Request for Review

A) Contact information

Name of Business/Company:

Government of Northwest Territories

Name of Proponent:

Kamran Ata, GNWT Project Manager

Mailing address:

GNWT Department of Transportation
P.O. Box 1320

City/Town:

Yellowknife

Province/Territory:

NT

Postal Code:

X1A 2L9

Tel. No. :

(867) 767-9086

Fax No.:

Email:

Kamran_ata@gov.nt.ca

Select additional contact:
Contractor/Agency/Consultant *(if applicable)*:

Eiffage Canada

Mailing address:

3455 Landmark Road

City/Town:

Burlington

Province/Territory:

Ontario

Postal Code:

L7M 1T4

Tel. No. :

(905) 637-0004

Fax No.:

Email:

pierric.lepert@ic2i.ca

Is the Proponent the main/primary contact? ○ Yes ◉ No

If no, please enter information for the primary contact or any additional contact.

Environmental Dynamics
Cameron Jackson
#26-101 1132 College Dr
Saskatoon, SK
S7N 0W2

1-306-500-9335

B) Description of Project

If your project has a title, please provide it.

Hay River to Pine Point Bridge Replacement

Is the project in response to an emergency circumstance* ○ Yes ◉ No

Does your project involve work in water? ◉ Yes ○ No

If yes, is the work below the High Water Mark*? ◉ Yes ○ No

What are you planning to do? Briefly describe all project components you are proposing in or near water.

The Hay River to Pine Point bridge will be rehabilitated with the bridge superstructure being replaced. Existing piers will remain in place and no new piers are planned. An ice bridge will be developed to access and demolish the existing superstructure and rehabilitate pier caps. Temporary crane pads will be constructed on either side of the banks of the river to provide a temporary work space for bridge works. Minimal disturbance to banks to rehabilitate bridge abutments is anticipated. Existing access to the work area will be used. Temporary crane pads will be installed in March of 2019 and be left in place until no longer needed (anticipate October 2019), at which time they will be removed. Please refer to the attached ECO Plan for additional details.

How are you planning to do it? Briefly describe the construction materials, methods and equipment that you plan to use.

Once winter conditions are favorable, an ice bridge will be created to aid in demolition of the existing bridge. Water will be pumped from upstream and downstream of the work site to flood the area. Pump intake will be screened to meet DFO's Freshwater Intake End-of Pipe Fish Screen guidelines. Once the ice has froze to a desired thickness, work will commence on the ice bridge by using hand tools, bucket trucks, track hoes, and cranes to remove portions of the existing bridge.

The profile of the existing access trails within the river valley will be adjusted to allow larger equipment to access the work area, but this is anticipated to require a limited amount of excavation and grading.

To facilitate construction and rehabilitation activities of the bridge, Eiffage is proposing to construct temporary crane pads on either side of the Hay River channel. The temporary crane pads will be designed using construction bags filled with granular material to provide a working platform on which construction equipment (e.g., cranes) will be positioned. The construction bags will be placed into position to create the temporary crane pads using booms or similar type equipment and a granular platform will be placed inside the area delineated by the bags which will then provide a level work area for the crane. Upon completion of the works, the platform and construction bags will be disassembled and the granular material removed with little disturbance to the banks and slopes of the river valley anticipated.

Large cranes will be required to rehabilitate the pier caps and bridge. The replacement of bridge features will require concrete (cast in place), steel beams and wood. All debris will be removed from the ice by a loader or skid steer prior to break up.

Include a site plan (figure/drawing) showing all project components in and near water.

Are details attached? ◉ Yes ○ No

Identify which work categories apply to your project.

- ☐ Aquaculture Operations
- ☐ Aquatic Vegetation Removal
- ☐ Beaches
- ☐ Berms
- ☐ Log Handling / Dumps
- ☐ Log Removal
- ☐ Moorings
- ☐ Open Water Disposal

- ☐ Blasting / Explosives
- ☐ Boat Houses
- ☐ Boat Launches / Ramps
- ☐ Breakwaters
- ☒ Bridges
- ☐ Cable Crossings
- ☐ Causeways
- ☐ Culverts
- ☐ Dams
- ☒ Dewatering / Pumping
- ☐ Docks
- ☐ Dredging / Excavation
- ☐ Dykes
- ☐ Fishways / Ladders
- ☐ Flow Modification (hydro)
- ☐ Groundwater Extraction
- ☐ Groynes
- ☐ Habitat Restoration
- ☒ Ice Bridges
- ☐ Piers
- ☐ Riparian Vegetation Removal
- ☐ Seismic Work
- ☐ Shoreline Protection
- ☐ Stormwater Management Facilities
- ☐ Surface Water Taking
- ☐ Tailings Impoundment Areas
- ☐ Temporary Structures
- ☐ Turbines
- ☐ Water Control Structures
- ☒ Water Intakes / Fish Screens
- ☐ Water Outfalls
- ☐ Watercourse Realignment
- ☐ Weirs
- ☐ Wharves
- ☐ Wind Power Structures

☒ Other Please Specify: temporary crane pads

Was your project submitted for review to another federal or provincial department or agency? (•) Yes ( ) No

If yes, indicate to whom and associated file number(s).

Mackenzie Valley Land and Water Board (Government of NWT), request has been made for a Water License

C) Location of the Project

Coordinates of the proposed project Latitude: ____ N Longitude: ____ W

OR UTM zone: 11V ; 564232 Easting

6735838 Northing

Include a map clearly indicating the location of the project as well as surrounding features.

Name of Nearest Community (City, Town, Village): Hay River

Municipality, District, Township, County, Province: South Slave Region, Hay River, NT

Name of watershed (if applicable):

Name of watercourse(s) or waterbody(ies) near the proposed project: Hay River

Provide detailed directions to access the project site:

Head south from Hay River on NT-2 for approximately 6.8 kilometres (km). Turn left onto the Fort Smith HWY/NT-5 and travel for

approximately 2.3 km to arrive at the Hay River crossing.

D) Description of the Aquatic Environment

Identify the predominant type of aquatic habitat where the project will take place.

○ Estuary (Estuarine) ○ Lake (Lacustrine) ◉ On the b

Provide a detailed description of biological and physical characteristics of the proposed project site.

The Project is located within the Great Slave Lowlands ecoregion of the Taiga Plains Mid-Boreal ecozone in Canada's boreal forest (Ecological Stratification Working Group 2009). Lands within the Taiga Plains Mid-Boreal ecozone are generally low-lying plains, level to gently rolling, with large and deep river valleys (Ecological Stratification Working Group 2009). The landscape of the Great Slave Lowlands typically consists of gentle topography with extensive till and lacustrine plains, organic blankets and alluvial deposits. Mixedwood and jack pine stands, large fens and bogs with discontinuous permafrost are characteristic vegetation and wetland types found in this ecoregion (Ecological Stratification Working Group 2009).

The Project footprint was located in a mixed forest, which was predominately composed of Canada Goldenrod (Solidago canadensis), Prickly Rose (Rosa acicularis), Trembling Aspen (Populus tremuloides), and White Spruce(Picea glauca). Mixed grasses and herbs throughout the Project footprint had undergone senescence at the time of the assessment. Sow-thistle(Sonchus arvensis) was also observed as sporadic individuals on the banks of the Hay River. Terrain within the Project footprint was sloping, with gradients ranging from 3% to 40%. Soils identified were a fine textured Silt Loam A horizon, with a fluvial, coarser textured Sand and Sandy Loam subsoil associated with the river.

A total of one kilometre of Hay River and five transects were assessed during the watercourse crossing assessment (see attached assessment report and EcoPlan completed by EDI for additional details). Water levels were low at the time of assessment. The watercourse crossing had a wetted width of 54 m and channel width of 67 m. The average depth was greater than 1.5 m. The substrate at the crossing was dominated by cobbles and boulders with low embeddedness, with gravels and fines as the subdominate cover. The shoreline was composed of exposed cobbles and boulders, with no riparian vegetation near the edge of the water. The height of the left bank at the crossing was 2 m and the right bank was 1.5 m. Both the left and right banks at the crossing were sloping and stable. The left bank had a slope of 20 % and the right bank had a slope of 30 %. The pier on the west side of the river is located on a large exposed cobble bar which becomes inundated during high flows. Water quality data taken at the crossing showed that conditions were favourable to support fish with dissolved oxygen concentration of 15.83 mg/L. An access road on each side of the river exists that will be widened to allow equipment access, which will require vegetation clearing. Natural drainages on both sides of the river and a culvert on the east side of the river occur outside of the work area and should not impact conditions with runoff .

The downstream and upstream sections of the Hay River had a wide and well-defined channel. Wetted widths at the downstream section were estimated to range from 67 m to 69 m, with channel widths ranging from 77 m to 98 m. Water depths downstream were greater then 1.5 m. Wetted widths at the upstream section ranged from 59 m to 64 m, with channel widths ranging from 78 m to 84 m. Water depths upstream were greater than 1.5 m; discharge was not measurable for both sections due to safety constraints.

The morphology of the upstream section was characterized as an unobstructed channel with armored and depositional banks. The downstream section was characterized as an unobstructed channel with armored, depositional and erosional banks. A pool and a set of rapids were also located approximately 525 m downstream of the crossing. Substrate downstream was largely comprised of fines and cobble, with large gravel as the subdominant substrate. Upstream substrate was comprised primarily of fines and large gravels. Cover at the downstream and upstream section was provided by turbidity from boulders and cobbles, with deep pools as subdominant cover.

Include representative photos of affected area (including upstream and downstream area) and clearly identify the location of the project.

E) Potential Effects of the Proposed Project

Have you reviewed the Pathways of Effects (PoE) diagrams (http://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html

◉ Yes ○ No

If yes, select the PoEs that apply to your project.

- ☐ Addition or removal of aquatic vegetation
- ☐ Change in timing, duration and frequency of flow
- ☒ Cleaning or maintenance of bridges or other structures
- ☐ Dredging
- ☐ Excavation
- ☐ Fish passage issues
- ☒ Grading
- ☐ Marine seismic surveys
- ☐ Organic debris management
- ☐ Placement of marine finfish aquaculture site
- ☒ Placement of material or structures in water
- ☐ Riparian Planting
- ☐ Streamside livestock grazing
- ☐ Structure removal
- ☐ Use of explosives
- ☒ Use of industrial equipment
- ☐ Vegetation Clearing
- ☐ Wastewater management
- ☒ Water extraction

Will there be changes (i.e., alteration) in the fish habitat*? ○ Yes ◉ No ○ Unknown

If yes, provide description.

Will the fish habitat ○ Yes ◉ No ○ Unknown

Is there likely to be destruction or loss of habitat used by fish? ○ Yes ◉ No ○ Unknown

What is the footprint (area in square meters) of your project that will take place below the high water mark*?

TBD - drawings of the temporary crane pads are being finalized.

Is your project likely to change water flows or water levels? ○ Yes ◉ No ○ Unknown

If your project includes withdrawing water, provide source, volume, rate and duration.

Water withdrawal is required for the construction of the ice bridge and will be acquired from the Hay River. However, the volume will be less than 100 m3 and will occur for a short time period (e.g., several days) until a sufficient layer of ice has been created to sufficiently accommodate heavy equipment traffic across the Hay River.

If your project includes water control structure, provide the % of flow reduction.

n/a

If your project includes discharge of water, provide source, volume and rate.

n/a

Will your project cause death of fish? ○ Yes ◉ No ○ Unknown

If yes, how many fish will be killed (for multi-year project, provide average)? What species and lifestages?

Are there aquatic species at risk (http://www.sararegistry.gc.ca/species/aquatic_e.cfm)

No

What is the time frame of your project?

The construction will start on 11/01/2018 and end by 10/10/2019

If applicable, the operation will start on MM/DD/YYYY and end by MM/DD/YYYY

If applicable, provide schedule for the maintenance

n/a

If applicable, provide schedule for decommissioning

n/a

Are there additional effects to fish and fish habitat that will happen outside of the time periods identified above? ○ Yes ◉ No

(If yes, provide details)

Have you considered and incorporated all options for redesigning and relocating your project to avoid negative effects to fish and fish habitat?

◉ Yes ○ No

If yes, describe.

The Project cannot be relocated as it is a bridge repair. However, all options have been considered to avoid negative effects on fish and fish habitat. Refer to the attached ECO Plan.

Have you consulted DFO's Measures to Avoid Harm to Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html

◉ Yes ○ No

Will you be incorporating applicable measures into your project? ◉ Yes ○ No

If yes, identify which ones. If No, identify which ones and provide reasons.

Project will incorporate the following measures (see attached EcoPlan for additional measures)

-Use of existing access trails to the watercourse to minimize loss or disturbance to riparian vegetation.
-Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.
-Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
-Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.
-Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the water body during all phases of the project. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the water body or settling basin and runoff water is clear. The plan should, where applicable, include:
-Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
-Measures for containing and stabilizing waste material (e.g., use of construction bags as part of the design of the temporary crane pads to contain granular material from entering the Hay River) above the high-water mark of nearby water bodies to prevent re-entry.
- Use of silt curtain surrounding the temporary crane pads (if necessary) as an additional mitigation measure to reduce sediment transport during high-water periods within the Hay River.
-Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction. Repairs to erosion and sediment control measures and structures if damage occurs.
-Removal of non-biodegradable erosion and sediment control materials once site is stabilized.
-Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to

the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
-Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the water body below the ordinary high-water mark. If material is removed from the water body, set it aside and return it to the original location once construction activities are completed.
-Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
-If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
-Remove all construction materials from site upon project completion.
-Properly screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself. Follow DFO screen guidelines.
-Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
-Whenever possible, operate machinery on land above the high-water mark or on ice in a manner that minimizes disturbance to the banks and bed of the water body.
-Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.

Have you considered and incorporated additional best practices and mitigation measures recommended in relevant guidelines to avoid negative effects to fish and fish habitat?

○ No ◉ Yes

If Yes, include a list of the guidelines being used to avoid negative effects to fish and fish habitat.

As per DFO guidelines, the following will be used:
- Measures to Avoid Causing Harm to fish and fish habitat
- Freshwater Intake end of pipe fish screen guideline

Are there any relevant best practices or mitigation measures that you are unable to incorporate? ○ Yes ◉ No

(If yes, identify which ones.)

Can you follow appropriate Timing Windows (http://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/index-eng.html

○ Yes ◉ No

(If no, provide explanations

Project activities will occur during the fish timing windows for NWT Zone 1

What residual effects to fish and fish habitat do you foresee after taking into account the avoidance and mitigation measures described above?

Following implementation of the aforementioned mitigation measures, residual effects to fish and fish habitat are anticipated to be negligible in magnitude, short-term in duration, and site-specific (confined to the area where the temporary crane pads were located and any adjacent work space).

F) Signature

I, _____ (print name) certify that the information given on this form is to the best of my knowledge, correct and completed.

_____
Signature

MM/DD/YYYY
Date

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* *Fisheries Act* *Privacy Act* *Privacy Act* *Access to Information Act*

**All definitions are provided in Section G of the Guidance on Submitting a Request for Review*

Guidance on Submitting a Request for Review

This document explains the requirements for a Request for Review by DFO under the fisheries protection provisions of the *Fisheries Act* http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

Incomplete Requests for Review will be returned to the applicant without review by DFO. All information requested must be provided. If you attach documents to your application with additional information, you must still provide appropriate summaries in the spaces provided on the application document or your application will be considered incomplete.

Section A: Contact Information

Provide the full legal name of the proponent and primary mailing address for the proponent.

If applicable, also provide the contact information of the duly authorized representative of the proponent. Please note that a copy of correspondence to Contractor/Agency/Consultant will also be sent to the Proponent.

Section B: Description of Project

This information is meant to provide background about the proposed project. All components of the proposed project in or near water, must be described.

Proponents should provide information about all appropriate phases of the project, i.e., the construction, operation, maintenance and closure phases for the proposed project.

All details about the construction methods to be used, associated infrastructure, permanent and temporary structures, building materials to be used, machinery and equipment to be used must also be provided. **ermanent structures**

When physical structures in or near water are proposed, provide the plan and specifications of those works which would require a review.

Section C: Location of the Project

The purpose for this information is to describe and illustrate the location of the proposed project, and to provide geographical and spatial context. The information should also facilitate an understanding of how the project will be situated in relation to existing structures.

The details to be provided must include:

- A map(s)
- http://www.nrcan.gc.ca/earth-sciences/geography-boundary/geographical-name/11680

Section D: Description of the Aquatic Environment

Proponents must describe the environmental context and aquatic resources present at the proposed site. The information must identify the current state of the fish and fish habitat prior to the carrying on of the project.

It is important to include information about the fish species present, the biological, chemical, physical features present (habitat characteristics),

and the fish life-cycle functions (fish characteristics).

The spatial scope for assessing fish and fish habitat should encompass the direct physical footprint of the project, and the upstream and downstream areas affected.

As an example, the following is a non-exhaustive and non-prescriptive list of some common attributes which may

- Type of water source or watercourse (groundwater, river, lake, marine, estuary, etc.);
- Characteristics of the water source or waterbody could include:
  - Substrate characterization
  - Aquatic and riparian vegetation characterization
  - Flow characterization
  - Physical waterbody characterization
  - Water quality characterization - (e.g., annual or average pH, salinity, alkalinity, total dissolved solids, turbidity, temperature etc.);
  - Biological water quality characterization
- Fish species characterization
- Estimate the fish abundance

There are many different methods and attributes available to characterize fish and fish habitat. Proponents must describe all sources of information used, all fish and environment sampling techniques used, all modelling techniques used and all other approaches used to define the fish and fish habitat. Proponents are encouraged to use recognized fisheries inventory methods such as those approved by DFO or provinces and territories, or scientifically defensible methodologies and techniques whenever possible.

Whenever possible, proponents should support descriptions of the aquatic environment with the use of detailed drawings, such as plans or maps and photographs of the habitat features. In an offshore marine setting, photos may not be useful to depict the proposed development site. Instead describe and/or sketch the specific features of the sea floor which may include the

Section E: Potential Effects of the Proposed Project

The objective of this section is to identify all anticipated effects on fish and fish habitat likely to be caused by the project. Proponents should consider all mitigation or avoidance techniques.

The description must include qualitative and/or quantitative information about the predicted/potential effects to fish species and fish habitat. Some examples of likely effects may include mortality to fish, changes to the life stages of fish affected, area of habitat loss, change to flow, changes to habitat function, reduction in prey availability etc.

The spatial scope of the aquatic effects assessment would include the direct physical "footprint" of the proposed project, and any areas indirectly affected, such as downstream or upstream areas. This may also include areas in or on the water, on the shoreline, coast or bank(s) (i.e., in the riparian zone).

The assessment must include the following attributes:

- Identification of all fish species affected by the proposed project ;
- Identification of the type of fish habitat affected (e.g., spawning habitat
- Of the affected fish, identify the life stages affected (e.g., juvenile, yearling, adult etc.);
- Description of the effect (e.g., mortality to fish from entrapment, delayed migration of spawning adults, reduction in prey availability, etc.)
- Probability of the effect
- Magnitude of the effect - this is the intensity or severity of the effect (e.g., total number of fish affected, or qualitatively assessment: low, medium, high).
- Geographic extent of the effect
- Duration of the effect

The information to be provided must also describe the methods and techniques used to conduct the assessment. As much as possible, methods and techniques used should be scientifically defensible.

The schedule should, at minimum, identify the proposed start and end dates for carrying out each proposed activity, and where applicable, identify the respective phase of the proposal; i.e., the construction, operation, maintenance and closure phases. In some cases, in order to provide additional context, it may be relevant to identify other information such as the expected life span of permanent and temporary structures.

Proponents must provide comprehensive information about all best available measures and standards that are proposed to avoid or mitigate potential serious harm.

Residual serious harm to fish is any serious harm to fish remaining after the consideration of the application of proposed measures or standards to avoid or mitigate serious harm.

It is important to clearly describe and quantify residual serious harm because DFO will use this information as part of its decision making on whether an authorization is required under subsection 35(2)(*b* *Fisheries Act*

Section F: Submission and Signature

The proponent must sign the application. A signed original of the Request for Review must be provided to the regional DFO office (http://www.dfo-mpo.gc.ca/pnw-ppe/contact-eng.html *b* *Fisheries Act*

Section G: Definitions

Emergency circumstance: If your project must be conducted in response to an emergency, you may apply for an Emergency Authorization. The emergency situations are:

- The project is required as a matter of national security
- The project is being conducted in response to a national emergency where special temporary measures are being taken under the federal *Emergencies Act*
- The project is required to address an emergency that poses a risk to public health or safety or to the environment or property.

Fish habitat: Means spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes.

High Water Mark: The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to leave a mark on the land.

Permanent alteration to fish habitat: An alteration of fish habitat of a special scale and a duration that limits or diminishes the ability of fish to use as spawning grounds for nursery or rearing, or as food supply, or as a migration corridor in order to carry out one