TERMS OF REFERENCE

As Required by the *Environment Act*
For Preparation of an Environmental Assessment Report

Proponent: Nova Scotia
Department of Transportation and Public Works

Project: Highway 113, Halifax Regional Municipality, N.S.

NOVA SCOTIA
ENVIRONMENT AND LABOUR

October 16, 2006

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BACKGROUND

Nova Scotia Department of Transportation and Public Works (Proponent) proposes the Highway 113 project (Project) in order to provide a more efficient means of travel for motorists between Highway 103 and Highway 102, that bypasses the Halifax Urban Core; and to also relieve congestion on the Hammonds Plains Road. The proposed 4-lane divided highway would go from Highway 103 near Exit 4 to Highway 102 near Exit 3.

Presented in this document are the Terms of Reference for the Environmental Assessment Report (EA Report) required for the Project, in accordance with the requirements of Part IV of the *Environment Act* (1995). The Proponent must include all the information requested within the Terms of Reference as a minimum, in accordance with the *Environmental Assessment Regulations* pursuant to Part IV of the *Environment Act*.

This Terms of Reference includes Valued Ecosystem Components (VECs) which must be adequately addressed in the EA Report. The Proponent must identify any additional VECs to be examined during the assessment process in the EA Report.

The order in which information is presented is at the discretion of the Proponent, however, a concordance table will be required to indicate where the information can be found. The Proponent may provide additional information to assist the Minister in making the decision for the Project. Since the EA Report is intended for public review, the information should be presented in non-technical language wherever possible and appropriate, including a non-technical executive summary. The Proponent will be required to submit an electronic copy of the EA Report in accordance with the Environmental Assessment Branch Bulletin on Requirements for Submitting Electronic Copies of Environmental Assessment Documents for publication on the Department's website.

Nova Scotia EA Requirements

On July 10, 2006, the Minister of Environment and Labour concluded the environmental assessment review of Nova Scotia Transportation and Public Works' Focus Report for the proposed Highway 113, Halifax Regional Municipality, Nova Scotia. The Minister decided that an EA Report is required in accordance with Part IV of the *Environment Act.*

Regulations require that the proposed Terms of Reference for the EA Report be prepared by the Environmental Assessment Administrator and made available for public review. The proposed Terms of Reference were released for comment between July 24, 2006 and September 5, 2006. The Terms of Reference were finalized based on comments received during the review period.

1.0 INTRODUCTION

This section shall introduce the reader to the EA Report and include the purpose for the document within the context of Part IV of the Nova Scotia *Environment Act* and *Environmental Assessment Regulations*.

The Nova Scotia *Environmental Assessment Regulations* require the EA Report to include, but not be limited to, the following information:

- a description of the proposed project;
- the reason for the project;
- other methods of carrying out the project;
- a description of alternatives to the project;
- a description of the environment that might reasonably be affected by the project;
- the environmental effects of the project;
- an evaluation of advantages and disadvantages to the environment of the project;
- measures that may be taken to prevent, mitigate or remedy negative environmental effects and maximize the positive environmental effects on the environment;
- a discussion of adverse effects or significant environmental effects which cannot or will not be avoided or mitigated through the application of environmental control technology;
- a program to monitor environmental effects produced by the project during its construction, operation and abandonment stages;
- a program of public information to explain the project.

2.0 PROJECT DESCRIPTION

This section of the EA Report shall describe the project particularly as it is planned to progress through the construction and operation phases of its life. The description should also address other phases of the project as can reasonably be

foreseen including modification, decommissioning and abandonment. Any assumptions which underlie the details of the project design shall be described, including impact avoidance opportunities inclusive of pollution prevention, and adherence to best management practices. Include mapping at an appropriate scale.

A Salt Management Plan should be developed prior to highway construction so the recommendations within the Plan can be incorporated into the design, construction and operational phases of the Project.

Where specific codes of practice, guidelines and policies apply to items to be addressed, those documents shall be cited and particularly important information from these documents should be included as appendices to the EA Report.

Items to be addressed shall include, but not be limited to:

2.1 Highway Corridor Location

Ultimate boundaries of the proposed corridor and highway route in a regional context showing existing and proposed land uses and infrastructure such as road networks, railways, power lines, pipelines, proximity to settled areas, individual and community water supplies, watercourses, wetlands, the proposed Blue Mountain/Birch Cove Lakes Regional Park, ecologically sensitive areas and archaeological sites shall be described.

2.2 Construction Methods, Schedule and Other Constraints

In the March 2006 Focus Report it is indicated that the Project would only be pursued after 2026, if ever. The planning horizon for this Project is considerable. In these circumstances it shall be explained how changes - including changes in the environment, in science and technology, and in legislation - would be accommodated and addressed (by the Proponent) as part of the EA process. This section shall include, but not necessarily be limited to, a description of the following, including locations, scheduling details and estimates of magnitude or scale where possible:

2.2.1 general construction practices, including but not limited to:

- any temporary pit and quarry operations within the immediate vicinity of the highway right-of-way
- erosion and sedimentation control;

2.2.2 description of vehicle types, truck routes, hours of operation of

vehicles to be used in highway construction;

2.2.3 proposed construction schedules, including proposed time frames for right-of-way clearing and slash disposal and timing of highway construction, and construction work adjacent to watercourses;

2.2.4 identification of areas requiring major cut and/or fill operations.

2.2.5 timing and extent of surveys for flora, fauna, and ecologically sensitive areas.

2.3 Structures

Describe the typical structures proposed for all watercourse and wetland crossings and for any proposed wildlife corridors.

2.4 Acid Producing Bedrock

Provide the location of potential areas of net acid producing bedrock to be disturbed.

2.5 Borrow Material

Describe the acceptable types of borrow material for highway construction and any currently identified sources likely to be used in the highway construction.

2.6 Paving Materials

Describe the proposed road paving materials.

2.7 Construction Waste Disposal

Describe the criteria for the selection of candidate sites for:

- the disposal of excess/waste excavated rock and overburden, including locations of any currently known planned disposal sites, including those for acid producing slates;
- the disposal of organic soil, slash, grubbing and wood fibre, including locations of any currently known or planned disposal sites.

3.0 REGULATORY ENVIRONMENT

Describe the existing regulatory environment (Federal, Provincial, Municipal) including all permitting, licensing and regulatory requirements, appropriate guidelines and Municipal Planning Strategy and Land Use Bylaw requirements that apply to all phases of this proposal.

4.0 NEED FOR THE PROJECT

In recognition of the fact that the project has a potential to impact upon the environment and planned or existing land use in the area, this section shall discuss the public need for the undertaking.

Examine how the proposed highway fits within the context of the current Halifax Regional Municipality's (HRM) planning efforts, including but not limited to, HRM's Water Resource Management Strategy consideration of parks and natural areas, including the proposed Blue Mountain/Birch Cove Lakes Regional Park, recreational land-use, transportation corridors and private development.

5.0 A DESCRIPTION OF ALTERNATIVES TO THE PROJECT

This section of the EA Report shall describe functionally different ways to meet the project need and achieve the project purpose. Compare how the Project and its alternatives will affect driving patterns, fuel consumption, vehicle emissions and air quality. This discussion shall address, but not necessarily be limited to, other modes of transportation, upgrading of existing roadways and the null (do nothing) alternative.

6.0 OTHER METHODS FOR CARRYING OUT THE PROJECT

The EA Report shall detail the process the Proponent undertook to determine the proposed corridor, including a discussion of other alignments considered. The environmental and socio-economic selection criteria (e.g. avoidance of wetlands, avoidance of watercourse crossings, construction costs, fuel savings, technical factors) for the preferred corridor and alternative corridors shall be provided. The EA Report shall discuss other methods for implementing the registered project, including, but not necessarily be limited to, items such as adjusting median width and different methods for watercourse crossings to allow for water flows, wildlife movements and recreational activities.

7.0 ASSESSMENT METHODOLOGY

This section shall include the study strategy, methodology and boundaries, within which the EA Report will be prepared.

The following must be clearly defined:

a) The Valued Environmental Components (VEC's)[1] within the study boundaries and the methodology used to identify the VEC's. The methodology shall include input from members of the public, government department and agencies and other interested parties.

b) The temporal boundaries (i.e. duration of specific Project activities and potential impacts) for planning highway corridor, needs analysis and updated surveys, as well as construction and operation.

c) The study boundaries or Project area and all space that will be potentially impacted by the Project as proposed or subject to subsequent modifications and the methodology used to identify the study boundaries.

d) The strategy for investigating the interactions between the Project and each VEC and how that strategy will be used to coordinate the individual studies undertaken

e) The strategy for predicting and evaluating Project impacts upon the environment; determining necessary mitigation, remediation and/or compensation; and determining the significance[2] of any residual impacts.

The following sections outline specific concerns and requirements related to the existing environment, adverse effects and environmental effects assessment, proposed

[1]Within the Nova Scotia Environmental Assessment Regulations, Valued Environmental Components are interpreted as environmental, socio-economic, human health, reasonable enjoyment of life and property, cultural, historical, archaeological, paleontological and architectural features that may be impacted, whether positive or negative, by the proposed Project.

[2] Under the *Environmental Assessment Regulations* significant means, with respect to an environmental effect, an adverse impact in the context of its magnitude, geographic extent, duration, frequency, degree of reversibility, possibility of occurrence or any combination of the foregoing.

mitigation, residual environmental impacts, proposed compliance and effects monitoring and the public information program that are to be addressed in the EA Report for the proposed Project.

8.0 EXISTING ENVIRONMENT

This section of the EA Report shall identify the study area and shall describe the existing environmental components, their interrelationship and their sensitivity to disturbance. This information shall reflect four seasons in the study area where appropriate, and can be gathered through studies conducted by the Proponent, or existing data.

The EA Report shall clearly indicate baseline data/information which is not available or existing data which cannot accurately represent environmental conditions in the Project area over four seasons, or at the time of construction.

If the background data have been extrapolated or otherwise manipulated to depict environmental conditions in the Project area, modeling methods and equations shall be described and shall include calculations of margins of error.

All categories and constraints covered in the Highway Environmental Database Study screening matrix shall be included in this section of the EA Report.

The components of the environment to be discussed shall include identified VEC's and the following:

8.1 Area Geography

Describe the study area geography and topography including features such as lakes, streams, wetlands, and topography within a minimum of five hundred (500) meters of the centerline of the proposed alignment and those features outside 500 meters which influence features within the proposed corridor.

8.2 Transportation

Describe the existing road conditions in the area, including class of road, traffic volumes and traffic types, and the road surface conditions. Describe how, or to what extent, the Project is consistent with HRM's planning objectives for integrating transportation systems with land use and the environment.

8.3 Existing and Planned Land Uses

Describe the patterns of current and planned land use and settlement along the proposed highway corridor including, but not limited to, municipal and provincial planning strategies, current and proposed development, and utilities (including main trunk waterlines). Describe current and predicted recreational activities. Describe any current land uses by First Nations along the proposed highway corridor.

Describe how, or to what extent, the Project is consistent with HRM's planning objectives for residential and related commercial development in suburban and urban areas, including the Blue Mountain area and communities such as Bedford West.

Describe how, or to what extent, the Project is consistent with HRM's planning objectives for the proposed Blue Mountain/Birch Cove Lakes Regional Park.

8.4 Socio-Economic Conditions

Describe the current socio-economic conditions of the area along the proposed highway corridor. Include population demographics and economic conditions.

8.5 Atmospheric Conditions

8.5.1 Describe the air quality to include, but not necessarily be limited to, wind speeds and directions, precipitation amounts and precipitation chemistry. Particular attention is to be paid to ambient dust levels in areas where construction activities may contribute to increased dust levels.

8.5.2 Describe the weather patterns along the proposed route as they relate to highway operation and maintenance. Include how snow, ice and wind conditions may be expected to change with geographic conditions and seasons, and how these relate to the proposed Project.

8.5.3 Evaluate how storm events could affect the Project.

8.6 Ambient Noise Levels

Provide a baseline study of all residential and other sensitive areas (i.e., commercial, recreational and institutional) within 200 meters and then intervals of 500 m, 1 km, 1.5 km and 2 km of the proposed right of way and at any other areas where traffic noise could be expected to have a significant negative impact. Background ambient noise levels should be characterized for various locations along the corridor where traffic noise on the proposed highway could be expected to be heard and felt to be a negative impact, i.e., residential areas, commercial areas, recreational, institutional areas, proposed Blue Mountain/Birch Cove Lakes Regional Park, sensitive wildlife habitats and recreational areas.

8.7 Surface Water

Provide a general hydrologic and water quality description of all surface water bodies potentially affected by the Project. Include a description of standard sampling and analytical protocols being used. Provide baseline water quality and quantity studies which will form the basis for a subsequent environmental effects monitoring program. The drainage areas of individual streams both above and below the proposed highway shall be described. This description shall include the calculation of the drainage area upstream of each watercourse crossing, and assess water quality over four seasons prior to construction.

Existing uses and users of the watercourses shall be identified, including water withdrawals.

8.8 Groundwater

Provide a general hydrologic, hydrogeologic, and water quality description of the groundwater in the study area.

Provide a general description of groundwater use in the area and provide a plan to conduct a pre-construction well survey at a later date.

8.9 Flora, Fauna and Habitat Evaluation

Identify flora, fauna, and habitat. Appropriate field surveys agreed to by the Nova Scotia Department of Natural Resources, Wildlife Division shall be conducted as part of the evaluation.

8.9.1 To satisfy provincial requirements, include the required information as stated in the *Guide to Addressing Wildlife Species and Habitat in an EA Registration Document.* Available data, survey results, and detailed mitigation measures that demonstrate a special emphasis on avoidance of impacts shall be included in the EA Report.

8.9.2 Survey migratory birds in the proposed project area. For general guidance on conducting such surveys refer to *General Guidelines for Landbird Surveys for Environmental Assessment of Linear Right-of-Way Projects.* Consult the Canadian Wildlife Service of Environment Canada regarding site-specific survey design.

8.9.3 Identify any existing or planned wildlife management areas, regional parks, ecological reserves, wilderness areas, managed wetlands and significant wildlife habitat, including areas with high wildlife concentrations, wildlife corridors or habitats rare to Nova Scotia.

8.10 Wetlands

Identify the location, size and class of any wetland within the predicted zone of influence and conduct a wetland evaluation. The true ecosystem value of each wetland shall be examined through on-site investigations using comprehensive evaluation methodology that assesses component, functional and attribute values.

Field surveys and investigations required to supplement the available data shall be completed in a manner that is acceptable to the Nova Scotia Department of Natural Resources (Wildlife Division) and the Nova Scotia Department of Environment and Labour.

8.11 Aquatic Species and Habitat

8.11.1 Identify fish habitat that includes, but is not restricted to, stream size, bottom composition, stream gradient at each potential watercourse crossing, and annual temperatures and sediment loading where data is available from appropriate regulatory and resource agencies, including, but not limited to, the Nova Scotia Department of Agriculture and Fisheries, Fisheries and Oceans Canada, and the Nova Scotia Museum of Natural History. Fish spawning, rearing nursery, food supply and migration areas are to be evaluated within the predicted zone of influence. Describe the

criteria utilized for determining the zone of influence this Project has on the fish habitat of the watercourse involved.

8.11.2 Describe the relative distribution, abundance, composition and socioeconomic importance of valued fish resource components within the predicted zone of influence of all proposed watercourse crossings. Fish species, age, health and diversity shall be described. Indicate methodologies and surveys completed.

8.12 Bedrock and Surficial Geology

Provide a general description of the bedrock and surficial geology of this study area, to include but not necessarily be limited to a discussion of:

8.12.1 The bedrock geology along the proposed corridor.

8.12.2 Identify all potential acid generating bedrock formations that will be encountered.

8.12.3 The surficial cover including overburden depth, soil types, permeability and porosity, and areas of high erosion risk.

8.12.4 The potential for disturbance of known or suspected contaminated soils.

8.12.5 Any areas having known or proven economic mineral deposits, areas under advanced mineral exploration, and the location and extent of existing and abandoned mines, pits and quarries.

8.13 Historical, Archaeological, Paleontological and Architectural Resources

Identify any locations containing sites or features of historical, archaeological, paleontological, or architectural importance, including First Nations, in a manner acceptable to the Nova Scotia Museum. The archeological assessment shall be conducted under the terms of a Heritage Research Permit for Archaeology issued under the *Special Places Protection Act* ,and contact should be made with the Nova Scotia Museum and Mi'kmaq organizations such as the Union of Nova Scotia Indians (UNSI) Confederacy of Mainland Mi'kmaq (CMM) and the Treaty and Aboriginal Rights Research Centre (TARR Centre) as

applicable to ascertain current knowledge of potential archaeological resources in the study area. Describe the nature of the sites or features located in those areas.

8.14 Pre-Blast Survey

Discuss plans for a survey of structures along the highway route where blasting is planned. The survey shall include structures and building foundations which may experience damage or impact due to seismic vibration or air concussion.

9.0 ADVERSE/ENVIRONMENTAL EFFECTS ASSESSMENT AND MITIGATION

The EA Report shall identify and predict the magnitude and significance of Project impacts, both positive and negative, on the environment. "Adverse effects" and "environmental effects" are defined under the *Environment Act.* This section shall also address impacts on identified VEC's, as well as, but not limited to, the following socio-economic, community and bio-physical environmental impacts.

The EA Report shall describe all measures that are technically and economically feasible that have or will be taken to avoid or mitigate significant negative impacts and maximize the positive environmental effects of the Project, with emphasis on pollution prevention, impact avoidance, and best management practices. Mitigation includes the elimination, reduction or control of the adverse effects or the significant environmental effects of the Project and may include restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.

Describe any legislation, regulations, guidelines, municipal planning strategies, policies and specifications that will be adhered to during design and construction of the roadway, that will lead to mitigation of environmental impacts.

Describe compensation that will be provided when environmental damage is unavoidable or cannot be adequately mitigated by any other means.

This section shall address, but not necessarily be limited to the following:

9.1 Impacts on Transportation and Mitigation

Discuss the anticipated changes in driving patterns including traffic speed and density in adjacent residential and commercial areas.

Discuss the mitigation measures planned to address anticipated impacts from any predicted changes in traffic speed and density in adjacent residential and commercial areas.

9.2 Impacts on Land Use and Mitigation

Predict the impacts of the highway, including the effects of fragmentation of landholding, on the existing and planned land uses, including, but not limited to planning strategies, proposed development, utilities (including main trunk waterline) and development boundaries. Discuss the impact on the proposed Blue Mountain/Birch Cove Lakes Regional Park.

Describe the corridor selection process and indicate how the chosen alignment minimizes/mitigates impacts on existing and planned land uses, including the proposed Blue Mountain/Birch Cove Lakes Regional Park.

9.3 Impacts on Socio-Economic Conditions and Mitigation

9.3.1 Discuss the impact on residential property values.

Discuss plans for compensation for any possible loss of property or property value.

9.3.2 Discuss the effect of proposed interchange locations on present and future expansion of commercial/residential/institutional/ recreational and resource land uses within the study area.

Describe actions that will be taken to mitigate adverse impacts on private and commercial property and on human activities.

9.3.3 Discuss the impact on the proposed Blue Mountain/Birch Cove Lakes Regional Park.

Describe actions that will be taken to mitigate adverse impacts on proposed Blue Mountain/Birch Cove Lakes Regional Park.

9.3.4 Discuss the impact on First Nations' current uses of land and resources for traditional purposes and on any land claims which may exist within the proposed highway corridor.

Describe actions that will be taken to mitigate adverse impacts on

First Nations.

9.3.5 Provide a dispute resolution process for addressing Project-related complaints and concerns that may be received from nearby land owners or residents.

9.4 Impacts on Air Quality and Mitigation

9.4.1 Discuss the impact of dust generated from highway construction on residential, agricultural, recreational and institutional areas, and on human health.

Describe measures that will be taken to control dust during highway construction.

9.4.2 Discuss the potential for micro-climate modifications in the vicinity of the Project.

9.4.3 Describe a management strategy to reduce Greenhouse Gas (GHG) emissions related to the Project. Estimate GHG emissions associated with various Project phases, including site preparation, construction, and maintenance phases of the Project.

9.4.4 Describe and estimate emissions such as Nox, Sox, CO, VOC and PM. Present best management practices to reduce air emissions.

9.5 Noise Impacts and Mitigation

Discuss any predicted increase and impact of background noise levels from highway construction activity and from traffic on residential, commercial, proposed Blue Mountain/Birch Cove Lakes Regional Park, recreational and institutional areas and sensitive wildlife species.

Describe measures that will be taken to mitigate increased noise levels during highway construction and operation.

9.6 Impacts on Surface Water and Mitigation

9.6.1 Identify receiving waters and associated watersheds for run-off during construction and operational phases, and discuss all associated impacts to surface water quality, water quantity, fish

habitat and groundwater. The CCME Canadian Water Quality Guidelines as they pertain to other water uses, aquatic life and existing ambient water quality shall be used as a context for addressing the magnitude and importance of the predicted impacts.

9.6.2 Discuss the potential for soil eroding from the highway into adjacent watercourses.

9.6.3 Discuss the criteria used for design of run-off control features, i.e., expected run-off volumes, storm design data, etc. This section shall indicate if allowance has been made for potential changes in precipitation due to climate change.

Present an outline of siltation, erosion and run-off control features, storm drainage management procedures and mitigation measures including specific references to seasonal variation, that will be used in the following situations: (a) clearing and grubbing of the proposed corridor, (b) installation of watercourse structures, (c) subgrade work, (d) construction of service roads, and (e) highway maintenance. Discuss commitments for plans that will protect the environment for these activities.

9.6.4 Provide the predicted impacts on surface water and vegetation resulting from the use of ice and snow control procedures, and from other maintenance activities.

If road salt is to be used, establish a road salt management strategy for the Project, that identifies areas vulnerable to impact and those areas where monitoring chloride concentrations would be pursued to verify impact predictions and mitigation effectiveness.

9.6.5 Discuss the predicted impacts resulting from the disturbance of contaminated soils.

If contaminated soils are to be disturbed, discuss methods to minimize adverse impacts.

9.6.6 Indicate the watercourses to be impacted and provide a description of the impacts.

9.6.7 Indicate and discuss the probabilities of spills/accidents and the

environmental consequences of such events. Discuss the potential impact of contaminated run-off on the environment, including the accidental release of a hazardous substance.

Discuss commitments to provide contingency and remediation plans for any contamination of, or drainage to, surface water resources, including decrease of water quality or quantity.

9.7 Impacts on Groundwater and Wells and Mitigation

Provide a description of potential impacts from road construction and operation activities on groundwater and wells, including both quality and quantity aspects. Predict any anticipated changes to groundwater quality and quantity and the significance of the anticipated changes including impacts of groundwater contaminated from road de-icing practices.

Provide a discussion of groundwater monitoring, mitigation and contingency plans.

Indicate and discuss the probabilities of spills/accidents and the environmental consequences of such events. Discuss potential impacts of contaminated groundwater on fish, fish habitat and water quality.

Describe actions that will be taken to moderate any negative impacts on groundwater quality and quantity.

Describe measures to be employed in the event of accidental dewatering of domestic water supply wells through highway construction activity including compensation for loss or degradation of domestic water supplies.

Discuss commitments to provide contingency and remediation plans for any contamination of or drainage to groundwater resources, including decrease of water quality.

If road salt is to be used, establish a road salt management strategy for the Project.

9.8 Impacts on Flora, Fauna and Habitat and Mitigation

Predict the impacts of construction and operation of the Project on terrestrial and aquatic flora and fauna, including avifauna, and include a full accounting of impacts on species of concern and significant habitats. Discuss the impacts of fragmentation on wildlife populations and habitats including any interruption, alteration or destruction of wildlife corridors. The potential impacts on migratory bird habitat shall be assessed.

Discuss measures that will be taken to minimize the impacts of road construction and operation on floral species. Include any plans for landscaping and preservation of existing vegetation. Demonstrate how a priority will be placed on the use of native species for revegetation efforts.

Describe the measures that will be taken to minimize the impacts of road construction and operation on terrestrial and aquatic fauna (including avifauna). Include any plans for preservation of existing habitat and compensation for loss or degradation of aquatic and terrestrial habitat (i.e. habitat rehabilitation or replacement).

Discuss commitments to provide contingency and remediation plans for drainage to aquatic and terrestrial habitat as a result of accidental events.

9.9 Impacts on Wetlands and Mitigation

Provide site-specific mapping to demonstrate, as applicable, why particular wetlands cannot be avoided through routing. In the event that effects to wetlands are shown to be unavoidable through routing, the methods that will be implemented to minimize impacts to wetlands shall be specified. Predict the impacts to all wetlands which may be affected by the proposed Project including wetlands which may be created through the construction of the highway.

Include a plan for monitoring impacts from highway construction and operation on wetlands to maintain ecological and hydrological integrity of any wetlands in the area and for ensuring that appropriate mitigation activities are undertaken.

Identify plans for the preservation of existing wetlands and compensation for loss or degradation of the functional values of wetlands impacted by the Project. Also include plans to monitor the success of mitigative action.

The potential consequences associated with a highway that increases access to wetlands (e.g., ATVs), and the necessary protective measures , shall also be considered.

9.10 Impacts on Aquatic Species and Habitat and Mitigation

Predict the impacts that the Project will have on freshwater and anadromous species, including a full account of impacts on species of concern and habitat.

Describe the timing of work in and immediately adjacent to watercourses, and fish passage at watercourse crossings.

9.11 Geological Impacts and Mitigation

Discuss the potential for the impact of acidic water run-off from bedrock disturbed by highway construction on Valued Environmental Components.

Describe alternatives to disrupting net acid producing bedrock. When no practical alternative to exposing this bedrock exists, mitigation plans shall be developed for minimizing the impacts on the aquatic environment.

Discuss commitments to provide contingency and remediation plans for watercourses that have been degraded due to the disturbance of acid-generating bedrock of tills.

Discuss commitments to protect natural geologic features, including natural landmarks and look-offs, and scenic vistas, with particular reference to the Blue Mountain Hill.

9.12 Impacts on Historical, Archaeological, Paleontological and Architectural Resources, and Mitigation

Predict the Project related impacts to all structures, sites, resources or things of historical, archaeological, paleontological or architectural significance.

Describe mitigation measures to preserve, protect, or recover any features of socio-economic, cultural, archaeological or paleontological value that are identified in the proposed highway corridor.

9.13 Blasting Impacts and Mitigation

Discuss the potential for the impact on structures along the highway route where blasting is planned.

Discuss the plans for mitigating potential impacts on structures along the highway route where blasting is planned.

9.14 Impacts of the Environment on the Project and Mitigation

9.14.1 Discuss the effect the environment may have on the construction and operation phases of the Project, including weather and climatic elements. Any necessary climate information shall be provided.

9.14.2 Discuss how the Project accommodates the potential effects of climate change in its design considerations, such as culvert design specifications.

10.0 RESIDUAL ADVERSE EFFECTS AND ENVIRONMENTAL EFFECTS

This section of the EA Report shall list and contain a detailed discussion and evaluation of residual impacts, including the criteria for determining significance. The EA Report shall note where uncertainty exists regarding the significance of the residual impacts. Residual impacts are those adverse effects or significant environmental effects which cannot or will not be avoided or mitigated through the application of environmental control technologies or other acceptable means. Those impacts that cannot be mitigated or avoided shall be clearly distinguished from those impacts that are not planned to be mitigated or avoided. Positive residual impacts will also be discussed and evaluated.

These impacts become important in the evaluation of a proposed Project as they represent the environmental cost/benefit of the Project.

Any changes to the Project that may be caused by the environment and the significance of those changes should be described in this section of the EA Report.

The EA Report shall contain a concise statement and rationale for the overall conclusion relating to the significance of the residual adverse environmental effects. The EA Report shall, for ease of review, include a matrix of the environmental effects, proposed mitigation and residual adverse effects.

11.0 EVALUATION OF THE ADVANTAGES AND DISADVANTAGES TO THE

ENVIRONMENT

This section shall present an evaluation of the advantages and disadvantages to the environment, including the VEC's during the construction and maintenance phases of the Project. This section shall include a detailed description of the methodologies used to describe or predict these results. Assessment objectives for each VEC will be articulated to guide the interpretation of assessment findings.

12.0 PROPOSED COMPLIANCE AND EFFECTS MONITORING PROGRAMS

The EA Report shall include a framework upon which compliance and effects monitoring will be based throughout the life of the proposed Project, including abandonment. The discussion of compliance monitoring shall include, but not necessarily be limited to, plans and procedures for water quality compliance monitoring, especially for suspended sediment and pH levels, during construction. Monitoring programs must be designed to determine the effect of the implemented mitigation measures. Effects monitoring during all phases of this Project, including post completion, shall include floral or faunal surveys for any species of concern.

This section shall also include, but not be limited to, commitments to undertake the following surveys prior to blasting operations in the corridor.

12.1 Pre-Blast Survey

Discuss plans to follow-up on the pre-blast survey, including a survey of structures along the highway route where blasting wells, building foundations, etc. may have experienced damage or impact due to seismic vibrations or air concussion.

12.2 Well Water Survey

Discuss plans for periodic monitoring of water quality and quantity of springs (if used as a water supply), and domestic and other wells where blasting operations are proposed and where significant roadway cuts that do not involve blasting are planned.

Provide plans to follow-up on any damage to water wells.

13.0 PUBLIC INFORMATION PROGRAM

This section of the EA Report shall detail the public information program initiated by the Proponent. The Proponent shall describe in detail the opportunities that have been or will be provided to allow the public to express their concerns and receive information on the various phases of Project development including planning design, environmental assessment review, operation, abandonment, site rehabilitation, post abandonment and monitoring.

The results of public participation and information sessions shall detail how public comments were addressed, including any commitments made by the Proponent.

14.0 ASSESSMENT SUMMARY AND CONCLUSION

This section of the EA Report shall summarize the overall findings of the EA with emphasis on the main environmental issues identified.