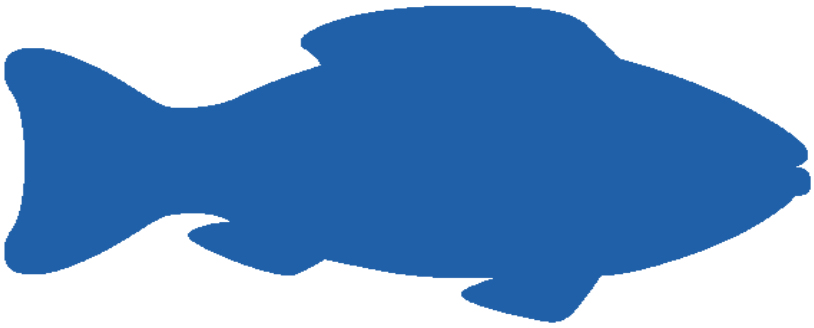
Blue Fish Guidance Manual for Schools



States of Jersey

JerseyWater

ECO-ACTIVE SCHOOLS

The Blue Fish Campaign – What is it about?

The Blue Fish Campaign is about the quality of Jersey's streams, reservoirs and bathing waters.

Many of us give no thought to where our road drains discharge and allow all sorts of waste to enter them such as unwanted oil, paint, litter, detergents and other chemicals.

Most people are unaware that here in Jersey the road drains are designed to remove rainwater and usually lead directly to the nearest stream. These streams also flow to reservoirs and onto the beaches.

Thoughtless disposal of waste is a significant risk to Jersey's environment, as even small amounts of some substances entering a stream can have a devastating effect on local wildlife. The loss of stream insects reduces food sources for other animals further up the food chain for example fish and bird populations. Oil is a substance used daily by most people and because of the way it spreads, it only takes a tiny amount to contaminate water. One litre of oil can contaminate one million litres of drinking water.

Blue emulsion paint disposed of into a surface water drain, which discharged into a stream.

Pollutants entering water courses can also lead to the loss of raw (untreated) water used by the Jersey Water Company to provide clean drinking water to the population of Jersey. Protecting surface waters is important because the majority of our drinking water comes from streams, that can be polluted through road drains.

Environmental Protection is responsible for protecting and improving Jersey's water resources though enforcement, regulation, monitoring and education. We have a Pollution Hotline number (tel:709535) to respond to pollution emergencies and can give on-the-spot advice to minimise the worst effects of an incident. Each year around 10% of the pollution incidents that Environmental Protection are called out to are as a result of substances being directly introduced into water courses via street or surface water drains.

These incidents can have a detrimental effect on these water bodies as well as taking time and money to investigate and remediate. We also believe that prevention is better than cure and look upon enforcement as a last resort.

It has become increasingly obvious that it is no longer just big industry that is to blame for the majority of water pollution incidents - **it's us at home, at school and at work!** But before we can act responsibly we need to be **aware** of that fact, and of the damaging effect our everyday activities can have on the local environment.

Introduction

The Blue Fish Campaign is an active, enjoyable and effective way of raising student awareness about potentially polluting substances, the impact of inappropriate disposal on the aquatic environment and what they can do to protect the water environment.

It involves identifying and spraying a blue fish stencil next to surface water drains around your school enabling students to identify surface water drains and recognise them around the Island.

The Blue Fish Campaign is run by the Department of the Environment in partnership with Eco-Active and Jersey Water. This campaign was piloted by Key Stage 3 students at Victoria College.

For further information please see page 9 for the relevant contact details or visit www.gov.je/bluefishcampaign

What it means for your school

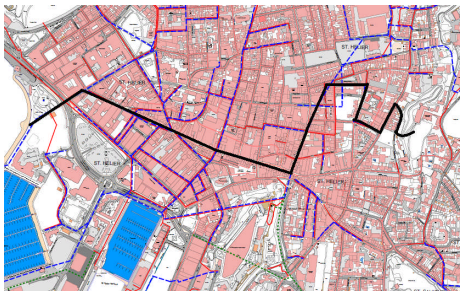
- The Blue Fish Campaign is linked to the school curriculum through the following subjects:
  - Environmental Science
  - Biology
  - Chemistry (Water samples)
  - Geography
  - Mathematics (Basic numeracy)
  - ICT (Presentations)
  - English (Presentations)
  - History (how drainage has changed and the disease limitations)
- It can also be linked into a number of areas in the Sustainable Schools Framework
  - Energy and Water
  - Taking part
  - Local environment
  - Food and Drink
- It can be adapted for primary and secondary students and be incorporated into your Eco-Schools action plan and included within students CV/personal development records.
- The Blue Fish Campaign fosters environmental stewardship in students giving them a greater awareness of the Islands surface water drainage, how they can prevent pollution and why this is important.
- The Blue Fish programme can be undertaken in a 5-6 week period, please see page 10 for further details.
- Please complete and return the feedback form, which can be found in this pack.

Getting started

Step 1: Teacher prep-work and timeframes

How the project can be applied to your particular school (seek advice from Environmental Protection) (3 hours)

- You will need to identify the location of the road drains in the vicinity of your school, the path they take and the discharge point into the aquatic environment.
- Create a map which allows the students to follow the surface water drains from your school to the discharge point.
  This information can be obtained from Environmental Protection (tel: 709535).



Map of surface water drainage from Victoria College to St Aubin's bay

- Spray blue fish next to the surface water drains within your school grounds (you can include your students in this activity if desired).
- Please contact Environmental Protection to obtain your free fish stencil.
- Spraying guidelines:
    - Brush any debris and dirt away from the area you are spraying.
    - Lay the stencil beside the drain. You may find it helpful to fix it down with masking tape or spray paint through a stencil fixed to the bottom of an old banana box (to avoid over-spraying)
    - Hold the paint can 5 - 10 cm from the stencil (children should be supervised) and begin spraying from the outside of the stencil towards the middle (try not to spray outwards under the stencil as this blurrs the outline). Once painted, carefully lift the stencil.
    - Be aware that paint spray may carry. Always stand upwind of the spraying to avoid contact with overspray, and do not spray near vehicles or other property.
    - Stencil paint will not adhere to a wet surface, so either protect the road surface from rain by covering it before painting, or try again on a dry day.
    - A 100 ml spray aerosol should spray over 10 fish (approximate cost £3).
- Identify two suitable sites to collect water samples, one of pure rain water (on school site if possible) and the other from the discharge point.
- Environmental Protection can give you advice on what to analyse for (see page 8 for suggestions) and the appropriate bottle to collect a water sample. Alternatively contact the States of Jersey Analyst (contact details – page 9).

- Conduct a school risk assessment on activity, for example:
    - Parental permission may be required for students participating in an activity taking place outside of school grounds
    - Risk of walking on main roads
    - It may be helpful to arrange for some additional adult helpers to be available on the walk day.
- The pollutants you are likely to find include:
    - Litter: cigarette ends, plastics wrappers, oily film on water

Pollutants in a surface water drain

Step 2: Equipment

Spraying

Stencil (free from Environmental Protection) and spray paint
Protective clothing
Banana box

Walking

Leaflets (free from Environmental Protection)
Map (printed)
Camera
Sample bottles
Paper/pen
Protective gloves – collection of sample

Step 3: Student activities and timeframes

Session 1 (1.5 hours):

- Brief students on project and give them an outline of activity plan
- Identify surface water drain and spray fish next to them (optional whether students are included within this task).

Session 2 (1.5 hours):

- Presentation from Environmental Protection Officer (EPO)/ Jersey Water Officer
- EPO to do demonstration of oil (cooking) on water and using absorbents to soak it up
- Questions from students
- Students to find the fish within the school grounds and report back on the number they find (If you decide to spray fish without students)
- Give students a pollution prevention pack

Victoria College students finding and photographing a blue fish next to a surface water drain.

Session 3 (3 hours):

- Collect water sample from water butt or alternative rain water source.
- Walk the catchment following the surface water drain map to the nearest discharge point, whilst identifying potential pollutants and taking photos.
- Students can take it in turn to navigate/lead the group
- Collect a water sample from discharge point (wear protective gloves)
- Take water sample to the States Analyst at Pier road (two samples will cost approximately £80). Samples will need to be collected in the appropriate type and size of bottle.

Victoria College students looking for pollutants in a surface water drain in St Helier.

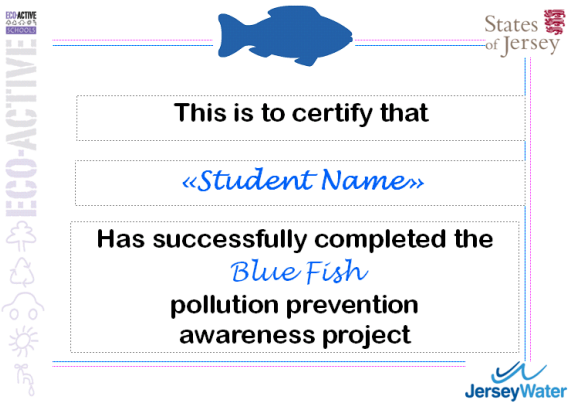
Victoria College students – collection of a discharge water sample.

Session 4 (1.5 hours (+ home work time if necessary)):

- Students to research and develop a presentation
- Assess analysis results and create graphs
- Undertake a Blue Fish quiz (provided within this guidance on pages 11-16)

Session 5 (2 hours (depends on number of students)):

- Students present their work to others
- All participants are presented with an Blue Fish (Eco-Active) certificate (Provided for free from Environmental Protection)



Blue Fish certificate

Additional activities

- Visit relevant drainage/water related sites:
- T&TS Sewage Treatment Works
- T&TS Cavern
- Jersey Water Treatment Plant
- Jersey Water reservoir

(Half a school day (depends on number of students))

Spreading the word

- Students give Blue Fish presentations to other schools
- Students inform their parents of the Blue Fish campaign and its messages
- School assembly
- Getting the media involved with the school presentations

Water Quality Analysis

Parameter	**Field observations**
pH	Odour
DO_2 %	Temperature ^{O}C
Conductivity uS	Appearance of water
COD mg/l O_2	Litter in and around water body
Suspended Solids mg/l	
Nitrate mg/l (NO_3-N)	
Nitrite mg/l (NO2-N)	
Ammonia mg/l (NH3-N)	
Chloride mg/l (Cl)	
Phosphate mg/l (PO_4-P)	
Sulphate mg/l (SO_4)	
Sodium mg/l (Na)	
Potassium mg/l (K)	
Magnesium mg/l (Mg)	
Calcium mg/l (Ca)	
Microbiology TC (cfu/100ml)	
FC	
FS	

Useful Contacts

Blue Fish Co-ordinator
Shelley Hawkins
Department of the Environment
Howard Davis Farm, La Route de la Trinite
Trinity, Jersey, JE3 5JP
Tel: +44 (0)1534 441631
Fax: +44 (0)1534 441601
E-mail: s.hawkins@gov.je

Official Analyst's Laboratory
Pier Road, St Helier, Jersey, JE2 4XW
Tel: +44 (0)1534 736455
Fax: +44 (0)1534 766746
E-mail: analyst@gov.je

Eco-Active
Department of the Environment
Howard Davis Farm, La Route de la Trinite
Trinity, Jersey, JE3 5JP
Tel: +44 (0)1534 441600
Fax: +44 (0)1534 441601

Jersey Water
Mulcaster House, Westmount Road,
St. Helier, Jersey, JE1 1DG
Main switchboard: +44 (0)1534 707300
Main Facsimile: +44 (0)1534 707400
Email: **info@jerseywater.je**

Transport and Technical Services
PO Box 412, States Offices, South Hill
St Helier, JE4 8UY
Tel: +44 (0)1534 445509
Fax: +44 (0)1534 445529
Email: **recycle@gov.je**

Proposed Timeframe

Blue Fish Campaign (5-6 week project time)

Age group – Key Stage 3

Prep work
- Get road drainage map
- Find surface drains on site
- Spray fish stencils
- Obtain appropriate pot for x2 samples
- Contact analyst – re testing samples
- Contact Jersey Water – potential visit?

Session 1 (23 March – 1.5 hours)
- Brief students on project
- Students to research topic area

Session 2 (30 March – 1.5 hours)
- 30 mins talk to students (provide visual aid – oil on water)
- Questions from students
- 20 mins find fish – ask them how many fish they found

Session 3 (6 April – 3 hours)
- Walk from school to beach/stream/reservoir (using an orienteering map)
- During walk observe litter/potential pollutants
- Collect sample at beach and water butt at school and take to the States Analyst

Session 4 (1.5 hours (+ home work time if necessary))
- Type up observations/ create presentation
- Research impact of pollutants found
- Look at sample analysis

Session 5 (2 hours)
- Students to present to peers
- Environmental Protection to provide certificates

Blue Fish Quiz – Key Stage 1/2

Please answer the questions below by circling the answer. There will only be on right answer to each question.

1. How many types of drainage system are there in Jersey?
    a. 1
    b. 3
    c. 7
    d. 2

2. Which of the following substances are polluting?
    a. Paint
    b. Oil
    c. litter
    d. All of the above

3. What type of drainage removes rain water from roads?
    a. Surface water drainage
    b. Combined drainage
    c. Foul drainage
    d. Public sewer

4. What is the chemical symbol for water?
    a. H_2O
    b. CO_2
    c. NO_3
    d. HO_2

5. What is the most common type of water pollution incident in Jersey?
    a. Oil
    b. Agricultural
    c. Sewage
    d. Construction

6. What surface area of water would be covered by 5 litres of oil?
    a. 2 Football pitches
    b. 4 Tennis courts
    c. 10 Snooker tables
    d. 1 Golf course

7. Where is the majority of Jersey's sewage treated?
    a. Bellozanne
    b. Fort Regent
    c. Handois
    d. La Collette

8. Who would you contact if you noticed a leak of oil from your tank at home?
    a. Environmental Protection
    b. Health Protection
    c. Transport and Technical Services
    d. Fuel Company

9. Where should you dispose of waste/unwanted chemicals and oils?
    a. Bellozanne
    b. In your compost
    c. In the sea
    d. Down your toilet

10. What symbol represents a pathway to a water course?
    a. Fish
    b. Beatle
    c. Bat
    d. Rabbit

Blue Fish Quiz – Key Stage 3

Please answer the questions below using the materials provided within your Blue Fish pack.

1. Where does Jersey's fresh water come from? (2 marks)

2. What law protects Jersey's water environment and who enforces it? (2 marks)

3. What type of drainage removes rain water from roads/roofs and where does the rain go? (3 marks)

4. Name five potentially polluting substances used at home and their impact if they entered into the water environment? (5 marks)

5. What can cause eutrophication of water courses? (3 marks)

6. What is the most common type of pollution incident in Jersey, how many (%) occur each year? (2 marks)

7. What 5 things can you do to prevent water pollution? (5 marks)

8. What are 5 common causes of oil loss from domestic heating oil tanks? (5 marks)

9. What 5 things do you do if an oil leak occurs? (5 marks)

10. Who would you contact if you noticed pollution in or near a water course? (1 mark)

11. Where should you dispose of waste/unwanted chemicals and oils? (1 mark)

Blue Fish Quiz – Key Stage 3

Please answer the questions below using the materials provided within your Blue Fish pack.

1. Where does Jersey's fresh water come from? (2 marks)
   Answer: All of Jersey's fresh water falls on the Island as rain, snow, sleet or hail.

2. What law protects Jersey's water environment and who enforces it? (2 marks)
   Answer: Water Pollution (Jersey) Law, 2000. Environmental Protection enforces this law.

3. What type of drainage removes rain water from roads/roofs and where does the rain go? (3 marks)
   Answer: Surface water drains removes rain run off and discharges it to streams, reservoirs and the sea.

4. Name five potentially polluting substances used at home and their impact if they entered into the water environment? (5 marks)
   Answer:
   - Oil (heating, cooking and motor) can be toxic to animals and plants, preventing respiration, photosynthesis and feeding.
   - Chemicals (pesticide, paint, white spirits) are toxic to aquatic life, disrupting normal functioning e.g. reproduction and can cause death.
   - Silt/ sediment can suffocate fish by clogging their gills. It can cover aquatic plants, make streams cloudy and reduce light penetration, affecting photosynthesis and reducing plant growth.
   - Litter clogs water courses and can release toxins as it breaks down. Litter can also be mistaken for food by some fish and animals. Durable plastics can end up in the sea where they can choke, trap and drown marine animals and birds. A build up of debris in streams can also lead to localised flooding.
   - Fertiliser runoff is rich in phosphorous and nitrogen, which feed all plants and can cause algal blooms, which in tern kill fish and other aquatic animals. Detergents may also contain phosphorous and should not be released into surface waters.
   - Organic waste, such as lawn clippings and leaves decays in water and uses oxygen, thus depriving plants, fish and other aquatic animals of oxygen causing them to die.
   - Pet droppings and runoff from sewage or septic tanks contain bacteria, viruses and parasites that can survive in water. Recreational water which is heavily contaminated can increase the risk of gastrointestinal and other infectious illness.

5. What can cause eutrophication of water courses? (3 marks)
   Answer: Fertiliser runoff is rich in phosphorous and nitrogen, which feed all plants and can cause algal blooms. Detergents may also contain phosphorous which can have the same effect and should not be released into surface waters.

6. What is the most common type of pollution incident in Jersey, how many (%) occur each year? (2 marks)
   Answer: Oil is the most common cause of pollution incidents, with 40% of incidents relating to oil occurring each year.

7. What 5 things can you do to prevent water pollution? (5 marks)
   Answer:
   - Never dispose of waste chemicals or wash out paint brushes/pots into surface water drains or watercourses.
   - Never wash oil into drains and never use a hosepipe or detergents to wash down the area.
   - Prevent oil from entering drains or watercourses by using earth or sand to absorb it.
   - Oily sand/soil should be put into sealed bags and taken to La Collette.
   - Contact Transport and Technical Services for advice on disposal of oils and oily sand. Tel: 709535.

8. What are 5 common causes of oil loss from domestic heating oil tanks? (5 marks)
   Answer:
   - Rusty/buried filter
   - Rusty tank
   - Rusty or corroded feeder pipes, couplings and valves
   - Sight gauge has been knocked or not properly secure to the tank
   - Sun bleaching/cracking of plastic tanks
   - Tank not on solid base and/or plinth or is unprotected in areas of heavy traffic
   - No plinth or solid base
   - No bund, where required
   - Bund full of water or rubbish
   - Hole in bund

9. What 5 things do you do if an oil leak occurs? (5 marks)
   Answer:
   - Collect leaking oil by using a tray or bucket.
   - Never wash oil into drains and never use a hosepipe or detergents to wash down the area.
   - Prevent oil from entering drains or watercourses by using earth or sand to absorb it.
   - Oily sand/soil should be put into sealed bags and taken to La Collette.
   - Contact Transport and Technical Services for advice on disposal of oils and oily sand. Tel: 709535.

10. Who would you contact if you noticed pollution in or near a water course? (1 mark)
    Answer: Environmental Protection – Pollution Hotline number tel: 709535

11. Where should you dispose of waste/unwanted chemicals and oils? (1 mark)
    Answer: Transport and Technical Services waste disposal sites at La Collette or Bellozanne.