
The Halifax Harbour Solutions Project Provision of Sewage Treatment

**ENVIRONMENTAL SCREENING PURSUANT TO THE
*CANADIAN ENVIRONMENTAL ASSESSMENT ACT***

SCOPE OF THE ENVIRONMENTAL ASSESSMENT

Prepared by Halifax Regional Municipality

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1.0 INTRODUCTION

Halifax Regional Municipality (HRM) intends to develop a regional sewage treatment system to treat raw sewage currently entering Halifax Harbour. The Canadian Environmental Assessment Agency (the CEA Agency) has determined that a screening level assessment of the project pursuant to the *Canadian Environmental Assessment Act* will be required. This determination is based on a review of the project description, and preliminary discussions with HRM and potentially interested federal authorities.

The CEA Agency distributed a project description to potentially interested federal authorities thereby initiating provisions of the *Federal Coordination Regulations* pursuant to the *Act*. As indicated in correspondence of December 22, 1999 from the CEA Agency to HRM, the *Federal Coordination Regulation* process resulted in ten responses. Fisheries and Oceans Canada declared that it would likely have environmental assessment responsibilities in association with regulatory responsibilities under the *Fisheries Act* and under the *Navigable Waters Protection Act*. Departments indicating they are in possession of specialist or expert information or knowledge include Environment Canada, National Defense, Public Works and Government Services, the Halifax Port Authority, and Parks Canada. Departments indicating they will not likely require an environmental assessment and are not in possession of expert knowledge include Transport Canada, Canadian Transportation Agency, and the Atlantic Canada Opportunities Agency. Environment Canada declared that it does not have enough information to determine if an ocean disposal permit would be required, thus triggering responsibilities for assessment.

The next step in the environmental assessment process as determined by the *Federal Coordination Regulations* is the determination of :

- 7 the scope of the project to be assessed;
- 7 the scope of the factors to be assessed pursuant to section 16 of the *Canadian Environmental Assessment Act*; and
- 7 the scope of the factors to be assessed.

This document is the summary of the scoping exercise led by the declared Responsible Authority Fisheries and Oceans, in consultation with the Expert Departments.

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2.0 SCOPE OF THE PROJECT

2.1 Physical Works or Physical Activities.

Construction, operation and decommissioning of the following physical works and physical activities proposed by HRM for the Halifax Harbour Solutions Project may potentially trigger the *Canadian Environmental Assessment Act*. The project will comply with all other applicable legislative requirements.

Collection System

- A system of new collector sewers will be built to intercept sewage flows currently discharged untreated to Halifax Harbour.
- Normal design flow will be 4 x Average Dry Weather Flow (ADWF). Approximately 75% of total annual flow will be captured and conveyed to the four new sewage treatment plants (STPs).
- The collection system will be approximately 14 km in length with approximately 43% tunneled and the remainder installed by trenching.
- The system includes 9 major pumping stations (including 3 at STPs), and 3 secondary pumping stations. Some of these stations are currently in use. Special mitigation considerations for the new Chain Rock pumping station (located within Point Pleasant Park) will be discussed.

Combined Sewer Overflows (CSOs)

Approximately 20 CSOs will be required, and will be equipped with screens or underflow baffles to remove some solids. Four of the CSOs will be located at the STP outfalls. Some of the existing sewer outfalls may be upgraded for use as CSOs.

Sewage Treatment Plants (STPs)

- Four STPs will be located in the following areas:
 - S Dartmouth (South side of Dartmouth Cove at Coast Guard Base)
 - S Halifax Peninsula South (VIA Maintenance Shop / Railyards area)
 - S Halifax Peninsula North/Central (HRM property at Cornwallis and Barrington Streets)
 - S Halifax Mainland South (Herring Cove Area)

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- All STPs will use an advanced primary level of treatment
- STPs in Halifax and Dartmouth will use a compact plant design . A compact or conventional plant design will be used for Mainland South depending on site.
- STPs will be totally enclosed to provide noise and odour control. The odour control system will be designed and operated to ensure that no odours are detectable at property boundary.
- STP sites will be designed to provide for possible future expansion and possible upgrade to secondary treatment. Population projections to 2041 have been used to define expansion requirements, and will be presented in the EA.
- STPs will be designed to be attractive and blend into surrounding area.
- UV disinfection will be used for all STPs.

Specific effluent quality criteria have been agreed with NSDOE and will be discussed.

Outfalls and Diffusers

- Each STP will have a marine outfall and diffuser for discharge of treated effluent capable of achieving an initial dilution of approximately 50:1.
- Diffusers will be located offshore generally in the vicinity of the STP in areas of sufficient depth and circulation and avoiding navigation concerns. Construction methods have not yet been determined. As a result of the procurement process for this project (Design/Build/Operate), the exact design and location of diffusers will be determined when a successful private partner is chosen by HRM toward the end of 2000, and full details will then be known and assessed. This information will form an integral part of the Screening Report for this project. Area of impact and sedimentation rates will be estimated based on available data, and impact on any fish habitat present will be predicted.
- It may be possible to minimize sediment disturbance by displacing sediment onsite during construction; alternately, other disposal means may become necessary. The outfalls/diffusers are likely to require Navigable Waters Protection Act permits, and possibly ocean dumping permits if sediment must be relocated. This will be clarified as soon as the pre-design is completed.
- Marine modelling will be presented to predict the effects of a multi-discharge (4 plant)

scenario as compared to the previous assessment of the single-discharge (HHCI) scenario.

Onsite Sludge Management

- All STPs will include onsite sludge dewatering and chemical stabilization for pH adjustment.

2.2 Other Associated Physical Works or Physical Activities

Other associated physical works or physical activities that must be undertaken to carry out the physical works and/or physical activities comprising the triggered project described in 2.1 above: include:

- Offsite sludge management whereby stabilized and dewatered sludge will be transported to a central facility for further treatment in preparation for beneficial end use. As a result of the procurement process for this project (Design/Build/Operate), the nature and location of this facility will be determined when a successful private partner is chosen by HRM toward the end of 2000, and full details of the facility design and operation will then be known and assessed. This information will form an integral part of the Screening Report for this project.
- Permanent access roads, power and municipal services that may be required for the STPs, pumping stations and other facilities noted in Section 2.1.
- Various temporary construction work spaces (e.g., tunnel heads), equipment laydown areas and access roads.

2.3 Other Undertakings in Relation to Physical Works

There are no other undertakings in relation to the physical works noted in 2.1 and 2.2 above. Two existing treatment plants on Halifax Harbour (Mill Cove and Eastern Passage) are unaffected by the project. Existing collection systems will be joined to the new collection infrastructure. There will be no decommissioning or removal of existing collection systems or outfalls. Some existing outfalls may continue to be used as overflows.

3.0 FACTORS TO BE CONSIDERED

The following are the mandatory factors to be considered for a screening level assessment as described in section 16 of the *Canadian Environmental Assessment Act*:

(a) the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;

(b) the significance of the effects referred to in paragraph (a);

(c) comments from the public that are received in accordance with this *Act* and the regulations;

(d) measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project; and

(e) any other matter relevant to the screening, such as the need for the project and alternatives to the project, that the responsible authority, may require to be considered.

Note: Environmental effects are defined in the *Canadian Environmental Assessment Act*, in respect of a project, as “(a) any change that the project may cause in the environment, including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archeological, paleontological or architectural significance, and (b) any change to the project that may be caused by the environment.”

The environmental assessment should encompass the components identified in this definition.

4.0 SCOPE OF THE FACTORS TO BE CONSIDERED.

HRM will prepare and submit to Fisheries and Oceans at their direction, a screening level environmental assessment for the physical works and physical activities described in Section 2 according to the mandatory factors described in Section 3. Other issues to be considered include: issues identified through regulatory, stakeholder and public consultation; and issues identified by Fisheries and Oceans, Expert Departments, and the environmental assessment study team. General guidance regarding the assessment process, and scope of the assessment will be provided by the CEA Agency.

The environmental assessment methodology to be used has evolved from methods proposed by Beanlands and Duinker (1983), who stressed the importance of focusing the assessment on environmental components of greatest concern to potentially affected parties. In general, the methodology is designed to produce an environmental assessment document that:

- is focused on issues of greatest concern;
- addresses regulatory requirements;
- addresses issues raised by the public and other stakeholders;
- integrates engineering design and mitigative and monitoring programs into a comprehensive environmental management planning process; and
- integrates cumulative effects assessment into the overall assessment of residual environmental effects.

The environmental assessment screening methodology for this project includes an evaluation of the potential effects, including cumulative effects, of each project phase - construction, operation and decommissioning - as well as malfunctions and accidents, with regard to Valued Environmental Components (VECs) and Valued Socio-economic Components (VSCs). Project related effects are assessed within temporal and spatial boundaries established for the assessment. In general, the assessment will be focused on those environmental interactions not previously addressed by the related assessment work conducted for the Halifax Harbour Cleanup Project and subsequent approvals. Beneficial effects of the project will also be discussed (ie. improvements in water quality, creation/improvement of fish habitat, improved recreational and other socio-economic benefits).

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Cumulative impacts will be addressed by identifying past, present and reasonably foreseeable projects which might interact with the proposed project. HRM is uniquely positioned to be aware of such projects through its' planning and approvals processes, supplemented by advice from federal departments which may not be subject to municipal approval for projects.

Figure 1 illustrates the standard sequence of steps followed in the assessment for each VEC/VSC.

The scope of the factors to be considered will primarily include the VECs and VSCs to be defined during the course of the assessment. It is likely that the VECs and VSCs will be drawn from the list of issues presented in Table 1. This list has been developed as a result of consultations undertaken by HRM, a review of previous related assessment work by Halifax Harbour Cleanup Inc. in the context of the Panel Review of that project proposal, as well as a review of issues by Fisheries and Oceans and Expert Departments for this assessment. The VECs have been selected on the basis of likelihood of significant impacts, based on expert advice, previously conducted studies, and public input. Present and projected future state of each VEC will be discussed under scenarios with and without the proposed project.

The EA document will provide a description of associated initiatives such as the HRM Source Control Program, which are proceeding independently of the proposed project. The Source Control Program will have a positive influence on the quality of influent sewage to the treatment plants and consequently on the quality of effluent. However, the nature of the treatment processes (advanced primary mechanical/chemical treatment) is such that treatment process integrity is not dependant on the quality of the sewage, as no biological treatment steps are involved or at risk from toxic inputs.

A draft annotated Table of Contents for the Screening Document is provided in Appendix 1 to indicate the outline of the proposed document. Appendix 2 provides a detailed list of the VEC/VSCs and the relevant studies which exist or are in preparation. These studies will be reported and discussed in the Screening Document.

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Table 1 Summary of Potential Issues for the Environmental Assessment of the Halifax Harbour Solutions Project	
Marine Environment	Fish
	Benthic Habitat
	Sediment Quality
	Marine Water Quality
Terrestrial Environment (Mainland South)	Terrestrial Habitat
	Species at Risk
	Groundwater
	Avifauna
	Freshwater Habitat
Socio-economic Environment	Commercial Fishery
	Archeological and Heritage Resources
	Land use
	Odour
	Noise
	Transportation (land and marine)

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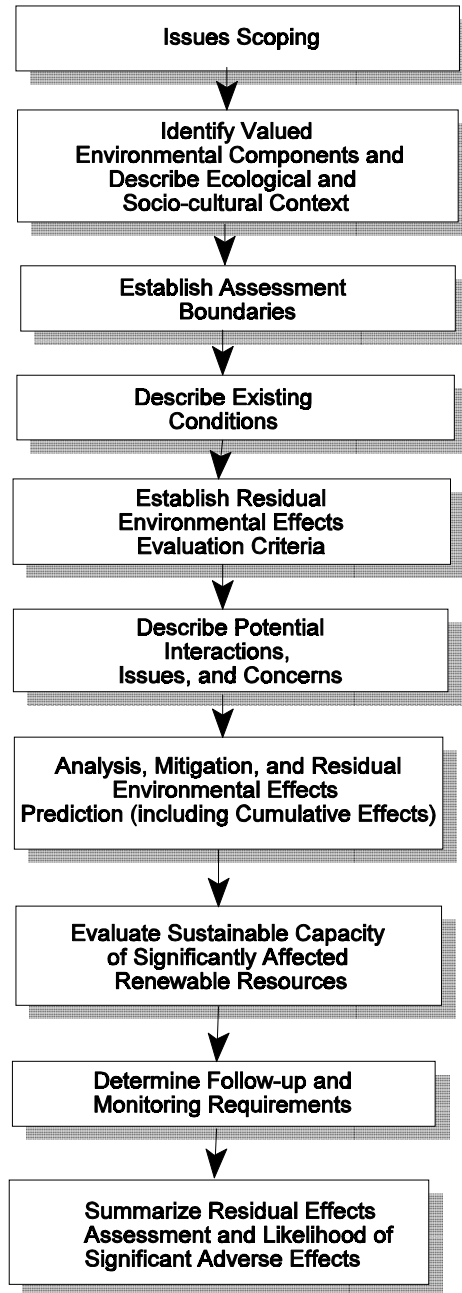


Figure 1 Environmental Effects Assessment Methodology

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Halifax Harbour Solutions Project Environmental Screening Report	
Appendix 1 - Draft Annotated Table of Contents	
Section	Description
	EXECUTIVE SUMMARY
1.0	INTRODUCTION <i>Summarizes project background as well as overall purpose and regulatory requirements for assessment. Describes proponent. Location map.</i>
2.0	PROJECT DESCRIPTION <i>Focus will be on elements relevant to the EA scope of project and scope of factors to be assessed as determined by the RA(s). This section will include a number of subsections as follows:</i>
2.1	Purpose and Need for the Project <i>Project Rationale. Discussion of “need for project” is generally considered a Comp Study requirement under CEAA 16 (1) (e) but is also recommended for this extensive screening..</i>
2.2	Project Location and Scope <i>Includes scope of the project and scope of factors to be assessed.</i>
2.3	Project Schedule <i>Includes construction, operation and decommissioning.</i>
2.4	Alternatives to the Project <i>Includes both “alternatives to the project” (generally considered a Comp Study requirement under CEAA 16 (1)(e)) and “alternative means of carrying out the project”. Discussion of alternative means will briefly document the major alternatives considered (e.g., location, size, treatment level, etc.) and rationale for selection. This should include a discussion of effects of alternatives.</i>
2.5	Project Components <i>Simplified drawings, key design features, and specifications, etc. for collector system and treatment plants.</i>
2.6	Project Construction and Commissioning <i>Description of all major construction activities. Also includes infrastructure and facilities, land requirements, wastes and effluents, land and municipal traffic, etc.</i>

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Section	Description
2.7	Operation and Maintenance <i>Description of operation and maintenance activities including performance requirements, traffic, wastes and effluents, air emissions, noise, etc.</i>
2.8	Abandonment or Replacement <i>Description of activities/effects associated with decommissioning or upgrading project facilities.</i>
2.9	Environmental Management Features <i>Environmental management incorporated into project design (e.g., noise and odour control, plant design and landscaping, etc.).</i>
2.10	Malfunctions and Accidents <i>Includes description of potential scenarios and likelihood.</i>
2.11	Project Costs <i>Includes capital, operating, and lifecycle costs, and funding agreements.</i>
2.12	Labour Requirements <i>Estimated labour requirements during construction and operation phases.</i>
3.0	EFFECTS ASSESSMENT METHODOLOGY AND ISSUES SCOPING
3.1	Overview of Assessment Methodology <i>Includes review of overall EA process (e.g., field studies, information gathering, issues scoping, etc.) Integrated, VEC driven approach, etc. Focus on difference compared with HHCI project.</i>
3.2	Issues Scoping Summary and Selection of Valued Environmental Components <i>Includes a summary of issue scoping including public consultation. Concordance of issues to VECs. A separate public consultation report will be provided as well.</i>
3.3	Potential Interactions Between Project Activities and Valued Environmental Components
3.4	Presentation of Environmental Effects Assessment <i>Description of EA subcomponents</i>

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4.0	COMPARISON BETWEEN HHSP AND PREVIOUSLY ASSESSED HHCI PROJECT <i>Opportunity to focus the assessment by identifying significantly different components and activities compared with previously approved (i.e., HHCI) project.</i>
5.0	ENVIRONMENTAL EFFECTS ASSESSMENT <i>Each Biophysical VEC assessed per methodology. Analysis by project phase. Supported by summary matrices.</i>
5.1	Valued Environmental Component (e.g., Fish and Fish Habitat, Birds, etc.)
5.1.1	Boundaries
5.1.2	Description of Existing Conditions
5.1.3	Residual Effects Evaluation Criteria
5.1.4	Potential Interactions, Issues and Concerns
5.1.5	Analysis and Residual Effects Prediction <i>To be completed for each project phase. Also includes discussion of cumulative effects. Includes mitigative measures. Summary matrix for each phase.</i>
5.1.6	Summary of Residual Environmental Effects Assessment <i>Includes summary matrix.</i>
5.1.7	Sustainable Use of Renewable Resources <i>Required if any significant effects.</i>
5.1.8	Follow up and Monitoring
6.0	SOCIOECONOMIC EFFECTS ASSESSMENT <i>Each Socioeconomic VEC assessed per methodology. Analysis by project phase. Supported by summary matrices.</i>
6.1	Valued Socioeconomic Component (e.g., Archeological and Heritage Resources, Commercial Fishery, etc.)
6.1.1	Boundaries
6.1.2	Description of Existing Conditions

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Section	Description
6.1.3	Residual Effects Evaluation Criteria
6.1.4	Potential Interactions, Issues and Concerns
6.1.5	Analysis and Residual Effects Prediction <i>To be completed for each project phase. Also includes discussion of cumulative effects. Includes mitigative measures. Summary matrix for each phase.</i>
6.1.6	Summary of Residual Environmental Effects Assessment <i>Includes summary matrix.</i>
6.1.7	Sustainable Use of Renewable Resources <i>Required if any significant effects.</i>
6.1.8	Follow up and Monitoring
7.0	CUMULATIVE EFFECTS SUMMARY
8.0	MITIGATIVE METHODS SUMMARY
9.0	SUMMARY AND CONCLUSIONS
10.0	ENVIRONMENTAL MANAGEMENT PLAN <i>Summarizing Environmental Protection Plan, contingency planning, training, emergency response, etc.</i>
11.0	REFERENCES
	APPENDICES <i>(e.g., Baseline Studies)</i>

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Appendix 2

Proposed Halifax Harbour Solutions Project (HHSP) VECs and Associated Background Studies			
VEC	HHSP Studies Completed	HHCI¹ Reports	Requirements For Further Studies
Fish	7 Commercial Fisheries of Halifax Harbour	7 Marine Biological Environment	7 No additional field work required.
Benthic Habitat	7 Marine Benthic Habitat and Sediment Characterization at Each Diffuser Site	7 Sediment Transport Modeling at Ives Point 7 Marine Water and Sediment Quality 7 Physical Oceanography	7 No additional field work required.
Sediment Quality	7 Marine Benthic Habitat and Sediment Characterization at Each Diffuser Site	7 Marine Water and Sediment Quality	7 No additional field work required.
Marine Water Quality	7 Oceanographic Modeling and Assimilative Capacity Study	7 Marine Water and Sediment Quality	7 No additional field work required.
Terrestrial Habitat		7 Terrestrial Water Resources 7 Wildlife Studies 7 Vegetation and Soil Survey	7 New field work required for Herring Cove.
Species at Risk		7 Wildlife Studies 7 Vegetation and Soil Survey	7 New field work required for Herring Cove.
Groundwater			7 Well water survey should be conducted within 300-500 m from proposed blasting activities in Mainland South.
Avifauna		7 Wildlife Studies	7 New field work required for Herring Cove.

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Proposed Halifax Harbour Solutions Project (HHSP) VECs and Associated Background Studies			
VEC	HHSP Studies Completed	HHCI ¹ Reports	Requirements For Further Studies
Freshwater Habitat		7 Terrestrial Water Resources	7 Habitat surveys should be conducted near stream crossings in Mainland South.
Commercial Fishery	7 Commercial Fisheries of Halifax Harbour	7 Commercial Fisheries of Halifax Harbour	7 No additional field work required.
Archeological and Heritage Resources	7 Archeological Screening proposed STP Site (Barrington/Cornwallis/ Upper Water Streets) 7 Archeological and Heritage Resources Overview Assessment	7 Dartmouth Heritage Resources 7 Heritage Resource Survey of the Halifax Collector Tunnel 7 Heritage Resources Survey of McNabs Island 7 Marine Archaeological Survey	7 Additional investigations will be required for Herring Cove site, collection system, access roads, and pumping stations.
Land use		7 Demographics, Land and Water Use 7 Community Profiles	7 Inventory of surrounding land uses required for STP sites.
Odour		7 Odour 7 Air Quality in the Environs of Halifax Harbour	7 Odour and noise baseline study currently underway.
Noise		7 Noise Environment	7 Odour and noise baseline study currently underway.
Transportation (land and marine)		7 Transportation Infrastructure	7 Consultations with HRM traffic personnel and Harbourmaster required.

¹ Halifax Harbour Cleanup Inc. Environmental Assessment, 1992