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**Regulator DRAFT REPORT
Environmental Impact Assessment
Registration Document
Northwest Miramichi River No. 1
(Anderson) Bridge Replacement
Miramichi, New Brunswick**

GEMTEC Project: 6921.44-R01

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1.0 INTRODUCTION

This document is the Regulator Draft Report of the Environmental Impact Assessment (EIA) Registration for the proposed Northwest Miramichi River No.1 (Anderson) Bridge Replacement in Miramichi, New Brunswick (herein referred to as the “Project”). The document details the necessary information as outlined in the New Brunswick Department of Environment and Local Government (NBDELG) document “A Guide to Environmental Impact Assessment in New Brunswick” dated January, 2018 (herein referred to as the “the guide”).

The proposed project type is specified as an undertaking outlined in Schedule A of the *New Brunswick Environment Impact Assessment Regulation 87-83* under paragraph:

- (i): all causeways and multi-span bridges.

As such, the Project must be registered with the Sustainable Development and Impact Evaluation Branch, Department of Environment and Local Government for a determination review.

1.1 Name of the Undertaking and Project Proponent

1.1.1 Name of the Undertaking

Northwest Miramichi River No.1 (Anderson) Bridge Replacement, Miramichi, New Brunswick.

1.1.2 Project Proponent

The name and contact information of the Proponent is presented in Table 1.

Table 1 Proponent Information

Name of Proponent	New Brunswick Department of Transportation and Infrastructure (NBDTI)
Address of Proponent	Kings Place P.O. Box 6000 Fredericton, New Brunswick E3B 5H1
Proponent Contact	Mr. Vincent Balland, M. Sc. F., P.Eng. NBDTI Telephone: (506) 453-5344 Email: vincent.balland@gnb.ca
Principal Contact Person for EIA	Ms. Abigail Garnett, M.Sc.Eng., P.Eng. GEMTEC Consulting Engineers and Scientists Limited 191 Doak Road, Fredericton, NB E3C 2E6 Telephone: (506) 453-1025 Email: abigail.garnett@gemtec.ca
Property Ownership	NBDTI / Provincial Holdings / Crown Lands

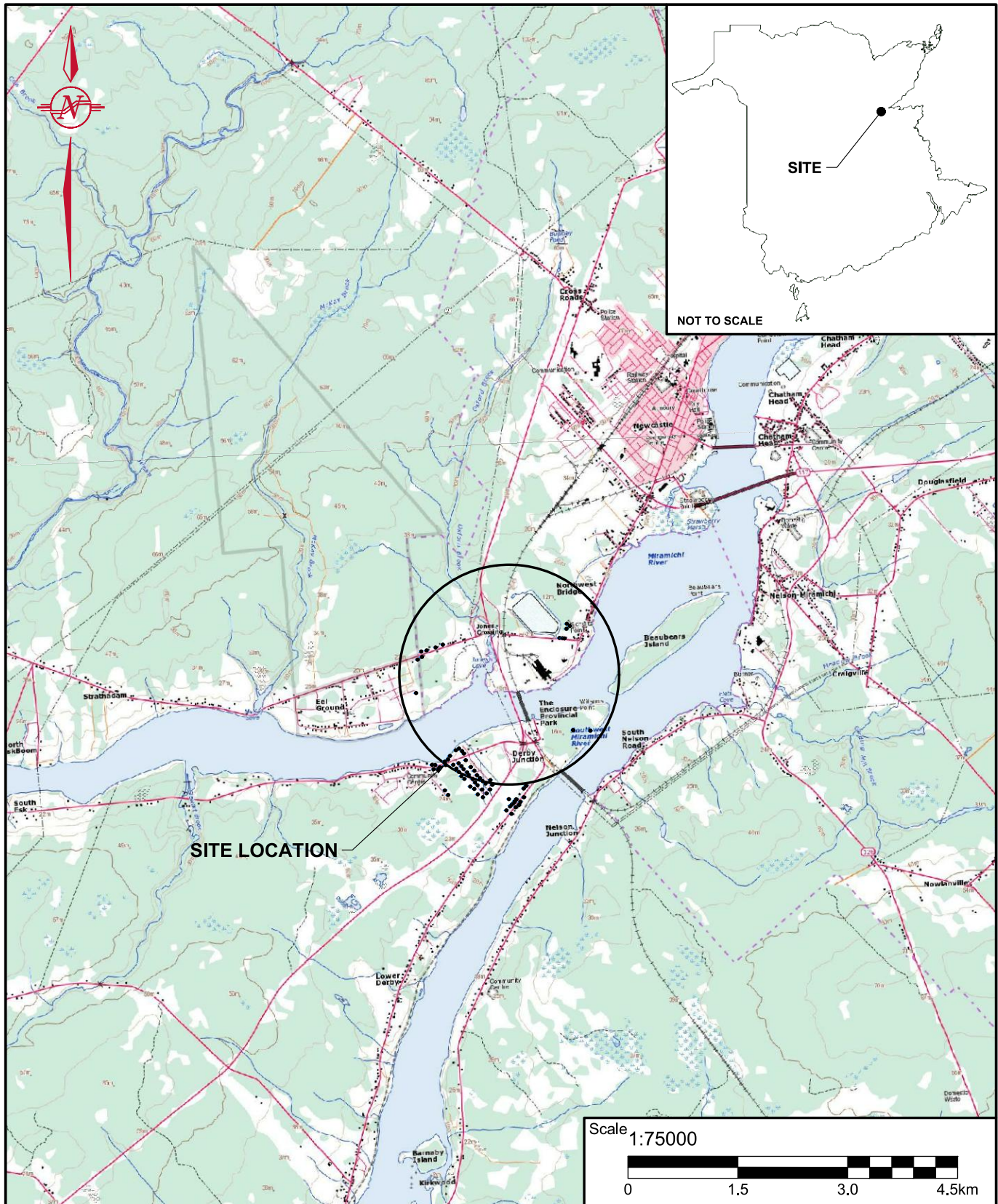
2.0 PROJECT OVERVIEW

The NBDTI has retained GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) to prepare an EIA registration document for the proposed Northwest Miramichi No.1 (Anderson) Bridge Replacement, Miramichi, New Brunswick. The location of the proposed Project is presented in Figure 1. General site photographs are presented in Appendix A.

The Project is located on 10 land parcels identified by Service New Brunswick (SNB) as property identifiers (PIDs): 40381345, 40381337, 40437121, 40445330, 40495780, 40164808, portion of 40163826, portion of 40143083, portion of 40336240, and portion of 40437139 (herein referred to as “Project Area”) (as presented in Figure 2). All 10 PIDs are either owned by the Proponent (NBDTI), or are Crown Lands managed by the New Brunswick Department of Energy and Resource Development (NBDERD; PID 40163826), or are considered Provincial Holdings (PID 40143083); therefore, private land acquisition is not required for the Project.

The Project involves the full replacement of the Northwest Miramichi River No.1 (Anderson) bridge. This includes the removal of the existing bridge and the construction of a new bridge located slightly upstream (preliminary designs are presented in Appendix B). The new structure will be built on a new alignment parallel to, and approximately 20 metres west, of the existing bridge. The new bridge will be approximately 480 metres in length, over five piers and two abutments. The bridge will contain two 3.7 metre wide travel lanes, 1.7 metre shoulders, and will incorporate concrete traffic barriers on both sides. The design provides a suitable structure to accommodate posted speed limits of 100 kilometres/hour (km/hr).

The Project will include the construction, operation and maintenance phases of the new bridge, as well as the demolition of the existing bridge, as detailed below. Due to the extended life expectancy (*i.e.*, 75 years) of the proposed bridge, decommissioning and abandonment phases of the new bridge are not discussed herein.



Project
**EIA - NORTHWEST MIRAMICHI RIVER
 NO.1 ANDERSON BRIDGE REPLACEMENT**

Drawing
GENERAL SITE LOCATION

Drawn By
CHG

Date
JUNE 2018

File No.
69214403

Drawing No.
FIGURE 1

Revision No.
0



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Legend

--- PROPERTY LINE

--- PROJECT AREA

Key Map

PROJECT AREA

1:150000

Note

1. THIS DRAWING IS A SCHEMATIC REPRESENTATION. SIZES, LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

Drawn By	CHG	Checked By	JH
Calculations By	---	Checked By	---

Date

JUNE 2018

Project

EIA - NORTHWEST MIRAMICHI RIVER NO.1 ANDERSON BRIDGE REPLACEMENT

Drawing

PROJECT AREA LOCATION PLAN

Scale

1:7500

0 150 300 450m

File No.	Drawing	Revision No.
69214403	FIGURE 2	0

GEMTEC
CONSULTING ENGINEERS AND SCIENTISTS

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2.1 Construction Phase

During the construction phase, the Project will include the following key components:

- Construction of the new bridge infrastructure and associated works; and
- Demolition of the existing structure and associated works.

2.1.1 New Bridge Construction

The new bridge construction will require the installation of a temporary trestle upstream of the new structure to provide access during construction. The use of barges is possible but unlikely because of difficult launching and ice conditions at the site. The main components of this undertaking include the following:

- Site preparation for the approaches to the new bridge including clearing, grubbing and removal of overburden soils;
- Construction and installation of five bridge piers within the streambed of the Northwest Miramichi River. Piers 1, 4 and 5 will each be supported on two steel encased concrete caissons drilled into bedrock and terminating above the waterline. The caissons will be extended with concrete columns and a concrete pier cap beam will be constructed above the caissons. At Piers 2 and 3, steel encased drilled caissons will also be used but will be founded in the till layer as the distance to bedrock is too great for conventional drilling equipment. Four caissons will be used at each of these locations and they will be terminated below the riverbed. Following installation of all caissons, steel cofferdams will be placed, as required. Excavation within the cofferdam will be completed to expose the caissons and tremie concrete will be poured under water to create a seal. Water will then be removed from inside the cofferdam and a structural concrete footing will be built. Concrete columns will be poured on the footings to support a concrete pier cap beam such that Piers 2 and 3 will look almost identical to Piers 1, 4 and 5 above the riverbed;
- Construction of two bridge abutments on the north and south banks of the Northwest Miramichi River. The south abutment will be founded directly on bedrock. Drilled concrete caissons will be used to support the north abutment. Both abutments will be constructed on the shore, above the normal water elevation;
- Erection of the steel superstructure which will be supported on the newly constructed abutments and piers;
- Construction of a concrete deck slab and concrete barriers atop the newly constructed superstructure;
- Completion of the approach roadways which will include clearing, grubbing and removal of overburden soils for the placement of pavement structure, as well as installation of new highway lighting and traffic signs; and
- Removal of the temporary trestle.

It is expected that the construction phase of the Project will begin as early as the spring of 2019 after all approvals and authorizations for the work have been obtained.

2.1.2 Demolition of Existing Structure

Demolition of the existing structure will be a significant undertaking. Firstly, a temporary trestle will be installed on the downstream side to provide access to the structure. The existing steel structure will be dismantled and completely removed from the site. The four approach span piers and both abutments are founded on bedrock; these will be completely demolished, and all debris removed. There are five river piers consisting of massive concrete foundations supported on steel piles. Temporary steel cofferdams are proposed to be installed around each river pier to act as containment during the removal process. Demolition of the concrete piers will be completed within the cofferdams until the riverbed is reached. Protruding steel piles and steel cofferdams will also be cut at the riverbed elevation and removed. All demolition debris will be hauled away from site and properly disposed of, or recycled. After demolition is completed, the temporary steel cofferdams and trestle will be removed and the disturbed ground stabilized and re-vegetated, where applicable.

2.2 Operations and Maintenance Phase

During the operational and maintenance phase, the Project will include:

- Maintenance of asphalt paving and resurfacing;
- Maintenance of surface water control features (e.g., stormwater drainage, roadside ditching *etc.*);
- Maintenance and inspection of concrete bridge piers and abutments;
- Mowing and brush cutting of fore-slopes and back-slopes of approaches to bridge crossing; and
- Winter road maintenance (*i.e.*, snow removal and ice control).

The operational phase is expected to begin in 2021, once all construction related activities for the new structure have been completed.

2.3 Purpose / Rationale / Need for the Undertaking

The Northwest Miramichi River No.1 (Anderson) bridge was built in 1953 and, having reached the end of its service life, has been deemed to require replacement. The bridge has been reduced to one-lane since March 2016 due to structural problems.

The Anderson Bridge is located on Route 8, and connects the City of Fredericton with the City of Miramichi, the City of Bathurst, and the Acadian Peninsula. Route 8 is considered a National Highway System (NHS) Feeder Route, as defined in the NHS Review Task Force report published in 2005 by the Council of Ministers Responsible for Transportation and Highway Safety. Together, Route 8 and the Anderson Bridge serve local, regional, and national interests as indicated below:

- Locally, Route 8 and the Anderson Bridge serve as an urban commuter route that connects villages such as Blackville and Renous on the south side of the Northwest Miramichi River with Miramichi's west end, located north of the Northwest Miramichi River. Traffic data obtained from the NBDTI indicate that the Anderson Bridge has an Average Annual Daily Traffic (AADT) volume of approximately 3,000 vehicles;
- Regionally, Route 8 and the Anderson Bridge connect the southcentral and northeastern regions of New Brunswick. They provide a direct link between the City of Fredericton and other communities in south-central New Brunswick with the City of Miramichi and the City of Bathurst in the northeastern part of the Province; and
- Nationally, Route 8 and the Anderson Bridge is a feeder route that connects northeastern New Brunswick with Route 2 (the Trans-Canada Highway) outside Fredericton, providing a connection to all of Canada and markets in the United States (US).

The proposed Project is a new construction project, as the existing Anderson Bridge will be completely removed and replaced with a new structure. This Project also includes a minor capacity upgrade as the new bridge will have a wider cross-section with additional lateral clearance to meet current cross-section design standards. The horizontal alignment will also be improved, which will allow drivers to cross the structure without reducing speed.

2.4 Background and Current Conditions

The Anderson Bridge is a 507 metre long, 11-span structure that was originally constructed in 1953. The bridge deck and superstructure were rehabilitated in 1988. The bridge's south approach was reconstructed in the late 1980s and the north approach was reconstructed in 2005 as part of the Miramichi By-Pass Project.

The posted speed limit on Route 8 at both bridge approaches is 100 km/h; however, due to the narrow bridge cross-section (*i.e.*, the existing bridge has two 3.3 metre travel lanes with very narrow lateral clearance), the speed limit on the bridge is currently 70 km/h.

In late 2015, a structural load rating analysis was performed to assess the bridge's current capacity to carry existing traffic loads. The results of the analysis indicated that the bridge did not have the structural capacity necessary to accommodate the truck loads that it had been expected to carry in recent years. A detailed inspection and condition assessment was performed, which concluded that the steel material of the bridge superstructure had reached the end of its useful life.

In March 2016, repairs were made to strengthen critical members of the superstructure and the bridge was permanently reduced to a single lane of traffic. The partial closure was done as an interim measure to maintain legal commercial vehicle weight limits on the bridge in the short term. The bridge is currently not capable of carrying overweight loads and based on the results of the

structural load rating analysis it is evident that a replacement structure will be required before two-way traffic flow across the river can be restored.

2.5 Project Location

The Project Area encompasses ten PIDs (40381345, 40381337, 40437121, 40445330, 40495780, 40164808, portion of 40163826, portion of 40143083, portion of 40336240, and portion of 40437139) as presented on Figure 2.

The Northwest Miramichi River flows west to east under the existing Northwest Miramichi River No.1 (Anderson) Bridge. Central coordinates for the existing bridge are: 46.965479°, -65.598627°. The central coordinates for the new proposed bridge are: 46.965792°, -65.599057°.

2.6 Siting Considerations

The Project Area is not located within either a wellfield or watershed protected area (GeoNB, 2017). One provincially regulated wetland (PRW) is present on PID 40437139, west of Route 8. This wetland is characterized as the tidal floodplain of Oxford Brook, a tributary of the Northwest Miramichi River.

Two New Brunswick Hydrographic Network (NBHN) mapped watercourses are present within the Project Area.

- The Northwest Miramichi River which flows west to east through the Project Area. The proposed bridge will be constructed across the Northwest Miramichi River to the west of the existing bridge; and
- Oxford Brook which flows north to south through the northwestern portion of PID 40437139 and the PRW. Oxford Brook enters the Project Area via a culvert under Saint Agnes Street and outlets into the Northwest Miramichi River approximately 700 metres downstream of the culvert. The location in which Oxford Brook outlets into the Northwest Miramichi River is upstream and outside of the Project Area. The portion of Oxford Brook contained within the Project Area is considered to be within the Northwest Miramichi River floodplain.

The location of the new bridge was chosen to be in close proximity to the existing ramp infrastructure currently in place, to minimise road re-alignments and to avoid modifications of the two existing interchange structures located north and south of the existing bridge. By utilizing the existing infrastructure as much as possible, disturbance to the natural environment and traffic disruption will be reduced.

2.7 Project Related Documents

There are no known prior EIAs or environmental studies available for the Project.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

The objective of this EIA report is to meet the requirements of the *New Brunswick Environmental Impact Assessment Regulation 87-83* (as described in Section 1.0), and should, in particular:

- Consider the potential for both positive and negative changes on the environment;
- Assess potential environmental effects;
- Outline mitigation and impact management measures; and
- Identify any monitoring needs associated with the Project.

The EIA focuses on issues directly relevant to highway construction and operation as well as maintenance of the proposed Project. The approach of this assessment is to focus on project-specific valued environmental components (VECs) in a method consistent with New Brunswick EIA regulatory requirements.

The guide outlines a list of environmental attributes that have the potential to be affected by a project. This EIA identifies the VECs (Table 2) that were assessed within and surrounding the Project Area, to determine whether activities related to the Project activities would affect them.

Table 2 VECs and Factors to be Considered for Valued Environmental Components

Valued Environmental Component	Factors to be Considered
Atmospheric Environment (Appendix C)	<ul style="list-style-type: none"> • Air quality; and • Sound quality.
Groundwater Resources (Appendix D)	<ul style="list-style-type: none"> • Physiography and drainage; • Bedrock and surficial geology; • Groundwater resource use; and • Groundwater quality and quantity.
Aquatic Environment (Appendix E)	<ul style="list-style-type: none"> • Surface water quality; • Fish and fish habitat; • Species at Risk (SAR) and Critical Habitat; • Species of Conservation Concern (SOCC) and their habitat; • Commercial/Recreational and Aboriginal (CRA) fisheries; and • A summary of previous records occurring in and around the Project from the Atlantic Conservation Data Centre (ACCDC).
Wildlife and Wildlife Habitat (Appendix F)	<ul style="list-style-type: none"> • Birds and bird habitat; • Wildlife and wildlife habitat; • SAR and Critical Habitat; • SOCC and their habitat; • Environmentally significant areas; and • A summary of previous records occurring in and around the Project from the ACCDC.
Wetlands and Vegetation (Appendix G)	<ul style="list-style-type: none"> • Wetlands; • Flora; • SAR (vascular flora survey) and Critical Habitat; • SOCC (vascular flora survey) and their habitat; • Environmentally significant areas; and • A summary of previous records occurring in and around the Project from the ACCDC.
Archaeological and Heritage Resources (Appendix H)	<ul style="list-style-type: none"> • Structures, sites, or things of historical, archaeological, paleontological, or architectural significance.

Valued Environmental Component	Factors to be Considered
Land Use and Economy (Appendix I)	<ul style="list-style-type: none"> • Residential land use; • Recreational land use; • Commercial and Industrial land use; • Navigable waters; • Local economy; • CRA Fisheries; and • Current use of land and resources for traditional purposes by Aboriginal persons.
Effects of the Environment on the Project (Appendix J)	<ul style="list-style-type: none"> • Climate conditions; • Climate change; • Sea level rise and flooding; • Erosion and mass wasting; • Seismic activity; • Natural forest fires; • Contaminated sites; and • Sulphide bearing rock.

Within each VEC, presented in the Appendices of the report, information is presented as follows:

- Section 1: Rationale for the VEC Assessment;
- Section 2: Establishment of Boundaries (spatial and temporal);
- Section 3: Assessment Methodology;
- Section 4: Description of the Existing Environment;
- Section 5: Summary of Potential Effects;
- Section 6: Proposed Mitigation Measures; and
- Section 7: Potential Significant Residual Effects.

4.0 PUBLIC INVOLVEMENT

The public involvement standards for registered projects is outlined in the guide.

A detailed public consultation report will be prepared and submitted by NBDTI under separate cover, once the EIA is registered. The following sections summarize the public consultation that NBDTI has carried out as of April 30, 2018.

4.1 Public Meeting

A public information session was held from 16:00 until 19:00 on November 22, 2017 at Flo's Hideaway, 8 Enclosure Road, Derby Junction, New Brunswick, a venue located in the vicinity of the proposed Project. During the public information session, the public was invited to view plans of the proposed Project, obtain a Project details sheet and ask questions of NBDTI head office staff and NBDTI district staff. Questionnaires were also distributed to obtain feedback about the proposed bridge design. Questionnaires were either returned during the information session or mailed to NBDTI afterwards.

4.2 First Nations Consultation

NBDTI sent notification letters advising of the proposed Project on April 10, 2017 to the following individuals and First Nations groups:

- Chief Ann Mary Steele, Tjipogtotjig First Nation (Bouctouche);
- Chief George Ginnish, Natoaganeg First Nation (Eel Ground);
- Chief Thomas (Everett) Martin, Ugpi'ganjig First Nation (Eel River Bar);
- Chief Arren Sock, Elsipogtog First Nation (Big Cove);
- Chief Alvery Paul, Esgenoopetitj First Nation (Burnt Church);
- Chief Rebecca Knockwood, Amlamgog First Nation (Fort Folly);
- Chief Kenneth Barlow, L'nui Menikuk First Nation (Indian Island);
- Chief William (Bill) Ward, Metepenagiag Mi'kmaq First Nation (Red Bank);
- Chief David Peter-Paul, Oinpegitjoig L'Noeigati First Nation (Pabineau);
- Kara Martin - Mi'gmawe'l Tplu'taqnn Inc (MTI);
- Kenneth Francis - Kopit Lodge;
- Heidi Freiheit - Infrastructure Canada; and
- Kim Allen - New Brunswick Aboriginal Affairs Secretariat.

Follow up letters were sent on July 20, 2017. A meeting was held on March 29, 2018, between NBDTI, the Eel Ground First Nation and MTI, to discuss the project. A letter summarising the topics discussed at the meeting was sent to NBDTI by Eel Ground First Nation on April 4, 2018. NBDTI is planning to follow up on these topics in the near future.

5.0 REFERENCES

GeoNB Wetland Mapping. Accessed October, 2017. Website: <http://geonb.snb.ca/geonb/>

GeoNB Protected Wellfields. Accessed October, 2017.
http://geonb.snb.ca/geonb/index_wellfield.html

GeoNB Protected Watersheds. Accessed October, 2017.
http://geonb.snb.ca/geonb/index_watershed.html

New Brunswick Department of Environment and Local Government (NBDELG). 2008. Additional Information Requirement for Linear Facilities. February 2008.

New Brunswick Department of Environment and Local Government (NBDELG). 2018. A Guide to Environmental Impact Assessment in New Brunswick. January 2018.

6.0 STATEMENT OF LIMITATIONS

This report has been prepared for the sole benefit of the New Brunswick Department of Transportation and Infrastructure. Any other person or entity without the express written consent of GEMTEC Consulting Engineers and Scientists Limited and the New Brunswick Department of Transportation and Infrastructure may not rely upon this report.

Any use that a third party makes of this report, or any reliance or decisions made based on it, is the responsibility of such third parties. GEMTEC Consulting Engineers and Scientists Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Some of the information presented in this report was provided through existing documents and interviews. Although attempts were made, whenever possible, to obtain a minimum of two confirmatory sources of information, in certain instances, GEMTEC Consulting Engineers and Scientists Limited has been required to assume that the information provided is accurate.

The conclusions presented represent the best judgment of the trained professional and technical staff based on current environmental standards and on the Project Area conditions observed by staff at the time the work was performed.

Should additional information become available, GEMTEC Consulting Engineers and Scientists Limited requests that this information be brought to our attention so that we may re-assess the conclusions presented herein.