



CHIPPEWAS OF GEORGINA ISLAND FIRST NATION FIXED LINK

Initial Project Description of a Designated Project
Executive Summary



April 14, 2022

TABLE OF CONTENTS

- Abbreviations.....v
- Part A: General Information 1**
 - 1. Project Name..... 1
 - 2. Proponent Information 1
 - 3. Summary of Public and Regulatory Engagement 4
 - 4. Indigenous Engagement.....13
 - 5. Other Relevant Studies and Plans20
 - 6. Section 95 Strategic Assessments21
- Part B: Project Information..... 22**
 - 7. Purpose and Need for the Project.....22
 - 8. Project Designation per the Physical Activities Regulation22
 - 9. Project Components and Activities22
 - 10. Maximum Production Capacity.....23
 - 11. Anticipated Schedule24
 - 12. Project Alternatives25
- Part C: Location Information and Context 27**
 - 13a. Geographic Coordinates27
 - 13b. Site Maps.....27
 - 13c. Legal Land Description27
 - 13d. Proximity to Residences and Potentially Affected Communities39
 - 13e. Proximity to Indigenous Lands39
 - 13f. Proximity to Federal Lands39
 - 14. Description of the Physical and Biological Environment39
 - 15. Description of the Health, Social and Economic Context.....43
- Part D: Federal, Provincial, Territorial, Indigenous and Municipal Involvement 56**
 - 16. Potential Federal Financial Support56
 - 17. Federal Lands that May Be Used for the Project.....56
 - 18. Involvement of Federal Authorities and Other Jurisdictions57
- Part E: Potential Effects to the Project 61**
 - 19. Changes to the Environment under Federal Legislation61
 - 20. Changes to the Environment on Federal Lands and Elsewhere67

21. Changes to Indigenous Physical and Cultural Heritage, Traditional Land Use, or Archaeology	74
22. Changes to Indigenous Health, Social or Economic Conditions	74
23. Greenhouse Gas Emissions	81
24. Types of Waste and Emissions	84
Conclusion	88

LIST OF FIGURES

Figure 1 Scoot/Airboat	2
Figure 2 Georgina Island Fixed Link Study Area	3
Figure 3 Georgina Island Land Ownership (2007).....	29
Figure 4 Georgina Island Land Use Plan.....	30
Figure 5 GIFN Population by Age (Statistics Canada, 2016).....	44
Figure 6 GIFN Population Over Time (1996-2016) (Statistics Canada, 2016; Statistics Canada, 2012)	46
Figure 7 GIFN Employment by Industry (2016) (Statistics Canada, 2016).....	49

LIST OF TABLES

Table 1 Summary of Regulatory Agency Consultation	4
Table 2 Summary of Public and Community Interest Group Consultation	8
Table 3 Government Agencies, Public and Community Organizations Future Engagement Schedule.....	12
Table 4 Summary of Community Engagement.....	14
Table 5 Summary of Indigenous Engagement	17
Table 6 Indigenous Communities Future Engagement Schedule	19
Table 7 Fixed Link Project Schedule Summary	24
Table 8 Legal Land Description.....	31
Table 9 Population by Age for GIFN.....	44
Table 10 Chippewas of Georgina Island Registered Population.....	45
Table 11 Population by Sex for GIFN.....	46
Table 12 Total Ferry Passenger Vehicle Trips (2009-2019)	47
Table 13 Level of Education for GIFN	47
Table 14 Labour Force Status for GIFN	48
Table 15 Income by Sex for GIFN.....	49
Table 16 Total Income Groups in 2016 for GIFN.....	50
Table 17 List of Agencies That Have Been Consulted for the Fixed Link Project.....	57
Table 18 Changes to the Environment under Federal Legislation – Effects and Mitigation Measures	61
Table 19 Changes to the Environment under Federal Legislation – Effects and Mitigation Measures	67
Table 20 Potential Effects of the Project on Indigenous, physical, and cultural heritage.....	74

Table 21 Potential Health and Socioeconomic Effects of the Project.....	75
Table 22 List of Project Benefits to Indigenous Peoples of Canada.....	77
Table 23 Values Used in GHG Savings Estimation for Proposed Fixed Link Options.....	82
Table 24 GHG Emission Calculations – Comparative Values.....	83
Table 25 Summary of Waste Sources.....	84
Table 26 Summary of Emissions Sources.....	87

ABBREVIATIONS

Abbreviation	Definition
ANSI	Areas of Natural and Scientific Interest
CIB	Canada Infrastructure Bank
CIPS	Cambium Indigenous Professional Services
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CNWA	<i>Canadian Navigable Waters Act</i>
DDC	Drone Delivery Canada Corporation
DFO	Fisheries and Oceans Canada
DPD	Detailed Project Description
EASR	Environmental Activity and Sector Registry
EC	Electrical conductivity
ECA	Environmental Compliance Approval
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
END	Endangered
EPA	<i>Environmental Protection Act</i>
ESA	Environmental Site Assessment
ESDC	Employment and Social Development Canada
FAA	<i>Fisheries Act</i> Authorization
GBA	Gender Based Analysis
GHG	Greenhouse Gas
GIFL	Georgina Island Fixed Link
GIFN	Chippewas of Georgina Island First Nation
GTA	Greater Toronto Area

Abbreviation	Definition
hHa	Hectare
IAA	<i>Impact Assessment Act</i>
IAAC	Impact Assessment Agency of Canada
IPD	Initial Project Description
ISC	Indigenous Services Canada
ISET	Indigenous Skills and Employment Training
LIO	Land Information Ontario
LSFAU	Lake Simcoe Watershed
LSRCA	Lake Simcoe Region Conservation Authority
MBCA	<i>Migratory Birds Convention Act, 1994</i>
MECP	Ministry of the Environment, Conservation and Parks
MNO	Métis Nation of Ontario
MOU	Memorandum of Understanding
MP	Member of Parliament
MPP	Member of Provincial Parliament
MTO	Ministry of Transportation Ontario
NDMNRF	Ministry of Northern Development, Mines, Natural Resources and Forestry
NFP	Non-For-Profit
NHIC	Natural Heritage Information Centre
NRCan	Natural Resources Canada
PAHs	Polycyclic Aromatic Hydrocarbons
PHCs	Petroleum Hydrocarbons
PPE	Personal Protection Equipment
PSW	Provincially Significant Wetland

Abbreviation	Definition
PTTW	Permit to Take Water
RLSC	Rescue Lake Simcoe Coalition
ROW	Right-of-way
RSFD	Resource Stewardship and Facility Development
SACC	Strategic Assessment of Climate Change
SAR	Species at Risk
SARA	<i>Species at Risk Act</i>
SPF	Skills and Partnership Fund
SUV	Sport-Utility Vehicles
SWH	Significant Wildlife Habitat
TC	Transport Canada
THR	Threatened
VOC	Volatile Organic Compounds
VPR	Voluntary Project Review
WAGE	Women and Gender Equality
WSP	WSP Canada Inc.

PART A: GENERAL INFORMATION

1. PROJECT NAME

Project Name:	Georgina Island Fixed Link
Type/Sector:	Transportation (Bridge and Causeway)
Proposed Location:	Georgina Island, Ontario
Municipal Location:	Town of Georgina, Regional Municipality of York (Lower Tier/ Upper Tier)

2. PROPONENT INFORMATION

Chippewas of Georgina Island First Nation (GIFN) Communication Protocol:

Mail/e-mail:	All correspondence to be sent to the Proponent Contact Copy the Primary Representative Contact
Telephone:	Direct all inquires to the Proponent Contact

Proponent:

Chief Donna Big Canoe
Chippewas of Georgina Island First Nation
(GIFN)

Proponent Contact

Sue Olguin
Senior Project Manager
WSP Canada Inc.
100 Commerce Valley Drive West,
Thornhill, ON, L3T OA1
Phone: 647-963-0257
E-mail: sue.olguin@wsp.com

Primary Representative Contact

Mike Jacobs
Chief Executive Officer
Cambium Indigenous Professional Services
1109 Mississauga Street
Curve Lake First Nation, ON, K0L 1P0
Phone: (705) 872-7244
Email: m.jacobs@indigenouseaware.com

Project Overview

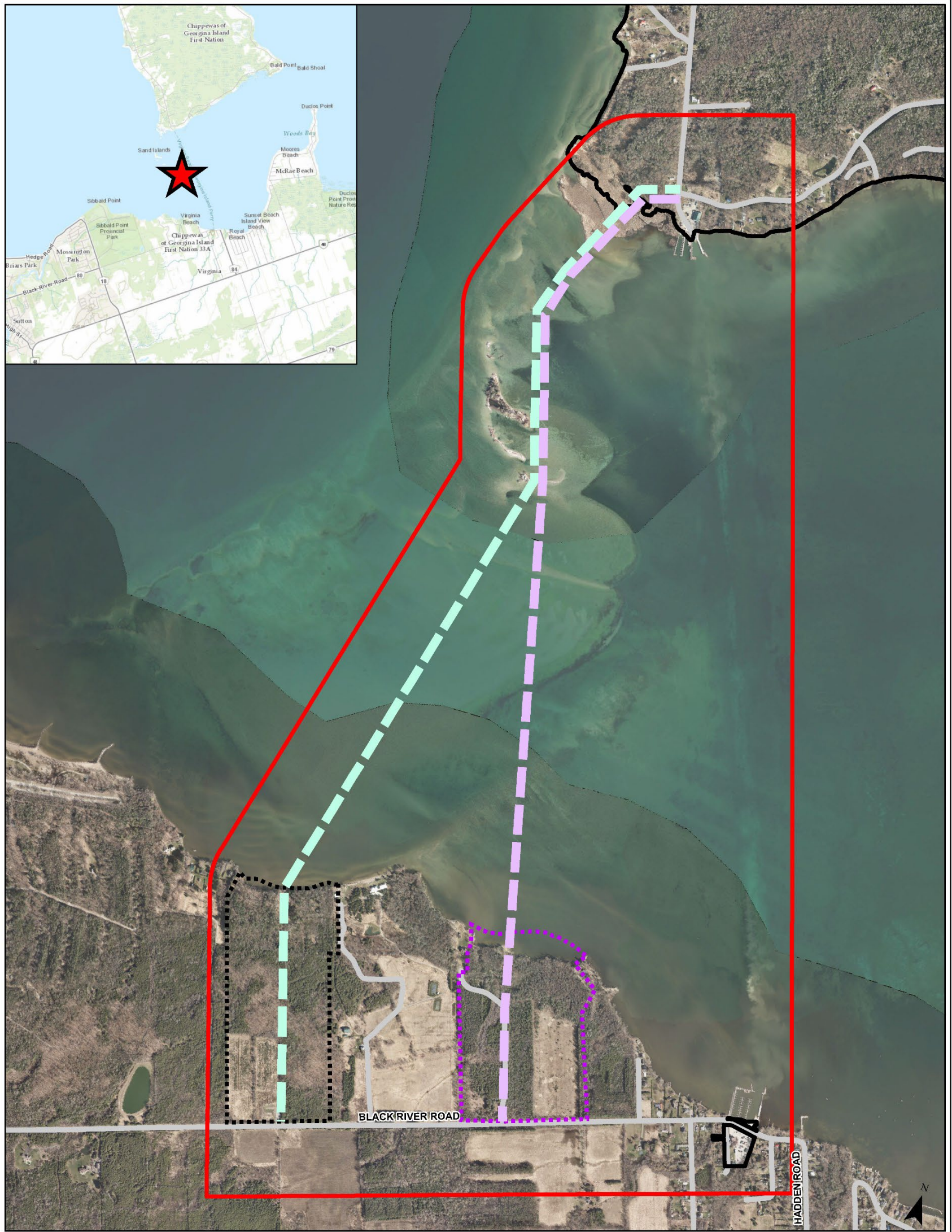
The Chippewas of Georgina Island First Nation (GIFN) is proposing a fixed link (i.e., a bridge and causeway) to connect Georgina Island to the mainland (the Project). Currently, Georgina Island is accessible solely by the Aazhaawe Ferry during the spring, summer, and autumn months of the year, and by scoot/airboat (**Figure 1**) or ice road during the winter months.



Figure 1 Scoot/Airboat

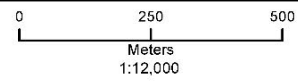
The Project is proposed to solve a number of issues the GIFN currently face with regard to accessing the mainland. These include: a dated ferry system nearing the end of its service life, lack of viable alternative transportation options, and health and safety concerns. Current methods to access the island are not sustainable and have caused threats to the health and safety of GIFN community members and other island inhabitants' (i.e., non-GIFN cottagers). As depicted on **Figure 2**, the proposed Project is considering alternatives that include a bridge and causeway that will provide access from the mainland to the southwest shore of Georgina Island, crossing a distance of approximately 2,800 metres (m). On the mainland, access to the bridge would be from Black River Road. The bridge would span a portion of Lake Simcoe leading to the Sand Islands, where a causeway link would connect to Georgina Island with access to Chief Joseph Snake Road.

The Initial Project Description (IPD) documents the studies, findings, and consultation and engagement undertaken to date as part of the planning process for the Project.



- Legend**
- Study Area 2022
 - Other GIFN Property
 - Bayvista Property
 - Reserve Lands
 - Proposed Alignment 1
 - Proposed Alignment 2
 - Road

**GEORGINA ISLAND FIXED LINK
Figure 2
Study Area**



Project No.: 19M-01346-00
Date Created: 20/05/2020
Date Modified: January 26, 2022
Coordinate System: NAD 1983 UTM Zone 17N
Source: York Region, GeoHub (LIO), ESRI Basemaps, WSP



Figure 2 Georgina Island Fixed Link Study Area

3. SUMMARY OF PUBLIC AND REGULATORY ENGAGEMENT

Regulatory and Government Agency Consultation

Consultation with regulatory and government agencies was initiated by the proponent in the fall of 2020 and was conducted with a number of federal, provincial, and municipal agencies that have jurisdiction over portions of the proposed Project location. A summary of feedback collected during the various agency consultation meetings to date, and how the Project Team will be addressing the feedback, is included in **Table 1**.

Table 1 Summary of Regulatory Agency Consultation

Agency	Date	Purpose	Issues Raised	How they were/will be addressed
Canada Infrastructure Bank (CIB) and Impact Assessment Agency of Canada (IAAC)	October 5, 2020	To have an introductory Project meeting. The outcome of this meeting was the identification that the Project falls under the <i>Physical Activities Regulations</i> designated project list under the federal <i>Impact Assessment Act</i> (IAA).	None.	Not applicable.
Ministry of the Environment, Conservation and Parks (MECP)	March 9, 2021	To determine what is required for the provincial environmental assessment (EA) process, if a provincial EA is required.	MECP noted that the proponent will need to explore potential Class EAs that could apply, and to share the analysis of the potential applicability of these Class EA processes with the MECP. These could include Municipal Class EA and the Ministry of Northern Development, Mines, Natural Resources and Forestry's (NDMNRF)	A meeting was held with NDMNRF on May 26, 2021, to discuss the applicability of the NDMNRF Class EA (see below).

Agency	Date	Purpose	Issues Raised	How they were/will be addressed
			Resource Stewardship and Facility Development (RSFD) Class EA.	
			MECP noted that, if needed, any decision to follow a harmonized federal-provincial impact assessment/EA process requires Minister approval; however, in any EA process MECP would support principles of efficient and streamlined review to minimize duplication.	A meeting was held with IAAC on May 12, 2021, to discuss the need for a harmonized federal-provincial process (see below).
			MECP noted that the Town of Georgina, the Regional Municipality of York, and the Lake Simcoe Region Conservation Authority (LSRCA) will need to be engaged and consulted throughout the course of the Project as a development application will be required and LSRCA is the shoreline regulator.	Meetings with the Town of Georgina and LSRCA were held to introduce the Project and gather feedback.
IAAC and MECP	May 12, 2021	To discuss the need for coordinating federal-provincial impact assessment/EA	MECP confirmed that a provincial Individual EA will likely not be required; however, certain Class EA processes may apply. Based on current understanding of	A meeting was held with NDMNRF on May 26, 2021, to discuss the applicability of NDMNRF Class EA (see below).

Agency	Date	Purpose	Issues Raised	How they were/will be addressed
		requirements for the Project.	the Project, a Municipal Class EA is not applicable; however, an NDMNRF Class EA may apply.	
Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF)	May 26, 2021	To discuss EA processes and jurisdictions, including potential works on the shorelands and lake bottom under NDMNRF jurisdiction.	<p>NDMNRF confirmed that there is overlap in the requirements between NDMNRF and the IAAC impact assessment process. An integrated approach with IAAC, in theory, is agreed upon.</p> <p>NDMNRF recommended notifying it of any potential permitting requirements in the early planning stages, not at the end of the process, which causes delays.</p>	The Project Team and GIFN will circulate relevant project information to the NDMNRF as early as possible and will continue engaging with the Ministry throughout the course of the Project.
Lake Simcoe Region Conservation Authority (LSRCA)	August 11, 2021	To provide an introduction to the Project and overview on the current status.	<p>LSRCA noted that the portion of Lake Simcoe within the study area has various hydromorphological hazards and is hydromorphologically sensitive, yet during the presentation the Project Team did not mention whether a hydromorphology study is being conducted.</p> <p>LSRCA recommended that these risks/hazards be highlighted throughout the</p>	<p>The Project Team confirmed they are aware of these hazards and concerns, including issues with ice flows and jams, which are quite substantial on the island.</p> <p>The Project Team also confirmed that there is a hydromorphologist and coastal marine engineering studies will be conducted and results of these</p>

Agency	Date	Purpose	Issues Raised	How they were/will be addressed
			environmental assessment and permitting phases.	studies will be included in the DPD.
			LSRCA inquired about how material for the island side of the causeway will be transported, as this section will need to be built prior to the fixed link construction.	The causeway construction and fill requirements will be further studied and specifications for the transport of materials will be developed during detailed design.
LSRCA Board of Directors	September 24, 2021	To provide an overview of the proposed Project and review the timeline dating back to pre- 2008 where discussions were held and federal commitments were made.	None.	Not applicable.

Public and Community Interest Group Engagement

A summary of feedback collected during the meetings with the regional public and community interest groups to date, and how the Project Team will be addressing the feedback, is included in **Table 2**.

Table 2 Summary of Public and Community Interest Group Consultation

Event	Attendance	Date/time	Topics presented	Issues Raised	How they were/ will be addressed
Rescue Lake Simcoe Coalition (RLSC)	1 representative	April 22, 2021	Introduction to the Project, aspects of interest, processes for formal engagement and next steps.	RLSC expressed interest regarding impacts and design aspects of the Project with specific interest on impacts to Lake Simcoe and the Lake Simcoe Watershed.	Formal engagement will be initiated with RLSC to find acceptable mitigation measures and to ensure project changes will protect the lake
Non-for-profit (NFP) Organizations: <ul style="list-style-type: none"> Rescue Lake Simcoe Coalition Carden Field Naturalists South Lake Simcoe Naturalists North Gwillimbury Forest Alliance 	10 representatives	July 22, 2021	Introduction to the Project, including project background and understanding prior to the official IAAC process being initiated.	Inquires about what processes will be used to ensure that the quality of Lake protection will meet that better than what is happening at the Bradford By-Pass.	The GIFN community will be establishing a team of western scientists to complete a two-phase evaluation – one to evaluate the process being used to procure services and the other to ensure any protection measures propose in study design were executed and further mitigations are included in final recommendations to Council All contractors will be required to undertake a GIFN community-based training on the importance of Lake Simcoe

Event	Attendance	Date/time	Topics presented	Issues Raised	How they were/ will be addressed
<ul style="list-style-type: none"> • Lake Simcoe Association • Windfall Ecology Centre • Lake Simcoe Watch • Rivers Alliance, • Sail Georgina • Ontario Water Centre 					to the people of Georgina Island.
Regional Citizens - Open Meeting	61 participants	October 5, 2021	Inform the greater Lake Simcoe community about the Project history, from a First Nation lens, through to the submission of the Draft IPD to the Impact Assessment Agency of Canada (IAAC).	Inquires on whether the bridge portion of the proposed fixed link will have sufficient clearance for boats to still be able to get to either side of the island and mainland, and whether the causeway will cause silting making the water shallower.	This is a consideration that will be explored more as studies begin. It was noted by Sail Georgina ¹ during a previous project meeting that the current depth of the lake does not allow for large vessel navigation as most users of the lake use boats for recreational activities and sustenance (i.e., fishing).

¹ Sail Georgina is a non-profit organisation which primary objective is to promote sailing and safe boating throughout the Town of Georgina Island and sailing community and to represent The Town among other sailing clubs on Lake Simcoe.

Event	Attendance	Date/time	Topics presented	Issues Raised	How they were/ will be addressed
					As evaluation of options continues, these issues will be addressed in more detail.
				Inquiries about the estimated cost of the Project and where funding will be sourced from.	<p>The initial rough order of magnitude costs for the fixed link is \$250 million. This is anticipated to evolve over time as the Project progresses and engineering designs advance.</p> <p>Currently, GIFN Chief and Council are working with the Canada Infrastructure Bank (CIB) for funding.</p> <p>As well, the GIFN has investment funds that would be applied to the Project.</p> <p>Other federal and provincial infrastructure funds will also be sought, as applicable.</p>
				The lifespan of the Aazhaawe Ferry is a concern; however, wondering whether it is possible to make the island a gated community to limit access to outsiders.	The GIFN community has expressed concern about people coming to the island with no intent – meaning that random visits are not preferred. A security and access evaluation will be prepared in spring 2022 to explore the possible options for limiting access through the fixed link. Results of this evaluation will

Event	Attendance	Date/time	Topics presented	Issues Raised	How they were/ will be addressed
					be included in the Detailed Project Description (DPD).
				General concerns about whether the island can withstand increased traffic and whether parking options will be studied.	<p>The island roads are not planned for high traffic volumes or the potential safety requirement of high traffic volumes at the present time.</p> <p>A Traffic Impact Study will be prepared in spring/fall 2022 to analyze potential impacts associated with any projected traffic increases (mainland and island)</p> <p>Parking options will be reviewed during the design phase.</p>
				Inquiries about whether an option for a “greener” icebreaker ferry that can be used all year long was explored.	A Health Impact Assessment has been completed that identifies the fixed link as the only solution to effectively meet the health and safety issues currently facing the GIFN community.

Future Engagement with Regulatory Agencies and the Public

The GIFN Chief and Council recognize that additional consultation with government agencies and the public will be required for portions of the Project that are not solely located on reserve lands. As a result, the Fixed Link Engagement Plan (**Appendix E** of the IPD) was finalized and approved by Council in February 2022, for implementation. Regularly scheduled engagement sessions will be provided as part of the GIFN and greater Lake Simcoe community consultation. The frequency of these dates has been determined through initial discussions and presentations by the Georgina Island Fixed Link (GIFL) Secretariat Team, as outlined in **Table 3** below.

Table 3 Government Agencies, Public and Community Organizations Future Engagement Schedule

Engagement Stakeholders	Frequency	Notes
Government Agencies	<ul style="list-style-type: none"> • Updates are to be offered on a quarterly basis, depending on Project progress and need. • Presentations to government agencies will be conducted as desired (either when desired or according to a fixed schedule). 	<ul style="list-style-type: none"> • GIFL Secretariat has opened a line of communication through a Project website (www.gifixedlink.com), email contact and presentations.
Public and GIFN and greater Lake Simcoe Community Groups	<ul style="list-style-type: none"> • Public presentations will be conducted to solicit input regarding potential impacts during the impact assessment process, as required. • Organizations currently protecting Lake Simcoe may request presentations to their respective groups given the shared interest with the GIFN community of Georgina Island. • A website has been developed to share information, reports, and updates on an ongoing, real-time basis. <ul style="list-style-type: none"> ○ General public can subscribe for updates • Facebook pages has been developed to support general public engagement. 	<ul style="list-style-type: none"> • GIFL Secretariat has opened a line of communication through the website, email contact and presentations.

4. INDIGENOUS ENGAGEMENT

The Government of Canada has a duty to consult, and where appropriate, accommodate Indigenous groups when it considers conduct that might adversely impact potential or established Aboriginal or treaty rights. The nature of this Project will trigger this obligation of the federal government. As the Project proponent, GIFN will need to execute the Fixed Link Engagement Plan to help ensure that the Project does not impact GIFN right, or the rights of other Nations.

The GIFN is signatory to the Williams Treaties and its peoples are recognized as Indigenous people of Canada. As such, the GIFN will respect the Nation-to-Nation relationship with the federal government of Canada and request the same from the federal government of Canada. This relationship is documented by “Characteristics of a Nation-to-Nation Relationship - Discussion Paper (February 2017)” - Submitted to the Institute on Governance (Marcia Nickerson).

Indigenous communities considered to have real or asserted interactions with the proposed study area for the Project will be engaged. As the Duty to Consult and Accommodate requirement is the responsibility of the federal government, the Impact Assessment Agency of Canada (IAAC) provided a letter on February 26, 2021, that identified Indigenous groups that may be impacted by the Project. IAAC identified the Indigenous groups listed below based on information available to the Crown from the Aboriginal and Treaty Rights Information System, and from publicly available information. The following constitutes the anticipated initial stakeholder list:

- Alderville First Nation
- Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama
- Curve Lake First Nation
- Hiawatha First Nation
- Huron Wendat Nation
- Métis Nation of Ontario – Region 7
- Mississaugas of Scugog Island First Nation

GIFN Community Consultation

Consultation and engagement has been an important part of the Project. Engagement was initiated by the proponent (GIFN Chief and Council) in 2019 and GIFN completed additional consultations with the GIFN community and the greater Lake Simcoe community for the Project in 2020 and 2021, as part of the Project planning.

A summary of feedback collected during the various GIFN community consultation events to date, and how the Project Team will be addressing feedback, is included in **Table 4**.

Table 4 Summary of Community Engagement

Event	Attendance	Date/time	Topics presented	Issues Raised	How they were/ will be addressed
GIFN Community Holiday Bazaar	60 participants	December 3, 2019	Project constraints and opportunities, as well as schedule and Project study area map.	No particular concerns were raised during the holiday bazaar, as it was intended to advertise the upcoming Community Visioning Workshop.	N/A
GIFN Community Visioning Workshop	31 participants	January 13, 2020	Potential positives, objections, enhancements, and potential mitigation measures related to the Project.	Concerns regarding the risks associated with travel across the lake, particularly during the freeze-up and spring thaw periods.	A fixed link will provide safe travel for members and visitors, improve convenient access to fresh food and have a substantial benefit to GIFN community health by giving educators, school workers and emergency services / healthcare providers more reliable access to the island.
				The topic of speed limits and congestion on the island associated with summer cottage travellers as a result of the fixed link is a concern.	A Transportation Impact Study will be prepared to analyze potential traffic impacts and identify mitigation measures for issues such as congestion and speeds.
				Water quality, wildlife and natural areas were of most importance to participants, in addition to other environmental	A detailed Natural Environment and Ecological Impact Assessment Study will be prepared in spring/fall 2022 to analyze potential impacts, if

Event	Attendance	Date/time	Topics presented	Issues Raised	How they were/ will be addressed
				<p>concerns associated with saline freshwater, services using the fixed link for transportation (e.g., for natural gas supply) , and where and when to fish.</p> <p>Concerns related to the perceived additional development pressure that might result from the fixed link, for which the GIFN community would not be prepared, as the Land Use Plan has not been ratified.</p>	<p>any, associated with the Project. The study will also identify potential mitigation measures, monitoring and follow up efforts, if needed. Results of this study will be included in the DPD.</p> <p>A land use desktop review will be completed to better understand any potential development pressures on the island due to the fixed link. Results of this study will be included in the DPD.</p>
GIFN Youth Workshop	11 participants	November 9, 2021	General project overview and Questions and Answers portion to respond to GIFN youths' questions/concerns about the Project.	<p>General concerns related to the following:</p> <ul style="list-style-type: none"> • Potential environmental effects due to the Project. • Increased access to the island by cottagers all year round. • Increased development that may happen after things are easier to 	<p>A number of technical and environmental studies will be conducted during spring/fall 2022 to analyze potential impacts associated with the Project, and to identify appropriate mitigation.</p> <p>A complete list of studies is included in Section 5.</p>

Event	Attendance	Date/time	Topics presented	Issues Raised	How they were/ will be addressed
				<p>bring over to the island.</p> <ul style="list-style-type: none"> • Security of the GIFN community. • Population may grow with cottagers. • Putting the GIFN community in debt due to project costs. • Waste of time and effort if the studies do not go as planned. • Job loss due to loss of the ferry system. 	
				<p>A question was raised about affecting boat traffic through the channel at the southwest points of Georgina Island.</p>	<p>The participant from Sail Georgina provided insight that safe passage for larger vessels is not possible through that channel. As long as bridge height meets the needs of the smaller vessels able to navigate that passage, bridge height should not affect most recreational boating enthusiasts.</p>

Consultation with Other Indigenous Communities and Organizations

A summary of feedback collected during the Indigenous consultation and engagement meetings to date, and how the Project Team will be addressing the feedback, is included in **Table 5** below.

Table 5 Summary of Indigenous Engagement

Indigenous Group	Attendance	Date	Initiated By	Issues Raised	How they were/will be addressed
<p>Williams Treaties First Nations:</p> <ul style="list-style-type: none"> • Curve Lake First Nation • Hiawatha First Nation • Alderville First Nation • Beausoleil First Nation • Chippewas of Georgina Island First Nation • Chippewas of Rama First Nation • Mississaugas of Scugog Island First Nation 	8 representatives	July 15, 2021	GIFN	Overall, the communities were in support of the Project, but shared a general concern about potential environmental impacts associated that may occur as a result of the Project.	The Project Team will continue to advance the environmental impact assessment studies to identify the potential impacts and propose mitigation and monitoring measures where needed.
Métis Nation of Ontario (MNO)	6 representatives	August 12, 2021	GIFN	Overall, the Project was received favourably, particularly with regard to the economic benefit this Project could have to Georgina Island, the Indigenous community,	None required.

Indigenous Group	Attendance	Date	Initiated By	Issues Raised	How they were/will be addressed
				and the regional economy.	
Huron Wendat First Nation	2 representatives	November 30, 2021	GIFN	<p>Primary concerns pertain to archaeology with environmental and technical issues outside of archaeology entrusted to GIFN and the Williams Treaty First Nations as part of the environmental impact evaluation.</p> <p>The First Nation also noted that they believe that GIFN and their Williams Treaties counterparts will take the required environmental care of the site and would trust that stewardship to the Proponent and their Treaty allies.</p>	<p>The Huron Wendat Nation will be included in archaeology studies as a relevant Indigenous community and results of the studies, communications and policies prepared as part of this Project will be shared with the First Nation. The GIFN acknowledge this and will consider Yändata' to complete the work on behalf of all of the Indigenous nations interest in this area.</p> <p>Aside from that, the Huron Wendat will be kept informed of progress on other issues regarding the Project.</p>

Future Engagement with Indigenous Communities

The GIFN Chief and Council recognize that additional consultation with Indigenous leaders will be required for many portions of the Project that are not solely located on reserve lands. As a result, the Fixed Link Engagement Plan (**Appendix E** of the IPD) was finalized and approved by Council in February 2022 for implementation. Regularly scheduled engagement sessions will be provided. The frequency of these dates has been determined through initial discussions and presentations by the GIFL Secretariat Team, as outlined in **Table 6** below.

Table 6 Indigenous Communities Future Engagement Schedule

Engagement Stakeholders	Frequency	Notes
GIFN Members	<ul style="list-style-type: none"> GIFN community update meetings on a quarterly basis. Specific engagements on community segments and populations, reports, community input will be scheduled as required. 	<ul style="list-style-type: none"> GIFN community meetings will be held virtually or in person. GIFN community will be given notice of opportunities for project-based inputs as they arise through project development.
Williams Treaties Allies	<ul style="list-style-type: none"> Updates to Williams Treaties Chiefs will be provided at scheduled meetings of the Williams Treaties Communities. Formal duty to consult requirements to be developed on a community-by-community basis. 	<ul style="list-style-type: none"> The Chiefs are in consistent contact on a regular basis and letters of support from the Project have been provided. If required, GIFN will request special or ad hoc meetings with Williams Treaty First Nations Chiefs.
Indigenous Leadership	<ul style="list-style-type: none"> Updates are to be offered on a quarterly basis, depending on Project progress and need. Presentations will be conducted as desired (either when desired or according to a fixed schedule). Duty to consult activities will be conducted by the GIFN community and IAAC for the Huron 	<ul style="list-style-type: none"> GIFL Secretariat has opened a line of communication through a Project website (www.gifixedlink.com), email contact and presentations.

Engagement Stakeholders	Frequency	Notes
	Wendat Confederacy and the Métis Nation of Ontario (MNO).	

5. OTHER RELEVANT STUDIES AND PLANS

Various background studies have been completed to provide GIFN with an understanding of the physical, biological, and socio-economic environment within the Project's study area. These studies include a Preliminary Evaluation of Engineering and Environmental Alternatives, completed in 2008, which informed the Project Plan that was completed in 2021. In addition, a Fixed Link Socio-Economic Study was completed in 2019, which described the health, social and economic context in the region where the Project is located, based on information that is available to the public or derived from any engagement undertaken.

In addition, a number of background technical memos were completed in 2021, based on desktop research and analyses. Each of these memos included a data gap analysis and provided an overview of study area existing conditions. These memos include:

- Environmental Planning Screening Memo;
- Ecology Screening Memo;
- Transportation and Traffic Technical Memo;
- Civil Roads Technical Memo;
- Hydrogeological Screening Memo;
- Preliminary Review of Geotechnical Conditions Technical Memo;
- Site Contamination Technical Memo;
- Archaeology Screening Memo;
- Cultural Heritage Screening Memo; and
- Air Quality, Greenhouse Gas and Noise Screening Memo.

Detailed impact assessment studies will be completed during the fall of 2022, and the results of each study will be included in a Detailed Project Description (DPD) to be submitted to IAAC. Where appropriate, specific contingency or management plans will also be prepared for implementation as part of the overall Project environmental management.

These studies will include:

- Air Quality Existing Conditions and Impact Assessment Study;
- Noise Existing Conditions and Impact Assessment Study;
- Natural Environment Impact Study, which will include a summary of results from the following surveys:
 - Terrestrial Ecology and Wildlife Existing Conditions Report;
 - Aquatic Ecology Existing Conditions Report;
 - Arborist Report;
 - Fish and Fish Habitat Survey;
 - Breeding Bird Surveys;
 - Ecological Land Classification (ELC) and Botanical Inventories; and
 - Species at Risk (SAR) Assessment.
- Surface Water Quality Impact Study;
- Transportation and Traffic Impact Study;

- Erosion and Sediment Control Plan;
- Stormwater Management Report;
- Geotechnical Investigation;
- Coastal Engineering Plan, which include a summary of the results of the following surveys:
 - On Land Geophysical Survey;
 - Marine Geophysical Survey;
 - Magnetometer Survey; and
 - Bathymetry Survey.
- Hydrogeological Baseline Conditions and Impact Assessment Report;
- Phase I and II Environmental Site Assessments;
- Accidental Spills and Malfunctions Assessment;
- Stage 1 Archaeological Assessment; and
- Cultural Heritage Existing Conditions and Impact Assessment Study.

6. SECTION 95 STRATEGIC ASSESSMENTS

The only relevant strategic assessment for the Project is the Strategic Assessment of Climate Change (SACC)(ECCC 2020²). Under SACC, any project undergoing a federal impact assessment will be required to provide an estimate of the Project’s GHG emissions. The proposed bridge and causeway GHG emissions have been estimated to result in a decrease of 15% and shown to be less than the expected GHG emissions from the current ferry operations; thus, supporting the goals of Canada’s Climate Action Plan. Further information is provided in **Section 23**.

No other strategic environmental assessments have been completed in relation to the project or study areas.

² ECCC. 2020. Strategic Assessment of Climate Change. Accessed March 2022. Available at <https://www.canada.ca/en/services/environment/conservation/assessments/strategic-assessments/climate-change.html>

PART B: PROJECT INFORMATION

7. PURPOSE AND NEED FOR THE PROJECT

The GIFN community currently relies on the Aazhaawe Ferry, which operates from the mainland to Georgina Island and has been funded by Indigenous Services Canada (ISC) to date. The ferry can carry up to 18 cars and there is cabin space for 50 walk-on passengers. The Aazhaawe Ferry's operational life cycle is coming to an end and the current transportation options have caused several health and safety issues for the GIFN community. Refer to **Section 15** or further information.

8. PROJECT DESIGNATION PER THE PHYSICAL ACTIVITIES REGULATION

Clause 50 of the Physical Activities Regulations under the IAA provides a description of the proposed undertaking and identifies the rationale for why it is a designated project. Clause 50 includes the "construction, operation, decommissioning and abandonment of a new permanent causeway with a continuous length of 400 m or more through navigable water."

Based on preliminary engineering studies and investigations, and based on the fact that the fixed link is proposed to traverse Lake Simcoe (a navigable body of water) with a permanent causeway of greater than 400 m, the fixed link is a designated project by definition.

9. PROJECT COMPONENTS AND ACTIVITIES

The following permanent and temporary structures, and related activities, are expected to be required to construct the fixed link connecting Georgina Island to the mainland:

Permanent structures:

- a)** Bridge with piers and foundations in the water;
- b)** Causeway at both ends of the bridge to the shore including sheet piles walls and backfill or rockfill in shallow areas;
- c)** Culverts may be required below the causeway to allow water movement; and
- d)** Re-design of access roads near the existing ferry location.

Temporary structures:

- e)** Temporary cofferdams at each pier for the construction of foundation and piers;
- f)** Temporary shoring for construction of culverts and causeways; and
- g)** Temporary barges may be required during construction.

Roadwork Components and Activities

A general list of physical activities for the roadworks is as follows:

- Earthworks
 - Clearing trees and grubbing;
 - Rock clearing, to be confirmed with geotechnical report;
 - Protect or relocate existing electrical poles and other utilities;
 - Erosion control (e.g., silt fences, sediment pond);
 - Topsoil stripping and disposal and,

- Import soil to fill:
 - Cut to fill: approximate preliminary estimate of 650 m³; and,
 - Import to fill: approximate preliminary estimate of 10,400 m³.
- Road construction
 - Rough grading;
 - Right-of-way (ROW) configuration (approximately 18 m wide), including ditch, shoulder, and stormwater management;
 - Import granular (e.g., for pavement structure and asphalt);
 - Intersection works at Black River Road and Bear Road (e.g., widening, turning lane, stop sign/controls, other signage, and pavement markings); and,
 - Culvert for existing ditches;
 - Fine grading and restorations of disturbed areas with topsoil, seed/sod, additional plantings as deemed appropriate for landscape and ecology
- Utilities
 - Electrical/streetlighting/transformers/overhead lines.

In addition to the roadworks on the mainland and island, there are much larger efforts required for the two causeway segments to ramp the road on each approach to the bridge over the water crossing. A preliminary estimate of the total height of the bridge crossing above the water surface at the road centreline at top of asphalt would be approximately 28 m above the water surface. This height would allow for the pier height above the water to be 20 m and the bridge structure thickness for the balance.

Bridge and Causeway Components and Activities

A high-level list of activities expected for the construction of the fixed link includes the following:

- Marine survey and confirmation of subsurface geotechnical considerations for fill to be placed;
- Earthworks
 - Construction of foundations and piers will require a cofferdam around the foundation cap;
 - Dewatering from inside the cofferdam to the bottom of the concrete cap;
 - Sourcing and trucking of suitable fill to mainland handling area for subsequent loading onto the barges;
- Barge operations in the water from mainland to both causeway construction areas; and,
- Once ready, extending all roadworks construction activities as listed above on both causeways to each end of the bridge segment of the water crossing.

Temporary structures relating to the construction may include trailers, sheds, and bins for various phases and staging of construction. Also, temporary moorings and docks related to construction in and on the water are expected. No permanent structures are associated with the road itself, other than the bridge and structural elements (i.e., piers, etc.).

10. MAXIMUM PRODUCTION CAPACITY

IAAC's guidance for an IPD requests an estimate of maximum production capacity of the Project and a description of the production processes to be used; however, the guidance indicates that this information may not be relevant to all project types, which is the case for the fixed link as it is not creating new production processes (unlike a new mine or energy generation project).

The proposed bridge and causeway will provide a new roadway link connecting local roads on Georgina Island to the mainland. Traffic capacity on the fixed link will be impacted by traffic discharge rates on both ends. Given its connections, a lane capacity of a maximum of 400 vehicles per hour is projected, akin to the typical lane capacity for a local road.

In addition, based on the findings of the Project Visioning workshop and other outreach activities, it is proposed that the bridge side of the link should have enhanced security and controlled access to restrict access to the island to GIFN community members, non-GIFN leaseholders and others by permission. The method of entrance control is yet to be determined, but could be similar to a guard booth. The entry control would slow down the traffic arrival rates and thus reduce the traffic demand per hour, compared to a free-flow traffic entry to the bridge. The Project design is envisioned to allow the regular passage of vehicles up to Class B (e.g., school purposes bus), to be confirmed through further study.

11. ANTICIPATED SCHEDULE

The Project schedule assumes that the full federal impact assessment process may be required for the Project; thus, the project team prepared a schedule that goes through the four phases of the federal impact assessment process, as outlined in **Table 7 (Appendix D)** of the IPD). This schedule allows for the Project to proceed with permitting and approvals, and ultimately construction starting in mid 2026. Construction is assumed to occur from mid 2026 to the end of 2027. Decommissioning or abandonment are not anticipated for the proposed fixed link.

Table 7 Fixed Link Project Schedule Summary

Phase	Start	End
IAA Phase 1: Planning	Mid 2022	Early 2023
IAA Phase 2: Impact Statement	Early 2025	2025
IAA Phase 3: Impact Assessment	Early 2025	Late 2025
IAA Phase 4: Decision Making	Early 2026	Mid 2026
Construction	Mid 2026	Late 2027
Operation	2028	N/A
Decommissioning and Abandonment	Not anticipated	

Alternatively, IAAC may determine that no impact assessment is required. A “no impact assessment” decision would allow the Project to proceed with permitting and other approvals, and ultimately construction starting in mid-late 2023 and concluding in 2026. In making the decision regarding the need for a federal impact assessment, IAAC will consider the following factors as per section 16 of the *Impact Assessment Act* (IAA):

- The IPD, the proponent's Response to the Summary of Issues provided by IAAC, and the DPD;

- The possible adverse effects of the Project that are within federal jurisdiction or the adverse effects that are directly linked or necessarily incidental to the exercise of federal power, duty or function;
- Any adverse impact the Project may have on the rights of Indigenous peoples of Canada;
- Any comments received from the public, any jurisdiction or Indigenous communities;
- Any relevant regional or strategic assessment;
- Any study that is conducted or plan that is prepared by a provincial, territorial, and Indigenous jurisdiction (in respect of a region in which the Project is located) and that has been provided to IAAC; and,
- Any other factor that IAAC considers relevant.

12. PROJECT ALTERNATIVES

Alternative Means

Alternative means are the various technically and economically feasible ways, including through the use of best available technologies, which would allow a designated project and its physical activities to be carried out. The GIFN Leadership and Community have already identified a preferred alternative solution – a combination of a bridge and causeway. The WSP technical team has worked with GIFN to draft feasible alternative designs that can be used in the EA and have done so for early scoping, understanding and identification of feasible funding options. The range of alternative designs are based on three preferred routes or options for a fixed link, including:

Option #1 – A Bridge and Causeway connecting to Duclos Point on the mainland side;

Option #2 – A Bridge and Causeway via the existing ferry route between Aazhaawe Ferry Landing and Virginia Beach Marina. Approximately 2,800 m in length, this option originates from Georgina Island and would terminate at a GIFN property to the West of Bay Vista; and

Option #3 – A Bridge and Causeway envisages the Link on the shoreline between a location near the Study route and Lee Farm Lane on the mainline side connected to the island via the Sand Islands with a connection to Chief Joseph Snake Road – possibly at the existing intersection of Chief Joseph Snake Road and Bear Road. Approximately 2,800 m in length, the origin of the fixed link on the mainland side continues to be examined and will be confirmed in the DPD, once developed. For the purpose of this IPD, two alignments were developed. Both originate from Georgina Island and terminate on a GIFN owned property on the mainland, as depicted on **Figure 2**. A preferred alignment will be determined based on the detailed impact assessment studies listed in **Section 5** and will be included in the DPD.

Alternatives to the Project

Alternatives to the Project are functionally different, yet technically and economically feasible, ways to meet the need for the Project and achieve its purpose. Alternatives to a fixed link were developed through studies and preliminary analyses with GIFN, and presented in the Proposed Fixed Link Study – A Preliminary Evaluation of Engineering and Environmental Alternatives (2008) prepared by Neegan Burnside. The alternatives were presented to the GIFN community,

compared to the other alternatives and have been considered for the purpose of the EA planning process. The potential alternatives included:

- a) Do Nothing
- b) Improve Existing Ferry and Ice Road Operations
- c) A Bridge
- d) A Combination of a Bridge and Causeway – *preferred alternative*

The alternative of a combination of a bridge and causeway was identified as the preferred option as it would dramatically improve the safety of accessing the island from the mainland during winter months. Constructing a causeway along the Sand Islands takes advantage of local geography to reduce the length of the in-water bridge, therefore leading to fewer environmental impacts and greater cost-savings than using a bridge alone.

PART C: LOCATION INFORMATION AND CONTEXT

13A. GEOGRAPHIC COORDINATES

The following lists the spatial boundary coordinates of the study area limits:

- North: 44° 21' 23" N; 79° 18' 16" W
- Northeast: 44° 21' 37" N; 79° 17' 36" W
- Northwest: 44° 20' 48" N; 79° 18' 40" W
- West: 44° 20' 09" N; 79° 19' 00" W
- Southeast: 44° 19' 31" N; 79° 16' 55" W
- Southwest: 44° 18' 51" N; 79° 19' 46" W

The study area (**Figure 2**) encompasses the southwest tip of Georgina Island, and a mainland area from just east of Sibbald Point Provincial Park, to just south of Black River Road, and east to Hadden Road. The study area also includes the waters of Lake Simcoe between the southwest tip of Georgina Island and the mainland.

13B. SITE MAPS

The GIFN community's preferred alternative alignment for Option #3 is a combination of a bridge and causeway (light green route in **Figure 2**) that will provide access from the southwest shore of Georgina Island to the mainland.

13C. LEGAL LAND DESCRIPTION

The GIFN has three reserves, with the main one being the Chippewas of Georgina Island First Nation Indian Reserve ("Georgina Island No.33"), which consists of a small parcel of land near Virginia Beach and three islands on the southern shores of Lake Simcoe: Georgina Island, Snake Island, and Fox Island.

The parcels of land on Georgina Island, shown in **Figures 3** and **4**, are owned by the GIFN and are part of the GIFN's reserve land, and whose title is vested in Her Majesty the Queen in right of Canada. GIFN provide Certificates of Possession to community members as 'stewards' to that piece of land within the communal allotment. The CP holder can lease that land to both GIFN and non-GIFN parties; thus, there are some private leases to non-GIFN cottagers as well.

On Georgina Island No.33, the fixed link will connect to the island at the existing intersection of Chief Joseph Snake Road and Bear Road. See **Figure 3** for the Land Ownership Plan for Georgina Island (2007), **Figure 4** for the Land Use Plan. GIFN owns several properties in fee simple on the mainland that may be chosen for the location of the fixed link's connection on the mainland. The legal description of the lands on the mainland that are owned by GIFN in fee simple will be provided once the exact location of the connection on the mainland is determined. Based on preliminary investigations, it appears that the lake bottom between the shore and the mainland may belong to the upland owner, in this case the GIFN, which will be confirmed with the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF). In addition, **Table 8** provides the legal description of land to be included within the Project study area, including, if the land has already been acquired, the title, deed or document and any authorization relating to reserve lands. This list will be refined in the DPD to include only lands that will be used for the Project, once that is determined.

In Canada, there are four types of property rights regimes in operation on reserves - customary rights, the independent land codes developed under the recently passed *First Nations Land Management Act*, leases, and Certificates of Possession (CPs). **Figure 3** provides detail about the current ownership of the Georgina Island lands, which are broken down to Band Land and Certificate of Possession. **Band lands**, in the context of the GIFN terminology, are those lands set aside in the *Indian Act* and subject to the *Land Management Act* lands controlled by the First Nation. A **Certificate of Possession** is evidence of the lawful possession of an individual tract of reserve land (the band council must allot the land to the applicant and the Minister of Crown – Indigenous Relations must approve the allotment).

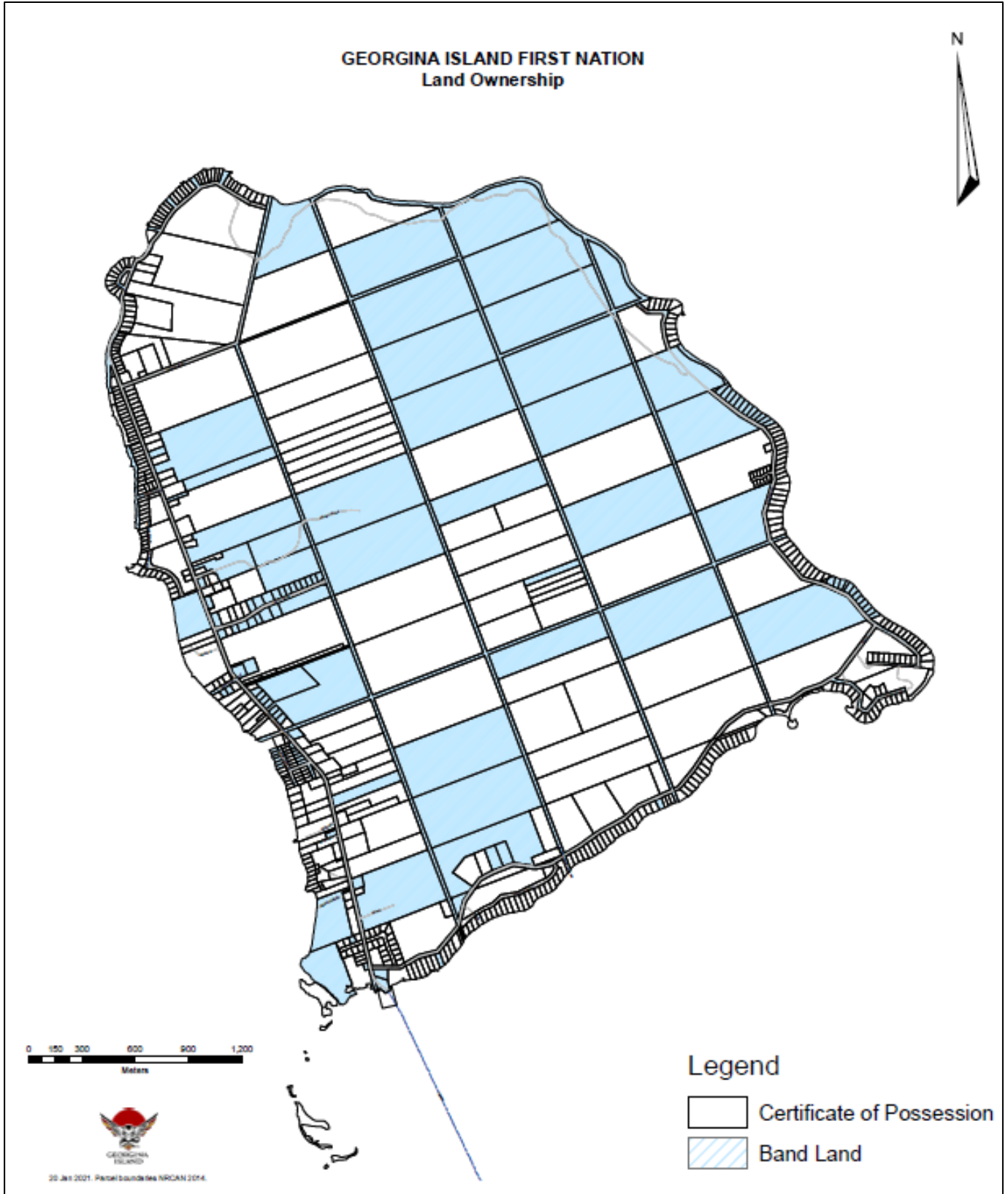


Figure 3 Georgina Island Land Ownership (2007)



Figure 4 Georgina Island Land Use Plan

In addition, **Table 8** provides the legal description of land to be included within the Project study area, including, if the land has already been acquired, the title, deed or document and any authorization relating to reserve lands. This list will be refined in the DPD to include only lands that will be used for the Project, once that is determined.

Table 8 Legal Land Description

PIN	Description
1063953	LOT 1-5-15 CONCESSION I, 5811R RSO ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063953	LOT 1-5-15 CONCESSION I, 5811R RSO ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1220327	LOT 2-11 BROKEN FRONT CONCESSION AND CONCESSION 1, 106510 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063925	LOT 2-9 CONCESSION 1 AND BROKEN FRONT CONCESSION; 6201R RSO ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1068432	LOT 2-4 CONCESSION 1, 6651R RSO ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1068430	LOT 1-11 CONCESSION 1, 95085 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063967	LOT 1-6-7 CONCESSION 1, 75757 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063970	LOT 1-6-6 CONCESSION 1, 75757 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063974	LOT 1-6-5 CONCESSION 1, 75757 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063975	LOT 1-6-4 CONCESSION 1, 75757 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063976	LOT 1-6-3 CONCESSION 1, 75757 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063980	LOT 1-6-2 CONCESSION 1, 75757 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063983	LOT 1-6-1 CONCESSION 1, 75757 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063984	LOT 1-1-21 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063985	LOT 1-1-20 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION

PIN	Description
1063986	LOT 1-4 CONCESSION 1, 64387 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063973	LOT 1-5-16 CONCESSION I, 5811R RSO ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063981	LOT 1-3 CONCESSION 1, 64387 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063978	LOT 1-5-11 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063972	LOT 1-5-10 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063966	LOT 1-5-9 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063956	LOT 1-5-8 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063958	LOT 1-5-7 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063961	LOT 1-5-6 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063965	LOT 1-5-5 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063950	LOT 1-5-14 (ROAD) CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063942	LOT 1-5-12 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063943	LOT 1-5-13 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063945	LOT 1-5-3 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063949	LOT 1-5-4 CONCESSION 1, 83544 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063939	LOT 1-1-22 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063937	LOT 1-1-23 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION

PIN	Description
1063935	LOT 1-1-24 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063931	LOT 1-1-4 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063932	LOT 1-1-5 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063941	LOT 1-1-6 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063947	LOT 1-1-7 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063955	LOT 1-1-8 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063962	LOT 1-1-9 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063969	LOT 1-1-10 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063977	LOT 1-1-11 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1184395	LOT 1-1-15 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063959	LOT 1-1-19 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063979	LOT 1-1-12 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063971	LOT 1-1-13 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063964	LOT 1-1-14 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063957	LOT 1-1-15 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063944	LOT 1-1-16 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063948	LOT 1-1-17 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION

PIN	Description
1063951	LOT 1-1-18 CONCESSION 1, 71168 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1213219	ROAD BROKEN FRONT CONCESSION, T124 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1063982	LOT 1-1-2 CONCESSION 1, 2057 RSO ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1068343	LOT 1-2-2 CONCESSION 1, 2058 RSO ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1208844	UNNAMED ISLAND # 5, 103065 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1208841	STONE SHOAL #2, 103065 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1208840	UNNAMED ISLAND # 4, 103065 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1208839	UNNAMED ISLAND # 3, 103065 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1208837	UNNAMED ISLAND # 2, 103065 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1208838	UNNAMED ISLAND # 1, 103065 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1064059	PART 1, 66615 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1064060	PART 2, 66615 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1064061	PART 3, 66615 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
1064058	PART 4, 66615 CLSR ON, CHIPPEWAS OF GEORGINA ISLAND FIRST NATION
35300005	LT 3 PL 191 GEORGINA T/W R662203; S/T INTEREST IN R662203, IF ANY; TOWN OF GEORGINA
35300005	LT 3 PL 191 GEORGINA T/W R662203; S/T INTEREST IN R662203, IF ANY; TOWN OF GEORGINA
35300006	PT LT 4 PL 191 GEORGINA AS IN R677368; T/W R677368; GEORGINA
35300013	LT 10 PL 191 GEORGINA T/W R573344; GEORGINA
35300014	PT LT 11 PL 191 GEORGINA AS IN R563498 TOWN OF GEORGINA

PIN	Description
35300015	PT LT 11 PL 191 GEORGINA; PT LT 12 PL 191 GEORGINA AS IN R586309; TOWN OF GEORGINA
35300016	PT LT 12 PL 191 GEORGINA AS IN R272132; PT LT 13 PL 191 GEORGINA AS IN R272132; GEORGINA
35300017	PT LT 13 PL 191 GEORGINA AS IN R645881; PT LT 14 PL 191 GEORGINA AS IN R645881; T/W R645881; GEORGINA
35300102	PT LT 12 CON 7 GEORGINA AS IN B4616B; PT LT 14 PL 191 GEORGINA; PT LT 26 PL 191 GEORGINA AS IN A66289A T/W A66289A TOWN OF GEORGINA
35300019	PT LT 15 PL 191 GEORGINA AS IN R658891; T/W R658891; TOWN OF GEORGINA
35300018	PT LT 15 PL 191 GEORGINA AS IN R507882; T/W R507882; GEORGINA
35300020	LT 16 PL 191 GEORGINA T/W R666993; GEORGINA
35300021	LT 17 PL 191 GEORGINA T/W R151874; GEORGINA
35300022	LT 18 PL 191 GEORGINA T/W R571229; S/T INTEREST IN R571229; GEORGINA
35300023	LT 19 PL 191 GEORGINA T/W R638469; GEORGINA
35300024	LT 20 PL 191 GEORGINA; PT LT 21 PL 191 GEORGINA AS IN R668123; GEORGINA
35300025	PT LT 21 PL 191 GEORGINA AS IN R450498; T/W R450498; GEORGINA
35300026	PT LT 22 PL 191 GEORGINA AS IN R193566; GEORGINA; SUBJECT TO EXECUTION 95-06984, IF ENFORCEABLE. ;
35300027	PT LT 22 PL 191 GEORGINA AS IN R655397; LT 23 PL 191 GEORGINA T/W R665397; GEORGINA
35300023	LT 19 PL 191 GEORGINA T/W R638469; GEORGINA
35300022	LT 18 PL 191 GEORGINA T/W R571229; S/T INTEREST IN R571229; GEORGINA
35300021	LT 17 PL 191 GEORGINA T/W R151874; GEORGINA
35300020	LT 16 PL 191 GEORGINA T/W R666993; GEORGINA
35300018	PT LT 15 PL 191 GEORGINA AS IN R507882; T/W R507882; GEORGINA
35300019	PT LT 15 PL 191 GEORGINA AS IN R658891; T/W R658891; TOWN OF GEORGINA
35300108	PT LT 24 PL 191 GEORGINA AS IN R182640 EXCEPT FOURTHLY LANDS; T/W & S/T R182640; GEORGINA
35280117	PT LT 25, PLN 191; GEORGINA

PIN	Description
35280027	PT LT 25 PL 191 GEORGINA AS IN R171564 (WESTERLY PORTION), S/T R732536; GEORGINA.
35280028	PT LT 25 PL 191 GEORGINA; PT RDAL BTN CON 7 & 8 GEORGINA AS CLOSED BY R389951, PTS 4 & 5, 65R3258; GEORGINA
35280056	WATER LT LOCATION DT157 IN LAKE SIMCOE IN FRONT OF LT 25 PL 191 AND RO AD ALLOWNACE BTN CONCESSION 7 & 8 (GEORGINA) PT 1 65R7476; GEORGINA
35300028	PT LT 24 PL 191 GEORGINA AS IN R667720; T/W & S/T R667720; GEORGINA
35300084	PT LT 24 PL 191 GEORGINA AS IN R659017; T/W R659017, IF ANY TOWN OF GEORGINA
35300083	PT LT 24 PL 191 GEORGINA AS IN R678772; T/W R678772; GEORGINA
35300029	PT LT 24 PL 191 GEORGINA AS IN R716315; T/W R716315; GEORGINA
35300030	PT LT 24 PL 191 GEORGINA AS IN R245095, R162932; T/W R2455095, R162932; GEORGINA
35280026	BLK B PL 481 GEORGINA; GEORGINA
35280025	PT LT 12 CON 8 GEORGINA AS IN A10244A; TOWN OF GEORGINA
35280024	PT LT 12 CON 8 GEORGINA AS IN B41809B; GEORGINA
35300080	LT 51 PL 481 TOWN OF GEORGINA
35300081	LT 52 PL 481 GEORGINA; GEORGINA
35300082	LT 53 PL 481 GEORGINA; GEORGINA
35300085	BLK A PL 481 GEORGINA; GEORGINA
35300079	LT 50 PL 481 GEORGINA S/T INTEREST IN R194978, IF ANY; GEORGINA
35280025	PT LT 12 CON 8 GEORGINA AS IN A10244A; TOWN OF GEORGINA
35280024	PT LT 12 CON 8 GEORGINA AS IN B41809B; GEORGINA.
35280114	PT LT 12 CON 8 GEORGINA, AS IN R248504, EXCEPT PT 1 6529220; TOWN OF GEORGINA
35280113	PT LT 12 CON 8 GEORGINA, PT 1 65R29220; GEORGINA
35280022	PT LT 12 CON 8 GEORGINA AS IN R631775; GEORGINA
35280021	PT LT 12 CON 8 GEORGINA AS IN R298531; GEORGINA

PIN	Description
35290031	LT 54 PL 481 GEORGINA T/W B47410B TOWN OF GEORGINA
35290032	LT 55 PL 481 GEORGINA T/W R115079; GEORGINA
35290033	LT 56 PL 481 GEORGINA T/W R188741; GEORGINA
35290034	LT 57 PL 481 TOWN OF GEORGINA
35290035	LT 58 PL 481 GEORGINA; GEORGINA
35290036	LT 59 PL 481 GEORGINA; GEORGINA
35290037	LT 60 PL 481 GEORGINA; GEORGINA
35290038	LT 61 PL 481 GEORGINA; GEORGINA
35290039	LT 62 PL 481 GEORGINA; GEORGINA
35290040	LT 63 PL 481 GEORGINA; GEORGINA
35280022	PT LT 12 CON 8 GEORGINA AS IN R631775; GEORGINA
35290092	PT LT 12 CON 7 GEORGINA AS IN R479140; T/W R479140 TOWN OF GEORGINA
35290029	PT LT 12 CON 7 GEORGINA AS IN R443403; GEORGINA
35290028	PT LT 12 CON 7 GEORGINA AS IN R274148 TOGETHER WITH AN EASEMENT AS IN TWR27414 TOWN OF GEORGINA
35290026	PT LT 11 CON 7 GEORGINA AS IN R610342; GEORGINA
35280021	PT LT 12 CON 8 GEORGINA AS IN R298531; GEORGINA
35280015	PT LT 12 CON 8 GEORGINA AS IN R633780, S/T R633780, S/T INTERESTS IN R419083; S/T DEBTS IN B14657B; S/T BENEFICIARIES INTEREST IN A3705A; GEORGINA; S/T ROW FOR ALL PERSONS ENTITLED THERETO OVER THE WESTERLY 20 FEET OF THE SOUTHERLY 285 FEET OF THE SOUTH 459 FEET OF SAID LOT 12 AS IN LT1504501. S/T EASEMENT IN FAVOUR OF ENBRIDGE GAS DISTRIBUTION INC. OVER PT 1 65R27543 AS IN YR591271, S/T & T/W IN B19480B
35280013	BLK B PL 308 GEORGINA; PT BLK A PL 308 GEORGINA AS IN R610342, S/T DEBTS IN R610342; S/T INTEREST IN A46742A - (SPOUSAL INTEREST OF DONAL D ROSS MARTYN), ADDED 01/05/16 BY A. GRAHAM, ADLR
35280102	PT BLK A PL 308, PTS 1, 2 & 3 65R21644, GEORGINA. S/T ROW IN FAVOUR OF PT BLK A PL 308 AS IN R140941 OVER PT 2 65R21644 AS IN R713405; "S/T SUBSECTION 44(1) OF THE LAND TITLES ACT, R.S.O. 1990 EXCEPT PARAGRAPHS 3 & 14 THEREOF"
35280011	PT LT 10 CON 8 GEORGINA PT 1, 65R7975; GEORGINA

PIN	Description
35280010	PT LT 10 CON 8 GEORGINA AS IN R490934; GEORGINA
35280008	PT LT 10 CON 8 GEORGINA AS IN B34937B, S/T B34937B, IF ANY; GEORGINA
35280007	PT LT 10 CON 8 GEORGINA AS IN R735576; GEORGINA
35280006	E PT LT 9 CON 8 GEORGINA BEING PART 1, 65R37393; GEORGINA

13D. PROXIMITY TO RESIDENCES AND POTENTIALLY AFFECTED COMMUNITIES

GIFN community buildings and most residential structures are centralized on the eastern and western shores, with ample distance away from the Project. The majority of the GIFN community's homes and community buildings are located on the west side of the island, along Chief Joseph Snake Road. Approximately 179 GIFN band members live on Georgina Island. Cottages occupy lots along the northwest, south and eastern portions of the island; some of these are leased by non-GIFN cottagers.

GIFN community buildings are concentrated in the area of Root Road. The GIFN community centre, administration office, school, medical clinic, and water treatment plant are located along Chief Joseph Snake Road. The ferry dock, located in the southwest corner of the island, is the main access point for residents, cottagers, and visitors.

13E. PROXIMITY TO INDIGENOUS LANDS

Georgina Island is entirely considered reserve lands under the Williams Treaty (1923). Other GIFN property is located along the mainland of Lake Simcoe, between the Virginia Beach Wetland Complex and Sibbald Point Provincial Park. Therefore, the majority of the Project is expected to be located on land subject to First Nations' *Land Management Act*. GIFN land ownership includes Georgina Island (1,353 ha), Snake Island (133 ha), Fox Island (19 ha), Sand Island (4 ha) and Gravel Island (0.4 ha). The GIFN residents reside on Georgina Island, while Snake, Fox and Sand Islands are "surrendered lands" and are currently leased to cottagers.

13F. PROXIMITY TO FEDERAL LANDS

Besides GIFN's reserves, which are federal lands within the meaning of the IAA, there are no known federal lands in proximity to the Project.

14. DESCRIPTION OF THE PHYSICAL AND BIOLOGICAL ENVIRONMENT

A number of preliminary background studies have been initiated for this Project, using both information provided by the GIFN and publicly available information, to ascertain existing physical and biological conditions and identify data gaps that may need to be filled through additional study. The findings of the desktop study completed to date is summarized in the following sections. Physical or biological features identified having potential to be potentially impacted by the Project will be further assessed in future stages of the Project.

Geology

The bedrock geology in the Georgina Island area consists of flat lying, thinly bedded sedimentary rock comprising limestone, dolostone, shale, arkose, and sandstone. This rock underlies all of the islands, as well as the shoreline of the mainland. The top of bedrock is slightly higher at the northeast side of Georgina Island compared to the southwest. Bedrock may be locally exposed at ground surface in a zone along the northwestern to southeastern part of the island, as well as along the shoreline elsewhere on the island.

The bedrock within the Georgina Island area is overlain by unconsolidated sediments (overburden). The surficial unit of the southwest portion on Georgina Island is glacial till,

consisting of heterogeneous deposits of silt, sand, gravel, cobbles, and boulders. The overburden thickness on the southwestern corner of the island is several meters thick. The overburden at the location where the fixed link is planned to connect to the mainland is part of a different geological unit, comprising glaciolacustrine deposits of sand, gravelly sand and gravel, nearshore and beach deposits.

A geotechnical investigation will be undertaken to assess a number of surface and sub-surface conditions and will inform an assessment of impacts associated with erosion and sedimentation processes, bearing capacity of road design and much more.

Natural Environment

The following is a summary of key natural environmental considerations for the Project:

- Designated Natural Areas
- Vegetation Communities and Wildlife Habitat
- Fish and Aquatic Habitat;
- Species at Risk, including endangered and threatened species;
- Migratory Birds;
- Wetlands;

From a desktop study, it was determined that the study area contains a number of sensitive features including a provincially significant wetland (PSW), habitat for endangered species, habitat for migratory birds, and aquatic habitat for fish populations.

Furthermore, the shorelines of Georgina Island and the mainland contain areas for regulation of flooding associated with high lake levels on Lake Simcoe during heavy rain events, which will require correspondence with the Lake Simcoe Region Conservation Authority (LSRCA). The study area is also located in an area with several sensitive land use features and will require a further consideration of several plans, policies, and guidelines, such as the *Lake Simcoe Protection Act* and the Oak Ridges Moraine Conservation Plan.

Designated Natural Areas

There are several provincially designated natural features mapped within the study area, including:

- Georgina Island PSW
- Virginia Beach Wetland Complex (non-PSW)
- Stratum 2 Deer Wintering Area (i.e., Significant Wildlife Habitat [SWH])
- Sibbald Point Provincial Park (Recreation Class)
- Greenbelt Policy Area

Vegetation Communities and Wildlife Habitat

The study area includes wetland communities mapped as part of the Georgina Island PSW as well as terrestrial vegetation communities at the south tip of Georgina Island. On the mainland, the study area includes forested wetland communities that are mapped as part of the Virginia Beach Wetland Complex (non-PSW) as well as surrounding upland forest and open habitats. Portions of these forested communities are mapped as Significant Woodlands in municipal official plans. These vegetation communities and their associated wildlife habitat will be further evaluated during field investigations during the next phase of the Project.

Georgina Island is approximately 1,353 ha and supports a high diversity of 38 vegetation community types. This includes 25 wetland communities, nine terrestrial communities and four human-influenced communities. Most of the island is covered in broadleaf and mixed swamps with the mixed swamps largely confined to the southeast side of the island. The mixed swamps are dominated by White Birch and White Cedar, as well as stands of Eastern Hemlock and Black Ash. In the northwestern portion of the island, there are small mixed swamps of Black Ash and Green Ash and Black Ash, Red Maple, White Cedar and occasionally Balsam Fir as secondary tree species. Scattered among the swamps are small openings supporting cattail marshes and thicket swamps of Red-osier Dogwood, Willow species and Speckled Alder.

A Deer Wintering Area (i.e., a seasonal concentration area for deer) is located in the study area, on the mainland, and is identified as a Significant Wildlife Habitat (SWH) area. This SWH feature has been identified by the NDMNRF and mapped in the provincial Land Information Ontario (LIO) database.

Fish and Aquatic Habitat

The main aquatic feature within the study area is Lake Simcoe, which provides fish habitat for a range of coldwater, coolwater and warmwater fish species. Background information indicated a total of 58 species have been documented in the Lake Simcoe watershed. A warm water to cool water fishery generally exists north of mainland shoreline between Duclos Point, south-west to Sibbald Point and south of Georgina Island. Also, the south shoreline of Georgina Island is known to contain Muskellunge spawning and nursery habitat, as well as Northern Pike spawning habitat (Anishinabek/Ontario Fisheries Resource Centre 2009). The study area also includes three warmwater tributaries of Lake Simcoe on the mainland, and one tributary on the island.

The fish population with the lake has shifted from coldwater species such as Lake Trout, Whitefish and Lake Herring, to species preferring warmer water such as Perch, Bass and Sunfish. These changes relate, in part, to changes in nutrient cycling and dissolved oxygen concentrations, siltation over spawning sites, shifts in available food items, and the invasion of non-native species.

Species at Risk

No aquatic Species at Risk (SAR) were identified through a review of the NHIC database, DFO SAR Mapping (2020) and other SAR screenings. This will be confirmed with DFO during future study phases.

Based on a review of the NHIC database and other SAR screenings, a number of avian and terrestrial species at risk have potential to occur in the study area. Based on a scan of potential species at risk or habitat in proximity to the study area, potential for impacts to the following federally-listed and provincially-listed species will be considered:

- Blanding's Turtle
- Snapping Turtle
- Midland Painted Turtle
- Wood Turtle
- Spotted Turtle
- Eastern Milksnake
- Eastern Hog-nosed Snake
- Western Chorus Frog, Great lakes/St. Lawrence population
- Wood Thrush
- Eastern Wood Peewee
- Red-headed Woodpecker
- Bobolink
- Eastern meadowlark
- Yellow-banded Bumblebee

- Least Bittern
- Bank Swallow
- Barn Swallow
- Cerulean Warbler
- Acadian Flycatcher
- Little Brown Bat
- Northern Long-eared Bat
- Eastern Small-footed Bat
- Tri-colored Bat
- Grey Fox
- Butternut
- American Ginseng

In addition, the Project may also be in, or in proximity to, critical habitat for:

- Blanding's Turtle
- Red-headed Woodpecker

Migratory Birds

The *Migratory Birds Convention Act, 1994* (MBCA) protects all migratory birds, not just avian SAR and the Project has the potential to impact migratory birds, primarily through construction activities. Nesting migratory birds are protected under the MBCA; therefore, no work will be permitted to proceed that would result in the destruction of active nests (nests with eggs or young), the wounding or killing of birds, of species protected under the MBCA and regulations under the Act.

Hydrogeology and Drainage

From a drainage perspective, additional studies will be required as part of the Project, including to assess and identify:

- Water quantity and quality control measures;
- Impact of ice forces on bridge piers and abutment; and,
- Climate change impact on lake water levels and wave action.

The Ministry of the Environment, Conservation and Parks (MECP) water well records and water supply records were reviewed and indicate that groundwater is present at depths ranging between 5.8 and 17.1 meters below the ground surface (mbgs) in the overburden. The management of groundwater will be considered in the impact assessment studies, and is expected to be needed during construction of the Project, depending on the chosen construction methodology.

Based on recent water supply well records, it is interpreted that the mainland may be partially serviced by groundwater and watermains. Documents provided by the GIFN show that a watermain is present along Bear Road on Georgina Island, indicating that the Georgina Island is serviced for water. A water treatment plant is present on the west side of the Georgina Island shown on "issued for construction" drawings from S. Burnett & Associates Limited (2018). The water intake occurs from Lake Simcoe west of the Georgina Island. Gravity sanitary sewer and pumping stations are present on Beaver Road (Neegan Burnside, 2005).

A Water Well Survey will be completed to confirm the reliance on and details of water wells present in the study area, and detailed geotechnical and hydrogeological investigations will be completed to confirm the existing conditions of the shallow groundwater areas of the island.

Environmental Site Assessment – Contaminated Soil Investigation

Preliminary site assessments were completed and identified three inactive landfills on Georgina Island. The locations of the historical landfills is immediately west of the active landfill sites; however, these landfills are not expected to be within the study area for the Project. Two

sources of potential contamination on the island were identified at the Marina and Business Centre and the buildings/storage yard at the ferry docks (potential contaminating activities include fuel spills and leaks from fuel storage tanks and fuel dispensing equipment, and vehicle/equipment and waste materials storage).

Further investigation will be completed to determine whether there may be potential impacts associated with the sources of potential contamination (e.g., likelihood that impacted soil and/or groundwater will be encountered during construction).

Air and Noise

No specific background studies have been conducted for air quality, greenhouse gas or noise for the Project to date. Air Existing Conditions and Impact Assessment and Noise Existing Conditions and Impact Assessment studies will be completed to inform the federal impact assessment process.

15. DESCRIPTION OF THE HEALTH, SOCIAL AND ECONOMIC CONTEXT

The following sections provide a brief description of the health, social and economic context in the region where the Project is located, based on information that is available to the public and/or derived from any engagement undertaken.

Transportation Planning and Traffic Analysis

The current major transportation option for the GIFN community members between Georgina Island and the mainland is a ferry service, known as the Aazhaawe Ferry. There are gaps in the ability to report on existing transportation conditions for GIFN and the surrounding area. A Traffic Impact Study and analysis of existing and future transportation operations will be completed in order to understand how possible fixed link alignments will impact current pedestrian and vehicular traffic within the study area.

Archaeology and Cultural Heritage

A review of the Ontario Archaeological Sites Database indicated there are no recorded archaeological sites within, or up to 1 km from, the study area. A review of the Ontario Public Register of Archaeological Reports indicated no archaeological assessments were completed within the study area. However, the York Region Archaeological Management Plan shows much of the study area on the mainland to hold archaeological potential.

A Stage 1 Archaeological Assessment, including consideration for marine archaeological resources for areas where the lakebed of Lake Simcoe and shorelines may be disturbed, will be completed at future stages of the Project. Stage 1 Archaeological Assessment will identify the archaeological potential of the study area and recommend appropriate mitigation strategies, including whether subsequent archaeological assessment is warranted. Consideration for underwater archaeological potential must be encapsulated within the Stage 1 report.

Population and Demographic

The main GIFN population on the reserve resides on the largest island, Georgina Island. In 2021, it was recorded that 231 GIFN members permanently reside on the island. The GIFN is governed by an elected band council, consisting of one chief and four councillors.

As per the 2016 census³, the population located within 50 km of the GIFN community was in excess of 860,000 people. This is expected to grow to over 1.1 million people. The population located within 100 km of Georgina Island is very substantial and includes the Greater Toronto Area and the entire Golden Horseshoe population.

The land area of the island approximately 15 km², which is 4.5 km long and 3.2 km wide, with an area of 1,353 ha/3,343 acres, and the population density, as of 2021, was 17.9 people per square kilometer (Statistics Canada, 2016). As per 2016 census data, the population of GIFN was appropriately 261 (including GIFN Members and non-members). The majority of the population in 2016 was in the age range of 15-64, as seen in **Figure 5** and **Table 9**.

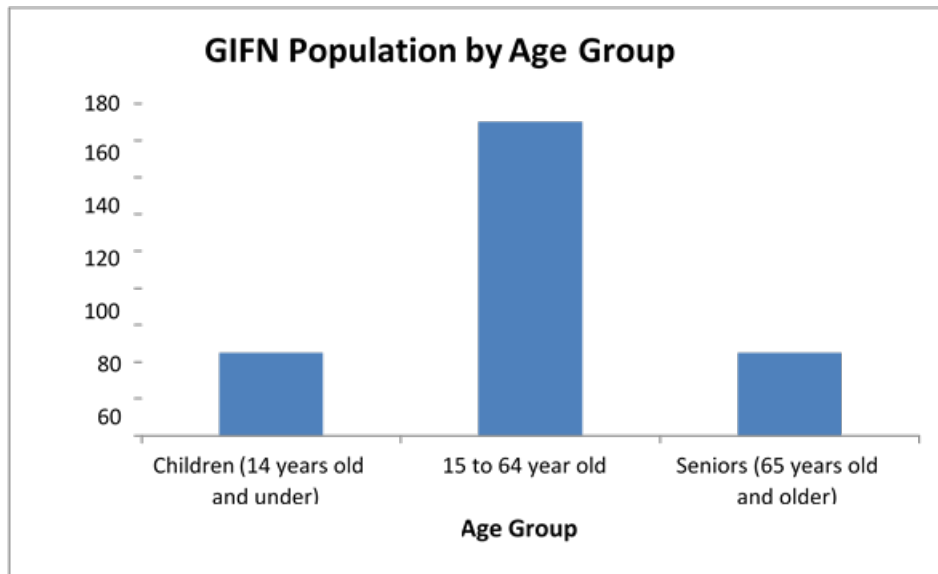


Figure 5 GIFN Population by Age (Statistics Canada, 2016)

The largest population is the age group between 55 and 59 years old, and the least populated age group is 85+ years old. 66% of the population are in the working age group between 15 to 64 years old, while 25.7% make up the younger population, which will be a part of labour force in less than two decades (**Table 9**).

Table 9 Population by Age for GIFN

Age Group	GIFN	
	Number	Percent (%)
Total Population	260	100
Children (14 years old and under)	45	17.3

³ In this section and following sections, a combination of data sources have been used, including Statistics Canada 2016 census data, which provides the most complete census data to reflect recent population changes and trends, though precise population numbers will have changed since 2016; thus, population data from 2019 and 2021 differs slightly.

Age Group	GIFN	
	Number	Percent (%)
15 to 64 years old	165	66
Seniors (65 years old and older)	45	17.3

Based on 2021 data from the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) First Nation Profiles, GIFN has a total membership of approximately 936 members, of which approximately 209 reside on the island and 726 live off the island (CIRNAC, 2021; GIFN, 2019). Of the 209 Members who reside on the island, approximately 98 are male and 111 are female as identified in **Table 10** (CIRNAC, 2021). First Nations or persons with Registered or Treaty Indian status but are not First Nations, Métis, or Inuit identity, make up 84% of the total population.

Table 10 Chippewas of Georgina Island Registered Population

Residency	Number of People
Registered Males on Own Reserve	98
Registered Females on Own Reserve	111
Registered Males Off Reserve	353
Registered Females Off Reserve	373

Overall, the GIFN population declined at a rate of 0.3% per year over 15 years from 2001 to 2016. Based on the census data from 1996 to 2016, the GIFN population (which includes both GIFN Members and non-members) has shown a decreasing trend. In the last two census, the population declined by 14 people, showing an average decline rate of 1% per year from 2011 to 2016. The population percentage change between 2011 to 2016 was -5.1% (**Figure 6**).

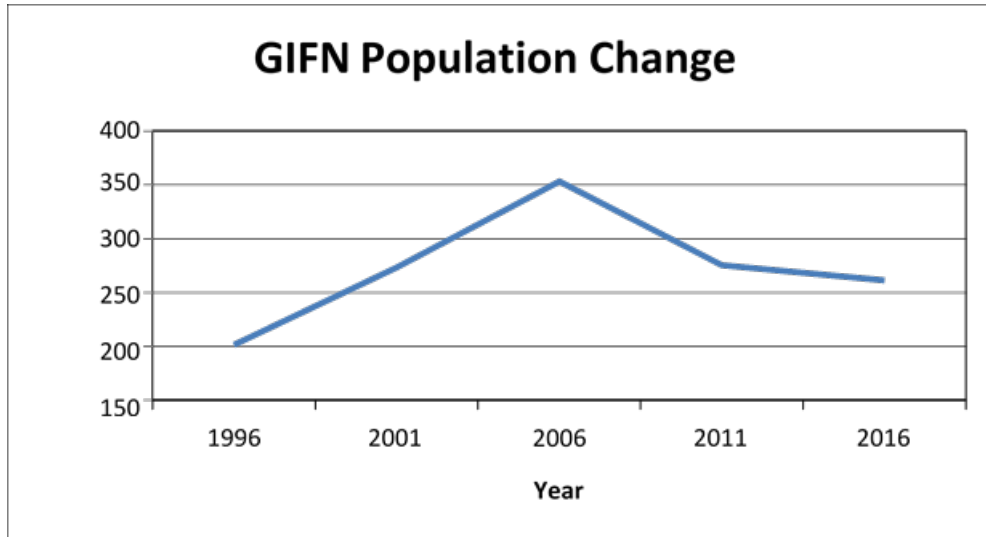


Figure 6 GIFN Population Over Time (1996-2016) (Statistics Canada, 2016; Statistics Canada, 2012)

As of 2016, there are 565 private dwellings on the GIFN Reserve islands and 118 dwellings which are occupied by year-round residents (i.e., not cottagers) (Statistics Canada, 2016).

The most recent census did not provide gender statistics for Georgina Island, but as of the 2019 registered membership, 53.8% of people were registered female members living within Georgina Island, and 46.1% of people were registered males also living within the GIFN community (**Table 11**).

Table 11 Population by Sex for GIFN

	GIFN	
	Number	Percent (%)
Total	260	100
Male	120	46.1
Female	140	53.8

Seasonal Population Changes

Seasonal influx of non-GIFN cottagers and tourists in the summer months is reported (**Table 12**), and in a recent Health Impacts Assessment survey, 43 participants indicated this influx is one of the reasons for causing additional strain on both the ferry and the GIFN community as a whole (Intrinsic, 2021).

Table 12 Total Ferry Passenger Vehicle Trips (2009-2019)

Year	Total Number of Passenger Vehicle Trips	Winter (5%)	Spring (20%)	Summer (45%)	Fall (30%)	Difference (Summer – Spring)	Difference (Summer - Fall)
2009	153,000	7,650	30,600	68,850	45,900	38,250	22,950
2010	121,500	6,075	24,300	54,675	36,450	30,375	18,225
2011	123,300	6,165	24,660	55,485	36,990	30,825	18,459
2012	129,600	6,480	25,920	58,320	38,880	32,400	19,440
2013	128,850	6,443	24,770	57,983	38,655	32,213	19,328
2014	121,500	6,075	24,300	55,080	36,450	30,375	18,225
2015	122,400	6,120	24,480	55,080	36,720	30,600	18,360
2016	163,800	8,190	32,760	73,710	49,140	40,950	24,570
2017	136,575	6,829	27,315	61,459	40,973	34,144	20,486
2018	126,450	6,323	25,290	56,903	37,935	31,613	18,968
2019	164,250	8,213	32,850	73,913	49,275	41,063	24,638
Total	1,491,225	74,561	289,245	671,051	447,368	Avg.= 33,891	Avg.= 20,335

Impacts on the community include longer ferry wait times, which contribute to poorer access to island residences, mainland emergency healthcare, or recreational activities.

Education

In 2016, 70.4% of GIFN members aged 25 to 64 had a high school diploma or equivalency certificate, compared with 86.3% in Canada (Statistics Canada, 2016).

In the GIFN community, 6.98% of people aged 25 to 64 had a bachelor’s degree or higher in 2016, while 27.91% had a college, CEGEP or other non-university certificate or diploma as their highest level of education, and 13.95% had an apprenticeship or trades certificate or diploma as their highest level of education (**Table 13**)

Table 13 Level of Education for GIFN

Education by highest certificate, diploma or degree	GIFN			
	Total Number ^a	Percentage	Male ^a	Female ^a
Total Population (aged 15 years and over)	215	100	100	115

Education by highest certificate, diploma or degree	GIFN			
	Total Number ^a	Percentage	Male ^a	Female ^a
No certificate, diploma, or degree	50	23.26%	25	30
Secondary (high) school diploma or equivalency certificate	50	23.26%	25	25
Apprenticeship or trades certificate or diploma	30	13.95%	20	10
College, CEGEP or other non-university certificate or diploma	60	27.91%	20	35
University certificate or diploma below bachelor level	10	4.65%	0	0
University certificate, diploma, or degree at bachelor level or above	15	6.98%	0	15
Bachelor's degree	10	66.67%	0	10

^a Users should be aware that the estimates associated with this variable are more affected than most by the incomplete enumeration of certain Indian Reserves and Indian settlements in the 2016 Census of Population. For more information on Aboriginal variables, including information on their classifications, the questions from which they are derived, data quality and their comparability with other sources of data, refer to the [Aboriginal Peoples Reference Guide, Census of Population, 2016](#) and the Aboriginal Peoples Technical Report, Census of Population, 2016.

^b Total – Secondary (high) school diploma or equivalency certificate for the population aged 15 years and over in private households – 25% sample data.

Employment

In 2016, the population of GIFN in the labour force was 130 individuals, out of which approximately 96% were employed (**Table 14**). 29% of the working population was employed in public administration, while the other 71% was split between 7 other industries as illustrated in **Figure 7** (Statistics Canada, 2016).

Table 14 Labour Force Status for GIFN

Labour Force Status	GIFN			
	Total Number ^a	Percentage	Male ^a	Female ^a
Total Population (aged 15 years and over) ^b	215	100%	100	115
In the Labour Force	130	60.47%	65	65
<i>Employed</i>	125	96.15%	60	60
<i>Unemployed</i>	10	7.69%	0	0
Not in the Labour Force	80	37.21%	35	50

^a Users should be aware that the estimates associated with this variable are more affected than most by the incomplete enumeration of certain Indian Reserves and Indian settlements in the 2016 Census of Population. For more information on Aboriginal variables, including information on their classifications, the

questions from which they are derived, data quality and their comparability with other sources of data, refer to the [Aboriginal Peoples Reference Guide, Census of Population, 2016](#) and the Aboriginal Peoples Technical Report, Census of Population, 2016.

^b Labour force status for the population aged 15 years and over in private households – 25% Sample data. Refer to whether a person aged 15 years and over was employed, unemployed or not in the labour force during the week of Sunday, May 1 to Saturday, May 7, 2016.

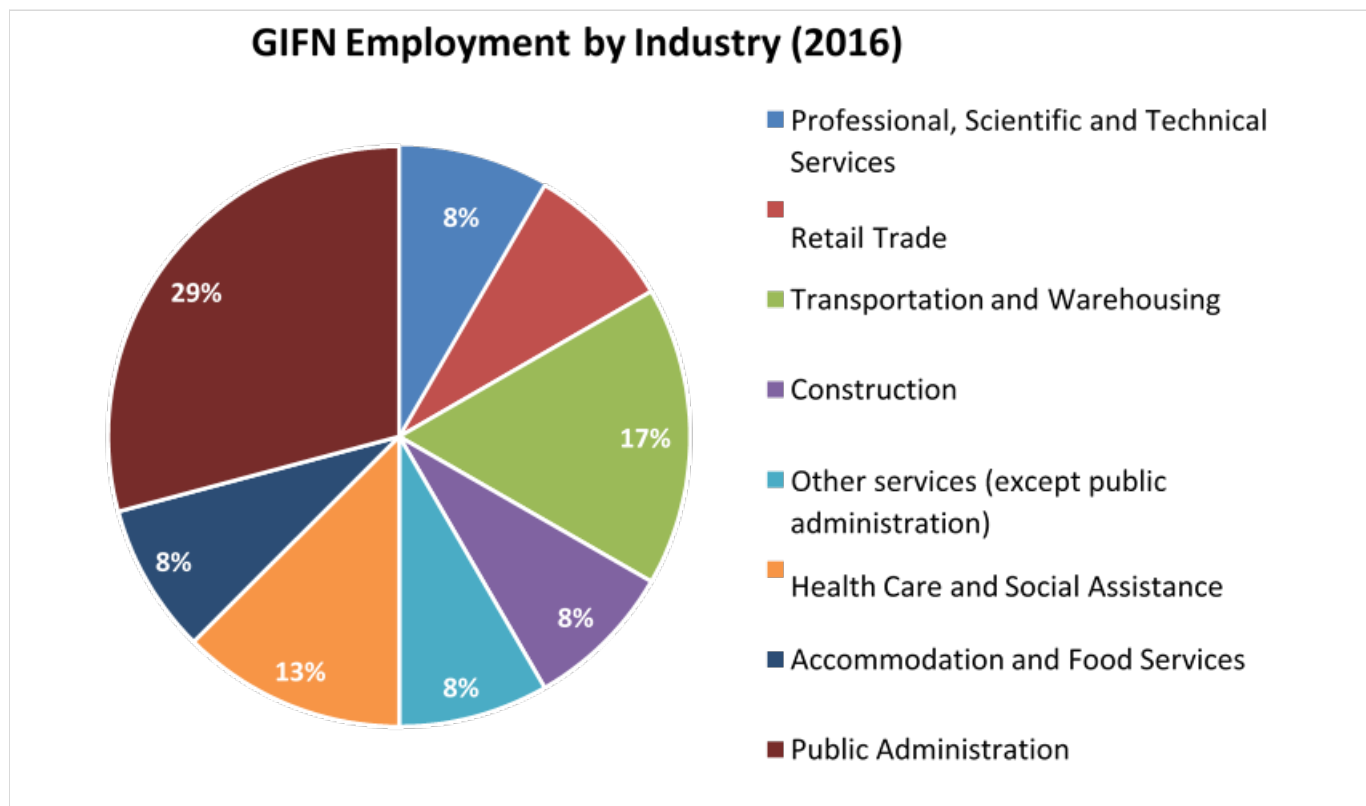


Figure 7 GIFN Employment by Industry (2016) (Statistics Canada, 2016)

Income

The median total income for GIFN in 2016 was \$26,368 (**Table 15**), which is substantially less than provincial median income of \$33,539, and a national median income of \$34,204 (Statistics Canada, 2016). With a population at 261 people at the time of the 2016 census, most inhabitants of Georgina Island were above the low-income cut-off, or the income a person must earn to be part of the low-income group.

Table 15 Income by Sex for GIFN

Income statistics in 2015	Total	Male	Female
Number of income recipients aged 15 years and over	200	90	110
Median total income	\$26,368	\$29,632	\$25,504
Average total income	\$36,627	\$36,679	\$36,583
Median after-tax income	\$25,728	\$29,632	\$25,024
Average after-tax income	\$34,684	\$34,624	\$34,735

The largest percentage of the population fell in the under \$10,000 income group with 23.26% of individuals, compared to Ontario which only had 15.3%, and Canada having 14% of individuals (**Table 16**).

Table 16 Total Income Groups in 2016 for GIFN

Income statistics in 2015	GIFN	
	Total	Percentage
Total income groups for the population aged 15 years and over in private households	200	100%
Under \$10,000 (including loss)	50	23.26%
\$10,000 to \$19,999	35	16.28%
\$20,000 to \$29,999	35	16.28%
\$30,000 to \$39,999	25	11.63%
\$40,000 to \$49,999	10	4.65%
\$50,000 to \$59,999	10	4.65%
\$60,000 to \$69,999	10	4.65%
\$70,000 to \$79,999	0	0%
\$80,000 to \$89,999	15	6.98%
\$90,000 to \$99,999	10	4.65%
\$100,000 and over	10	4.65%

Cost of Living

Cost of living for residents of Georgina Island can be expected to be at or near Ontario averages. Ontario is Canada's largest province and is one of the most expensive provinces on a cost basis. This is partially explained by the province having some of the highest housing costs in Canada, especially around the Greater Toronto Area (GTA), where 48% of Ontarians call home.

Electricity

With the majority of the Georgina Island residents being First Nations, costs associated with delivery for electricity are not incurred due to the On Reserve First Nations Delivery Credit from Hydro One, implemented July 1, 2017, resulting in a lower average monthly electricity bill. However, the Ontario Fair Hydro Plan was only promised for four (4) years, and the future of electricity pricing is unknown. As per the updated Community Energy Plan for Georgina Island (2018), electricity is the most common energy type for space-heating used year-round in residential and seasonal residential sectors.

Propane

Propane is the second most common energy type used for space heating in both the year-round residential and seasonal residential sectors. Propane is supplied to the community by Budget and Superior Propane, by truck on the ferry. Delays due to freezing and thawing seasons on Lake Simcoe do occur for the community, so propane must be pre-ordered at times during the year, compounding costs for residents.

Internet

Internet in the community is provided by Xplornet and Bell Communications. Internet connectivity has been historically poor, as connection must be established wirelessly. Costs associated with internet would be consistent with other local municipalities, without having a secure fibreoptic speed connection. The Government of Canada has recently announced a major investment for new high-speed access for Georgina Island, which will improve quality for cost and overall quality of life for residents and staff who must work from home or within band facilities.

Housing

From the 2016 census, 91% of families owned their homes, with the remaining 9% renting their home. Housing prices on First Nations have been historically lower due to standards set by the First Nation itself to ensure homes are affordable for members, or due to the value placed on dwellings that reside on leased lands. This may differ to some degree for cottages located on lakefront. Costs associated with renting on a First Nation have also remained lower than regional averages due to more limited access to services that are available outside of First Nation communities. It can be expected that costs associated with housing/ renting would be lower than regional averages.

Food And Essentials

Food costs for residents of Georgina Island can be expected to be higher than mainland residents due to the added need for transportation to the island from the mainland. Georgina Island does not currently have any grocery or convenience stores available, so residents must travel to the mainland to access nearby centres to shop for essentials.

Transportation

Transportation costs in Ontario are also some of the highest in Canada, with car ownership and associated insurance premiums being high as well. Many Georgina Island residents must travel by vehicle to the mainland for education, employment, essential services, social and recreation activities. Residents of the community must also carry comprehensive insurance for their personal vehicles for the purposes of crossing an ice-road, resulting in higher-than-average premiums. From the updated Community Energy Plan, 80% of transportation energy use between 2014 to 2017, was by the residential and seasonal residential sectors.

Childcare

Childcare provided by the Niigaan-Naabiwag Child Care Centre is subsidized by the federal government for members of Georgina Island. For the purposes of this Project, it has been included in the cost of living existing conditions. Members who reside outside the community but wish to take advantage of free childcare must transport their children to the facility within the community, thus incurring additional risks/costs of transportation, and ferry wait times.

Country Food

The following list of food/medicinal sources for Georgina Island include, but is not limited to:

Type	Species
Fish	<ul style="list-style-type: none"> • Lake whitefish (<i>Coregonus clupeaformis</i>) • Lake herring (<i>Coregonus artedii</i>) • Burbot (<i>Lota lota</i>) • Northern pike (<i>Esox lucius</i>) • Yellow perch (<i>Perca flavescens</i>) • Smallmouth bass (<i>Micropterus dolomieu</i>) • White sucker (<i>Catostomus commersoni</i>) • Pumpkinseed (<i>Lepomis gibbosus</i>) • Brown bullhead (<i>Ictalurus nebulosus</i>) • Rock bass (<i>Ambloplites rupestris</i>) • Black crappie (<i>Proxys nigromaculatus</i>) • Rainbow smelt (<i>Osmerus mordax</i>) • Muskellunge (<i>Esox masquinongy</i>)
Mammals	<ul style="list-style-type: none"> • Eastern gray squirrel (<i>Sciurus carolinensis</i>) • Red squirrel (<i>Sciurus vulgaris</i>) • Eastern cottontail (<i>Sylvilagus floridanus</i>) • Snowshoe hare (<i>Lepus americanus</i>) • White-tailed deer (<i>Odocoileus virginianus</i>) • American black bear (<i>Ursus americanus</i>) • North American beaver (<i>Castor canadensis</i>) • Muskrat (<i>Ondatra zibethicus</i>)
Birds	<ul style="list-style-type: none"> • Canada goose (<i>Branta canadensis</i>) • Canvasback (<i>Aythya valisineria</i>) • Mallard (<i>Anas platyrhynchos</i>) • Redhead (<i>Aythya americana</i>) • Wood duck (<i>Aix sponsa</i>) • Hooded Merganser (<i>Lophodytes cucullatus</i>) • Common goldeneye (<i>Bucephala clangula</i>) • American widgeon (<i>Mareca americana</i>) • American black duck (<i>Anas rubripes</i>) • Greater scaup (<i>Aythya marila</i>) • Lesser scaup (<i>Aythya affinis</i>) • Bufflehead (<i>Bucephala albeola</i>) • Blue-winged teal (<i>Spatula discors</i>) • Gadwall (<i>Mareca strepera</i>) • Green-winged teal (<i>Anas carolinensis</i>) • Northern pintail (<i>Anas acuta</i>) • Northern Shoveler (<i>Spatula clypeata</i>) • Rudy duck (<i>Oxyura jamaicensis</i>) • Ring-necked duck (<i>Aythya collaris</i>) • Ruffed grouse (<i>Bonasa umbellus</i>) • Mourning dove (<i>Zenaida macroura</i>) • Eastern Wild Turkey (<i>Meleagris gallopavo silvestris</i>)

Type	Species
Reptiles	<ul style="list-style-type: none"> • Painted turtle (<i>Chrysemys picta</i>) • Common snapping turtle (<i>Chelydra serpentina</i>)
Plants	<ul style="list-style-type: none"> • American Ginseng (<i>Panax quinquefolius</i>, <i>Panacis quinquefolis</i>) • White Cedar (<i>Thuja occidentalis</i>) • Wild Crabapple (<i>Malus coronaria</i>) • Morel (<i>Morchella esculenta</i>) • Fiddlehead (<i>Polypodiopsida</i> or <i>Polypodiophyta</i>) • Wild Ginger (<i>Asarum canadense</i>) • Wild Mint (<i>Mentha arvensis</i>) • Ramp/Leek (<i>Allium tricoccum</i>) • Wild Asparagus (<i>Asparagus officinalis</i>) • Chaga (<i>Inonotus obliquus</i>) • Sweetgrass (<i>Hierochloe odorata</i>, <i>Anthoxanthum nitens</i>) • Wild Rice (<i>Zizania palustris</i>)

Community Features and Services

On Georgina Island, there is an administration building, a health centre, a police station, a fire hall, and a community centre. As well, the island children attend a two-classroom school until Grade 5, and there is a daycare for infants and toddlers. A church, the community centre and an outdoor rink provide opportunities for the community to gather for various events.

The community buildings and most residential structures are centralized on the eastern and western shores providing community members with access to local services. The GIFN has undeveloped Lake Simcoe shoreline and excellent proximity to Highway #12 and Highway #48 leading directly from the Greater Toronto Area to the northern cottage regions. Georgina Island is only accessible by the Aazhaawe Ferry during the spring, summer, and autumn months of the year and by scoot or ice road during the winter months. The ferry can carry up to 18 cars and there is comfortable cabin space for 50 walk-on passengers.

The Georgina, Fox, and Snake Islands Subwatershed Plan (2017) confirms that drinking water within the study area portion located on Georgina Island is provided through private wells and surface water from Lake Simcoe. A water well survey will need to be completed to confirm the reliance on and details of water wells available in the area. GIFN provides drinking water to approximately 109 households on Georgina Island. This supply has been in place since 1993 and surface water from Lake Simcoe is taken in a location approximately 345 m to the west of the Georgina Island, treated at the Georgina Island Water Treatment Plant. Based on recent water supply well records, it is understood that the mainland may be partially serviced by groundwater and water mains.

Recreational opportunities exist within GIFN on Georgina Island; however, recreational and social activities could have expanded offerings for members on the mainland. Ferry scheduling and inconsistent ferry operations do not provide flexible opportunities for recreation offerings off reserve.

Tourism

The Georgina Island is situated in the prosperous Ontario Regional Tourism (RTO) Zone 6 – also known as the Central Counties. The Central Counties have a population of over 2 million

people, residing within over 670,000 households. Tourism in Central Counties is an increasingly substantial contributor to economic growth. The retention of businesses and services in the area is increasingly dependent on visitor spending, resulting in nearby economies investing heavily in attracting those visitors.

From the RTO Zone 6 visitor profile survey in 2018, Cultural Sampling, Attraction to Nature and Ecological Lifestyle scored the highest social values in the survey.

Emergency and Health Care Services

Health care services to GIFN are hindered by inconsistent methods of transport to Georgina Island during winter months and the reliance on one ferry operating with limited capacities during spring, summer, and autumn months. Ambulance service in winter months is currently a challenge as ambulances cannot travel on ice and stretchers cannot fit in scoots. As a result of access difficulties, the overall costs of services from the hourly rates are higher than average and there are greater costs for equipment and maintenance of equipment. 24/7 service across all health care offerings is not possible due to complexities of accessing the island and emergency service would have to be delivered via air medical services. With a reliable fixed link, visiting doctors can more easily and affordably access Georgina Island to provide members of GIFN with essential health care service.

COVID-19 Pandemic

In March 2020, the COVID-19 pandemic (the pandemic) emerged in Ontario, forcing many industries to either close or operate at a reduced capacity. These measures and the hardships with public health measures have forced many tourism businesses to lay off staff with concerns of cashflow to pay for fixed costs such as rent, utilities and existing debt. From a survey and report released in October 2020, by the Tourism Industry of Ontario (TIAO), it was estimated that tourism businesses were suffering a 69% revenue decline at that time.

Further pandemic waves and a regression into more stringent physical distancing protocols have caused sectors, such as restaurants, bed and breakfasts and other local tourism attractions even further hardships, which are yet to be fully understood as the pandemic continues. At the beginning of the pandemic, GIFN leadership decided to limit access to the island, for the protection of community health. This choice, which was in the best interests of the community, has had obvious impacts to local businesses both on the island and mainland. As well, Indigenous peoples experience a more significant burden of noncommunicable and infectious diseases generally, and this is related to social and health inequities stemming from invasion and subsequent colonisation.

The island closure impacted the momentum of the Project as stakeholder meetings and community engagements regarding the Project have either been rescheduled for times when public health measures have relaxed or switched to virtual options, which most of the work force has become familiar with. As well, community members experienced increased challenges in accessing cultural practices due to public health protocols, lack of ability to travel to communities due to lockdown measures, increased fear/concern surrounding contracting the virus, and the shutdown of recreational activities such as sports, entertainment, cultural gatherings, and family vacations. Close living quarters also impacted mental health, especially in cases of unhealthy emotional and physical situations for women, children, and LGBTQ2S+ peoples, as a non-exhaustive list. Further, as a result of the heightened public health protocols,

community members experienced lack of culturally safe health care and access to personal protection equipment (PPE).

In response to the pandemic and island closure, GIFN entered into a six-month commercial agreement with Drone Delivery Canada Corp. Dated July 30, 2020, the agreement was established with the assistance of Drone Delivery Canada sales agent Air Canada and also the Pontiac Group. Drone Delivery Canada's drone delivery platform was crucial to limit person-to-person contact on its island ferry service by transporting COVID-19-related cargo, including PPE, hygiene kits, test kits, test swabs, and other goods.

PART D: FEDERAL, PROVINCIAL, TERRITORIAL, INDIGENOUS AND MUNICIPAL INVOLVEMENT

16. POTENTIAL FEDERAL FINANCIAL SUPPORT

The GIFN is well positioned to take this project on financially.

The GIFN understands the substantial costs that will be associated with this project. For community planning purposes, the GIFN Chief and Council have separated the Project into two separate phases: Planning/Design and Construction.

The Canada Infrastructure Bank (CIB) is in discussions with the GIFN with respect to financing the Project construction. The community has initiated the processes required to be considered for financial support through an initial meeting, which included a presentation by the CIB to the GIFN Council. The discussions with respect to a potential CIB investment would be for approximately 80% of the required capital to be supported by the CIB.

The remaining 20% of the Project would be funded through a combination of Long-Term Investments, own source revenues and other government equity-based funds. Due to the uncertainty of government programming over the long term, the community is unable to gauge what amounts may be available in the long term. For that reason, the GIFN is operating on the assumption that it will be required to support the full 20% of equity needed and are willing to do so if required.

It should be noted that any funding with respect to the Project from a federal department (e.g., CIB) would be conditional upon the Project receiving a positive decision statement from the Minister of Environment and Climate Change after an impact assessment, or a decision by the Impact Assessment Agency of Canada (IAAC) that no impact assessment of the Project is required (IAA, subsection 7(3)).

17. FEDERAL LANDS THAT MAY BE USED FOR THE PROJECT

Georgina Island No.33, the reserve lands of GIFN, are federal lands as defined in the IAA. The fixed link will connect the mainland to Georgina Island No.33. Any submerged lands under Lake Simcoe that were once dry lands belonging to Georgina Island No.33, Sand or Gravel Islands before the water levels of Lake Simcoe are also federal lands as defined in the IAA.

18. INVOLVEMENT OF FEDERAL AUTHORITIES AND OTHER JURISDICTIONS

See **Table 17** for a summary of list of agencies that have been consulted with for the Project.

Table 17 List of Agencies That Have Been Consulted for the Fixed Link Project

Agency	Level	Powers/Duties/Functions
Impact Assessment Agency of Canada (IAAC)	Federal	<ul style="list-style-type: none"> • Administer the <i>Impact Assessment Act</i> (IAA). • Lead and manage the impact assessment process for all federally designated major projects. • Lead Crown engagement and serve as the single point of contact for consultation and engagement with Indigenous peoples during impact assessments for designated projects. • Provide opportunities and funding to support public participation in impact assessments. • Work to ensure that mitigation measures are applied and are working as intended. • Promote uniformity and coordination of impact assessment practices across Canada through research, guidance and ongoing discussion with stakeholders and partners.
Fisheries and Oceans Canada (DFO)	Federal	<ul style="list-style-type: none"> • Administer the <i>Fisheries Act</i>. • Administer the protection provisions of aquatic species under the <i>Species at Risk Act</i> (SARA). • Ensure that Canada's oceans and other aquatic ecosystems are protected from negative impacts. • Ensure commercial vessels and recreational boaters can safely navigate DFO waters. • Save lives and protect existing environments when emergencies arise.
Environment and Climate Change Canada (ECCC)	Federal	<ul style="list-style-type: none"> • Administer the protection provisions of terrestrial species under the <i>Species at Risk Act</i> (SARA). • Preserve and enhance the quality of the natural environment, including water, air and soil quality, and the coordination of the relevant policies and programs of the Government of Canada renewable resources, including migratory birds and other non-domestic flora and fauna. • Enforce rules and regulations under its mandate.
Transport Canada (TC)	Federal	<ul style="list-style-type: none"> • Develop and oversee the Government of Canada's transportation policies and programs so Canadians can have access to a transportation system. • Administer the <i>Canadian Navigable Waters Act</i> (CNWA), and the <i>Bridges Act</i>. • Works towards the following objectives: <ul style="list-style-type: none"> • Proposing and updating policies, laws, and regulations;

Agency	Level	Powers/Duties/Functions
		<ul style="list-style-type: none"> • Conducting inspections, enforcement activities and surveillance of the transportation industry's equipment, operations, and facilities; and • Providing funding to organizations for projects that strengthen the transportation network, including safety improvement projects, technological innovations, and green transportation initiatives.
Indigenous Services Canada (ISC)	Federal	<ul style="list-style-type: none"> • Administer the <i>Indian Act</i> in cooperation with Crown-Indigenous Relations and Northern Affairs Canada. • Work with First Nations, Inuit, and Métis to: <ul style="list-style-type: none"> • Improve access to high-quality services; • Improve well-being in Indigenous communities across Canada; and • Support Indigenous peoples in assuming control of the delivery of services at the pace and in the process they choose.
Women and Gender Equality (WAGE)	Federal	<ul style="list-style-type: none"> • Lead the implementation of GBA Plus across the federal government and provide expert advice and strategic support to federal departments and agencies in the development of policies, programs and legislation related to gender equality. Intersectional analysis of GBA Plus incorporates considerations related to engagement. • In December 2018, the Government of Canada passed the <i>Budget Implementation Act, 2018 No.2</i>, which included legislation in favour of evolving Status of Women Canada (an Agency) into a department and increasing its power, duties, and functions to those concerning not just women, but all gender identities. • Advance equality with respect to sex, sexual orientation, and gender identity or expression through the inclusion of people of all genders including women, in Canada's social and political life, as well as the intersection of these with other identity factors such as ethnicity, age, socio-economic level, disability and others. • Share expertise in a range of issues related to gender equality, gender-based violence and in the practice of Gender-based Analysis Plus (GBA Plus), which is the Government of Canada's strategy to mainstream equality, diversity, and inclusion into all government business.
Employment and Social Development Canada (ESDC)	Federal	<ul style="list-style-type: none"> • Develop, manage, and deliver social programs and service, as well as promote safe, healthy, cooperative, and productive workplaces. • Implement two Indigenous Labour Market programs that support participation of First Nations, Métis, and Inuit in the labour market: the Indigenous Skills and Employment Training (ISET) Program and the Skills and Partnership Fund (SPF).

Agency	Level	Powers/Duties/Functions
Ministry of the Environment, Conservation and Parks (MECP)	Provincial	<ul style="list-style-type: none"> • Administer the Environmental Assessment Act. • Administer the Environmental Protection Act. <ul style="list-style-type: none"> • Contaminated soils and waste generated during construction must be disposed of in accordance with Ontario Regulation 347, entitled “General—Waste Management” and the Environmental Protection Act. • Activities involving the management of excess soil shall be completed in accordance with Ontario Regulation 406/19, On-Site and Excess Soil Management, and MECP guidance document “Rules for Soil Management and Excess Soil Quality Standards” (MECP, 2020). • The Environmental Protection Act, 1990 (EPA) [Part X, section 92] defines and imposes specific duties on anyone causing a spill or having control of a spilled pollutant into the natural environment. MECP must be notified when a solid, liquid and/or gaseous material has been released to the outside environment (i.e., outside of a building) and causes, or has the potential to cause, an adverse effect. • Administer the Ontario Water Resources Act <ul style="list-style-type: none"> • Water takings that exceed 50,000 litres per day must be carried out in compliance with the conditions for registration on the Environmental Activity and Sector Registry (EASR) or a permit to take water (PTTW) issued under the <i>Ontario Water Resources Act</i>, where and as applicable within the Project area. • Administer the <i>Endangered Species Act, 2007</i>, which prohibits activities that would kill, harm, or harass, and/or damage or destroy habitat of species listed under <i>Ontario Regulation 230/08</i> as extirpated, endangered, or threatened in Ontario. <ul style="list-style-type: none"> • It is a proponent’s responsibility to determine if their planned activity(s) will have adverse impacts on SAR protected under the Act and/or its habitat. If a proposed activity will impact SAR and/or its habitat (i.e., the activity may contravene subsection 9(1) and/or 10(1) of the Act), an authorization under the Act would be required in order to proceed with the activity and be in compliance with that Act. • Protect Ontario’s air, land, water, species at risk and their habitats. • Tackle climate change. • Manage the province’s parks and conservation reserves. • Maintain strong environmental protections while creating jobs. • Enforce compliance with environmental laws. • Work with partner ministries, other governments, Indigenous partners and organizations, industry, stakeholders, and the public.

Agency	Level	Powers/Duties/Functions
		<ul style="list-style-type: none"> • Monitor and report to track environmental progress.
Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF)	Provincial	<ul style="list-style-type: none"> • Administer the Fish and Wildlife Conservation Act and the Invasive Species Act. • Administer the Public Lands Act and Lakes and Rivers Improvements Act. • Administer Class EA processes under the Environmental Assessment Act. • Protect people, property and communities from forest fires, floods, and droughts. • Develop and apply geographic information to help manage the province's natural resources. • Identify, evaluate, and classify Provincially Significant Wetlands (PSWs) and Areas of Natural and Scientific Interest (ANSIs). • Complete Fisheries Assessment work within the Lake Simcoe Watershed (LSFAU) to guide management
Lake Simcoe Region Conservation Authority (LSRCA)	Provincial	<ul style="list-style-type: none"> • Administer Ontario Regulation 179/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation under the Conservation Authorities Act • Work with the community to protect and restore the Lake Simcoe watershed by leading research, policy, and action.
Regional Municipality of York	Municipal	<p>The Regional Municipality of York governs the following in nine municipalities, including: Aurora, East Gwillimbury, Georgina, King, Markham, Newmarket, Richmond Hill, Vaughan, Whitchurch-Stouffville:</p> <ul style="list-style-type: none"> • Public transit • Water • Emergency medical services • Policing
Town of Georgina	Municipal	<p>The Town of Georgina is structured into several departments, including:</p> <ul style="list-style-type: none"> • Mayor & Council. • Chief Administrative Officer (Communications). • Deputy Chief Administrative Officer (Office of the Clerk, Municipal Law Enforcement). • Development Services - (Building, Planning, Economic Development & Tourism, Development Engineering). • Operations & Infrastructure (Operations - Roads / Water / Wastewater, Parks, Capital Projects).

PART E: POTENTIAL EFFECTS TO THE PROJECT

19. CHANGES TO THE ENVIRONMENT UNDER FEDERAL LEGISLATION

Changes that, as a result of the carrying out of the Project, may be caused to components of the environment that are within the legislative authority of Parliament (i.e., fish, fish habitat, aquatic species, and migratory birds), are summarized below.

Table 18 Changes to the Environment under Federal Legislation – Effects and Mitigation Measures

Factor	Potential Environmental Effect	Mitigation Measures
Fish, Aquatic Species and Aquatic Habitat, as defined in subsection 2(1) of the <i>Fisheries Act</i>	<ul style="list-style-type: none"> Change to fish habitat (loss) as a result of infilling 	<ul style="list-style-type: none"> Minimize impacts through ongoing collaboration between fisheries ecologists and the design team to ensure aquatic habitat considerations are incorporated into the design. Consult with regulatory agencies for permitting requirements (e.g., complete a Request for Review [RfR] for submission to DFO) when designs have progressed to a sufficient level of detail. Complete a <i>Fisheries Act</i> Authorization (FAA) application and determine appropriate mitigation and compensation / Off-setting Plan through that process with DFO. Potential to create new fisheries habitat at bridge abutments and piers
	<ul style="list-style-type: none"> Change to fish movement as a result of construction and permanent foundations/piers 	<ul style="list-style-type: none"> Mitigation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> Change to fish habitat as a result of shading from the bridge 	<ul style="list-style-type: none"> Mitigation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> Change to fish habitat as a result of deck drainage 	<ul style="list-style-type: none"> Mitigation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> Change to fish habitat as a result of run-off/soil erosion 	<ul style="list-style-type: none"> Develop comprehensive erosion and sediment control plan and maintain measures throughout construction.

Factor	Potential Environmental Effect	Mitigation Measures
		<ul style="list-style-type: none"> Additional mitigation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> Change to fish habitat as a result of snow removal Change to fish habitat as a result of increased salt runoff into lake Simcoe as a result of application of road salt on the bridges and road access 	<ul style="list-style-type: none"> Store plowed snow off the proposed bridge and causeway away from coastal areas to avoid erosion Incorporate an appropriate stormwater management design, in accordance with MECP's Stormwater Management Planning and Design Manual (2003), to capture and treat run-off. Develop a Salt Management Plan with guidelines on salt application as well as salt alternatives: <ul style="list-style-type: none"> Acetate-based de-icers. Carbohydrates. Sanding/gritting Stainless steel reinforcing steel should be used according to MTO directions/guidelines to reduce future maintenance of the structure. Maintenance will depend on construction material, coating, etc. Additional mitigation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> Change to fish health or habitat as a result of accidental spills (leakage or contacting fluid-containing components) during earthworks or in-water works 	<ul style="list-style-type: none"> Vehicle refueling stations will be located in a centralized location and away from any sensitive receptors. Develop and employ a Spills Management and Response Plan during construction. Additional mitigation measures to be determined through permitting processes at future study phases.

Factor	Potential Environmental Effect	Mitigation Measures
	<ul style="list-style-type: none"> • Change to fish health or habitat as a result of fuel spills due to increased motor vehicle traffic on the proposed causeway/bridge 	<ul style="list-style-type: none"> • Incorporate an appropriate stormwater management design, in accordance with MECP's Stormwater Management Planning and Design Manual (2003), to capture and treat run-off. • Develop and employ a Spills Management and Response Plan during construction.
	<ul style="list-style-type: none"> • Change to waterflow, lake currents and fish movement resulting from the causeway infilling • Change to aquatic and riparian habitats from in-water machinery works. 	<ul style="list-style-type: none"> • Mitigation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> • Change to waterflows and fish habitat as a result of construction of bridge foundations/piers/temporary cofferdams 	<ul style="list-style-type: none"> • Mitigation anticipated to include but not be limited to the following measures: • Conduct in-water work during appropriate timing windows. • Use isolation methods (e.g., coffer dams) for the in-water work. • Additional mitigation / compensation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> • Change to waterflows as a result of dewatering from inside temporary cofferdams where required 	<ul style="list-style-type: none"> • Conduct fish rescue operations to remove fish from construction zones prior to temporary dewatering of isolated areas.
	<ul style="list-style-type: none"> • Change to fish health and habitat as a result of barges to transfer materials and equipment for foundation/pier construction 	<ul style="list-style-type: none"> • Mitigation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> • Change in shoreline habitat as a result of construction 	<ul style="list-style-type: none"> • Minimize vegetation removal to the extent feasible. • Any vegetation removed to facilitate construction will be replaced with a mix of appropriate native vegetation.

Factor	Potential Environmental Effect	Mitigation Measures
	<ul style="list-style-type: none"> Change in fish populations as a result of fishing from the bridge 	<ul style="list-style-type: none"> Additional mitigation / compensation measures to be determined through permitting processes at future study phases.
	<ul style="list-style-type: none"> Various 	<ul style="list-style-type: none"> Fishing from the bridge shall be prohibited to eliminate any potential impacts on the existing fish communities. The bridge portion of the fixed link will be at high elevation that will not allow for fishing from the bridge.
<p>Aquatic and Avian SAR, as defined in subsection 2(1) of the <i>Species at Risk Act</i>, as well as all SAR on federal lands</p>	<ul style="list-style-type: none"> No change to aquatic SAR or SAR habitat is anticipated as no aquatic SAR (i.e., fish and mussels) have been identified in the study area through the background review process. 	<ul style="list-style-type: none"> Additional consultation and field investigations and with DFO, MECP and LSRCA will occur during future study phases to confirm no aquatic SAR impacts.
	<ul style="list-style-type: none"> Change to avian SAR and their habitats as a result of construction. 	<ul style="list-style-type: none"> Additional field investigations, including breeding bird surveys will be completed during future study phases to confirm species presence and/or habitat potential Additional consultation with MECP and ECCC will occur during future study phases to quantify potential impacts and develop mitigation / compensation / overall benefit measures through the permitting process (if applicable).
	<ul style="list-style-type: none"> Change to reptile SAR and their habitats as a result of construction. 	<ul style="list-style-type: none"> Additional field investigations will be completed during future study phases to confirm species presence and/or habitat potential Additional consultation with MECP and ECCC will occur during future study phases to quantify potential impacts (if any) and develop mitigation

Factor	Potential Environmental Effect	Mitigation Measures
	<ul style="list-style-type: none"> Change to vascular plant SAR and their habitats as a result of construction. Change to mammal SAR and their habitats as a result of construction. 	<p>measures. Consultation will also determine the permitting or registration process, if required.</p> <ul style="list-style-type: none"> Additional field investigations will be completed during future study phases to confirm species presence and/or habitat potential Additional consultation with MECP and ECCC will occur during future study phases to quantify potential impacts (if any) and develop mitigation measures. Consultation will also determine the permitting or registration process, if required. Additional field investigations will be completed during future study phases to confirm species presence and/or habitat potential Additional consultation with MECP and ECCC will occur during future study phases to quantify potential impacts (if any) and develop mitigation measures. Consultation will also determine the permitting or registration process, if required.
<p>Migratory Birds, as defined in subsection 2(1) of the <i>Migratory Birds Convention Act, 1994</i></p>	<ul style="list-style-type: none"> Change to nesting migratory birds as a result of construction (e.g., during vegetation clearing, grubbing, grading, etc.) 	<ul style="list-style-type: none"> Minimize vegetation removal to only that which is required for construction. Use timing windows to minimize potential for impacts. Specifically, no vegetation clearing, grubbing or other construction activities which may be disruptive to migratory birds to occur during the regional nesting period for the study area (i.e., April 1 through August 31). Ensure all construction workers are trained in advance of starting work on the potential for encountering wildlife while undertaking their activities and the appropriate response if this occurs (e.g., contact the Environmental Inspector). Utilize an Environmental Inspector during construction to ensure that all protection

Factor	Potential Environmental Effect	Mitigation Measures
		measures are in place, maintained and repaired, and that remedial measures are implemented, where warranted.
	<ul style="list-style-type: none"> • Change to habitat for migratory birds as a result of construction 	<ul style="list-style-type: none"> • Consider restoration planting / compensation in consultation with relevant agencies and the Community.
	<ul style="list-style-type: none"> • Change to habitat for migratory birds as a result of introducing invasive plant species during construction (e.g., Phragmites) 	<ul style="list-style-type: none"> • Utilize the Clean Equipment Protocol during construction to minimize potential for introduction of invasive species.
	<ul style="list-style-type: none"> • Change to migratory bird habitat as a result of increased lighting during both construction and operation 	<ul style="list-style-type: none"> • Minimize lighting during construction to only that which is required for safety • Consider impacts to migratory birds when developing the lighting design for the bridge and causeway.
	<ul style="list-style-type: none"> • Change to migratory bird health as a result of increased vehicle collisions with birds 	<ul style="list-style-type: none"> • Bridge design to consider and integrate design features that deter birds from the structure.
	<ul style="list-style-type: none"> • Change to migratory bird habitat availability as a result of new nesting habitat near/under the bridge 	<ul style="list-style-type: none"> • Creation of new nesting habitat for species such as barn swallow could be viewed as a benefit; however, this can create potential issues for bridge maintenance work. • Mitigation measures, if required, to be determined during future study phases.
	<ul style="list-style-type: none"> • Change to migratory bird health and habitat as a result of soil and groundwater contamination 	<ul style="list-style-type: none"> • Incorporate an appropriate stormwater management design, in accordance with MECP's Stormwater Management Planning and Design Manual (2003), to capture and treat run-off. • Vehicle refueling stations will be located in a centralized location and away from any sensitive receptors. • Develop a comprehensive soil and ground water management plan.

Factor	Potential Environmental Effect	Mitigation Measures
		<ul style="list-style-type: none"> • Develop a spills management and response plan. • Develop comprehensive erosion and sediment control plan and maintain measures throughout construction.
	<ul style="list-style-type: none"> • Change to migratory bird health and habitat as a result of spills during earthworks 	<ul style="list-style-type: none"> • Employ a spills management and response plan during construction. • Develop comprehensive erosion and sediment control plan and maintain measures throughout construction. • Exposed surfaces and stockpiles to be stabilized and seeded with temporary seed mix.

20. CHANGES TO THE ENVIRONMENT ON FEDERAL LANDS AND ELSEWHERE

In addition to the potential effects identified in **Section 19**, changes to the environment that, as a result of carrying out the Project, may occur on federal lands or impact other aspect of the environment are summarized below, and include potential effects that may be covered under provincial and local legislation and requirements.

Table 19 Changes to the Environment under Federal Legislation – Effects and Mitigation Measures

Factor	Potential Environmental Effect	Mitigation Measures
Vegetation, Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> • Change to terrestrial and wetland vegetation (and associated wildlife habitat) as a result of the construction of bridge approaches 	<ul style="list-style-type: none"> • Complete additional vegetation community assessment and botanical inventories to document rare or sensitive communities or species during future study phases. • Minimize impacts to significant or sensitive communities through ongoing collaboration between ecologists and the design team to ensure ecological considerations are incorporated into the design. • Minimize vegetation removal to only that which is required for construction.

Factor	Potential Environmental Effect	Mitigation Measures
	<ul style="list-style-type: none"> Change to wetland and aquatic vegetation communities (and their associated wildlife habitat functions) as a result of the construction of the causeway 	<ul style="list-style-type: none"> Consider salvage and relocation of any significant species that could not be avoided. Determine if restoration or compensation measures are required through consultation with regulatory agencies during future study phases. Complete additional vegetation community assessment and botanical inventories to document rare or sensitive communities or species during future study phases. Minimize impacts to significant or sensitive communities through ongoing collaboration between ecologists and the design team to ensure ecological considerations are incorporated into the design. Minimize vegetation removal to only that which is required for construction. Consider salvage and relocation of any significant species that could not be avoided. Determine if restoration or compensation measures are required through consultation with regulatory agencies during future study phases.
	<ul style="list-style-type: none"> Change to vegetation communities (and their associated wildlife habitat functions) as a result of the introduction of invasive plant species during construction (e.g., Phragmites) Change to vegetation as a result of construction effects beyond the working area Change to NDMNRF identified deer yard and associated wildlife movement corridors as a result of new road access 	<ul style="list-style-type: none"> Utilize the Clean Equipment Protocol during construction to minimize potential for introduction of invasive species. Install tree protection fencing and ESC measures and maintain throughout construction. Evaluate east-west wildlife movement and consider options for ensuring connectivity and reducing wildlife-vehicle collisions (e.g., funnel fencing, wildlife crossings, signage, reduced speed limits)

Factor	Potential Environmental Effect	Mitigation Measures
	<ul style="list-style-type: none"> Change to vegetation, wildlife, and wildlife habitat as a result of soil and groundwater contamination 	<ul style="list-style-type: none"> Incorporate an appropriate stormwater management design, in accordance with MECP's Stormwater Management Planning and Design Manual (2003), to capture and treat run-off. Vehicle refueling stations will be located in a centralized location and away from any sensitive receptors. Develop a comprehensive soil and ground water management plan. Employ a spills management and response plan during construction. Develop comprehensive erosion and sediment control plan and maintain measures throughout construction.
	<ul style="list-style-type: none"> Change to vegetation, wildlife, and wildlife habitat as a result of spills during earthworks 	<ul style="list-style-type: none"> Employ a spills management and response plan during construction. Develop comprehensive erosion and sediment control plan and maintain measures throughout construction. Exposed surfaces and stockpiles to be stabilized and seeded with temporary seed mix.
	<ul style="list-style-type: none"> Various 	<ul style="list-style-type: none"> Utilize an Environmental Inspector during construction to ensure that all protection measures are in place, maintained and repaired, and that remedial measures are implemented, where warranted.
Air and Noise Emissions	<ul style="list-style-type: none"> Change to air quality as a result of dust pollution from construction and operation activities (e.g., excavation) 	<ul style="list-style-type: none"> Prior to construction, develop a Best Management Practices Plan for Dust including the following mitigation measures: Identification of the sources of fugitive dust emissions. Review the composition and size range of the fugitive dust.

Factor	Potential Environmental Effect	Mitigation Measures
	<ul style="list-style-type: none"> Change in noise emissions as a result of earthworks and construction machinery 	<ul style="list-style-type: none"> Identify fugitive dust control measures for each identified source. Prepare a schedule by which the plan will be implemented. Provide a description of how the plan will be implemented, including training of facility personnel. Description of inspection and maintenance procedures; and Description of methods of monitoring and recordkeeping to verify compliance with the plan. If mobile mitigation equipment is required, obtain an Environmental Compliance Approval (ECA) from the Ministry of the Environment, Conservation and Parks (MECP), or engage equipment with a mobile ECA. Regular bridge maintenance to limit dust. Avoid excavating during high wind events. Apply regular watering during excavation/material piles. Move material off-site to avoid long term storage piles, minimize pile heights. Notes: <ul style="list-style-type: none"> Excavate soils in accordance with a fugitive dust Best Management Practice Plan (BMPP) to limit air emission impact off site. Those mitigation options listed above would be included in the BMPP Excavation construction activities must comply with NPC-115, MECP noise guidelines for construction equipment.

Factor	Potential Environmental Effect	Mitigation Measures
		<ul style="list-style-type: none"> As part of the design, assess if noise controls will be required on the fixed link (e.g., noise barrier).
	<ul style="list-style-type: none"> Change in air emissions as a result of earthworks and construction machinery 	<ul style="list-style-type: none"> Existing air quality assessments are required to assess potential mitigation requirements as part of the Project impacts.
	<ul style="list-style-type: none"> Change in air and noise emissions as a result of paving activities 	<ul style="list-style-type: none"> Document the existing air quality using publicly available data from nearby air quality monitoring stations as part of the Environment Assessment. Avoid summer months when sensitive receptors in the area may have open windows, thus reducing the likelihood of receiving air and noise complaints. Select road surfacing material to minimize GHG emissions Limit the length of construction time on site, and the quantity of materials brought to the Project site; this will minimize the potential dust emissions and noise emissions from the paving activities. Ensure the Construction Contractor is operating in accordance with a fugitive dust Best Management Practice Plan (BMPP): more specifically is using regular watering on short-term material piles, avoiding paving activities during high wind periods, performing street sweeping/roadway clean up in areas adjacent to the construction site, etc. <p>Notes:</p> <ul style="list-style-type: none"> Mobile construction equipment to be used on site for paving (e.g., mobile asphalt or cement operations) must be operated in accordance

Factor	Potential Environmental Effect	Mitigation Measures
	<ul style="list-style-type: none"> Change in air quality as a result of the use of barges to transport material in-water, construction foundations and piers in-water Change in air quality as a result of dewatering activities from inside temporary cofferdams Change in air quality as a result of clearing of trees/relocating of utility poles Change in GHG emissions to the air as a result of more vehicles using the proposed alternative (reduced emissions to the water as a result of no ferry service) 	<ul style="list-style-type: none"> with a mobile Air and Noise Environmental Compliance Approval (ECA). Other construction activities must comply with NPC-115, MECP noise guidelines for construction equipment. Reduce materials being handled (per hour and per day); minimize the number of trips made optimizing construction schedule. Minimize the barge trip distance. Limit the number of pieces of mobile equipment operating at any time. Limit the number of pieces of mobile equipment operating at any time. Document the existing GHG levels as part of the Environment Assessment.
Soils and Groundwater	<ul style="list-style-type: none"> Change soil or groundwater conditions as a result of accidental leaks or spills during construction Change in soil conditions (e.g., soil exposure, stability, and erosion) as a result of construction activities including excavations, management, movement, and placement of soils Change in soil conditions as a result of tree clearing/grubbing and the relocation of utility poles Change in groundwater conditions as a result of the management of 	<ul style="list-style-type: none"> Develop and employ a Spills Management and Response Plan during construction. A geotechnical assessment is required to understand aspects such as stability and settlement of embankments. A geotechnical assessment must determine the most suitable foundation methods, slope angles of embankments and any potential ground improvement requirements. Ground water or surface water that is pumped for dewatering will be in compliance with an Environmental Activity and Sector Registry

Factor	Potential Environmental Effect	Mitigation Measures
	groundwater during construction (e.g., dewatering and discharge)	(EASR) or permit to take water (PTTW) and discharged in accordance with an environmental compliance approval per section 53 of the <i>Ontario Water Resources Act</i> . <ul style="list-style-type: none"> • Sampling and monitoring maybe required for discharges.
	<ul style="list-style-type: none"> • Change in soil or groundwater conditions as a result of disturbance of pre-existing soil or groundwater contamination issues 	<ul style="list-style-type: none"> • Completion of further investigations, including Phase I and II environmental site assessments, are recommended to confirm the presence or absence of soil and groundwater contamination within the Project study area. • If contamination is identified during environmental site assessments, delineation and appropriate mitigation/risk management would be required to address the exceedances. • Excess soil imported or generated by the Project should assessed for re-use on-Site or beneficial re-use off-Site in accordance with the <i>Ontario Regulation 406/19: On-Site and Excess Soil Management</i>.
	<ul style="list-style-type: none"> • Change in soil or groundwater conditions as a result of deleterious substances that may be used for maintenance 	<ul style="list-style-type: none"> • Ensure product for removal of graffiti/murals/vandalism is controlled and does not percolate into the ground/Lake Simcoe.
Areas of Natural and Scientific Interest	<ul style="list-style-type: none"> • No changes to Areas of Natural and Scientific Interest are anticipated 	<ul style="list-style-type: none"> • Avoid construction activities from occurring within the limits of Sibbald Point Provincial Park.

21. CHANGES TO INDIGENOUS PHYSICAL AND CULTURAL HERITAGE, TRADITIONAL LAND USE, OR ARCHAEOLOGY

With respect to Indigenous peoples of Canada, **Table 20** provides a brief description of potential impact that, as a result of the carrying out of the Project, may result from any change to the environment on:

- physical and cultural heritage,
- the current use of lands and resources for traditional purposes, and
- any structure, site or thing that is of historical, archaeological, paleontological, or architectural significance.

Overall, GIFN views the benefits of the Project as benefits to physical and cultural heritage and the current use of lands and resources for traditional purposes.

Table 20 Potential Effects of the Project on Indigenous, physical, and cultural heritage

Factor	Potential Effects to Identified Activities	Proposed Protection/Mitigation Measures
Indigenous Culture and Heritage	<ul style="list-style-type: none"> • Loss of or disruption to current traditional land and resource uses such as hunting, gathering, fishing, trapping from possible direct project impacts to wildlife and fish habitats, plants and water navigation. 	<ul style="list-style-type: none"> • Application of appropriate habitat protection and mitigation measures.
	<ul style="list-style-type: none"> • Easier access to outside of community could put pressure or losses on traditional language, traditions and culture; and/or decrease interest and participation in traditional land use activities (e.g., trapping, hunting, fishing, gathering, etc.). 	<ul style="list-style-type: none"> • Effort to reinforce language and culture through changes to educational curriculum that provide additional cultural enrichment opportunities.
	<ul style="list-style-type: none"> • Possible for outsiders to access and affect cultural/spiritual/ sacred sites. 	<ul style="list-style-type: none"> • Controlled road access/security
	<ul style="list-style-type: none"> • Potential to impact archaeological sites 	<ul style="list-style-type: none"> • Include Indigenous groups in the archaeology investigations at all stages.

22. CHANGES TO INDIGENOUS HEALTH, SOCIAL OR ECONOMIC CONDITIONS

Table 21 provides a brief description of any change that, as a result of the carrying out of the Project, may occur to the health, social or economic conditions of the GIFN community. The GIFN views that the fixed link will have a net-positive impacts on the GIFN community as a result of economic, community well being, educational, social, and human health improvements.

Table 21 Potential Health and Socioeconomic Effects of the Project

Factor	Potential Effects to Identified Activities	Proposed Protection/Mitigation Measures
<p>Transportation and Infrastructure</p>	<ul style="list-style-type: none"> • Change to local traffic (e.g., increased traffic, detours, intersection delays) during construction • Change to local traffic as a result of operations (e.g., change in traffic patterns) 	<ul style="list-style-type: none"> • Ensure proper signage directs different users (vehicles, ATVs, snowmobiles, pedestrians, etc.). • Increased traffic on local roads may require road improvements from the highway along Black River Road for safety and security. • Options, road widening, speed limit control, traffic flow control (spread out approach direction in and out for various vehicles, types, weight, frequency to avoid bottle necks), education, information, complaint phone line, suggestion box are all to be considered in a Transportation Impact Study. • A Transportation Impact Study is required to identify the impacts and potential improvements such as left-turn lanes, right-turn lanes, signalization, (if warranted) and recommend the lane configurations. Key intersections will include the fixed link at Black River Road, Hadden Road at Highway 48 on the mainland side and the intersection of Chief Joseph Snake Road and Bear Road on the island side. • The following additional detailed requirements for the Transportation Impact Study are necessary: <ul style="list-style-type: none"> • study area limits; • Horizon years for analysis; • Peak periods for analysis; • Method for predicting traffic volumes;

Factor	Potential Effects to Identified Activities	Proposed Protection/Mitigation Measures
		<ul style="list-style-type: none"> • Method for establishing background traffic volumes; • Software program for intersection capacity analysis; • Automatic traffic record data for Black River Road; and • Peak period (7 to 9 am and 4 to 6 pm) turning movement counts at the intersection of Hadden Road at Highway 48 and Chief Joseph Snake Road at Bear Road.
Health	<ul style="list-style-type: none"> • Increased dust and noise associated with road operations. • Localized, minor, and temporary impacts on water quality. 	<ul style="list-style-type: none"> • Application of appropriate protection and mitigation measures (i.e., noise, dust control, erosion, and sediment control).
Navigation	<ul style="list-style-type: none"> • Potential temporary disruption to navigation associated with fixed link construction • Temporary minor traffic delays possible during construction of fixed link. 	<ul style="list-style-type: none"> • A Transportation Impact study will be prepared.
Access and Security	<ul style="list-style-type: none"> • May offer easier access to substances, possible causing more health and social issues in community. • More outsiders (tourists) coming to Georgina Island, possibly causing social issues. • Limited/no access to fishing areas or other points of interest in the community (e.g., the causeway may prevent boat access) 	<ul style="list-style-type: none"> • Controlled road access/security. • Management of these sites or areas to be developed by community
Other	<ul style="list-style-type: none"> • Limited by-laws/by law enforcement for future land-use/development • Loss of staff and employees affecting government, education, and health services due to mainland opportunities 	<ul style="list-style-type: none"> • To be developed, supported, and enforced by community • Plan for retaining/recruiting staff will need to be explored

Economic Benefits

The Fixed Link Socio-Economic Study (2019) prepared by CIPS finds that the fixed link will have a net positive impact on the community as a result of economic, community well being, educational, social, and human health improvements. A boost to the local economy of GIFN and the surrounding area is expected through the creation of direct and indirect jobs during construction and as a result of increased access to the community by the fixed link.

Furthermore, access to commercial markets becomes simple via a trustworthy transportation route is the key reason for the positive feelings towards the fixed link and the economy. Overall, GIFN views the benefits outlined in **Table 22** as benefits to physical and cultural heritage and the current use of lands and resources for traditional purposes.

Table 22 List of Project Benefits to Indigenous Peoples of Canada

Type of Benefit	Project Benefit
Economic	<ul style="list-style-type: none"> • More employment opportunities between Georgina Island and the mainland; • Direct and indirect employment opportunities for construction; • Airboat Rescue Agreements possible with Town and surrounding areas; • Partnerships with small business between Band and others; • Opportunities for Band Members to start or expand small businesses; • More access to markets in the GTA; • The overall size of Georgina Island's economy is expected to grow; • Lower costs for food and other everyday necessities as travel time and ferry costs are eliminated and potential for businesses supplying necessities within community; • With the introduction of some of the preliminary recommended access and security crossing technologies/methods, including but not limited to gate arm, pedestrian/cyclist turnstile or gate, card reader and intercom for off hours, and sliding gate, will provide new employment opportunities to those that may be impacted by the expected employment losses due to the ferry no longer being in operation. Some of these new employment opportunities potentially include manning toll stations, security positions or service staff for additionally required road maintenance; • The development of the Project is expected to boost the local economy of GIFN and the surrounding area, both through the creation of direct and indirect jobs during construction and as a result of increased access to the community by the fixed link; • The demand for a variety of skills and labour that is involved with the construction of a fixed link will be identified as the Project progresses and procurement priority will be created for members and family members of Georgina Island to fill these demands; and • Upon completion of the fixed link, the community anticipates a demand for land development both residential and commercial, as a direct result of the regularized access created to the island.

Type of Benefit	Project Benefit
Community Well-Being	<ul style="list-style-type: none"> • Members wanting to move home will be more likely to return; • Opportunity for a more qualified work force in the lands department, instead of sourcing outside consultation, which may attract local service providers; • Improved housing opportunities; • Better access to experts and services needed at market rates without have to pay the 'Island premium';
Educational	<ul style="list-style-type: none"> • A managed entry point allowing for better security and scrutiny of visitors resulting in a safe school and student environment; • Students are able to stay at home throughout the whole school year without billeting during freeze up and thaw season; • Students will be able to travel by bus to school rather than bus/scoot/bus in the winter months or bus by ferry during warmer months which reduces travel time to and from school offering more free time for extra-curricular offerings; • Increased opportunities for youth employment; • There will be the opportunity to attract and hire qualified teachers at a lesser cost than those having to cross on ferry boat; and • Parents residing off territory will be able to send kids to community school to retain their "island identity" and teachings.
Social	<ul style="list-style-type: none"> • Lower costs for food and other everyday necessities as travel time and ferry costs are eliminated; • Reduction in the hauling of groceries, goods, and gas during scoot season; • More opportunity for physical activities/extra curricular activities; • Increased social activities planned and reductions in absence and cancellations due to transportation issues; • Social plans will not have to be cancelled as a result of ferry schedule and weather-related changes: • Gatherings can be held on Georgina Island without mainland attendees having to stay the night; • Increase in recreation opportunities as the current ferry schedule may not fit recreation offerings off territories; and • Greater ability to fit employment opportunities to any schedule, not just the ferry schedule.
Human Health	<ul style="list-style-type: none"> • Quicker, more reliable, and safer ambulance services especially in winter months; • Ambulance service in winter months as currently ambulances cannot travel on ice and stretcher cannot fit in scoot; • More services offered in the community from health professionals; • A reduction in overall costs of services from the hourly rates being charged now; • No missed health-care appointments as a result of poor access to the mainland; • Better food security and access to nutritious foods; • Less physical and mental stress for everyday living such as going out to get groceries or running other household errands;

Type of Benefit	Project Benefit
	<ul style="list-style-type: none"> • Members would be able to stay at home and get medical care and long-term care access 24/7; and • Current Georgina Island emergency responders could have new agreements put in place where services are contracted out to Township/Region for Airboat Rescue, Fire and other EMS Supports; • 24/7 services across all services resulting in a more safe, secure community; • A decrease in homeowner insurance with the perceived increase access to services; and • Reduced travel time and transportation costs will lower costs of food and necessities, improving mental health.

Fixed Link Benefits Compared to Existing Ferry

Additionally, in comparison to the existing ferry, the economic benefits of the fixed link include the following:

Avoided Ferry Operating Costs

The construction of the fixed link would negate the need to operate the ferry; thus, avoiding the on-going costs of operation. Those costs include the contract outlays for the ferry operation, equipment rentals, fuel and utilities expenses, and costs of staff positions.

Avoided costs of recurring ferry rehabilitation/replacement

GIFN incurs recurring costs of a capital nature required to maintain the ferry. These costs include provision for ferry refits and ancillary facilities and equipment.

Salvage value of ferry at bridge completion

The construction of the proposed fixed link would allow for disposition of the existing ferry and alternative use of other water crossing vehicles (scoots, hovercrafts, and airboats)

Transport Time and cost savings compared to ferry/ice road

The economic benefits of the fixed link attributable to commercial and non-commercial traffic include the value of time saved compared to the ferry and ice road. The construction of a fixed link will:

- Reduce the travel time taken to cross the Lake Simcoe by ferry during the periods of open water (March to December). Users of the ferry incur a travel time that can include waiting for the ferry, loading and unloading, queuing during peak periods, occasional operational disruptions, restricted ferry operating hours and a reduced transit speed compared to road transport.
- Reduce travel times and the distance travelled for traffic utilizing the ice road during the winter season, generally from late December later March. The ice road involves a slower travel speed compared to transit on the proposed fixed link.
- Transport time and cost savings during winter freeze-up and spring-thaw periods

The construction of a fixed link will reduce transport costs incurred by commercial and non-commercial traffic during the spring break-up and fall freeze-up periods when neither the ferry nor the ice bridge is operational.

Workforce Recruitment Strategy

In addition, the GIFN will, as the study phases of the Project commence, provide the following unique employment opportunities:

Fixed Link Secretariat

The GIFL Secretariat has already developed a youth-based position for this project, the GIFL Community Liaison. The community liaison position is currently filled by a youth member of the community. The liaison is supported by an employment program GenPower, supported by Indigenous Clean Energy (ICE). Taking a future-focused approach, the program introduces Indigenous youth to the growing clean energy sector in Canada and around the globe, and the broad range of energy careers that exist today as well those that are beginning to emerge. In addition to engagement and project management support duties, the Liaison position will achieve the following objectives through the completion of the program:

- a) Explore the range of careers that encompass the energy sector;
- b) Gain exposure to clean energy projects through mentorship and on-the-land learning camp;
- c) Enhance understanding of the current and future energy landscape in Canada and globally;
- d) Develop leadership and essential employability skills;
- e) Leverage existing skills and experience to launch a career in the energy sector; and,
- f) Build a network of support with ICE's community.

This position is intended to grow from a support to a leadership role for the Fixed link as experienced is gained.

Summer and Youth Opportunities

BEAHR Indigenous training programs (Eco Canada) offer locally customized learning that provide accessible and meaningful career development to First Nations, Métis, and Inuit members to overcome barriers to employment and develop competencies needed to actively contribute to Canada's growing environmental sector.

The courses offered provide introductory training to those who want to work in the environmental sector in Canada. Graduates will have all the necessary technical, cultural, safety and soft skills required to secure meaningful environmental employment. There are two streams, Workforce Training and Technician Training. The latter gives participants further recognition if they already have environmental experience or training.

GIFN will begin to provide BEAHR certified or unique opportunities for youth that includes on the job support. The summer of 2022 will provide a job shadowing opportunity for all high school and post- secondary aged youth. Managed by the GIFL Secretariat, the community will assign youth workers to shadow field professional as they undertake study work. With core training in field-based health and safety and the GIFL Environment Principles, youth will be encouraged to shadow study team members as they complete the multitude of activities over the course of the next two years.

The intent of this program will be to inspire youth and to build a legacy of knowledge of what work was completed and what results of the studies mean. This integration with western science will allow for community-based understanding of processes. It will also enhance work experiences to become more employable in the future.

Casual Employment Opportunities

There are a number of Georgina Island members that will realize project-based employment opportunities over the course of the next three years:

- Many members are currently certified harbour pilots and meet the necessary insurance requirements to transport study teams on the ice.
- Caterers will be provided opportunities to support team meals and field teams.
- There will be the need for traditional based services for meeting openings, closings, and areas where traditional knowledge is being shared.
- Those with boats, ATVs/UTVs and vans may be required to transport field teams around the island.

These types of positions will be offered through a 'community roster'. The roster will identify skill sets and abilities to be offered to contractors on the island. These opportunities will provide a more robust resume and experiences following their service. The GIFL Secretariat will continue to monitor and project the number of casual employment opportunities as the Project continues, and demand is better understood.

First Nation Employee Development

There are a number of skill development opportunities that will be offered as a result of the Project. GIFN employees will be able to learn through direct relationships with suppliers about their job, the analysis and interpretation of data and the recommendations that result from this work. The overall internal skill development for current employees will result in:

- A better understanding of the local environment.
- A better understanding of western science-based methods of data collection on lands.
- A better understanding of how to integrate community based ecological and traditional knowledge into western based scientific studies.
- A better understanding of project management, deliverable assessment and financial modeling for projects being undertaken on community lands.
- A better understanding of the IAAC process to respond to other proponent's projects more effectively.

Employment Through Procurement Initiatives

There will be \$2M worth of studies occurring over the next 18 months. These studies will require many team members from many different contractors. The GIFN procurement process is intended to award 'points' to those projects that incorporate employment opportunities for:

- a) Members of the GIFN;
- b) Members of Williams Treaties ally communities; and,
- c) Members of the Indigenous community at large including Métis and Huron Wendat community members.

The GIFL Secretariat will continue to monitor and project the number of employments through procurement opportunities available, as the Project continues and project deliverables, scopes of work are identified.

23. GREENHOUSE GAS EMISSIONS

A preliminary assessment of greenhouse gas (GHG) emissions from the two phases (construction and operation) associated with the Project was completed. A qualitative GHG comparison was provided for the construction phase given the construction methodologies and

details are not yet known. Detailed GHG calculations were conducted for the operation phase, and comparisons between the proposed fixed link design alternatives and the current Aazhaawe Ferry are presented below.

Construction

Due to the many unknowns related to the construction methods of the fixed link, potential GHG savings from the three proposed Fixed Link options (described in **Section 12**) have been calculated, using the variables shown below.

Table 23 Values Used in GHG Savings Estimation for Proposed Fixed Link Options

Variable	Option 1	Option 2	Option 3
Fixed Link Length (m)	1,400	2,800	2,800
GHG in Fixed Link Construction (tonnes CO₂eq/m)	10	15	15
Increase in Traffic (%)	5%	25%	25%

In addition to any assumptions listed above, the calculation also assumes: 1) The typical life of a Ferry is 30 years. The current Ferry will require replacement in 5 years. Replacement of a Ferry results in approximately 1,000 tonnes CO₂eq due to manufacturing. 2) Potential increase in the efficiency of any subsequent Ferry's is negligible, as well as any need to increase the size of the Ferry.

Operation

When assessing GHG emissions associated with the Project, this assessment follows the instructions under the “Strategic Assessment of Climate Change (SACC)”, published in October 2020, section 4.1.1, and Equation 1 to quantify project emissions. The acquired energy GHG emissions, CO₂ captured and stored, and offset credits were considered negligible for this assessment when compared to the direct GHG emissions which already account of the avoided domestic GHG emissions in the comparison of alternatives. The assessment focused on the quantified the net GHG emissions as the direct GHG emissions in Equation 1.

$$\begin{aligned}
 \text{Net GHG emissions} &= \text{Direct GHG Emissions} + \text{Acquired energy GHG emissions} - \text{CO}_2 \\
 \text{(SACC Equation 1)} &= \text{captured and stored} - \text{Avoided domestic GHG emissions} - \text{Offset} \\
 & \quad \text{credits} \\
 &= \text{Direct GHG Emissions}
 \end{aligned}$$

Note: the acquired energy GHG emissions, CO₂ captured and stored, avoided domestic GHG emissions, and offset credits are considered negligible comparing to the direct GHG emissions in this project.

GHG emissions from the ferry include the emissions from its operation, and the vehicle activities, such as vehicle idling, embarking, and disembarking the ferry. To quantify the GHG emissions from the operation of the ferry, an annual diesel fuel consumption rate of 244,600 L was estimated based on current operations and emission factors were obtained from “Canada's Official Greenhouse Gas Inventory - Emission Factors” Table A6.1-14 Emission Factors for Energy Mobile Combustion Sources, Marine, Diesel. GHG emission from vehicle activities, were calculated from the estimated vehicle-kilometer travelled (VKT) and vehicle emission factors for

the 2021 year were generated using the latest Motor Vehicle Emission Simulator (MOVES3) emission model. GHG emissions from the proposed fixed link options include the emissions from vehicle traveling on the fixed link which were quantified using the vehicles emission factors and the VKT calculated from the length of fixed link in each alternative.

Based on this assessment, it was estimated that the ferry generates approximately 677 tonnes of CO₂eq (Carbon dioxide equivalent) annually. The fixed link option 1 (1,400 m in length) is anticipated to generate approximately 299 tonnes of CO₂eq annually which would provide a 56% reduction in GHG emissions compared to the ferry. The fixed link options 2 and 3 (both 2,800 m in length) are both anticipated to generate approximately 598 tonnes of CO₂eq annually, resulting in an annual reduction of 12% GHG emissions compared to the ferry.

See **Table 24** for a breakdown by alternatives of the annual and daily GHG emissions.

Table 24 GHG Emission Calculations – Comparative Values

Alternative	Emission Sources	Greenhouse Gas	CAS #	Annual Emission Rate (tonnes/yr)	Daily Emission Rate (tonnes/day)	
Current Aazhaawe Ferry	Ferry	Carbon Dioxide	124-38-9	656	2	
		Methane	74-82-8	0.06	0.0002	
		Nitrous Oxide	10024-97-2	0.02	0.00005	
	CO₂eq				662	tonnes/year
	Ferry Vehicle Activity	Carbon Dioxide	124-38-9	14	0.04	
		Methane	74-82-8	0.0003	0.000001	
		Nitrous Oxide	10024-97-2	0.0001	0.000003	
	CO₂eq				14	tonnes/year
	Total CO₂eq				677	tonnes/year
	Fixed Link Option #1 (1,400 m)	Bridge/Causeway Vehicle Activity	Carbon Dioxide	124-38-9	298	1
Methane			74-82-8	0.008	0.00002	
Nitrous Oxide			10024-97-2	0.002	0.000004	
CO₂eq				299	tonnes/year	
Fixed Link Option #2 (2,800 m)	Bridge/Causeway Vehicle Activity	Carbon Dioxide	124-38-9	596	2	
		Methane	74-82-8	0.02	0.00004	
		Nitrous Oxide	10024-97-2	0.003	0.000008	
	CO₂eq				598	tonnes/year
Fixed Link Option #3 (2,800 m)	Bridge/Causeway Vehicle Activity	Carbon Dioxide	124-38-9	596	2	
		Methane	74-82-8	0.02	0.00004	
		Nitrous Oxide	10024-97-2	0.003	0.000008	
	CO₂eq				598	tonnes/year

See below as sample calculations for GHG emissions associated with fixed link option 3:

Carbon dioxide emissions

$$\begin{aligned} \text{from one car (g/V)} &= \text{Emission factor (g/VMT)} \times \text{Fixed link length (m)} \times \text{Conversion (mile/m)} \\ &= (315 \text{ g/VMT}) \times (2,800 \text{ m}) \times (1 \text{ mile}/1609 \text{ m}) \\ &= 548 \end{aligned}$$

Methane emissions from one

$$\begin{aligned} \text{SUV/truck (g/V)} &= \text{Emission factor (g/VMT)} \times \text{Fixed link length (m)} \times \text{Conversion (mile/m)} \\ &= (0.01 \text{ g/VMT}) \times (2,800 \text{ m}) \times (1 \text{ mile}/1609 \text{ m}) \\ &= 0.02 \end{aligned}$$

Nitrous oxide emissions from

$$\begin{aligned} \text{one transport truck (g/V)} &= \text{Emission factor (g/VMT)} \times \text{Fixed link length (m)} \times \text{Conversion (mile/m)} \\ &= (0.003 \text{ g/VMT}) \times (2,800 \text{ m}) \times (1 \text{ mile}/1609 \text{ m}) \\ &= 0.005 \end{aligned}$$

$$\begin{aligned} \text{Carbon dioxide annual} & \text{ [CO}_2 \text{ emissions per car (g/V)} \times \text{\# of cars (V/yr)} + \text{CO}_2 \text{ emissions per SUV} \\ \text{emission rate (tonnes/yr)} &= \text{(g/V)} \times \text{\# of SUV (V/yr)} + \text{CO}_2 \text{ emissions per truck (g/V)} \times \text{\# of trucks (V/yr)} + \\ & \text{CO}_2 \text{ emissions per transport truck (g/V)} \times \text{\# of transport trucks (V/yr)}] \times \\ & \text{Conversion (tonnes/g)} \\ &= [(548 \text{ g/V}) \times (33 \text{ V/hr}) + (705 \text{ g/V}) \times (33 \text{ V/hr}) + (705 \text{ g/V}) \times (33 \text{ V/hr}) + \\ & (3,463 \text{ g/V}) \times (1 \text{ V/hr})] \times (24 \text{ hr/d}) \times (365 \text{ d/yr}) \times (1 \text{ tonnes}/1,000,000 \text{ g}) \\ &= 596 \end{aligned}$$

$$\begin{aligned} \text{Option 3 GHG Emission} & \text{ CO}_2 \text{ annual emission rate (tonnes/yr)} \times \text{GWP (CO}_2\text{)} + \text{CH}_4 \text{ annual} \\ \text{Rate (tonnes/yr)} &= \text{emission rate (tonnes/yr)} \times \text{GWP (CH}_4\text{)} + \text{N}_2\text{O annual emission rate} \\ & \text{(tonnes/yr)} \times \text{GWP (N}_2\text{O)} \end{aligned}$$

$$\begin{aligned} &= (596 \text{ tonnes/yr}) \times 1 + (0.02 \text{ tonnes/yr}) \times 25 + (0.002 \text{ tonnes/yr}) \times 298 \\ &= 598 \end{aligned}$$

24. TYPES OF WASTE AND EMISSIONS

Table 25 provides a summary of the types of waste and emissions that are likely to be generated - in the air, in or on water and in or on land during the Project construction or operation (i.e., use).

Table 25 Summary of Waste Sources

Type of waste/emission	Source	Management/Re-uses	Project phase
Excess Soil - To be identified in Phase II Environmental Site Assessment (ESA) - typically metals, petroleum	Excavated soil, topsoil, and sediment (Excess Soil)	To be re-used on-Site wherever possible or at a beneficial re-use site per Ontario Regulation 406/19. Liquid soils or sediment which does not pass slump test must be	Construction Post-operation (end-of-life)

Type of waste/emission	Source	Management/Re-uses	Project phase
hydrocarbons, Polycyclic aromatic hydrocarbons (PAHs), Electrical conductivity (EC)/ sodium adsorption ratio (SAR)		dewatered prior to testing for re-use, all in accordance with a Soil and Ground Water Management Plan prepared and approved for the Project.	
Demolition materials - asphalt Metals, petroleum hydrocarbons [F3, F4, F4G] and PAHs are typical	Existing asphalt removal	Asphalt removal, if necessary, will be specified to be re-used on-Site as a compacted gravel base in gravel areas to prevent erosion, or may be included as recycled asphalt in asphalt design mixes on- or off-site, or as a recycled asphalt product surface treatment on- or off-site.	Construction
Demolition materials Steel and other metals/alloys, concrete, asphalt, aggregate	Bridge/causeway structures/superstructure (steel, concrete, asphalt, aggregate)	Steel and other metals/alloys, concrete, asphalt, aggregate demolition materials to be segregated and assessed for re-use or recycling.	Post-operation (demolition)
Geological Spill Metals, petroleum hydrocarbons (PHCs), EC/SAR, cyanide are typical	Spill/Erosion	Comprehensive erosion and sediment control plan. Spills management plan	Construction Operation (in the event of a spill; accumulation in storm water management pond/sediment basin/OGS) Post-operation (demolition)
Geological To be determined through Phase II ESA/soil characterisation sampling; metals,	Pre-existing Contaminated soil/sediment Post-demolition soil/sediment	Contaminated soil or sediment passing slump test will be assessed for beneficial re-use wherever possible and for disposal when necessary, <i>per Ontario Regulations</i>	Construction Post-operation (demolition)

Type of waste/emission	Source	Management/Re-uses	Project phase
PHCs, EC/SAR, cyanide are typical		153/04, 406/19, and 347. Special requirements apply for the re-use of contaminated materials. Additional characterization (sampling and analysis) will be required for re-use/disposal purposes.	
Hydrogeological/ Hydrological To be determined through Phase II ESA/environmental characterisation; metals, PHCs are typical	Ground Water/ Surface Water	Ground water or surface water that is pumped for dewatering will be in compliance with a permit to take water (PTTW) and discharged in accordance with an environmental compliance approval per section 53 of the <i>Ontario Water Resources Act</i> . Sampling and monitoring maybe required for discharges.	Construction Post-operation (demolition)
Air Emissions Nitrogen dioxide, sulphur dioxide, particulate matter (total suspended particles, PM ₁₀ , PM _{2.5}), carbon monoxide, ozone, volatile organic compounds (VOCs), PAHs, metals, diesel, particulate matter (DPM), carbon dioxide, methane, nitrous oxide	Fossil fuel combustion, dust-generating activities	Develop a Best Management Practices Plan for Dust Manage construction timing and duration appropriately Construction equipment selection and maintenance	Construction (construction equipment, fugitive sources) Operation (vehicle activity)
Water discharge to lake, ground water Chloride, sodium, metals, PAHs, cyanide	Storm water runoff	Stormwater management plan to capture and treat runoff	Operation

Type of waste/emission	Source	Management/Re-uses	Project phase
Geological	Bedrock	Bedrock may be re-used as granular or dimensional stone assuming no evidence of contamination is observed. Crushing/screening may be required for re-use as granular, if the re-use will be subject to Ontario Provincial Standard Specification (OPSS). Fine materials maybe considered soils for management purposes.	Construction
Fuel spill Petroleum hydrocarbons F1-F4, metals	Construction vehicles Traffic on causeway/bridge	Clean up/remediate per comprehensive spill management plan.	Construction Operation Post-operation (demolition)

Table 26 Summary of Emissions Sources

DIRECT EMISSIONS		
Option	Source	Details
Ferry	Ferry	The Aazhaawe Ferry operations emissions
	Vehicle idling	Vehicle fleets that travel via the Ferry (Cars, SUVs, trucks, transport trucks)
	Vehicle embarking and disembarking the ferry	Vehicle fleets that travel via the Ferry (Cars, SUVs, trucks, transport trucks)
Fixed link	Vehicle emissions	Vehicle fleets that travel on the fixed link (Cars, SUVs, trucks, transport trucks)

CONCLUSION

The Georgina Island Fixed Link Project will provide substantial benefits to the Chippewas of Georgina Island First Nation (GIFN) and other island inhabitants. The Project will increase safety and level of security for GIFN members and will improve access to the island. The fixed link will provide a permanent, safe, year-round transportation route for crossing between Georgina Island and the mainland. The fixed link will also provide economic benefits for the GIFN members. While the Project will have some impacts on the local environment, these impacts will be further assessed through a number of environmental and technical studies and will be addressed through Project design and by identifying mitigation measures, which will be required as a condition of several federal, provincial, and local permits and approval that are expected to be required. Results of these studies will be documented in the DPD. Initial stakeholder, public, and indigenous consultation has occurred, with all inputs being documented and considered in the development of mitigation plans.