in walls and roofing constructed with asbestos sheeting - a matrix of cement and asbestos fibres.

As these asbestos sheets age, the cement used to hold the asbestos fibres in place deteriorates, and a deadly mix of cement dust and asbestos fibres are carried with the wind into the environment.

Even though the dangers of asbestos started becoming known by the early 1990s, it wasn't until 1999 that all types of asbestos were banned in the UK.

Asbestos waste being dug out from under IFC, the first building of Jersey's International Finance Centre.

Photo: SOS Jersey

Health issues caused by asbestos

There are four main diseases caused by asbestos exposure:

- Pleural disease: Pleural plaques and pleural thickening are non-cancerous conditions affecting the outer lining of the lungs.
- Asbestosis: A chronic respiratory condition; not curable but treatment can prolong survival. People diagnosed with asbestosis have a higher chance of developing asbestos-related cancers.
- Mesothelioma: This highly aggressive cancer affects up to 10% of people with prolonged exposure to asbestos. Symptoms do not appear until 20-60 years after exposure, by which time tumours have grown and spread. The average life expectancy for mesothelioma patients is 12 to 22 months.
- Lung cancer

Mesothelioma in children

Mesothelioma is fortunately extremely rare in children and young adults, not because they are immune, but simply because the cancer typically takes decades to develop after exposure to asbestos.

There is a tragic case history of children being exposed in the former asbestos mining town of Wittenoom, Western Australia. Over the course of 23 years, up to 9,000 children, including 2,000 under 15s, were exposed to asbestos pollution, spread over gardens and playing fields.

Mining ceased in 1966, but the tragic aftermath was just beginning. Even if the children left the town, the asbestos fibres they inhaled went with them. They led seemingly healthy lives for up to 50 years before the onset of shortness of breath signalled their first symptoms. To date, more than 2,000 workers and residents of Wittenoom have died from asbestos-related diseases.

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Mesothelioma in children

How does a remote town in Australia fifty years ago affect us? Here in Jersey in our enlightened times of knowing the risks posed by asbestos?

During 2015, nursery groups walked past the IFC site daily whilst harmful asbestos waste mixed with toxic incinerator ash was being excavated a few metres away.

Pleas by SOS Jersey to have the site properly contained by plastic sheeting were rejected by SoJDC. They were rejected out of hand by an Environmental Health Regulator, 7 September 2015:

> *"I would happily let my own child walk past the site and she has done so on numerous occasions recently."*

On one side of the fence are Health and Safety conscious workers in full hazmat suits; on the other, nursery nurses push their tiny charges, totally unaware.

I truly hope you will not forget these images taken on the same day; they will probably haunt you as they have done me since I first saw them. It makes me wonder; were these children identified? Has their health been monitored? Does anyone care?

Photo: SOS Jersey

SOS JERSEY

Why has this situation arisen?

- It appears that those with the power to take action fail to do so; if that is the case, they are failing in their roles
- There is sadly no independent regulation to ensure that the relevant authorities fulfil their legal obligations
- There exists a historical lack of investment in our Infrastructure; and we have an ever increasing population with no upper limit
- There is a lack of innovative thinking by the relevant departments, whilst they ignore expert external advice freely offered

Those of us who care about the health of our population and our island's environment can only look on in despair

Thank you for your attention

If you would like to find out more about the work we do, or if you feel you would like to help, email us at jerseyinperil@gmail.com

SOS JERSEY