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OPI Project File Number: C.001104

Department of National Defence (DND)

Due Diligence Environmental Effects Determination (DDEED) Report

Construction of a New Multi-purpose Building, Proposed Lots 8-11, Engle Business District Phase 2, Yellowknife, NT

Prepared by: Andrea Catley
Date: July 2018
Version: 1.0



Part 1 Physical Activity Information

1.1 Title of Proposed Physical Activity

Construction of a new multi-purpose building at the proposed lots 8-11, Engle Business District Phase 2 in Yellowknife, NT.

1.2 Originating Directorate, Base, or Unit

Department of National Defence (DND), Assistant Deputy Minister-Infrastructure and Environment (ADM (IE)), Directorate Municipal Transfers and Project Development (DMTPD) completing for location of Yellowknife, NT and Joint Task Force North (JTFN).

1.3 Location of Proposed Physical Activity

Latitude: 62.442306, Longitude: -114.461237

The site covers 50,790 square meters (m²) and is located in the southwest portion of the City of Yellowknife adjacent to the south of Fiddler Lake Road. The site consists of undeveloped land with mostly exposed bedrock, some sparsely vegetated areas with small spruce trees and low shrubs and some areas that were recently cleared for geotechnical testing. The topography of the site is very irregular and ranges in elevation from approximately 195 meters above sea level (masl) along parts of the western property boundary to approximately 189 masl near the northeast and southeast corners of the site. Below illustrates the area of the site.

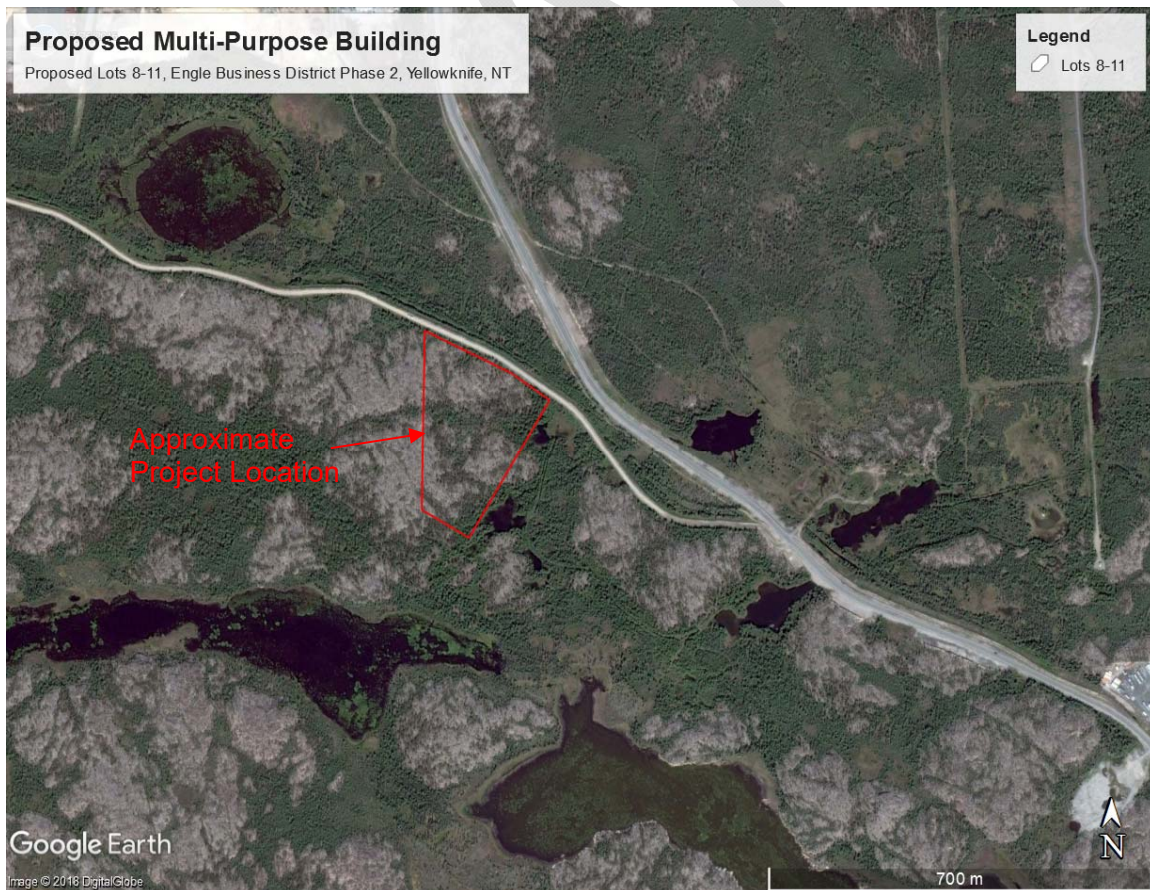




Figure 1: Approximate project location for the proposed multi-purpose building, proposed lots 8-11, Engle Business District Phase 2 in Yellowknife, NT (ref: Google Earth)

1.4 Project Summary

The objective of this project is to construct a multi-purpose building, associated parking area and storage yard at the site. The gross building area is expected to be approximately 7,000 m², which includes the mechanical penthouse but does not include a possible second floor future expansion.

1.5 Applicability of DND EIA Directive and Territorial Act

DND EIA Directive:

The DND Environmental Impact Assessment (EIA) directive was created in response to requirements made under the Canadian Environmental Assessment Act, 2012 (CEAA 2012). CEAA 2012 sets out rules under which environmental assessments (EAs) and departmental environmental effects determinations (EEDs) must be completed. It also stipulates the geographic boundaries under which CEAA 2012 applies (applies to projects occurring on federal lands or outside of Canada). The definition of federal lands in CEAA 2012 does not include any lands under the administration and control of the Commissioner of Yukon, the Northwest Territories or Nunavut, as these lands are regulated by other jurisdictions. In the case of this project, CEAA 2012 and the DND EIA directive processes do not apply, and applicable territorial acts must be considered.

Territorial Act:

The project falls under lands which are regulated by the Mackenzie Valley Resource Management Act (MVRMA). The MVRMA outlines their requirements for EIAs, which begin with a preliminary screening of a proposal to determine whether an EA is required, and end with submitting EAs for evaluation by a Review Board, if required. Preliminary screenings for projects are required under the MVRMA when an application is made to a regulatory authority or designated authority agency for a license, permit or other authorization required for the carrying out of a development, unless it is exempt from screening because:

- a) The body proposing to carry out the development has determined that the impact of the development on the environment will be manifestly insignificant; or
- b) The development is exempted from preliminary screening because either:
 - The Governor in Council has determined that the impact on the environment to be insignificant, or
 - The examination is declared to be inappropriate for reasons of national security.

It is understood that potable water and wastewater will be trucked to and from the site and that the only site servicing will be electrical, and the current site zoning is in line with the proposed development. Thus, it is not anticipated that a regulatory license, permit, or other authorization will be required to carry out this project at this time, and as such, it has been determined that a preliminary screening is not required for the project under the MVRMA. It is noted that building permits or other City issued permits do not fall under the category of regulatory licenses, permits or authorizations as they are not issued by a regulatory authority.



As neither CEAA 2012 nor the MVRMA EIA processes apply to the project, DND has decided to complete a due diligence environmental effects determination (DDEED) for the project to determine whether the physical activity is/is not likely to cause significant adverse environmental effects.

1.6 DDEED Start Date

Start date of the effects determination process: 2018/06/25.

1.7 Provincial/Territorial and Municipal Government Involvement

Provisions made under the Mackenzie Valley Resource Management Act have been consulted for the completion of this DDEED.

1.8 Other Federal Departments or Third Party Groups

There are no third party groups or other federal departments involved with the site. The occupant of the site will be exclusively DND.

1.9 Contacts

1.9.1 Project Point of Contact

- a) Name: Kyle Keffer, Team Leader, Program Management
- b) E-mail Address: kyle.keffer@dcc-cdc.gc.ca, and
- c) Name: Andrea Catley, Coordinator, Environmental Services
- d) E-mail Address: andrea.catley@dcc-cdc.gc.ca.

1.9.2 Project Environmental Staff Specialist (ESS) / Env O

- a) Name: Dr. Peter Cott, Environmental Advisor, Joint Task Force North, CAF
- b) E-mail Address: Peter.Cott@forces.gc.ca

1.9.3 Project OPI

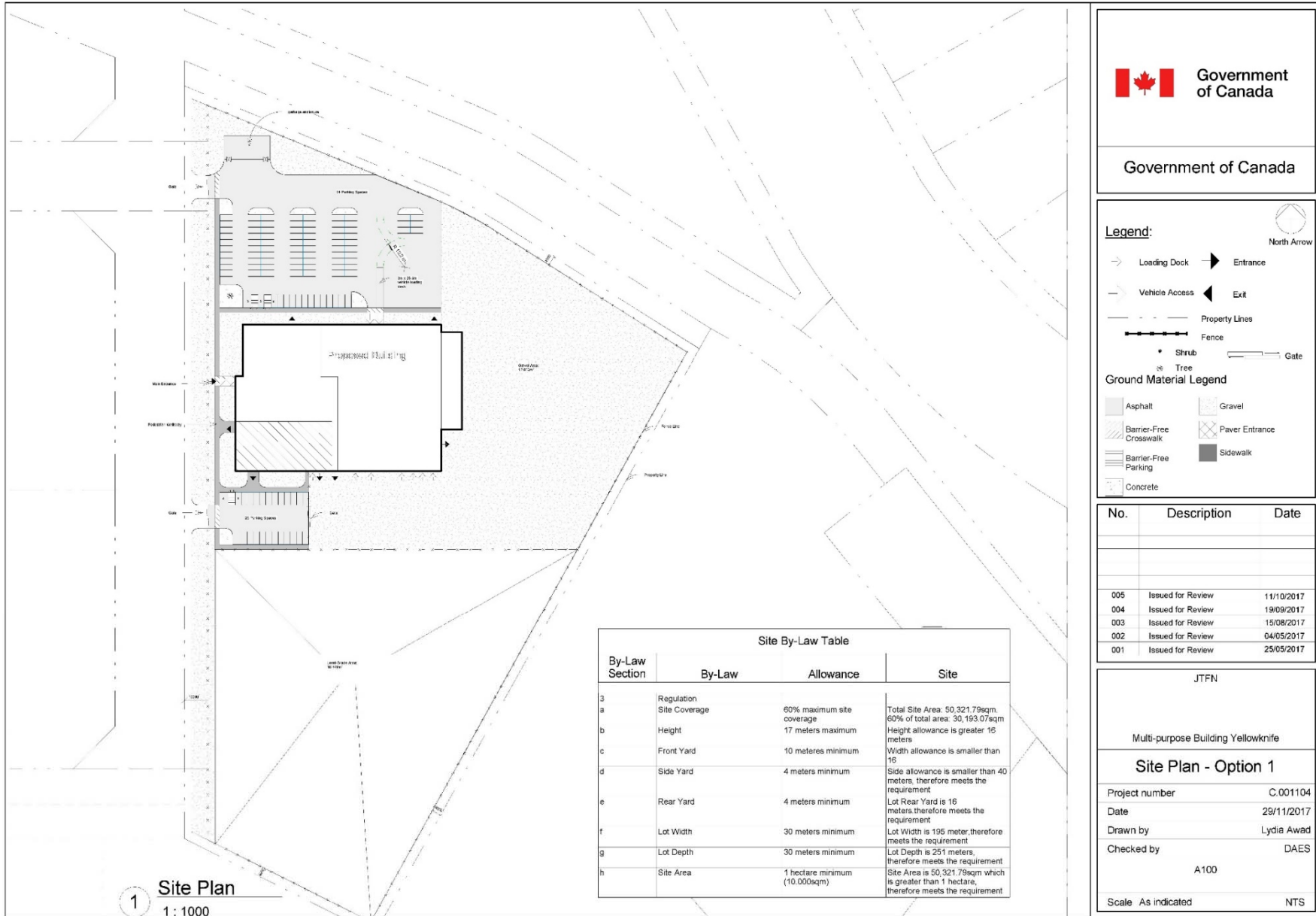
- a) Name: Richard Helm, Project Director- Directorate Municipal Transfers and Project Development
- b) E-mail Address: richard.helm@forces.gc.ca

Part 2 Environmental Effects Discussion

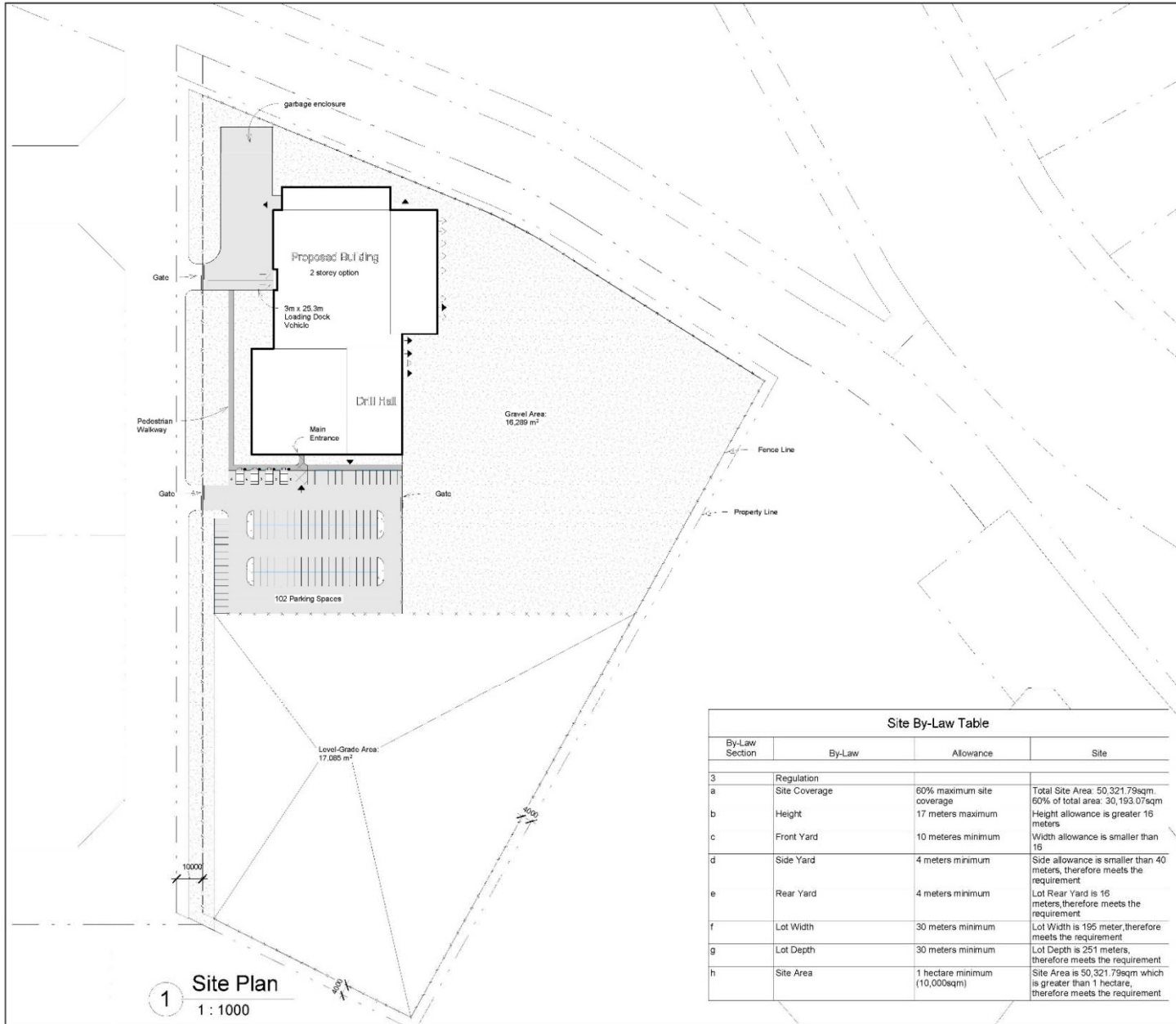
2.1 Description of Project

The proposed project involves the construction of a new multi-purpose building and storage yard at the site. The new building design consists a one-story building with a mechanical penthouse for a total approximate area of 7,000 m². The building is to include a drill hall, maintenance bays, a stores area, loading docks, and a group and shared resources area which would include work stations, meeting rooms, storage areas, a fitness room and a storage tank room. It is understood that potable water and wastewater will be trucked to and from the site and that the only site servicing will be electrical. It is expected that the construction phase will last approximately 2 years beginning in February 2020.

The images below illustrates the two proposed site layouts (Options 1 and 2).



Source: Multi-purpose Building Yellowknife, Site Plan – Option 1.



1 Site Plan
1 : 1000

Site By-Law Table			
By-Law Section	By-Law	Allowance	Site
3	Regulation		
a	Site Coverage	60% maximum site coverage	Total Site Area: 50,321.79sqm, 60% of total area: 30,193.07sqm
b	Height	17 meters maximum	Height allowance is greater than 16 meters
c	Front Yard	10 meters minimum	Width allowance is smaller than 15
d	Side Yard	4 meters minimum	Side allowance is smaller than 40 meters, therefore meets the requirement
e	Rear Yard	4 meters minimum	Lot Rear Yard is 16 meters, therefore meets the requirement
f	Lot Width	30 meters minimum	Lot Width is 155 meter, therefore meets the requirement
g	Lot Depth	30 meters minimum	Lot Depth is 251 meters, therefore meets the requirement
h	Site Area	1 hectare minimum (10,000sqm)	Site Area is 50,321.79sqm which is greater than 1 hectare, therefore meets the requirement



Government of Canada

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Legend:

Loading Dock Entrance
 Vehicle Access Exit
 Property Lines
 Fence
 Shrub Gate
 Tree
Ground Material Legend:
 Asphalt Gravel
 Barrier-Free Crosswalk Paver Entrance
 Concrete Sidewalk
 Barrier-Free Parking

No.	Description	Date
005	Issued for Review	11/10/2017
004	Issued for Review	19/09/2017
003	Issued for Review	15/06/2017
002	Issued for Review	04/05/2017
001	Issued for Review	25/05/2017

JTFN

Multi-purpose Building Yellowknife

Site Plan - Option 2

Project number: C.001104
 Date: 29/11/2017
 Drawn by: Lydia Awad
 Checked by: DAES

A100

Scale: As Indicated NTS

2017-12-06 15:38:44

Source: Multi-purpose Building Yellowknife, Site Plan – Option 2.



2.2 Identification of Valued Ecosystem Components (VECs)

The following is a summary of the valued ecosystem components where potential significant adverse effects are anticipated due to the project activities. The following sections (Section 2.3) provide the rationale for the information presented in Table 1 below.

Table 1: Environmental Effects Matrix

Physical Activity Components	Valued Ecosystem Components (VEC)													
	PHYSICAL					BIOLOGICAL				SOCIAL AND CULTURAL				
	Atmosphere	Surface Water and Wetlands	Groundwater	Soils and Geology	Ambient Noise	Terrestrial Animals and Habitat	Aquatic Animals and Habitat	Vegetation	Species at Risk and Migratory Birds	Human Health	Land Use	Parks and Recreational Areas	Cultural Resources	Aboriginal / Traditional Activities
Site Planning/ Preparation	x	x		x	x	x	x	x	x	x	x			
Building	x	x	x	x	x	x	x	x	x	x	x			
Site Restoration	x	x		x	x	x	x	x	x	x	x			
Building Operation		x		x	x	x	x	x	x		x			

Legend: [Blank] = No Effect | [x] = Potential Significant Adverse Effect

2.3 Identification of Valued Ecosystem Components

2.3.1 Physical Components

i) Atmosphere

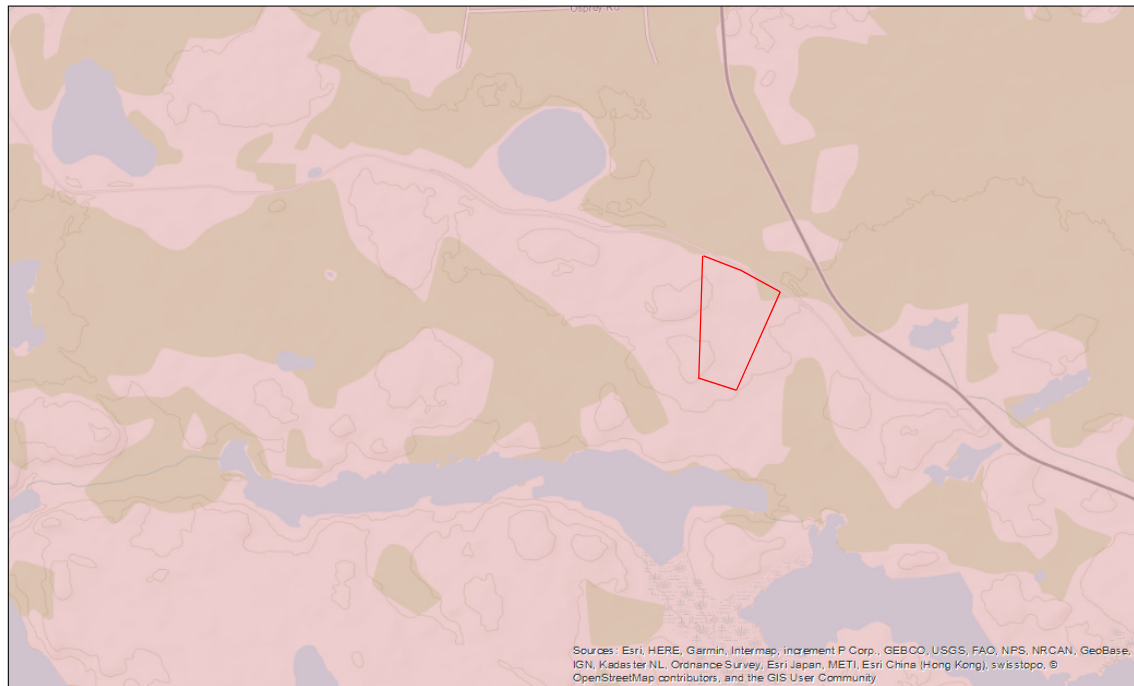
Climatic norms are available from Environment Canada stations, with the closest station being found at the Yellowknife airport, NT. The daily average temperature ranges from a low of -25.6 °C in January to a high of 17.0 °C in July. The precipitation ranges from a high of 40.8 mm in July to a low of 11.3 mm in April, with an average total precipitation of 288.6 mm. The proposed project location has not been evaluated for existing air quality, though due to the presence of nearby roadways, industrial/commercial activities approximately 0.5 km north of the site and the Yellowknife airport located 1.5 km northeast of the site, exhausts could be anticipated in the area.

ii) Surface Water and Wetlands

There are no surface water bodies on the site and the closest surface water bodies are two small ponds located immediately east of the site boundary. A larger unnamed pond is located approximately 160 m south of the site boundary. As indicated in the figure below,








a wetland inventory for the project area is in progress; however, using this base imagery as a guide, it is also not anticipated that there are wetlands, or habitats that support aquatic animals, within the proposed project boundaries.





Canadian Wetland Inventory Status Map

Wetland Classes

-  Bog \ Bog
-  Fen \ Fen
-  Marsh \ Marais
-  Swamp / Marécage
-  Shallow/Open Water / Eau peu profonde/étang

CWI Inventory Status

-  Complete \ Near Complete
-  In Progress

0 0.35 0.7 1.4 Kilometers

Date: 6/26/2018



Map Source: Ducks Unlimited Canada and CWI Partners, Bureau of Land Management, Northwest Territories, ESRI map: <http://maps.ducks.ca/cwi/>.

iii) Groundwater

Groundwater was not encountered in test holes drilled on site in October 2017 to depths ranging from approximately 1.8 meters below ground surface (mbgs) to 4.9 mbgs. Based on the anticipated depth of excavation for the building construction of no more than 3 mbgs, it is not anticipated that dewatering of the excavation would be required and groundwater in the area is not expected to be significantly impacted by the project activities.

iv) Soils and Geology

Exposed granite bedrock is present at surface across much of the site. Based on test holes drilled in 2017, areas with overburden consist of a thin to moderately thick layer of organics (topsoil or peat) underlain by sand or sand and gravel which in turn is underlain by granite bedrock with occasional fractures. Bedrock was encountered between 0.1 mbgs to 3.3 mbgs in these test holes.

v) Ambient Noise



Ambient noise at the site is typically associated with the nearby Yellowknife airport (located approximately 1.5 km north of the site). Other sources of ambient noise may include nearby roads, commercial/industrial activities to the north of the site and construction activities to the west of the site.

2.3.2 Biological Components

i) Terrestrial Animals and Habitat, and Vegetation

The site is located on undeveloped land with mostly exposed bedrock and some sparsely vegetated areas. Access to the site is not restricted and while terrestrial animals may frequent the site, given that the site (lots 8-11) and nearby lots to the west of the site are slated for development it is not expected that the site is an important habitat for terrestrial animals.

ii) Aquatic Animals and Habitat

As indicated above, there are no water bodies supporting aquatic habitats within the project boundaries. The topography of the site generally slopes downward towards two small unnamed ponds located near the eastern site boundary. A topographic map from Natural Resources Canada was consulted to assess whether there were any water bodies to consider for the completion of this project. The figure below indicates that there are no ponds, swamps, streams, or other water bodies within the boundary of the proposed project; however, it is noted that the two small ponds adjacent to the east of the site are not shown on this figure.



June 26, 2018



1:10,000
0 0.075 0.15 0.3 mi
0 0.125 0.25 0.5 km

Map Source: Natural Resources Canada – The Atlas of Canada – Toporama
<http://atlas.gc.ca/toporama/en/index.html>.



iii) Species at Risk, and Migratory Birds

The following is a list of the species at risk identified in the territory by the Northwest Territories Species at Risk Committee (NWT SARC), Northwest Territory List of Species at Risk under the Species at Risk (NWT SAR), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessment, and/or the federal species at risk act (SARA).

Is it important to note that once a species is added to Schedule 1, it benefits from all the legal protection afforded, and the mandatory recovery planning required, under SARA. In addition, under SARA, wildlife species that are listed on Schedules 2 and 3 must be assessed by COSEWIC within a given timeframe. These wildlife species follow the same process for assessment and classification, but are not included on the official list. Therefore only Schedule 1 species are included in the table below. The SARA and COSEWIC species at risk information was accessed on June 26, 2018 from <http://laws-lois.justice.gc.ca/eng/acts/s-15.3/>. Information on the website was last modified on May 30, 2018.

The official list of species at risk in the Northwest Territories under the Species at Risk (NWT) Act was accessed through the website: <http://www.nwt-species-at-risk.ca/CMA/SarList>. Listing is normally for a term of 10 years. Information on the NWT SAR was viewed on June 26, 2018.

Those species that are listed as extinct (a wildlife species that no longer exists) or extirpated (a wildlife species that no longer exists in the wild in Canada, but exists elsewhere) in the territory under SARA classification are also not included below as project activities cannot affect these species.

Species with range maps overlapping with the site location are indicated below along with the species' general preferred habitat. The species highlighted in red below indicate that the site may include the listed species preferred habitat; these species are discussed further below. Only those species highlighted in red are considered to be potentially impacted by the proposed project.



Table 2: NWT SARC Assessment, NWT SAR, COSEWIC Assessment and Federal SARA listings with range maps overlapping the site location

Common Name	Taxon	NWT SARC Assessment	NWT SAR	COSEWIC Assessment	Federal SARA	General Preferred Habitat
Barren-ground caribou	Mammals	T	UC	T	UC	Open tundra, grassed areas
Little brown myotis	Mammals	SC	UC	E	E	Summer roosts include man-made structures, caves, winter hibernation usually in caves or mines
Wolverine	Mammals	Not at risk	NS	SC	UC	Variety of habitats, generally covering several hundred kilometers of tundra
Bank swallow	Birds	NA	NA	T	T	Nest on sites with vertical sand-silt banks such as riverbanks and sand/gravel mounds
Barn swallow	Birds	NA	NA	T	T	Breed near open habitats in typically man-made structures (e.g., barns) or caves
Common nighthawk	Birds	NA	NA	SC	T	Nest in a variety of habitats (e.g., open forests, sand dunes, marshes)
Evening grosbeak	Birds	NA	NA	SC	UC	Breeds in open, mature conifer-dominated forests
Harris's sparrow	Birds	NA	NA	SC	UC	Breed in semi-forested tundra
Horned grebe	Birds	NA	NA	SC	SC	Small ponds, marshes and wetlands
Olive-sided flycatcher	Birds	NA	NA	SC	T	Boreal forests and mature conifer stands near open areas with tall trees for perching
Red-necked phalarope	Birds	NA	NA	SC	UC	Breed in low and sub-arctic tundra or tundra-forest transition habitats
Rusty blackbird	Birds	NA	NS	SC	SC	Breed near open water in treed wetlands. Primarily nest in small spruce trees
Short-eared owl	Birds	NA	NS	SC	SC	Grasslands, prairies, and tundra
Yellow rail	Birds	NA	NA	SC	SC	Nest in marshes, wet meadows and shrubby wetlands
Shortjaw cisco	Fishes	NA	NA	T	NS	Deepwater fish (usually found in waters between 55 m to 144 m deep)
Transverse lady beetle	Insects	NA	NS	SC	UC	Wide variety of plants in a wide range of habitats
Yellow-banded bumble bee	Insects	NA	NS	SC	UC	Wide range of habitats where flowers and nest sites are available (usually nests)



Common Name	Taxon	NWT SARC Assessment	NWT SAR	COSEWIC Assessment	Federal SARA	General Preferred Habitat
						underground in abandoned rodent burrows or rotten logs)
Mackenzie Hairgrass	Plants	NA	NS	SC	SC	Sand dunes and beaches

Notes:

UC Under consideration

NA Not Active, or Not Applicable

NS No Status

E Endangered: A wildlife species facing imminent extirpation or extinction.

T Threatened: A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Special Concern: A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

DRAFT



Based on the results of the database search, the following at-risk species may range at or be near the site. It is noted however, that the likelihood of these species being present at the site is considered low given that much of the site has been cleared and the ongoing construction in the area (i.e., construction of the road and development of lots to the west of the site).

Wolverine: is a stocky, medium-sized carnivore and the largest terrestrial member of the weasel family. They do not thrive near human settlements. Given the site's proximity to human settlements (roads adjacent to the site, industrial/commercial facilities approximately 0.5 km north of the site and the Yellowknife airport located 1.5 km northeast of the site, it is not anticipated that wolverines would be present on site.

Common Nighthawk: is a medium-sized bird with greatest impact due to human activities (loss of habitat) in their southern range, outside of the project boundaries. Other impacts on the species are related to severe weather events (cold snaps) and collisions with motor vehicles and aircraft. Common nighthawks breed in mid-May to early June and lay eggs directly on sand, gravel or bare rock. Chicks stay in the nest area for about three weeks.

Evening grosbeak: is a stocky songbird with a large greenish-yellow bill. They are a nomadic species that will move around as their food supply (seeds and insects) changes. Potential threats to the species include loss or degradation of mature and old-growth forests.

Horned Grebe: is a small water bird, of special concern due to increased population of predators and loss of wetlands due to drought (climate change) or water quality. Their typical habitat consists of small ponds, marshes and wetlands and they build floating nests in shallow water. Given that there are no water bodies on site, it is unlikely that nests would be present on the site; however, with two ponds adjacent to the site, nests could be present in close proximity to the site. Horned grebes arrive in NWT in May and breed in mid-June to July. Adults leave the NWT in mid-August and young leave in early September.

Olive-sided Flycatcher: is a medium-sized songbird, of concern due to loss of habitat in their southern range due to human activities (outside of project area), decline in insect populations and due to collisions with towers during migration. The Olive-sided Flycatcher arrives in the NWT in late May and early June, and leaves the NWT in late July to early August and winters in South and Central America.

Rusty Blackbird: is a medium-sized forest bird, whose greatest threat is due to changes in wetland habitats and deforestation. They primarily nest in small spruce trees and rely heavily on aquatic insects and larvae for food.

Yellow Rail: is a small-sized bird of special concern due to loss of habitat and increased number of predators due to human activities and collisions with towers during migration. They likely arrive in the NWT in the latter part of May and nesting occurs in June and possibly July.

Transverse Lady Beetle: is a small, round beetle, whose threat in the territory is due to negative interactions with non-native species and use of pesticides. They can be found



on a variety of plants in a wide range of habitats and they move around to take advantage of available prey (aphids and other insects).

Yellow-banded bumble bee: is a medium-sized bumble-bee, whose threat in the territory is not well understood. Colonies usually nest underground in pre-existing cavities like abandoned rodent burrows and rotten logs. The queens overwinter in loose soil or rotting trees.

2.3.3 Social and Cultural Components

i) Human Health

Potential impacts to public health may arise for personnel and construction workers in the form of changes in air quality from emissions and dust, use of heavy equipment, and excavation activities as well as the handling of petroleum, oil, lubricants (POL). Provided the mitigation measures are implemented, no long-term adverse human health effects are expected from the project.

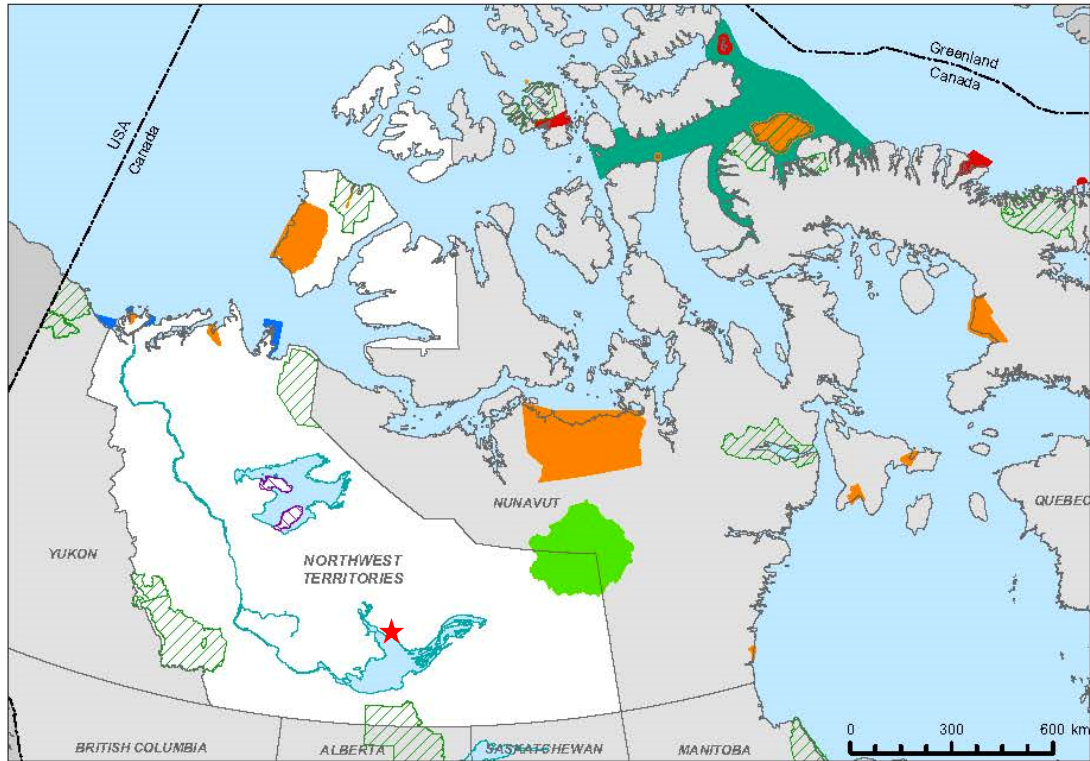
ii) Land Use

The proposed project area is located in undeveloped land and the adjacent lands consist of undeveloped lands apart from the roadway to the north and the newly constructed road adjacent to the west of the site. There are no documented known or suspected contaminated sites on or adjacent to the proposed project area. The lands to the west of the newly constructed road are slated for development.

The land use for the site and area to the west of the site will change from undeveloped forest lands to commercial/industrial lands. An increase in vehicular traffic is expected from the development of the site and nearby lands; however, given that the nearest residential dwellings are over 1 km from the site, it is not anticipated that the increase in vehicular traffic would have an adverse effect for these residents.

iii) Parks and Recreational Areas

As illustrated below, the project is not located within an area designated as a migratory bird or wildlife sanctuary, national wildlife area, national park, or historic site.



- | | | |
|----------------------------|------------------------------------|-------------------------|
| Migratory Bird Sanctuaries | National Wildlife Areas | National Historic Sites |
| Thelon Wildlife Sanctuary | National Parks | Marine Protected Areas |
| Site | National Marine Conservation Areas | |

Map Source: Government of the Northwest Territories Species at Risk in the Northwest Territories, 2018.

http://www.nwt-species-at-risk.ca/sites/default/files/species-at-risk-in-the-nwt_english_2018.pdf

v) Cultural Resources

There are no known cultural resources within the project boundary, and as such are not expected to be impacted by the project activities.

vi) Aboriginal/Traditional Activities

The project site is not expected to impact aboriginal activities.



2.4 Project Effects and Associated Mitigation Measures

Table 3: Potential effects of the activity on each Valued Ecosystem Component (VEC) with mitigation measures

VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
Atmosphere	1) Site Planning/ Preparation 2) Building 3) Site Restoration	1) 2) 3) Vehicles and heavy equipment used during project activities will release emissions and potentially contribute greenhouse gases (GHG) to the atmosphere. 1) 2) 3) Dust and particulates may be generated during the project in association with excavation, blasting, soil stockpiling, and movement by heavy equipment.	1) 2) 3) The Contractor will prepare an Environmental Protection Plan (EPP) to identify measures for controlling vehicle emissions and dust. 1) 2) 3) Vehicles, machinery and equipment will be maintained in good repair. 1) 2) 3) Vehicles, machinery and equipment will be turned off when not in use, unless there are safety concerns such as extreme cold or hot temperatures. 1) 2) 3) Wetting techniques can be used to prevent the release of excess dust to the atmosphere. The amount of water used shall not create runoff to the surrounding environment. 1) 2) 3) All loads entering and leaving the site shall be covered.	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
Surface Water and Wetlands	1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation	1) 2) 3) 4) Accidental spills have the potential to impact the off-site adjacent surface waters and/or drainage features for the duration of the construction, approximately 2 years, and then with less magnitude and frequency for the duration of the buildings operation. 4) Increased surface water runoff from the impermeable surface of the parking lot and building for the duration of the operation of the building, could lead to erosion of soil.	1) 2) 3) 4) Area pre-designated for vehicle refuelling. Equipment (e.g. generator) can be refuelled where it is used if secondary containment is available. In all refuelling scenarios, spill kits must be at the ready. 1) 2) 3) 4) All vehicles and equipment are to be kept in good working order and checked for leaks prior to use. 1) 2) 3) Spill kits capable of containing 110% of the largest HAZMAT volume being used / stored are to be kept on Site and accessible at all times. 1) 2) 3) All personnel shall be conversant with spill recognition and response for the HAZMAT being stored on Site. 1) 2) 3) Contractors and on-site personnel shall be familiar with the requirements of the Spill Response Plan and adhere to applicable DND Standard Operating procedures (SOPs), directives and requirements for reporting during an accidental	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
			<p>spill. All spills shall be reported to Contract Authority.</p> <p>1) 2) 3) Drip trays are to be placed under all equipment not in use.</p> <p>1) 2) 3) All fuel shall be stored in approved jerry cans bearing the Underwriters of Canada or Factory Mutual seal of approval. Any such container shall be stored out of the weather elements in drip pans or other suitable secondary containment.</p> <p>1) 2) 3) The quantity of fuel on hand in storage containers shall meet the fire code and fuel storage requirements as per the applicable guidelines and regulations.</p> <p>1) 2) 3) Erosion control measures are to be implemented and maintained to minimize the transportation of fine material off-site, particularly towards the ponds immediately east of the site.</p>	



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
			<p>1) 2) 3) Ensure soil stockpiles are not in the direct path for surface water runoff and ensure all erosion control measures have been implemented.</p> <p>4) The building and parking lot designs shall be constructed in such a way as to divert intercepted precipitation into swales to capture surface water runoff and enhance infiltration rates.</p> <p>4) Appropriate containment measures shall be constructed around any fuel storage areas or tanks.</p>	
Groundwater	2) Building	<p>2) Groundwater pumping to dewater excavations for building foundations is not expected to be required; however, should it be required, it has the potential to depress the local groundwater level.</p> <p>2) Accidental spills in excavations have the potential to negatively impact groundwater quality.</p>	<p>2) Should dewatering be required, a dewatering plan shall be prepared and followed.</p> <p>2) Refer to the “Surface Water and Wetlands” section of this table for spill mitigation measures.</p>	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
Soils and Geology	1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation	<p>1) 2) 3) Project activities could expose soils through vegetation clearing, land grading, excavations, and rutting from vehicle movements for the duration of the construction process, approximately 2 years.</p> <p>4) Permeability of paved surfaces reduces the infiltration rate and can lead to soil erosion from increased surface water runoff for the duration of the apartment buildings operation.</p> <p>1) Tree clearing may also cause a risk of fire.</p> <p>1) 2) 3) 4) Soil may be negatively impacted by spills of hazardous materials for the duration of the construction process, approximately 2 years, and then with less magnitude and frequency for the duration of the buildings operation.</p>	<p>1) 2) 3) The Project area will be clearly communicated to all personnel to limit the impacted area.</p> <p>1) 2) 3) 4) Refer to the “Surface Water and Wetlands” section of this table for spill mitigation measures.</p> <p>1) 2) 3) Construct and maintain all soil erosion barriers on areas that have been disturbed as per the Government of Northwest Territories, Department of Transportation – Erosion and Sediment Control Manual. Keep these in place until vegetation has secured the area and minimized the potential for soil erosion.</p> <p>4) The building and parking lot designs shall be constructed in such a way as to divert intercepted precipitation into local swales or storm water facilities for infiltration.</p> <p>1) 2) Trees to be cleared from the project footprint are to be removed from the site or stacked in a way to minimize fire hazard.</p>	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
Ambient Noise	1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation	1) 2) 3) 4) The heavy machinery required to construct various components of the facility (as well as machinery and vehicles associated with general maintenance during the operation phase) will generate noise for the duration of the construction process, approximately 2 years, and then with less magnitude and frequency for the duration of the buildings' operation. 1) Blasting of bedrock is expected to be required during the site preparation phase due to the irregular bedrock surface topography and may generate noise and vibrations over a long range from the site. 1) 2) 3) 4) The acoustic environment can be degraded by	1) 2) 3) 4) Equipment and other machinery are not permitted to idle when not in use. 1) 2) 3) Project construction activities will follow any municipal by-laws related to hours of operation and noise restrictions. 1) 2) 3) 4) Prevent the occurrence of multiple noise activities for prolonged periods. 1) 2) 3) 4) Workers on site must wear appropriate hearing protection as needed. 1) Nearby occupants should be forewarned of blasting at the site.	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
		the presence of unwanted sound. For the most part, noise is a nuisance that detracts from the enjoyment of a quiet atmosphere. In severe cases, noise can cause sleep disturbance, anxiety, and consequent health effects. It can damage the natural environment by alarming wildlife and affecting habitat. Acoustic disruption for nearby neighbourhoods is expected to be minimal as the nearest residential dwellings are over 1 km away.		
Terrestrial Animals and Habitat	1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation	1) 2) 3) The proposed project area has the potential to provide habitat for a variety of animal and plant species and may disrupt the use of the adjacent habitat for the duration of construction activities, approximately 2 years. 1) 2) 3) 4) Construction activities and final landscape design will alter the local terrestrial habitat. As the construction of the facility is the desired outcome of this project, mitigation measures will	1) 2) Conduct vegetation removal activities during times when nesting birds are not present (e.g. prior to early May and after mid-August). If not possible, a nesting bird survey ¹ should be conducted prior to any project activities. 1) 2) 3) Prior to site work, site inspections shall be conducted to identify any signs of birds nesting or SAR. Real Property Operations Department Natural Resource (RP Ops Det NR) Office shall be	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
		not be prescribed for these VEC interactions.	immediately contacted if any wildlife or nests are found onsite in order to identify and relocate (if applicable) any wildlife that may be at risk of injury as a result of the project activities.	
Aquatic Animals and Habitat	1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation	1) 2) 3) The proposed project area has the potential to disrupt the use of the adjacent aquatic habitat for the duration of construction activities, approximately 2 years. 4) Increased surface water runoff from the impermeable surface of the parking lot and building for the duration of the operation of the building could result in degradation of the adjacent aquatic environment.	1) 2) 3) 4) Refer to the “Surface Water and Wetlands” section of this table for relevant mitigation measures. 1) 2) 3) 4) Refer to the “Species at Risk and Migratory Birds” section of this table for relevant mitigation measures.	No
Vegetation	1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation	1) 2) 3) Construction activities such as site excavation and grading will eliminate the local vegetation. 4) Construction activities and final landscape design will alter the	1) 2) 3) Inspect equipment to ensure it is free of invasive species and noxious weeds. 1) 2) 3) 4) Minimize the amount of vegetation that is impacted from project activities by delineating and	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
		<p>local vegetation for the operation of the building.</p> <p>1) 2) 3) Introduction of non-native species from site restoration activities (e.g. seeding) and unintentional transport on construction vehicles and equipment onto site could spread invasive species into the Project area or surrounding lands.</p>	<p>staying within the footprint of the project.</p> <p>1) 2) 3) Ensure all sediment and erosion controls remain in place until vegetation has secured the soil.</p> <p>3) Seed disturbed areas with native plant species.</p>	
Species at Risk and Migratory Birds	<p>1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation</p>	<p>1) 2) 3) 4) The development of the project area could remove nesting habitat for SAR and migratory bird species for the duration of construction and for the duration of the building operations, if SAR or migratory birds are found to be nesting in the project.</p> <p>1) 2) 3) 4) The Site is potential habitat for SAR and migratory bird species. Construction will eliminate the habitat.</p> <p>1) 2) 3) Construction activities should be aware of the potential for creating temporary nesting</p>	<p>1) 2) Conduct vegetation removal activities during times when nesting birds are not present (e.g. prior to early May and after mid-August). If not possible, a nesting bird survey should be conducted prior to any project activities.</p> <p>1) 2) 3) Prior to site work, site inspections shall be conducted to identify any signs of birds nesting or SAR. RP Ops Det NR Office shall be immediately contacted if any wildlife or nests are found onsite in order to identify and relocate (if applicable) any wildlife that may be at risk of</p>	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
		habitats for migratory and/or SAR birds through material handling and storage practices.	injury as a result of the project activities.	
Human Health	1) Site Planning/ Preparation 2) Building 3) Site Restoration	<p>1) 2) 3) There is the potential to affect the health of DND personnel as well as Contractors in association with the increased traffic, and other construction related hazards which present a potential risk to safety. Site activities increase the amount of airborne dust, particulates and vehicle exhaust emissions, which may pose a potential adverse effect to individuals whom are highly sensitive, due to allergies or respiratory illness.</p> <p>1) 2) 3) Any underground structures (electrical lines, etc.) have the potential to cause serious damage to human health if the lines are accidentally struck.</p> <p>1) 2) 3) Heavy equipment, if not maintained or used safely, can be</p>	<p>1) 2) 3) Contractor shall develop a Site Specific Health and Safety Plan. The plan should be reviewed by the DND Project Manager and/or delegated Site Representative for appropriate measures before the contractor mobilizes to the site. All site-specific health and safety requirements must be followed.</p> <p>1) 2) 3) All work must be conducted in compliance with the applicable regulations and DND standing orders.</p> <p>1) 2) 3) Heavy equipment operators must be qualified/certified to operate the type of equipment.</p> <p>1) 2) 3) Safety meetings shall be held on a regular basis, as required, to identify safety concerns and potentially avoid hazardous incidents.</p>	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
		<p>dangerous to personnel as well as the public (i.e., risk of being hit or run over by heavy equipment). Activities at the sites could be dangerous to site workers.</p> <p>1) Blasting of bedrock is expected to be required during the site preparation phase and may generate noise and vibrations over a long range from the site.</p>	<p>1) 2) 3) On site locations of services and utilities must be established prior to any earthwork.</p> <p>1) 2) 3) Contractor to ensure workers wear proper personal protective equipment (PPE) for the job being performed.</p> <p>1) 2) 3) The mitigation measures noted in the VEC Atmosphere shall be implemented to limit the impacts to human health from airborne dust, particulates and vehicle exhaust emissions.</p> <p>1) Nearby occupants should be forewarned of blasting at the site.</p>	
Land Use	<p>1) Site Planning/ Preparation 2) Building 3) Site Restoration 4) Building operation</p>	<p>1) 2) 3) Increased traffic from construction vehicles may impact the use of road networks for the duration of construction.</p> <p>1) 2) 3) The use of construction vehicles may lead to the transport of soil onto adjacent road networks for the duration of construction.</p>	<p>1) 2) 3) The project size is relatively small and related vehicle traffic and traffic disruption is anticipated to be minor. If required, coordination of traffic flow will be done to minimize impact during the project. Traffic on Fiddler Lake Road is anticipated to be primarily associated with the construction at nearby lots.</p>	No



VEC(s) Affected	Project Component(s)	Description of Effects	Mitigation Measures (numbers appearing after a measure indicate the Physical activity component(s) with which it is associated)	Are residual significant adverse effects likely?
		4) Construction of the proposed facility will alter the potential for various land uses.	1) 2) 3) Implement the use of soil elimination procedures (e.g. mud mats) at the access points of the project to reduce soil from being transported onto the adjacent roadways. 1) 2) 3) Conduct street sweeping activities if excessive soil is transported into adjacent roadways. 4) The project Site is zoned general industrial land use and is therefore in line with development to the west (also zoned general industrial). The nearest residential dwellings are over 1 km (east) from the site.	

1) Environment and Climate Change Canada (2017) Technical Information – related to determining the presence of nests. Available on line at: https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=8D910CAC-1#_03_5. Accessed on June 28, 2018.



Part 3 Environmental Effects Determination

On the basis of this DND DDEED Report, it has been determined that the impact of this Physical Activity on the environment is as follows:

In our opinion, the impact of the development on the environment will be manifestly insignificant and will not be a cause of public concern. The Physical Activity **can** proceed with application of the mitigation measures specified in the interaction tables in this report.

The Physical Activity is likely to cause significant adverse environmental effects that cannot be mitigated. As per the Environmental Impact Assessment Directive, it is recommended that the Physical Activity must not proceed.

DND DDEED Report Prepared by:

Name: Andrea Catley

Title: Environmental Coordinator, DCC

Signature

Date (dd-mm-yyyy)

DND DDEED Report Reviewed by:

Name: Dr. Peter Cott

Title: Environmental Advisor, JTFN, CAF

Signature

Date (dd-mm-yyyy)

DND DDEED Report Accepted and Approved by:

The undersigned accepts the determination and recommendations of this environmental effects determination report. The undersigned also accepts the responsibility to incorporate the recommendations of the report into the Physical Activity design and implementation.

Name: Richard Helm

Title: Project Director- Directorate
Municipal Transfers and Project
Development

Signature

Date (dd-mm-yyyy)

Name: David Courchaine

Title: Team Leader, Environmental
Services, DCC

Signature

Date (dd-mm-yyyy)



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