Drains to Harbour (DTH) Programme

Teacher Information

This resource has been adapted from the Auckland Regional Councils 'Stormwater City Issues' Kit

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Intro to Experiencing Marine Reserves and DTH background

The Drains to Harbour programme has been developed by 'Experiencing Marine Reserves' (EMR). The EMR programme empowers schools and communities by providing hands-on experience in the ocean. The programme involves investigating marine biodiversity and the local marine environment before venturing to a fully-protected marine reserve. After this experience, students are able to compare unprotected and protected areas and are encouraged to put their knowledge into action within the community.

The EMR programme has been operational in Northland since 2002 and available to other parts of New Zealand since 2004. The programme has produced interactive educational resources (CD ROM, video & website www.emr.org.nz) featuring information and images about marine biodiversity and conservation. These resources are available to all schools in New Zealand.

The 'Drains to Harbour' (DTH) stormwater programme was piloted with Whangarei Primary School and Morningside School by EMR in 2006 with support from the Whangarei District Council (WDC). Students were taken through an interactive multi-media presentation about stormwater and related harbour issues by EMR coordinator Kim Boyle. Students were then given the chance to use their new knowledge to advocate for cleaner stormwater in their own communities. This was achieved by the students who stencilled the 'Drains To Harbour – Rainwater Only' message near stormwater grates around their schools and communities with the assistance of EMR coordinators Kim Boyle and Samara Nicholas and traffic safety management advisor, Ross Vaile.

A community day was also coordinated by EMR to give the wider community an opportunity to find out more and get involved.

The evaluation of the DTH 2006 pilot indicated the programme was fostering community awareness of local stormwater and related issues whilst promoting long-term behaviour change and recognition of the role of local government and community in these issues. Thus the further development of the DTH programme was both justified and sustainable.

Consequently, the programme was delivered to 10 schools in Whangarei in 2007 with some great results including the Clean Green Stream Team at St. Francis Xavier who discovered dead eels in their local stream and went on a problem solving mission to

get to the source of the pollution and try to restore stream health – their efforts won them the National Problem Solving Championship (Junior Division) and they are still promotoing community awareness through drain stencilling, visiting other schools with their message, writing letters to newspapers and local government officials and plan to paint a 'Drains to Harbour' mural in town. They recently spotted a healthy eel in their stream and are off to the International Problem Solving Championships in America at the end of 2008.

McBreen Jenkins agreed to sponsor traffic management for 2007 DTH delivery and Wynn Fraser Paints agreed to supply the programme with environmentally friendly spraypaint for the stencilling.

EMR is committed to developing the DTH programme as it compliments EMR's current objectives and links to the Whangarei harbour marine reserve. Because the EMR programme is restricted to the warmer months for its delivery, the winter months are free to be committed to the development, planning and delivery of the DTH programme.

WDC, McBreen Jenkins and Wynn Fraser Paints are continuing their support for the Drains to Harbour programme in 2008 and EMR is delivering the programme to local schools and working with teachers to develop the programmes resources and unit plans.

The Mountains To Sea Conservation (MTSC) Trust
Nga Maunga ki te Moana

The MTSC Trust is the umbrella organisation for The Experiencing Marine Reserves & Whitebait Connection programmes. The Experiencing Marine Reserves (EMR) programme (Northland) is currently funded by The Tindall Foundation, WWF-NZ, the ASB Trust and the Department of Conservation. The Northland delivery of the programme directly involves over 1000 people per summer season, including field trips, classroom talks and community events, such as guided snorkel days.

The formation of the MTSC Trust in 2002 brought together an extensive array of professional skills and capabilities. Within our group there is a balance of youth and experience, science, social science and educational accomplishment. Collectively amongst the Trustees of MTSC Trust we have decades of educational, science and business experience. We have extensive networks and professional relationships to call upon.

Mountains To Sea
Conservation Trust
Nga Maunga ki te Moana

Stormwater and Environmental Education

Through the exploration and development of the Stormwater theme, and underlying issues within the Whangarei District, it is hoped that students will develop:

- **Awareness and sensitivity** to the quality of Whangarei's stormwater and related issues
- **Knowledge and understanding** of stormwater and the impact of people on it
- **Attitudes and values** that reflect feelings of concern for our stormwater issues
- **Skills** involved in identifying, investigating and problem solving associated with the issues related to stormwater quality
- A sense of responsibility through **participation and action** as individuals (and as members of a group) in addressing the issues of stormwater quality

(Ref. Guidelines for Environmental Education in New Zealand Schools p. 9)

Keeping Safe

Take care near stormwater drains. Never enter a stormwater manhole or pipe and do not go close to drain openings after rain.

Students should be told not to touch material found lying in or near stormwater drains. However, as part of an organised litter clean-up, it is appropriate to collect samples of pollutants – gloves must always be worn to protect hands from germs and cuts.

Key Concepts

- Differences between stormwater and wastewater
- Stormwater drains
- Pollutants in stormwater drains – what are they and where do they come from?
- Critical numbers – small amounts of pollution add up to a critical number, when just one bit is just one bit too many
- Stormwater pollution at home
- The effect of pollutants on streamlife
- The importance of keeping our streams clean – why and how
- Motor vehicles and stormwater pollution
- Personal and community commitment and action to improving stormwater quality

Drains To Harbour Unit Plan example

TOPIC: Stormwater

Level 3/4

Suggested environmental education learning outcomes Students will develop:

Knowledge and understanding of:

- ***The interdependence of living things in the marine environment.***
- ***The impact people have had, and can have on the freshwater and marine environment.***
- ***The significance of clean stormwater for protecting and enhancing waterways.***
- ***The importance of working together as local communities, including the ethic of Kaitiakitanga (stewardship).***

Skills such as:

- **Social and co-operative**
- **Physical**
- **Information**
- **Work and study**
- **Communication**
- **Problem solving**

Key Competencies:

- **Thinking**
- **Making meaning**
- **Relating to others**
- **Managing self**
- **Participating and contributing**

Attitudes and values such as:

- ***Respect for others***
- ***Appreciation and concern for fresh water and marine life***
- ***Awareness of the need for both individual and group action in keeping stormwater clean and enhancing biodiversity.***
- ***Awareness of conflicts of interest in the use and protection our waterways.***

IN:
Exploring a local waterway.

Assessing the health of a local waterway.

Stencilling stormwater drains in the community.

ABOUT:
'Treasure Chest'. Listen to a Waiata about a feature in the marine or freshwater area.
'Food Web Tug' experiential learning activity.
Carry out a survey to determine how people use a local stream. Research the development of a project that was designed to clean up stormwater, and find out how the restoration has changed how people think and feel about, and use the area.

Achievement statements from selected curriculum statements that could be used as a focus for the environmental education topic. These include:

Science
Making Sense of the Living World
Students can:
Investigate & classify closely related living things on the basis of easily observable features (AO1)
Use simple food chains to explain the feeding relationships of familiar animals and plants and investigate effects of human intervention on these relationships (A04)
Making Sense of Planet Earth and Beyond
Students can:
Justify their personal involvement in a school or class initiated local environmental project (A04)

English
Oral Language:
Interpersonal Speaking
Students can talk clearly in small and large groups about experiences, events and ideas, organising material effectively and attending to others' responses.
Visual language: Presenting
Students can combine verbal and visual features to communicate information, ideas or narrative through layout, drama, video, computer or other technologies and media.

Social Studies
Resources and Economic Activities
Students can explain how and why people view and use resources differently and the consequences of this.
Time, Continuity and Change
Students can explain how the ideas and actions of people in the past changed the lives of others.
Place and Environment
Students can explain how different groups view and use places and the environment.

Suggested learning experiences that could enable students to meet the learning outcomes of environmental education in association with objectives from selected curriculum

Students will:

- Look at and touch a variety of marine life from the Experiencing Marine Reserves 'Treasure Chest'.
- Visit a local stream, identifying plants and animals, and assessing the health of the stream using biological and non-biological indicators.
- Take part in the experiential learning activity 'Food Web Tug' to discover food chains and human impacts.
- Listen to a Waiata that describes a feature of the aqua environment and retell the story in writing.
- Prepare and present an oral report following a visit to a local stream.
- Design and publish a pamphlet, role-play, chart or video to provide information for the public on the connection between our stormwater and our waterways.
- Carry out a survey to determine how people use a local stream and work out how the human impacts identified might affect the area.
- Research the development of a stream restoration project and find out how the restoration has changed how people think and feel about, and use, the area.

FOR:
Oral report to the school or local community.

Pamphlet, role-play, chart or video to provide information to the public.

Waiata to local community.

Curriculum planner electronic template courtesy of the Northland Regional Council.Curriculum planner adapted from 'Guidelines for Environmental Education in New Zealand

Possible Learning Outcomes

Students will:

- Understand the difference between stormwater and wastewater
- Locate and record the position of stormwater drains in their local area
- Identify and describe things that pollute our stormwater drains
- Research the effects of different pollutants in stormwater drains
- Develop solutions to the problem of stormwater pollution
- Use criteria to evaluate a range of solutions
- Make a choice about possible action and justify this choice

Assessment

Teachers may derive specific learning outcomes that are appropriate to the learning needs of their students. These learning outcomes will provide the criteria against which student's achievement can be assessed. Some suggestions for assessment activities can be found in this resource on Page 15.

Related Themes

The focus of this resource is stormwater and related issues in the Whangarei district. There are a number of other topics that you may wish to explore, for example:

- The water cycle
- Wastewater and sanitary sewers
- Water use and conservation
- Whangarei's water catchment area
- Ground and surface water issues in the Whangarei district

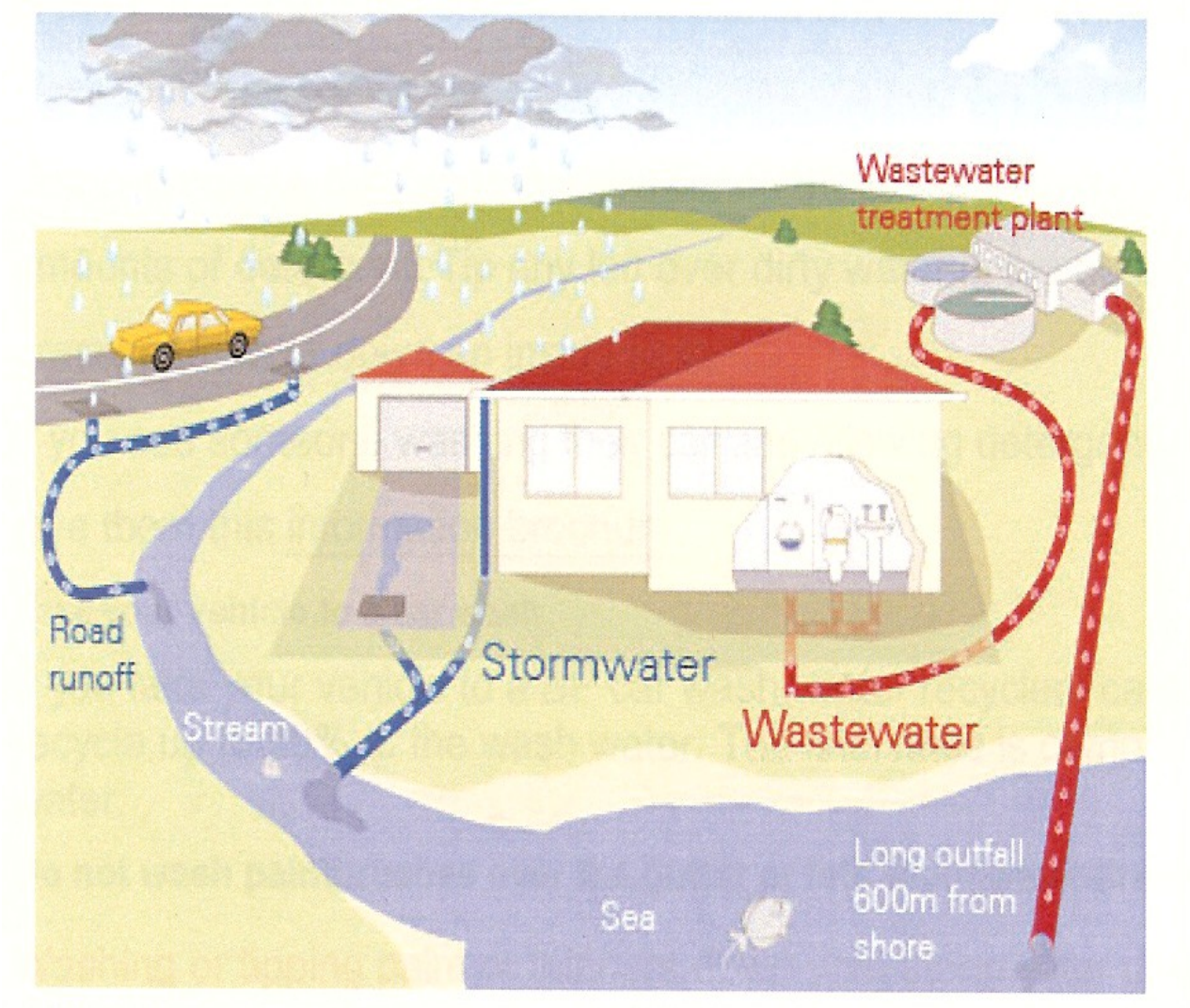
Background Information

Stormwater

There are two sets of drains running under the city:

Sanitary sewers collect waste flows from inside houses, offices, factories, hotels, shops, schools and other buildings. Wastes from sinks. Basins, laundries, toilets, batchs and showers flow through this network to a sewerage treatment plant before disposal into the environment.

Stormwater pipes collect rainfall from rooves, yards, driveways and other hard surfaces. Rain is channelled through roadside drains or stormwater grates in roads, yards and parking lots into stormwater pipes which carry this run-off to the nearest stream, lake, harbour, beach or aquifers (underground rocks which have water in the cracks and spaces).



The Environmental Issue

Every day all over the Whangarei district (and the rest of New Zealand) pollutants find their way into our streams, lakes, harbours, beaches and aquifers.

- Pollutants are either accidentally or occasionally deliberately spilt on the ground or directly down stormwater drains.
- The enormous range of pollutants are having a disastrous impact on our water systems and their ecology e.g. Fish, shellfish, plants and birds and have serious consequences for people.
- Most people are unaware that whatever goes down a stormwater drain goes untreated to the nearest body of water.

What is a Catchment?

"A catchment can be described as an area of land, bounded by hills or mountains from which surface and groundwater flow into streams that join and ultimately have the same outlet to the sea. Almost everybody lives in a catchment. Catchments in New Zealand vary in size from large, such as the Waikato River stretching from Taupo to Pukekohe, to tiny areas of only a few hectares.

Tangata Whenua understand their ancestral waterways in terms of tribal boundaries and relationships rather than the scientific defintion of a catchment area. The 'tribal catchment area' is identified in terms of key geographic features such as maunga (mountains), awa (rivers), puna (water sources/springs), which form the basis of iwi and hapu identity and spiritual and physical sustenance.

You will need to have an understanding of the Tangata Whenua relationship with their streams and rivers. Each waterway will have significant history, names and stories attached to it because of the way it has been used in the past.

Streams are generally described as permanently flowing (perennial) or intermittently flowing (ephemeral) which dry up in summer.

Catchments come in all different sizes, but even the large catchments are made up of many smaller sub-catchments. Whatever happens in the smaller feeder streams affects the overall wellbeing of the main waterway lower down".

Reference

Wai Care Books 2 and 7, Auckland Regional Council, Auckland City Council, North Shore City Council, Manukau City Council, Waitakere City Council.
http://waicare.org.nz

Types and sources of stormwater pollutants

Knowing what pollutants are present in stormwater and where they come from can assist in working out ways to avoid practices that produced them or reduce their impact on waterways.

The following table lists typical sources of stormwater pollutants.

Urban Runoff Contaminant Sources

Contaminant Source	Solids	Nutrients	Bacteria	Oxygen Demanding Substances	Metals	Oils	Synthetic Organics
Soil erosion	●	●		●	●		
Cleared land	●	●		●			
Fertilisers		●					
Human waste	●	●	●	●			
Animal waste	●	●	●	●			
Vehicle fuels /fluids	●			●	●	●	
Fuel combustion	●				●	●	●
Vehicle wear	●			●	●		
Industrial /household chemicals	●	●		●	●	●	●
Industrial processes	●	●		●	●	●	●
Paints /preservatives					●	●	
Pesticides				●	●		

Effects of pollutants on living creatures

Pollutant	The effect it has on living creatures
Fuels	● Damages gills so fish can't breathe ● Poisons animals ● Burns plants ● Can cause cancer in fish and shellfish
Oil (and toxic substances in waste oils like sulphur and acids)	● Creates a barrier that stops oxygen from getting in water ● Causes serious damage
Paint and ink	● Poisonous to creatures who come into contact with them ● Stops light from getting into the water making it difficult for plants to get the energy they need to make food, and for animals to find food
Food stuffs	● Rot and decay in water using up all the oxygen, suffocating fish and insects
Sediment	● Reduces water clarity and interferes with vision, breathing and digestion ● Fills the gaps between rocks in which some animals live ● Affects the growth of plants, which can disrupt the food chain
Detergents (even some claiming to be biodegradable or environmentally friendly)	● Can be toxic to fish ● Remove oxygen from the water as they break down and suffocate the fish

What can we do?

- Educate others about the effects of pollutants on our waterways.

- Inform others about alternatives for waste disposal:

Paints and brushes

- Wash out paint brushes in an inside sink
- Allow all unwanted paints to dry, then dispose with household rubbish
- Allow used brush cleaning fluids to settle then decant off and reuse the solvent, and then allow the residue to evaporate

Oil

- Drop off used oil for recycling at a local service station or Refuse Transfer Station

Household hazardous wastewater

- Drop off at any Refuse Transfer Station

Detergent and wash water

- Wash cars at a car wash or on the lawn (most pollutants will be absorbed and broken down in the ground)
- Pour all household liquid wastes down a sink or toilet

Take responsibility for changing our own actions – ensure that what we do does not cause further pollution.

If you see water pollution in a stream or at the beach or harbour...

CALL THE WATER POLLUTION HOTLINE 0800 504 639

Classroom Activity Ideas

- Walk in the rain. Select a viewing spot to watch the flow of water from one place to another. Discuss the local catchment area. What and where is it?
- Talk about what happens when rain hits the ground. Conduct experiments to show what happens when water is poured on different surfaces e.g. Grass, soil, sand, and hard surfaces. Discuss erosion and its causes and solutions
- Invite your school caretaker to talk to the class. Ask them to show students where the systems are obvious within the school
- Invite a water pollution expert from the Northland Regional Council to talk about how water pollution is monitored/tested.

Ideas for Action

- Create a restoration plan for a local stream e.g. clean up and plant with native riparian plants to slow stormwater run-off.
- Hold an information evening for the community to learn more about stormwater pollution
- Create posters or artwork showing strong messages about stormwater issues and display these in public places
- Students could role-play different scenarios related to stormwater issues
- Clean up local gutters and create an inventory of the items found. This should only be done if students can wear gloves and if it can be done safely. Find out how long it would take each item of rubbish to break down. Write letters to the local papers about the amount of litter students found and what action they would like others to take to clean up the area.

School journals

Blue fish on the footpath **by Patt Quinn** **1992 2:2**

The children of Westmere School have an unusual job helping the Auckland Regional Authority to tell people about storm water drains and the dangers that these drains can create for the fish in the Waitemata Harbour.

New Zealand's colourful sea life **by Kim Westerskov** **1988 2:3**

Some people think you can only find brightly coloured fish in tropical seas. Kim has taken flash photos to show the colourful sea life in New Zealand waters.

The shapes of water **by Gillian Shannon** **1995 1:4**

A photo-article about water in some of its many forms: rain, sea, clouds, fog, hail, frost and rainbows.

Turid Reid: field studies scientist **by Frances Parkin** **1979 4:1**

Turid Reid's job is to find out how clean the water is in the streams and harbours and at the beaches of Auckland. She works for the Auckland Regional Authority which, as part of its responsibility, safeguards the purity of the waters of its region.

Wairere - poem **by Kevin White** **1987 4:2**

Water - poem **by Stanley Cook** **1984 2:4**

Water - poem **by Alan Bagnall** **1997 2:3**

Water mad - poem **by Peter Bland** **1979 4:1**

Water supply **1978 4:3**

An outline of the problems of a good water supply - the need for a piped supply as a population grows, the treatment of the water and the growing need for water conservation.
Good diagrammatic illustrations.

The water we breathe **by Gillian Crook** **1978 3:2**

How clouds are formed, the three main types of the sort of weather they foretell.
Also how fog and mist are formed.

The creek **by Tuaine Taniwha** **1990 pg. 43**

Laying the drains **by Brian Birchall** **1981 3:3**

When a house is built, drainlayers put drains under the ground to carry away the sewage and dirty water. Brian Birchall spent a couple of days watching some men doing this job on a new house and asked them some questions about their work.

Oil spill - are we prepared? **by Norman Bilbrough** **1995 4:1**

This scenario looks at the possibility of an oil tanker grounding on the New Zealand coast. The Midas is not a real ship, but the situation is possible, the organisations mentioned do exist, and the steps taken in this scenario are those they have worked out if such an emergency arises.

Pollution - what happens? **by Janet Humphris** **1988 pgs. 16-18**

A comic strip shows what often happens to sewage and what can be done to reduce pollution.

Using water **1979** **4:1**

Here are the answers to the question "Where does the water go when we empty the sink, or the bath, or flush the lavatory?"

Suggestions for monitoring and assessment

Complete a concept map that represents the flow of stormwater and the source and effect of pollutants.

Interactive approach

- observing
- working with small groups
- listening to discussions

Conferencing individuals – groups

- Tell me about your.....
- Explain your.....

Checklists

Use specific skills and objectives from given lists as criteria in checklists

Peer Support

Students give constructive/positive feedback to peers

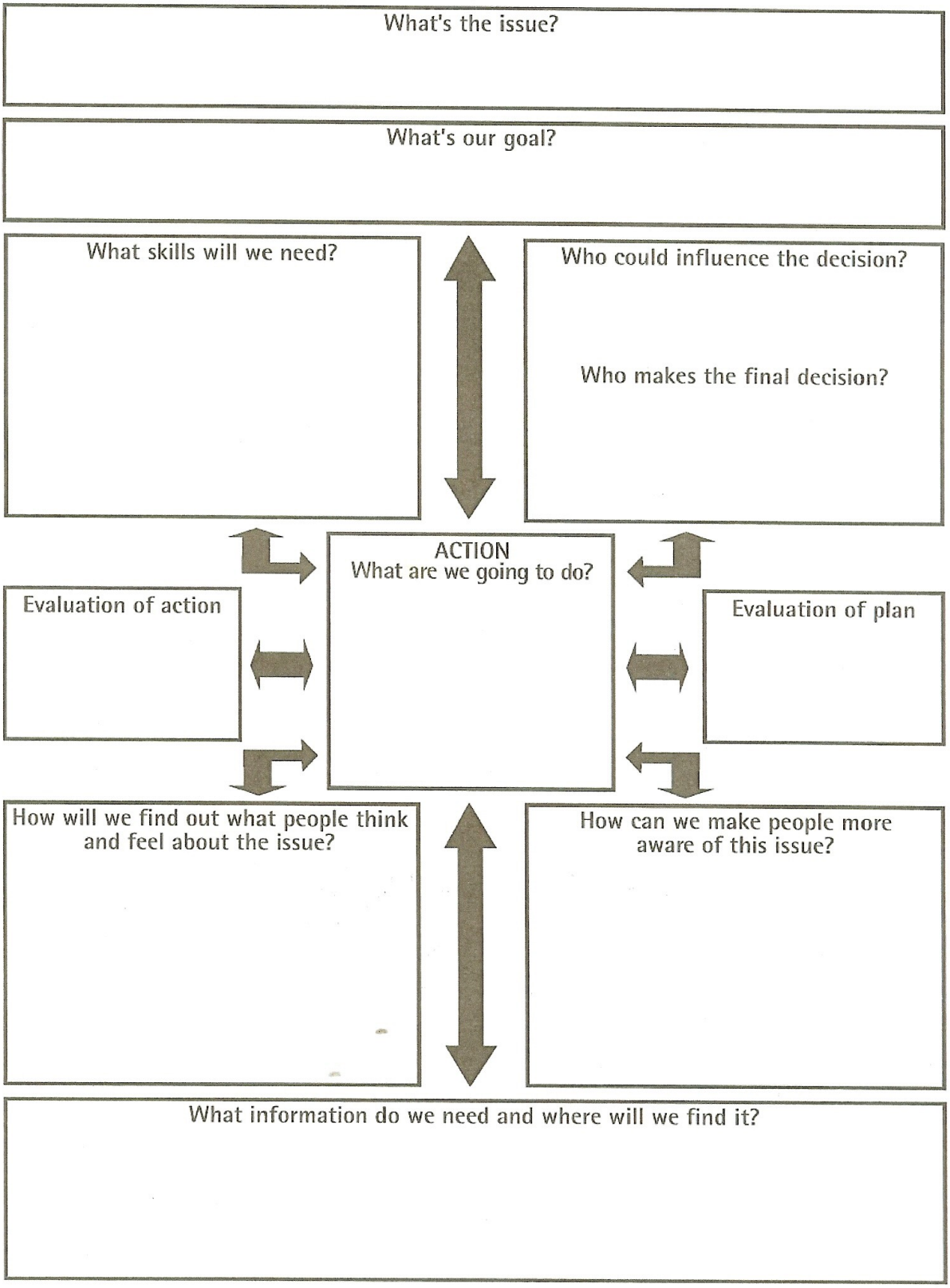
Self Evaluation

Students complete an evaluation sheet that may include the following:

- In this study I enjoyed learning about.....
- The most interesting fact I learned was.....
- Four new words and their meaning I have learned are.....
- The most interesting sentence I read/learned about the topic was.....
- One thing I would like to find out more about is.....
- This picture/illustration shows.....

Complete activities from the DTH student learning journal

Environmental Action Planner



Activity	**Stream Investigation**

Leader		Date	
Group		Location	
School		Teacher	

Risks (potential losses)

1 Physical Injury	4
2 Environmental factors	5
3 Gear/Equipment	6

Causal factors (potential risks)	**Risk reduction strategies**
People Skills Attitudes Age Fitness Ratios Inexperience Health Inappropriate behaviour Inadequate supervision Inexperienced parent/teacher helpers in water Existing medical conditions Sunburn Fall on rocks	Experience and skills of leader. General outdoor ability of students checked. Students above age of six. Clear discipline guidelines given to students before entering stream and identification of potential hazards. Boundaries, and entry and exit points made clear. Rules or EMR Kaupapa briefing. **Students to stay in immediate proximity of designated adult buddy**. Adequate supervision ensured by adult staff – adult:student ratio aim of 1:6 (adapt ratio to age and skills of students). Sunscreen available. Brief children on danger of hypothermia and assure that it is OK to get out if shivering or tired. Parents and teachers to comply with instructors directions while in stream. Adult observers based on shore, ready to attend to any emergencies, first aid, emergency plan, medical records, medication and cell phone (location known of nearest land line). On land: No running on rocks, clear boundaries and supervision when observing from shore or walking to changing rooms/toilets. Number check before and after stream study.

Environment Unsuitable weather conditions, tides, currents, rocks, oysters, fishing line/hooks, waves, rips. Weather changes creating adverse conditions. Damage to environment. Hazardous marine life, jellyfish oysters, barnacles, urchins/ Kina spikes, seals, sharks, stingray. Boats.	Up to date weather forecast and pre-site visit. Sensible assessment of environmental conditions. Safe location of entry and exit points, depending on conditions. Identification of potential hazards (waves, rocks etc). Care of environment instructions given. Knife to cut fishing line (not usually necessary in marine reserve). Look out for loose fish hooks. Specialised first aid for treatment of injuries caused by hazardous marine life. Group to stay close together.
Equipment Gear being misused. Unsuitable footwear causing injury. Unsuitable clothing and no spare clothes.	Students wearing suitable footwear and have warm clothes on hand. Students to assign each team member to a task (e.g. Sampling, writing, sorting) so that not all members are in the water at the same time with sampling equipment. Proper briefing given on the use of the sampling equipment

EMERGENCY PROCEDURE

Adult observers based on streamside with first aid and cell phone.
In the event of unforeseen dangers, calmly organise evacuation to the nearest safe landing point.

Three whistle blasts for everyone to come back in with buddies and assemble at pre-decided meeting point. Apply first aid where appropriate.

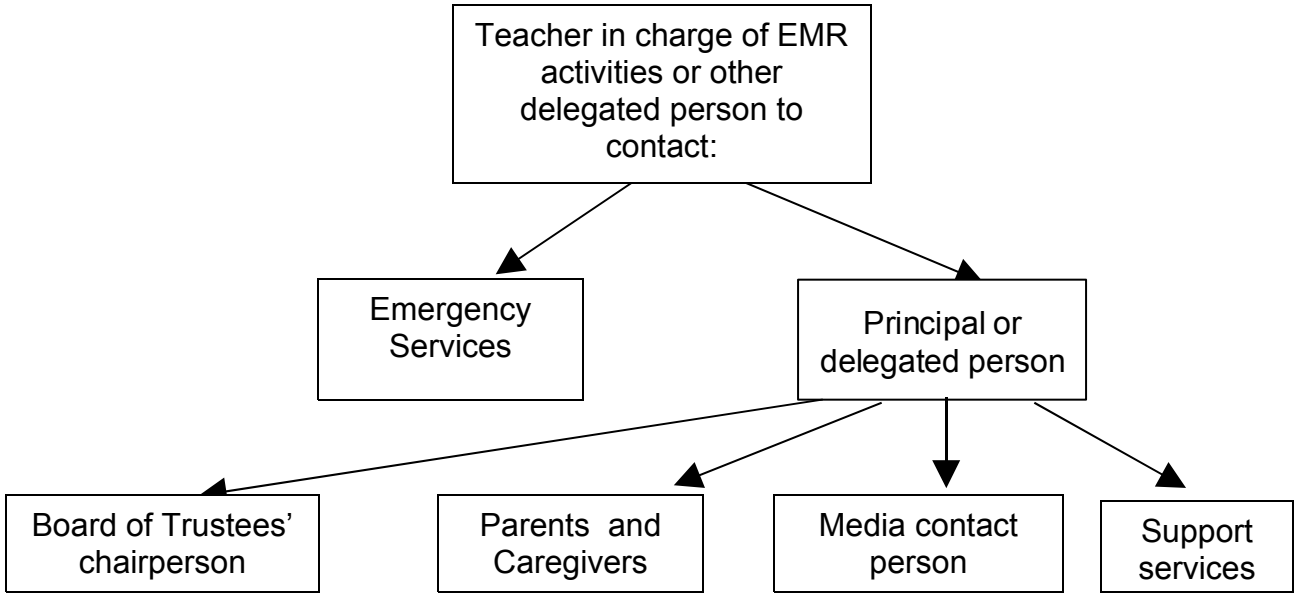
Medical records and medication known and on hand.

Safety person to call **111** if urgent. Ask for first response. Advise emergency service of whereabouts, using name of the road and area.

Get someone to wait by road and direct emergency services to problem.

On-site cell phone -

DELEGATION FOR EMERGENCY PROCEDURE



APPROVAL FROM SCHOOL

Accept **Reject**

Comments

Activity	**Drain Stencilling**		
Leader		Date	
Group		Location	
School		Teacher	

Risks (potential losses)

1 Physical Injury	4
2 Environmental factors	5
3 Gear/Equipment	6

Causal factors (potential risks)	**Risk reduction strategies**
People Skills Attitudes Age Fitness Ratios Inexperience Health Inappropriate behaviour Inadequate supervision Existing medical conditions Sunburn Fall on footpath	Experience and skills of leader. Clear discipline guidelines given to students before leaving school and identification of potential hazards. Students use toilet before leaving school. Boundaries, made clear. **Students to stay in immediate proximity of the rest of the group at all times**. Adequate supervision ensured by adult staff – adult:student ratio aim of 1:4 (adapt ratio to age and skills of students e.g. 1:2 for year 4 students and below). Sunscreen available. Leader first aid certified and equipped with first aid, emergency plan, medical records, medication and cell phone (location known of nearest land line). No running on road, clear boundaries and supervision when observing the marine reserve from the lookout. Number check before and after field trip. Students to listen to traffic safety briefing from McBreen Jenkins STMS staff and comply with all rules.
Equipment Unsuitable clothing and/or footwear. Whistle Spraypaint	Ensure students have suitable clothing and footwear. Take whistle. Ensure students do nbot spray paint anywhere but at the stencil to mark the drains.

Environment Unsuitable weather conditions, or weather changes creating adverse conditions. Damage to environment. Traffic.	Up to date weather forecast and pre-site visit. Sensible assessment of environmental conditions. Safe location of boundaries. Identification of potential hazards (traffic, spraypaint). Care of environment instructions given. Group to stay close together giving traffic right of way.

EMERGENCY PROCEDURE

Group leader equipped with first aid and cell phone.

In the event of an emergency, calmly organize evacuation to the nearest safe meeting point.

Whistle blasts for attention – instruct everyone to assemble at meeting point. Apply first aid where appropriate.

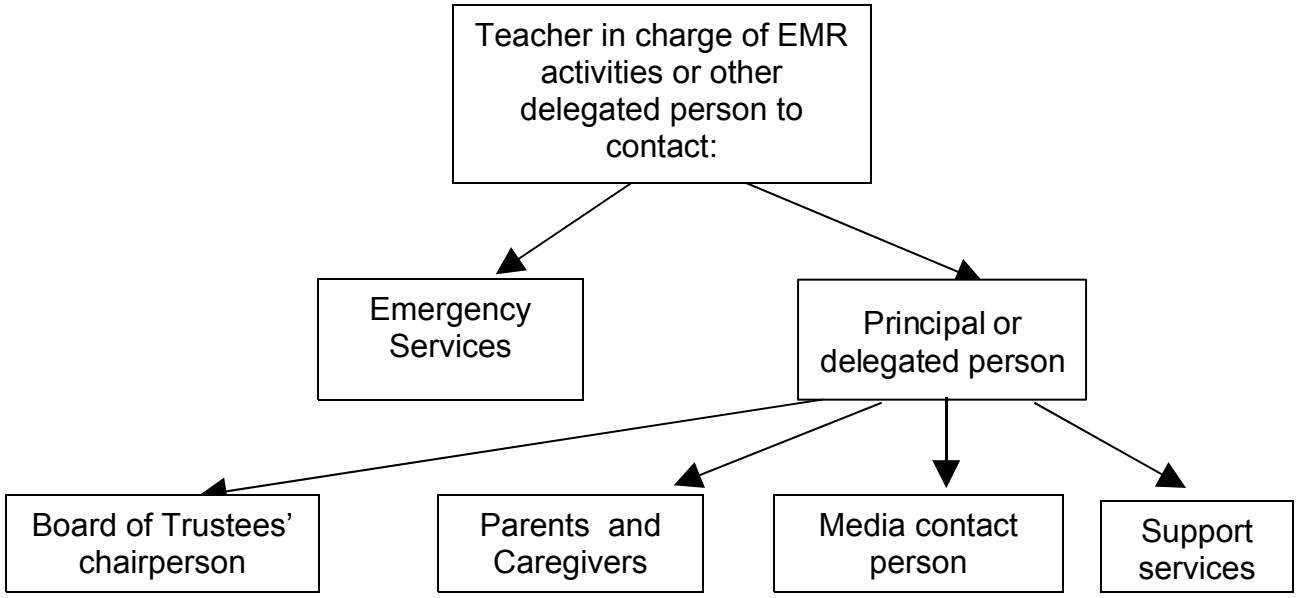
Medical records and medication known and on hand.

Delegate an adult to call **111** if urgent. Ask for first response. Advise emergency service of whereabouts, using name of the road and area.

Get someone to wait by road and direct emergency services to problem.

On-site cell phone –

DELEGATION FOR EMERGENCY PROCEDURE



APPROVAL FROM SCHOOL

Accept **Reject**

Comments

Agreement between EMR and school

The following agreement must be reviewed by the teachers and coordinator involved at the initial planning meeting. The agreement must be signed by both parties prior to the delivery of the DTH programme.

The Experiencing Marine Reserves (EMR) programme empowers schools and communities by providing hands-on experience in the ocean. The Drains to Harbour programme involves investigating types of stormwater pollution and its sources within local waterways and assessing the health of local waterways using biological and non-biological indicators. Students then have the opportunity to create an environmental action plan based on their experiences and findings. The action plan includes stencilling stormwater drains around their community with the 'Drains to Harbour – Rainwater Only' stencils.

This is an agreement between:

Experiencing Marine Reserves (**EMR**)	Address: Phone: Mobile: Email:
And:	
…… … …… … (**School**)	Address: Phone: Email:

Please tick to acknowledge the following:

EMR responsibilities – provide the school with the following:

EMR will take all practicable steps to ensure the health and safety of the school students and staff while participating in the EMR programme.[1]

- O Explanation of how the expected learning outcomes of the activity/ies will be met
- O Stormwater education resources

1 Health and Safety in Employment Act 1992, sections 1.1, 1.2.1, and 1.2.2.

- O Stormwater presentation in classroom
- O Work in partnership with teacher in charge to coordinate and organize field trips
- O Summary of experienced staff to student ratios required for each activity (in accordance with relevant best practice requirements)
- O Volunteers with relevant qualifications/experience (if applicable)
- O Stream study equipment and instruction for water activities
- O Safety equipment and associated briefings and leadership
- O Safety management plans and policies, for example RAMS.
- O Emergency procedures for field trips

School responsibilities – provide EMR with the following:

- O Intended learning outcomes that are based on the achievement objectives in the relevant curriculum areas
- O Adequate parental/community supervision for field activities (EMR recommends 1:6 ratio, and can help identify community support for supervision)
- O Health, medical and behavioural profiles of the students involved
- O Student participation consents, medical conditions and permission for EMR use of student images
- O Appropriate support for students with special needs
- O Review of risk management and approval from Board of Trustees
- O Risk management planning for all activities other than drain stencilling and instream activities
- O First aid kit
- O School covers costs associated with transport.

Please also tick the following to recognize your commitment to EMR:
Our staff and students undertake to:

- O Recognise that the use of the DTH programme and resources is restricted to educational and non-profit purposes. The DTH resources can be reproduced

in their entirety for educational non-profit use.

- Incorporate the EMR concept (information, experience and action) in the school programme and curriculum, for example by incorporating an introduction to stormwater, investigation of a local waterway and action-oriented activity.
- Inform the school and wider community about stormwater pollution and the Drains to Harbour connection, DTH experiences and encourage similar experiences within the community, incorporating any local conservation initiatives.
- Refer to the programme as 'Drains to Harbour' and EMR wherever possible when using the EMR concept.
- Recognise that risk management, other than that associated with drain stencilling and in stream activities, remains the official responsibility of the school.
- Indemnify the EMR leader for any claims, costs, damage and expenses that may result from the failure of the school to fulfil its risk management obligations.

The school and EMR reserve the right to withdraw any or all participants from the programme if safety is compromised.

Signed:		(School)	Date:	
Name:				
Signed:		(EMR)	Date:	
Name:				

Experiencing Marine Reserves: Student Participants' Evaluation
(end of programme)

The purpose of these questions is to evaluate the effectiveness of the Drains to Harbour (DTH) programme and to see if you support the creation of more stormwater pollution prevention actions around the Whangarei District. Please write or circle your answer.

What is the name of your school?

……

What year level are you?

……

1. Do you remember the classroom talk? Yes / No

2. What do you remember about it?

3. Do you remember your stream experience? Yes / No

4. What do you remember about it?

5. Circle the parts of the DTH programme that you enjoyed and remember most from the list below:
   - classroom talk
   - stream investigation
   - drain stencilling
   - action activity – informing your community about what you learnt/showing your community what you learned?

6. What did you notice about the health of your local waterway

……
……
……

7. What did you learn about stormwater pollution types and sources?

……
……
……

8. What did you learn about stormwater pollution prevention?

……
……
……

9. What did you enjoy least about the programme?

……
……
……

10. Have you informed your community about your experiences since participating in DTH or shown your community what you learned?
Yes / No

What action did you undertake? How did you do this?

……
……
……

11. Do you feel that your attitude towards the need to care for the marine environment has changed since participating in the DTH programme
Yes / No

Comment:

……
……
……

12. Would you recommend the DTH programme to other schools?
Yes / No

Why/why not?

15. What are you personally going to do now to help look after our waterways?

……
……
….

Now that you have participated in the DTH programme, do you……..
(Please circle one of the following sentences)

- **Now support** the creation of more stormwater pollution prevention.
- **Still support** the creation of more stormwater pollution prevention.
- **Still oppose** the creation of more stormwater pollution prevention.

Thank You!

EMR Drains to Harbour (DTH):
Teacher Evaluation (end of programme)

Name of school……

On a scale of 1 – 5 (5 being the highest), **please rate the following by writing your rating in the circle provided:**

1. Resources (programme info, equipment and teaching materials etc) provided by EMR for the Drains to Harbour (DTH) programme

Comment……
……

2. Content of the DTH programme (including classroom intro, local investigation, drain stencilling and follow up etc)

Comment……
……

3. Effectiveness of safety management

Comment……
……

4. Satisfaction with your EMR Leader's role in the delivery and effectiveness of the programme (including rapport with students)

Comment……
……

5. Effectiveness of the programme in meeting your objectives

Comment……
……

6. How is your DTH project contributing to positive changes in your local environment (eg actions/activities being taken, community involvement, improvements in the environment itself)

Comment……
……

7. Educational value of this type of hands-on environmental education

Comment……
……

8. Value added to students' knowledge, skills, and attitudes

Comment……
……

9. Do you think your local community has learned anything about stormwater pollution and waterway protection as a result of the project?
Please comment.

Comment……
……

10. Did you have to change the programme to make it work for you in terms of curriculum requirements or your own objectives? What in particular?

Comment……
……
…

11. Has experiencing this programme with your students changed your own level of support for the implementation of more stormwater pollution prevention initiatives in the Whangarei District?

Comment……
……

13. How has your attitude towards the need to care for waterways changed since participating in the DTH programme or via your students?
Yes / No

Comment……
……
……

Things you enjoyed most	Things you suggest could be changed or improved

Thanks!