

Institutional Strengthening for Enhanced Environmental Management of Kingston Harbour



Component D: Public Awareness

Deliverable 1

This report is submitted to the National Environmental and Planning Agency and the Inter-American Development Bank in fulfillment of Deliverable 1 of Component D: Public Awareness.

Deliverable D1: **Draft Plan for the Public Awareness Campaign** is found in Section 1, while Deliverable D2: **Preliminary Outlines for the Educational Modules** is found in Section 2.

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SECTION 1:

COMPONENT D1

**DRAFT PLAN FOR THE PUBLIC
AWARENESS CAMPAIGN**

1. INTRODUCTION

The plan for a public awareness campaign to support the plans for institutional strengthening and environmental improvement of Kingston Harbour has been prepared by the project team after the following activities:

- ◆ A brainstorming session was held with members of the Project Committee to garner ideas on issues to be addressed in the Public Awareness programme
- ◆ A brainstorming session was held with selected educators to ask for their input into the content and design of the modules and supporting materials
- ◆ A meeting was held with representatives of communities on Kingston Harbour and the gullies that feed into the Harbour, and one community was toured.
- ◆ Meetings were held with NEPA Public Awareness personnel
- ◆ We participated in the NEPA “Green Expo” display, and gained further insights into issues and also into public perceptions and attitudes.
- ◆ Attendance at a Green Expo seminar on environmental issues in industry and business.

We also referred to documentation on Kingston Harbour and Environmental Awareness and Education research and reports produced locally and on the Internet.

2. RATIONALE FOR THE CAMPAIGN STRATEGY

Issues

The research done for the campaign revealed the following issues:

- Kingston Harbour is on its way to being a “Dead Zone”, i.e. the level of pollution is so high that only the lowest type of life forms survive in most of the harbour
- The major source of pollution is raw sewage that enters the harbour. The NWC sewage treatment plants are mostly non-functional. They are said to have plans to build a sewage treatment plant at Soapberry on Hunts Bay.
- Other sources of pollution are ship waste, solid waste washed down the gullies, industrial waste, pesticides and fertilizers.

- A major recurring item of concern is solid waste caused by packaging materials such as styrofoam, soft drink bottles and plastic bags. These materials end up on the floor of the harbour and in the mangroves, thus threatening marine life.
- Drewsland community representative spoke of the health problems caused by aluminium smelting by those who make pots.
- Another problem is unplanned development around the rim of the harbour.
- Government agencies sometimes make decisions that are not in the best interest of the environment, and in this case Kingston Harbour.
- People who remember the harbour of over 30 years ago, have a desire to see the good things return, such as cross the harbour swimming races, swimming at Gunboat Beach and other areas of the harbour and water sports.

Packaging Waste

The issue of non-biodegradable packaging material is an issue worldwide. Some steps being taken elsewhere include:

- Incentives for shoppers to take bags to the supermarket by charging for bags at the checkout
- Use of thinner biodegradable bags at stores and supermarkets
- Recycling plastic bottles and other types of packaging, e.g. aluminium cans
- Use of paper or other forms of biodegradable food packaging material to replace styrofoam.

This campaign offers an opportunity to address this problem with the food, drink and packaging industries, and to develop strategies for reducing the amount of non-biodegradable waste. One manufacturer of styrofoam replacement packaging found on the Internet even offers to assist packaging manufacturers use their technology.

It is therefore suggested that we host a conference on this issue, bringing all the players together in a search for a strategy that can be supported by government policy, e.g. a tax on non-biodegradable packaging to force a change in behaviour. Funds allowed, we could bring in a speaker from abroad where such a strategy has worked.

The campaign can sensitize the consumer to the need for change, and at the very least encourage them to take bags to the supermarket, and to choose supermarkets where vegetables are presented in bins rather than styrofoam trays.

Government Agencies

The decision makers in key government agencies need to be brought together to understand the power they have to make decisions that help rather than harm the environment. The plan is to bring them together in a conference or series of dialogues to focus on solutions and the decision making process that can help to clean up and not do further harm to Kingston Harbour.

General Conclusion

There is no use in telling the general public to change their behaviour, if the decision makers in the public and private sectors who can really make a difference are making decisions to harm the environment. So the change must begin at the top, while informed consumers can help to put pressure on the decision makers to make the right decisions.

3. FUNDING THE CAMPAIGN

A constraint identified by the consultants was the lack of funding in the contract for an advertising campaign to make the kind of impact needed.

We are, therefore, suggesting that one of the first tasks we will have to do in implementing the programme is to seek partners from the private sector and donor community to sponsor the advertising campaign. This will require support from NEPA's top management.

4. IMPLEMENTATION STRATEGY

Because the technical consultants are not far enough into their work programme to have arrived at the messages they want to transmit, and because time is needed to build up partnerships to support the advertising campaign, we propose that the campaign have two phases:

- *Phase 1 – Late September-November 2004*

This phase would be a soft launch of the project to the public, and raise the issues related to Kingston Harbour. It would consist of

- A media launch/breakfast where the CEO of NEPA and the Project Manager would speak about the project and the issues, thus beginning a media and public debate.
- A banner, brochures and a PowerPoint presentation would be prepared for use at functions.
- Speaking engagements and media appearances would be arranged to air the issues to the public
- The conference on packaging would be held, and the issue of packaging would be the focus of media appearances and speaking engagements around the conference
- The web pages would be developed and posted on the NEPA website.
- Round table discussions would be held with government agencies on policy and decision-making issues.
- The workshop for vetting the educational modules would be held and given publicity
- The workshop for Component A would be held and publicised.
- Presentations to prospective partners for funding the advertising campaign. This effort would be supported by the general awareness programme.
- The video would be produced in collaboration with Component D2.

- *Phase 2: February to March 2005*

This phase would consist of reporting to the public the outcomes of the project and a campaign with the messages encouraging concern and behaviour change

- an advertising campaign
- media and speaking engagements
- an outside radio broadcast – if possible a concert on the waterfront.
- a newspaper feature.

5. PUBLIC AWARENESS CAMPAIGN PLAN

Theme: Vision Kingston Harbour – Reviving Our Harbour – Securing Our Future

Target Audience		Messages	Media/Strategy
A.	Individual Level: i) General Public	<p>Kingston Harbour is a valuable resource (shipping, aviation, fishing, heritage tourism, protects Kingston from storm surge, etc.)</p> <p>Because we keep polluting it, the harbour has depreciated: it is hardly used for recreation; fishing is depleted. There is need for Government, private sector, and civil society to come together to improve it.</p> <p>Kingston Harbour can once again be a place where we swim, and enjoy other water sports and recreational activities. It can be a centre for heritage tourism, based on the historic triangle of Port Royal, Kingston and Spanish Town.</p> <p>Revival of Kingston Harbour could be a catalyst for economic revival activity in the spheres of hospitality (restaurants, water-based recreation activities, entertainment and arts complexes, heritage tourism, housing and general commercial activity. All of these areas would, of course provide employment at all levels.</p> <p>Kingston Harbour was once a place where Kingstonsians went to relax and have fun: Swimming across the harbour, at Bourne-mouth Bath, Sirgany, Gunboat and Buccaneer beaches; water skiing, boating, etc. Victoria Crafts market was the place to go and relax on a Saturday, while enjoying mento music, refreshing drinks and browsing the stalls. These memories would be evoked by public figures who remember what it used to be.</p> <p>Specific behaviours that need to be promoted are:</p> <ul style="list-style-type: none"> • Stop throwing garbage in the gullies • Stop throwing garbage on the side of the road • Reducing the number of plastic bags used for packaging, e.g. at the 	<p>Billboards</p> <p>Radio & TV advertising</p> <p>Sponsored radio call in programme with text/call in competition</p> <p>Speaking engagements at service clubs, community meetings and others to be identified</p> <p>A concert on the waterfront in collaboration with existing institutions.</p> <p>Video to be shown on television and at live events and distributed as widely as possible.</p> <p>Web pages on NEPA site</p> <p>Newspaper feature</p> <p>Brochures</p>

		<p>supermarket and in the markets.</p> <ul style="list-style-type: none"> • Changing the type of food containers from styrofoam to a biodegradable type. • Stop discharging toxic and harmful effluent into the harbour and gullies. • Lobbying for a proper sewage disposal system for Kingston that will stop the flow of untreated sewage into the Harbour. • Taking personal responsibility for the environment – I can make a difference. 	
	ii) Communities near the Harbour and on the gullies	<p>The above, plus focus on solid waste and the harm done by rubbish thrown in the harbour and the gullies, e.g. flooding of communities during heavy rainfall.</p> <p>Discussion of solutions.</p>	<p>Meetings in 2-3 communities with entertainment aimed at improving sanitation practices in association with NSWMA; JIS would be requested to televise the meeting and show in other communities.</p>
B.	<p>Corporate Level</p> <ul style="list-style-type: none"> i) Supermarkets ii) Restaurants & caterers iii) Wholesale food distributors iv) Manufacturers and importers (especially food and packaging) v) Environmentally aware companies 	<p>Shorter version of message to the general public and communities, with focus on packaging (particularly for food & drink) that is non-biodegradable and eventually reaches Kingston Harbour.</p> <p>Particular emphasis on:</p> <ul style="list-style-type: none"> ▪ Reducing plastic & styrofoam packaging at supermarkets ▪ Replacing styrofoam lunch boxes with a bio-degradable substitute (see www.earthshell.com) ▪ Recycling of PET bottles ▪ Setting up recycling systems <p>What can collectively be done to reduce this proliferation of non-biodegradable garbage?</p> <p>Corporate responsibility for the environment</p>	<p>Conference on Packaging and reduction of non biodegradable waste, possibly with a keynote speaker from overseas. Perhaps someone from EarthShell Corporation</p> <p>Presentations requesting support for advertising campaign</p> <p>Newsletter</p>
C.	Government Organisations and Decision Makers	<p>Statement of Problems affecting the Harbour and the need for Government to make decisions to improve its state, e.g.</p>	<p>Establishment of a cross sector, inter-agency working group to address the</p>

	<ul style="list-style-type: none"> i) National Water Commission ii) National Works Agency iii) National Solid Waste Management Authority iv) Port Authority v) ENROC vi) PIOJ vii) KSAC viii) KCIC 	<p>NWC - Sewage NWA/ENROC – Highway 2000 route PIOJ – Planning Issues NEPA] - Planning approvals KSAC] Port Authority – Ship waste</p>	<p>issues. This could be done in collaboration with the Greening of Government programme.</p>
D.	Industries that discharge effluent into gullies/ Kingston Harbour	To be determined after consultation with Component B consultants	<p>Newsletter Other strategies to be determined</p>
E.	<ul style="list-style-type: none"> Port Authority Shipping Association of Jamaica Operators of wharves Maritime Authority JMA JGRA NSWMA NWC Ministry of Health General Public 	<p>The necessity for a ship waste facility The benefits to Kingston for having this facility including disposal and recycling of oily waste Issues regarding siting of the facility</p> <p>To be determined after consultation with Component C consultants</p>	To be determined

6. SUGGESTED SLOGANS FOR THE CAMPAIGN

**Kingston Harbour:
A Valuable Resource
for Today and Tomorrow**

**Vision Kingston Harbour:
Reviving our Harbour -
Securing our Future**

**Kingston Harbour is Dying:
Let's Cure it and Secure it**

**Kingston Harbour:
Save it Today
Enjoy it Tomorrow**

**Project Kingston Harbour:
Reviving our Harbour -
Securing our Future**

SECTION 2:
COMPONENT D2

**PRELIMINARY OUTLINE OF THE
EDUCATIONAL MODULES**

OUTLINE OF THE EDUCATIONAL **MODULES**



Institutional Strengthening for Enhanced Management of Kingston Harbour Component D2 : Educational Modules

A.V. Plus Ltd.

Prepared by June Cezair Wallace

1. INTRODUCTORY NOTES TO THE OUTLINE:

This is a draft outline, which is designed to create awareness among its readers of the nature of the design and content of the final document.

These modules will be prepared as part of a public awareness programme to support the institutional strengthening leading to an improvement in the environmental and social quality of Kingston Harbour and its environs. This overall aim of this project is to facilitate the institutional arrangements best suited to coordinate the diverse stakeholders and activities that impact upon the current state of the Harbour, and to support pre-investment efforts to address major sources of pollution. The Public Awareness component is divided into two sub-components:

- Component D1: A general public awareness programme on Kingston Harbour which will also support the technical components
- Component D2: Educational modules

The overall goal of these modules is to create in students and teachers an appreciation of the value of Kingston Harbour, the problems now affecting it, and some solutions to those problems. It is hoped that through these modules, students, teachers and parents (through their children) will start to recognize that the environment, especially Kingston Harbour is everyone's responsibility and that the actions of each of us can make a difference.

The modules are intended to give teachers of all grades ideas and examples from Kingston Harbour which are relevant to specific concepts and topics already being taught in the existing curriculum. This is known as the Infusion method. It is not, therefore, a new programme being introduced to the school system, but enrichment materials which will enhance the existing concepts and topics by adding information on this important resource. There is, therefore, no need for curriculum mapping, since this was completed for the original curriculum. The information provided will be added through the concepts and topics identified as support for the existing teaching/learning programme.

LIST OF CONTENTS

The proposed list of contents of the final document is outlined below:

Background -----
General Notes for Teachers-----
Environmental Education-----
The Main Issues regarding Kingston Harbour -----
An Overview of Kingston Harbour -----
Infusion and Integration-----
The Overall Objectives-----
A Vision of Kingston Harbour -----
Module One: Grades 1-3-----
Module Two: Grades 4-6-----
Module Three: Grades 7-9-----
Module Four: Grades 10 & 11 ¹ -----
Some references -----

GENERAL NOTES FOR TEACHERS

This section will provide information that teachers may use in the process of helping students develop the knowledge, skills, attitudes and awareness necessary for their participation in improving the environment, thereby leading to its sustainability. This section will include a comprehensive definition of the term environment and other relevant terms as well as information on Kingston Harbour.

¹ Data provided by Mrs. Janice HoLung

FORMAT

In the final document, each module will be designed as set out in the chart below. All the following areas will be included in the final presentation:

- ◆ An introduction/overview for each module which will briefly cover the extent to which the issues will be discussed and the overall objectives addressed. There will also be a summary of the topics that will be covered.
- ◆ Issue or priority problem which will be addressed in the grade cluster
- ◆ Learning objectives for each cluster
- ◆ Schedule of concepts/topics to be covered according to the grade level, i.e. those common to Kingston Harbour/environment for the lower grade levels and Subject area/topic- the page number refers to the page in the Revised Curriculum.
- ◆ Some suggestions on possible areas of infusion
- ◆ Suggested activities, including instructions for field trips to locations on the Harbour and the building of models. (not included in outline)
- ◆ References (not included in outline)
- ◆ Sample lesson plans (not included in outline)
- ◆ Teachers' notes (for the grade cluster) based on the issue and the concept (not included in outline)

Columns will cover the schedule of concepts, topics and areas of infusion. Suggested activities will also be indicated. For each grade level the balance of concepts and topics will relate specifically to the curricula. Some examples are included in the outlines below. Each module will have teachers' notes, possible references (including websites) and sample lesson plans, which are designed to assist teachers with the process of infusion.

The curricula/syllabi which will be used as reference materials are prescribed by the Ministry of Education, Youth and Culture and/or the Caribbean Examinations Council:

- ✘ Revised Primary Curricula Grades 1-3, Primary Education Improvement Programme 0GOJ/IDB 11, Ministry of Education and Culture, Jamaica, 1999

- ✘ Revised Primary Curricula Grades 4, 5 & 6, Primary Education Improvement Programme, GOJ/IDB 11, Ministry of Education and Culture, Jamaica, 1999
- ✘ Government of Jamaica/World Bank, Reform of Secondary Education Teachers' Guide Grades 7-9 for Social Studies, Science, Mathematics, Career Education and Language Arts
- ✘ CXC syllabi for Social Studies, History, Geography, Chemistry and Biology

The modules will be developed taking into account documents from the National Environmental Education Committee and the Ministry of Education Youth & Culture as well the output from brainstorming sessions held on the Public Awareness programme and other relevant documents.

PHILOSOPHY

The philosophy underlying the modules may be found in the Monk's Six Principles of Living Sustainably:

The Monk's Six Principles for Living Sustainably²

1) Harmony with Nature

Students should learn from the underlying co-operation of living and non-living things. Students should learn about recycling our resources and the processes involved in recycling as well as about living and working with our environment in a sustainable way.

2) Quality of Life

Living selfishly just for what we can get leads to misery and conflict with other people and the environment. Living selflessly to give, help and serve, leads to happiness, fulfillment and harmony with everyone and everything around us.

3) Self Reliance

Students must recognize the importance of developing a sense of independence, although they may retain the need for support systems. Students should make their own

² Source: Adapted from Beddis, R. and Johnson, C., eds. (1988) *Only One Earth: A Multimedia Education Pack*, World Wide Fund for Nature, Godalming, Surrey.

decisions based on all the available facts, be accountable and assume responsibility for themselves and their actions. They should participate and do the right thing.

4) Variety and Diversity

Students should appreciate variety in ideas, opinions, people, etc. They must respect and value other people and their ideas, even though they may be different from them and their ideas. There should be a desire of not wishing to make things the same or uniform.

5) Small is Beautiful

Student should appreciate the value of being in an organization and organize themselves if possible - organising things on a small scale gives control to ordinary people. Small groups can often get things done quickly. Large organisations are usually difficult to change, even when people's needs change.

6) Co-operation and Peace

All around the world we see competition and aggression. People feel that they must win at something to feel good. But people can share their skills and resources. By working together co-operatively with each other and our environment, we can lead a more peaceful and satisfying life.

FEATURES SPECIFIC TO KINGSTON HARBOUR

THE MAIN ISSUES REGARDING KINGSTON HARBOUR

- 1) The economic and social value of this body of water
- 2) The location and importance of Kingston Harbour
- 3) The improper disposal of solid waste, including non-biodegradable packaging materials used in Kingston and St. Andrew, much of which ends up in the Harbour: waste management and reduction.
- 4) 20 000 gallons of sewage emptied into Kingston Harbour each day
- 5) Deterioration of natural resources due to main contributors to economy (e.g. dust pollution at Harbour Head, pollution from Petrojam refinery)

- 6) The restoration of the harbour for tourism and local recreational purposes
- 7) Kingston Harbour as a modern container port, its repercussions on its role as a fish and animal habitat and the impact on the livelihood of fishermen
- 8) The possibilities and challenges of cruise shipping in Kingston Harbour
- 9) The endangerment of the marine and animal life within and surrounding the Harbour
- 10) The destruction of the mangroves
- 11) Disuse of the public bathing beaches along the Harbour due to poor water quality and solid waste pollution
- 12) Watershed protection for improved water supply and water quality for Kingston and St. Andrew.
- 13) Chemical pollution due to the use of pesticides, fungicides and other unfriendly chemicals; disposal of petroleum products and batteries
- 14) River and tombolo sand mining

2. OVERALL LEARNING OBJECTIVES

The objectives listed below are those which should be achieved by the end of a secondary education, assuming that the individual has covered all the modules:

The secondary school graduate should be able to:

- ❖ ***Relate that each individual bears some, if not all the responsibility for the environment within which he/she lives***
- ❖ ***Demonstrate his/her responsibility to the environment, in particular to all waterways, by refusing to dump any waste material in any gullies, streams, or Kingston Harbour***
- ❖ ***Assist in convincing others to practice good waste management, thereby leading to positive changes in attitude and behaviour***
- ❖ ***Appreciate the cultural diversity of different groups of people who live and work on or near Kingston Harbour.***

3. THEME, VISION, GOAL AND SYMBOL

Theme

The theme will be related to the overall theme selected for the Public Awareness programme.

Goal

Everyone should be committed to the goal of restoring Kingston Harbour to its former glory as a place for recreation, tourism, economic progress, a thriving marine environment and competitive sports.

A Possible Symbol

A possible symbol for the education programme could be a fish called 'King Harbo'.

A Possible Vision for Kingston Harbour

Kingston Harbour is a vibrant busy waterway with container vessels moving freely towards and from Gordon Cay along the western side of the harbour; hovercraft moving back and forth between Kingston and Port Royal, while along the eastern side of the harbour families are busy fishing near to the shoreline with a kayak race, supported by thousands of spectators. In the centre there is a cross-the-harbour race starting by Bournemouth Club; while at the docks opposite the cement company there is a cruise ship in port with lots of busy attractive stalls dotted along the driveway leading to the port and several tour buses and taxicabs awaiting passengers.

The marine life near to the Port Royal end has been restored and birds from Refuge Cay are cheerfully flying over the harbour, while there are ongoing tours of the restored mangroves. Around the coastline, on all sides, there is lush vegetation and beautiful attractive gardens and the restored public beaches are once again popular.

Primary Illustrations

There will be two primary illustrations accompanying these modules. Both will be drawn in black and white by artists. The first will represent the vision for Kingston Harbour (above), while the second will depict the worst case scenario below.

Worst Case Scenario

An unsanitary harbour with much refuse and oil floating on the surface, included badly treated sewage. Rubber tyres and dead fish can also be in evidence. On the shoreline there can be people with their hands or handkerchiefs over their noses. People should also be stopping others from diving in, swimming or fishing in the water – maybe hand-made signs. The mangroves and refuge cay could be over-run with solid waste material – plastic bags, Styrofoam boxes, juice boxes, beer cans and cardboard boxes can be in evidence around the shoreline as well as in the mangroves.

4. STRUCTURE OF THE MODULES

In the final analysis the modules will be designed to address the vision, principles, issues and overall learning objectives. Once a student completes all the modules, all the principles and issues will be addressed and the objectives should be achieved. The format of the modules will address the following in the final documentation, which will be presented in a tabular form;

- ✿ Introduction/Overview for the grade cluster
- ✿ Issue or priority problem which will be addressed in the grade cluster
- ✿ Schedule of concepts/topics to be covered according to the grade level, i.e. those common to Kingston Harbour/environment for the lower grade levels and Subject area/topic- the page number refers to the page in the Revised Curriculum.
- ✿ Some suggestions on possible areas of infusion
- ✿ Suggested activities, including instructions for field trips to places like Blue and John Crow Blue Mountains, Holywell and Port Royal and the building of models. (not included in this outline)
- ✿ References (not included in this outline)
- ✿ Sample lesson plans (not included in this outline)
- ✿ Teachers' notes (for the grade cluster) based on the issue and the concept (not included in this outline)

The table below represents the way in which the modules will be laid out with the exception of the sample lesson plans, schedule of references and Teachers' notes.

The tables below provides elements of the content which will be included as far as the topics and areas of infusion are concerned. Please note that they are not complete, but indicative of the approach.

5. MODULE ONE: GRADES 1-3

Introduction

For Grades 1-3 the overall theme is "All About Me and My Environment". The focus at these levels is on the individual as he/she relates to himself/herself, his/her family, home, school, community and environment.

Issues/Priority Problems

- The economic, cultural and social value of Kingston Harbour
- The importance of Kingston Harbour and its environments
- The proper disposal of solid waste materials and sewage

CURRICULA REFERENCES				
Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
1: Term One: Unit One: Who am I? How do you know me?	8	Names for identification	Each person is a unique individual	Surnames common among those in Port Royal or other fishermen.
1: Term One: Unit One: Who am I? To which group do I belong?	13	Groups	Rules & regulations of groups	Fishermen as a group; the rules etc. which govern them regarding fishing, safety, pollution & preservation of the harbour
1: Term One: Unit Two: What can I do?	15	Contribution of others	Giving praise & appreciation for others' contribution	What do fishermen do? How do they contribute to the provision of food?
1: Term One: Unit Two: What can I do?	21	Exploring senses	Go on a nature walk	Visit to the shoreline of Kingston Harbour & noting the pollution to the water & degradation of the plants on the shoreline; learning about the value of plant & marine life
1: Term One: Unit Two: What are the activities in which we take part as a family?	43	Special days of family celebration	Christening/ baptism/ blessing	The need for water; the importance of good water quality in bodies of water, especially Kingston harbour; the need for proper sewage and solid waste disposal.
1: Term Two: Unit Two: How do I care for plants & animals at home?	55	Taking care	Plants & animals at home	Marine life in the harbour; how they exist and how they can be cared for.
2: Term One: Unit Two: Why do I need recreation?	129	Recreation as one means of keeping healthy	Satisfying our needs	How Kingston Harbour could be used for surfing, diving, swimming, surfing, fishing and boating
2: Term One: Unit Two: How am I	131	Value of Kingston	Learning about the value of the	Using posters & pictures of the harbour to educate students about the

CURRICULA REFERENCES

Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
educated?		Harbour	harbour	value of the harbour; tours of the mangroves could also be educational
2: Term One: Unit Two: How can I spend my leisure time?	133	Leisure time activities	The potential recreational uses of the harbour	Uses of a clean healthy harbour can include sea-bathing, diving, picnicking on the shoreline, surfing, sport-fishing & canoeing.
2: Term 2: Unit One: What does my community look like?	151	Body or source of water	Describe the body or source of water in your community	Students who live or go to school in the vicinity of the harbour can describe its location, colour, consistency and uses.
2: Term 3: Unit Two: What are the places in our community that we find interesting?	161	Interesting places	Select an interesting place in the community	Invite a resource person to talk about Kingston Harbour and the surrounding historic sites; this could be accompanied by the "model" and the video.
3: Term 1: Unit One How does my food help in making my body healthy?	199	Healthy Body Nutritious food	Identify food according to group & nutrient	Fish is a very important source of nutrients; they are caught at sea or grown in ponds; the water from which fish are caught must be of good quality or the fish may be poisoned-discuss catching fish in the harbour.
3: Term 2: Unit One: Who are the providers of the goods & services which we need?	220	How fish is provided & by whom	Identify different groups of workers in the country	Discussions can relate to the harm created by blasting for fish in the harbour; the role of container ships in the harbour regarding the importation of food through Gordon Cay
3: Term 2; Unit Two: Relating to others outside of Jamaica	231	International relationships	External relationships exist through trade, visiting, tourism and telephone, etc.	Cruise ships visit the harbour, albeit occasionally; Reference can also be made to the mobile bookstore and the eye doctor that visits .
3: Term 2: Unit Three: Aspects of the Jamaican Culture	251	Culture & its emergence	Seagoing, fishing & trading by sea have always been a part of Jamaican culture	The roles of fishermen, the buccaneers and legitimate trades, especially as they relate to the harbour, as well as reference to the role of Port Royal can be discussed and/or role played.
3: Term 3: Unit One: Living and Non-living things in my environment	269	The needs of living things	Living things have special needs	The need for good quality water, free of solid waste and sewage, for the growth of fish and other marine life. Students could be exposed to the effects of dumping waste on marine life.

6. MODULE TWO: GRADES 4- 6

GRADE 4

Introduction

Unlike those of grades 1-3 and similar to those of grades 5 & 6, grade 4 curriculum possesses discrete subject curricula. In the final document each subject will be discussed under the relevant heading. For the purposes of the overview, however, they will be discussed under the "Grade" only.

ISSUES/PRIORITY PROBLEMS

CURRICULA REFERENCES				
Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
GRADE FOUR				
Drama Gr. 4: Term One; Unit One: Story-building	9	Interpret still pictures and use elements to build a story	Identify & use elements in a story	Using a picture displaying some features of Kingston harbour and with guidelines from teachers students in groups can write a story about Kingston Harbour that can be role-played
Language Arts. Gr. 4 Term One: Unit One: Ourselves	24	Recognize & use past tense verbs correctly	Giving & receiving information about ourselves	After selecting the verbs from "How did we get here", students can use them to describe the role of the harbour in bringing various types of people to Jamaica.
Language Arts; Gr. 4 Term One; Unit Two: Language through senses	35	Expressing & responding to what I see (water)	Observe & talk about Kingston Harbour	A group of students could visit the harbour, make specific observations including throwing stones in the water and touching it with sticks and then describe to their peers what they see and hear.
Mathematics: Gr. 4 Term One; Unit One: Numbers	53	Identify the value of numbers	Measuring distance	Using a road map, students can calculate the distance between the school/community and Kingston Harbour. Using the notes the students can discuss the varying average temperatures.
Mathematics: Gr. 4 Term One; Unit Two: Measurements	60	Units of measurement	Measuring & calculating distances	Using the model of Kingston harbour, students can collect, organize, display and interpret information about the harbour.
Music: Gr. 4; Term One, Unit One: Music from sounds in my environment	73	Music from the sounds of my environment	Creating music using water	Students/teachers can bring varying sizes of glasses to the classroom. Each glass has a different amount of water in it. Using a metal instrument, the rims of

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
				the glasses are touched lightly; each makes a different sound. The students can thus make a musical instrument and use these sounds to compose a tune.
Religious Education: Gr. 4; Term One; Unit One: What is religion?	108	How does religion affect our daily life?	The role of water in religion	Religion determines that each individual has a unique relationship with the environment: In religion, water is a precious commodity, because it is used for baptism/christening. the environment is to be valued highly and treated with care because as human beings we cannot create it – the environment is to be preserved. This discussion can be extended to Kingston Harbour and how dumping garbage in the gullies eventually reach the harbour.
Social Studies: Gr. 4 Term One; Unit One Jamaica, its location & physical features.	135	Locate Kingston Harbour	Kingston Harbour as the seventh largest in the world and is a feature of Jamaica	The main economic activities, e.g. fishing and trade are associated with the harbour.
Social Studies Gr. 4 Term One Unit Three: Important Events and People in Jamaica's History	152	Important events that shaped Jamaica's history	Major events can impact the existence of the harbour	A major event which happened in 1692 was the collapse of two thirds of Port Royal during an earthquake into the harbour. This had a significant impact, when thousands of survivors moved from Port Royal to Hog Crawle to create the town of Kingston.
Social Studies Gr. 4 Term One; Unit Four: The effects of weather and climate on life in Jamaica	166	Weather and tourism	The help that weather and climate give to tourism	Many cruise ships have visited Kingston Harbour. Stimulus moot for a debate: the economic potential of Kingston Harbour as a cruise shipping port is enormous or students can list the possible activities that would encourage the visit of cruise ship passengers.
Language Arts: Gr. 4 Term Two; Unit Four: Print in the environment	208	Solid waste disposal	The effect of solid waste disposal on marine life in the harbour	Compare the different ways of disposing of materials associated with print, e.g. flyers, bags, bottles, boxes, plastic bags and wrappers?
Science: Gr. 4; Term Two; Unit One: What is water and why is it important?	269	Illustrate the Water cycle Identify sources of water pollution	The role of Kingston Harbour and its surrounding vegetation in the water cycle	In discussing the water cycle reference can be made not only to the trees, vegetation and rivers, but also to Kingston Harbour as a large body of water. Reference can also be made to the sources of water pollution and steps students can take to lead to change
Social Studies; Gr. 4	282	Major	Kingston	Using a diagram which will be given

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
Term Two, Unit One: Meeting our Economic Needs		economic activities- trading, tourism	Harbour as one of the main ports of entry and exit	students can discuss the trading and tourism links to various trading partners
Social Studies, Gr. 4: Term Two; Unit Two: How do we affect our environment as we meet our economic needs.	292	Pollution, waste disposal, toxic water, destruction of marine life	Types of waste, e.g. from manufacturing, various ships in port and their methods of disposal	Using the map and with questions and answers, student can talk about the use of the harbour in trading and cruise shipping. Links to the various trading partners can also be discussed. The effects of agriculture, e.g. pesticides and fungicides on the harbour
GRADE 5				
Drama Gr 5: Term One; Unit One: Inventive Role Play	5	Believable roles		A scenario will be given for a role play so that students can do a performance
Language Arts Gr. 5 Term One, Unit Two: Some Caribbean Customs	38	Creative writing		Students will be asked to pretend that Jamaica is hosting an International Cross the Harbour race with the world's top swimmers and create a poster, a print advertisement and a radio/television jingle
Mathematics Gr. 5 Term One, Unit One: Number	47	Relationships between numbers		Problem: a group of students from a cross-section of schools will hire a bus to visit Kingston Harbour. They will give the total cost and ask students to calculate the per person cost and the per mile cost.
Physical Education Gr. 5 Term One Unit One: My Body, an element in space	75	Physical activities	Identify the skills used in physical activities	Identify the most common skills used in the physical activities of swimming and/or fishing and/or walking/jogging/running along the beach at Palisadoes or along the Kingston waterfront)
Physical Education Gr. 5 Term One Unit One: My Body, an element in space	76	Physical activities	Demonstrate the skills used in physical activities	Students can demonstrate the skills used in swimming and discuss and report in groups the values of and reasons for swimming, walking, running and/or jogging.
Science: Gr. 5 Term One, Unit One: Weather and climate	107	Water cycle		Review the water cycle and discuss the role of large bodies of water and the formation of rain.
Social Studies: Gr. 5 Term One Unit One: Our Caribbean Neighbours	119	Locating our Caribbean Neighbours		Locate five neighbours. Calculate the distance and describe the direction from Kingston Harbour. Calculate the time it would take for boats traveling at a stated speed.
Social Studies: Gr. 5 Term One, Unit One:	121	A Caribbean cruise		Describe an imaginary cruise to several Caribbean territories, assuming that the

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
Our Caribbean Neighbours				resident port of call is in Kingston Harbour.
Mathematics: Gr. 5 Term Two, Unit One: Numbers	185	Venn Diagram		Using the data provided, draw a Venn diagram to reflect the varying depths and temperatures of Kingston Harbour
Language Arts: Gr. 5 Term Three, Unit One: Exploring Our Country	300	Bodies of water in Jamaica		What do I know and can I say or write about the bodies of water in Jamaica? With special emphasis on Kingston Harbour do research and find out all the uses to which Kingston Harbour has been put within the last four hundred years.
GRADE 6				
Language Arts: Gr. 6	14	Using Poetry	How do poems help me to hear, see, touch, taste and smell?	Using a quotation from a poem about water/Harbour, students will make up one about the Harbour. This will be done in small groups, each of which will focus on a different theme related to the Harbour
Language Arts, Gr. 6	37			Students will be given a case study about "Cross the Harbour racing" They will be required to do research and make up a scrap book on cross the harbour activities.
Mathematics Gr. 6	53	Measurement		Students will be given photographs of the model and data on the various measurements. They will be asked to use these data and calculate the area of the Harbour.
Gr. 6	95		Strategies for playing games	Students will find out what games are played in water and list the rules and regulations for each game.
Religious Education Gr. 6	98		Water, religion and life stage celebrations	Students should make up a list of religious songs or songs linked to religious practices that are associated with water. One example is Dip them Bedward Dip Them, dip them in the healing stream. Within groups. discuss the meaning of the words and state whether any of these songs are linked to an important stage of life. Research how the water in Kingston Harbour may have been used for celebrations.
Art Gr. 6	121		Shades, colours & textures	Explain why there are so many different shades and colours of water in the harbour. Is it linked to the reflection of light?
Social Studies Gr. 6	146		How do the earth's movements	Visit Port Royal and examine ancient maps of Port Royal and observe the effects of the two major earthquakes

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
			affect life	(1692 and 1907). Photographs of the effects of the 1907 earthquake will be made available- students should write a report stating how the earthquake has affected the harbour.
Science G r. 6	149			Discuss how plants in the harbour survive or die and how their root system operates in the harbour.
Science Gr. 6	264		Water as a natural resource	Discuss whether water is finite or infinite and what eventually happens to water as a resource
Social Studies Gr. 6	307		Transportation	Students can identify the vehicles which travel in the harbour – the advertisement showing the bicycle being ridden in the harbour can be used as a stimulus
Religious Education Gr. 6	351		Religious acts of faith	Identify the personal acts of faith practiced in various religious acts that require water and discuss the role of water.
Social Studies Gr. 6	366			Discuss the harmful effects of industry and agriculture on Kingston Harbour
Social Studies Gr. 6	366		A global village	Discuss the role of Kingston Harbour as a part of the global village and as a trans-shipment port in this hemisphere

7. MODULE THREE: GRADES 7-9

Introduction

Similarly to the previous cluster, Grades 4-6, the curricula for grades 7-9 also relates to specific subject areas. These subject areas will be identified as the focus at this level is more on individual subject areas, i.e. the tendency is for different subject teachers to cover each area.

CURRICULA REFERENCES				
Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
GRADE 7				
Social Studies Gr. 7: Unit One: Our People	15	Our Ancestors	Movement of Peoples	The movement of peoples in 1692-3 from Port Royal to Hogs Crawle (Kingston) – Students who live in Kingston and Port Royal can attempt, through research and discussions with their elderly relatives, to trace their family tree to find out if their ancestors originally came from Port Royal.
Social Studies Gr. 7 Unit One: Our People	24	Social Groups:	Cultural Identity	Buccaneers and Pirates: Henry Morgan and the Buccaneers, used Port Royal as their base prior to 1692. Students could research to determine what kinds of rules and regulations they had and any other ways in which they qualified as a social group. – What role did Kingston Harbour play in this- in what other ways have the Harbour affected our cultural identity?
Social Studies Gr. 7 Unit Three: Social and Environmental Issues	36	Good Health Practices	Keeping the environment clean as a contribution to good health	Students can divide into groups; each group can make a list of the ways in which he/she can keep the environment clean and safe, they ways in which he/she will do it and how they will convince their friends, neighbours to do the same.
Science Gr. 7 Unit One: Introduction to Science	21	Using our senses to explore our environment		After a field trip to the harbour or an examination of the model, study the variety of shades of blue and green and explain what the shades mean (for example reflection of the sun on the water, density or pollution of the water)
Science Gr. 7 Unit One: Introduction to Science	21	Using our senses to explore our		During a visit to the Kingston harbour, note what happens when small stones are thrown into the water at various

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
		environment		points – note the differences at which the ripples flow.
Science Gr. 7 Unit One Introduction to Science	23	Using Instruments and Equipment to extend the use of the senses		Find out the names and uses of the instrument and equipment that are used to measure the degree and nature of pollutants in the harbour.
Science Gr. 7 Unit Two: Grouping Things	31	Grouping plants		Make up a list of the plants (and grade them) that make up marine plants and find out which plants are likely to be found in Kingston harbour
Science Gr. 7 Unit Two: Grouping Things	32	Grouping animals		Make up a list of the animals (and classify them) that make up marine animals, which are likely to be found in Kingston harbour.
Science Gr. 7: Unit Two: Grouping Things	34	Grouping non-living things into solids, liquids, gases including change of state	Water cycle	Draw a diagram to illustrate the water cycle and explain the extent to which the Kingston Harbour participates in this system
GRADE 8				
Social Studies Gr. 8 Unit One: Jamaica: Physical Resources	59	Location, size, relief		Students could locate on a map of Kingston its drainage features and describe where and how the drainage ultimately ends; this can be done for both sewage and solid waste disposal.
Social Studies: Gr. 8 Unit One: Jamaica: Physical Resources	59			Define the main water bodies in Kingston and how the drainage affects them; using information and/or the model write a description of Kingston Harbour.
Social Studies Gr. 8 Term One, Unit One Jamaica: Physical Resources	63	Climate and vegetation		Define and use correctly the terms, earthquake, vegetation and natural disaster. Give examples of earthquakes and natural disasters and how they have affected those areas in immediate contact with the Harbour. Describe how human activity has modified the uses, the natural vegetation and the size of Kingston Harbour
Social Studies Gr. 8 Term One, Unit One Jamaica: Physical Resources	64	Natural disaster, hurricane, storm, flood	Preventive relief measures	Identify and describe the relief resources and institutions that have been put in place to cope with natural disasters and environmental degradation with particular reference to Kingston Harbour and its role in tsunamis and surges.
Social Studies Gr. 8	67	Population		Do research to determine the impact of

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
Term One Unit Two: Human Resources		movement, migration		population movement on the creation of a new community. Outline the effects of disasters on the death rate within a stated time frame and the population growth of Kingston as a result of migration. Special reference should be given to the movement across the Harbour – Port Royal to Kingston
Social Studies Gr. 8 Unit Three: Using our resources and related environmental matters	72	Cultivation, commercial, subsistence,	Climate and vegetation	Indicate on a map of Kingston, St. Andrew and St. Catherine the areas from and the routes through which fertilizers, pesticides, fungicides and industrial chemicals may be deposited into the harbour. Make suggestions on what can be done to eliminate the flows.
Social Studies Gr. 8 Unit Three; Using our resources and related environmental matters	75	Marine life, inshore, pollution, sanctuary, banks		Describe the conditions which contribute to a rich marine life: discuss the exploitation and destruction of the marine life and list the steps that can be taken to alleviate these, with reference to Kingston Harbour
Social Studies Gr. 8 Unit Three; Using our resources and related environmental matters	75	Marine life, inshore, pollution, sanctuary, banks		Describe the types of fishing that have occurred in Kingston Harbour during the last century and explain the changes that have taken place.
Social Studies Gr. 8 Term two, Unit Three; Using our resources and related environmental matters	79		Mining and manufacturing	Outline the ways in which mining and manufacturing have contributed to the pollution within the harbour Identify the processes used in the mining and manufacturing that have led to the creation of pollutants.
Social Studies Gr. 8 Term two, Unit Three; Using our resources and related environmental matters	82		Tourism	In what ways during the last century did Kingston Harbour facilitate tourism activities; explain the changes.
Science Gr. 8 Unit 7: Water and Living Things	69		Water as a physical component	Carry out investigations to show the physical properties of water and use the results to make a list. Compare those properties to those of Kingston Harbour
Science Gr. 8 Unit 7: Water and Living Things	72		Water as a habitat	Give examples of plants and animals which live in the water and find out which ones exist in Kingston Harbour Have students carry out the research on the threat to marine life posed by the pollution of Kingston harbour
Science Gr. 8 Unit 10 Keeping Healthy	99		Cleanliness, exercise, rest and health	Debate the moot: Youth who dive into the water and swim off Ocean Boulevard are practicing good health by keeping

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
				clean and doing exercise.
Science Gr. 8 Unit 10 Keeping Healthy	102		Safety and health	Lady Nugent's book described how the youth used to dive into Kingston Harbour nearly two centuries ago off Victoria Pier in order to retrieve the coins flung in by the gentry (Will try to find the actual quote.) Using this students should identify appropriate safety and health measures which should be taken.
Science Gr. 8 Unit 12: The Resources – Air and Water	116			Describe Kingston harbour as a source of water
Science Gr. 8 Unit 12: The Resources – Air and Water	118			Explain how and why the water from Kingston harbour could be used for irrigation purposes in Port Royal and for other agricultural projects around the harbour.
GRADE 9				
Social Studies Gr. 9 Unit One: Earning a Living	98		Why people work	Debate the moot: If Kingston Harbour were in its pristine state, employment could be provided for hundreds, if not thousands of persons
Social Studies Gr. 9 Unit One: Earning a Living	102	Goods, services, labour intensive		Categorize and list the various types of occupations that could be provided in connection with Kingston Harbour. Research the types of activities that are found in other large natural harbours, e.g. Poole Harbour, Port Lincoln, Dar es Salaam and compare the economic activities
Social Studies, Term One Unit One: Earning a living in Jamaica	107	Formal schooling, qualification, job satisfaction	Investigating Jobs in Jamaica	<p>Select a cross-section of the jobs you have listed above and determine the following:</p> <ul style="list-style-type: none"> ● The types of qualification needed ● The suitability of the jobs as a career choice ● The characteristics and peculiarities of the selected jobs ● The possible attitudes of some of the persons in the jobs selected <p>Pretend you own a company with overall responsibility of managing activities linked to the Harbour, prepare a series of newspaper advertisements displaying the employment opportunities</p>
Social Studies, Term	121	Consumer		Pretend that Gunboat Beach has been

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Subject & Grade Level	P. #	Concepts/ skills	Topics	Points that can be infused
One: Unit Two: Consumer Affairs		Self- Protection		restored to its pristine state, and the management company has decided to charge large entry fees and instituted money-operated locks for the showers and washrooms. A group of consumers have decided that, because the Harbour is "public property" they are going to lobby for a reduction of the prices and, as the leader you are asked to give interviews on the public media. With other students in the class role play a radio interview, a television interview and one which shall be printed. The television and the print interviews must be supported by pictures.
Social Studies Term One, Unit Three: Nation-building	122	Government, non-government, democracy	Our Government and how it works	Draw a chart demonstrating the various organizations (government and non-government bodies) which bear some responsibility for restoring, preserving and/or conserving Kingston Harbour and the surrounding physical amenities.
Social Studies Term One, Unit Three: Nation-building	123		Our Government and how it works	Draw a cartoon depicting the attitude of government, the private sector and the public to Kingston Harbour
Social Studies Term One, Unit Three: Nation-building	124			Design a poster explaining to companies why they should assume responsibilities for proper solid waste disposal. Also include the mechanisms for sewage disposal- with an appropriate caption.
Social Studies Term 2 Unit Three: Nation Building	127			Explain with details, which persons and or organizations should be given credit as "nation builders" regarding the amenities surrounding the harbour
Social Studies Term Three: Regional and Global Relations	140	International law, Cooperation, collaboration, international relations		Explain the need for global and regional collaboration in keeping the Harbour clean and safe. What kind of collaboration is there or is there likely to be?
SCIENCE				
Science Unit 14: More about Matter	145		Pure and impure matter	Research and provide information on chemical pollution in the harbour and list ways that can be used to correct it.

8. MODULE FOUR: GRADES 10 & 11: OBJECTIVES IN CXC

SYLLABI³

The areas within the CXC syllabi for Chemistry, Biology, Social Studies, History and Geography which will facilitate infusion will be set out as indicated in the chart above. They will be completed in the second draft, prior to discussions with the teachers and students. Additionally all the spaces displayed in the chart above will be completed prior to the second draft for discussion.

³ This section has been provided by Janice HoLung