REPORT

Project Description

Environmental Site Assessments at the Ikhil I-37 and Reindeer C-36 Former Wellsites, East-central Mackenzie Delta, Inuvialuit Settlement Region, Northwest Territories

Submitted to:

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List of Abbreviations

˚C	degree Celsius
AICCP	Aklavik Inuvialuit Community Conservation Plan
BTEX	benzene, toluene, ethylbenzene, xylenes
CC	Community Corporations
CCME	Canadian Council of Ministers of the Environment
CEA	Cumulative Effects Assessment
cm	centimetre
CO_2-e	carbon dioxide equivalent
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSA	Canadian Standards Association
DFO	Fisheries and Oceans Canada
DOC	dissolved organic carbon
ECC	Department of Environment and Climate Change
ECCC	Environment and Climate Change Canada
ECE	Education, Culture and Employment
ECG	Ecosystem Classification Group
EISC	Environmental Impact Screening Committee
EM	electromagnetic
ERP	Emergency Response Plan
ERT	electrical resistivity tomography
ESA	environmental site assessment
ESWG	Ecological Stratification Working Group
GNWT	Government of Northwest Territories
GOC	Government of Canada
GPR	ground penetrating radar
HTC	Hunters and Trappers Committee
ICCP	Inuvik Community Conservation Plan
ILA	Inuvialuit Land Administration
ISR	Inuvialuit Settlement Region
kg	kilogram
km	kilometre

Komex/IEG	Komex International Ltd. and IEG Environmental
L	litre
L/day	litres per day
LA*n*	Low Arctic north
LiDAR	Light Detection and Ranging
m	metre
m^3	cubic metre
masl	metres above sea level
mbgs	metres below ground surface
n/a	not applicable
NWT	Northwest Territories
PAH	polycyclic aromatic hydrocarbon
PD	Project Description
PHC	petroleum hydrocarbon
PPE	personal protective equipment
QA/QC	quality assurance/quality control
SAR	species-at-risk
SARA	*Species at Risk Act*
SARC	Species at Risk Committee
Shell	Shell Canada Limited
T	tonne
TCCP	Tuktoyaktuk Community Conservation Plan
TDS	total dissolved solids
TOC	total organic carbon
VC	valued components
VOC	volatile organic compound
WSP	WSP Canada Inc.

1.0 COVER LETTER

The cover letter is submitted as a separate document.

2.0 TITLE OF THE PROPOSED DEVELOPMENT

Environmental Site Assessments at the Ikhil I-37 and Reindeer C-36 Former Wellsites, East-central Mackenzie Delta, Inuvialuit Settlement Region, Northwest Territories

3.0 CONTACT NAME AND ADDRESS

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4.0 APPROVALS – REGULATORY AND OTHER AUTHORIZATIONS

4.1 Purpose of This Project Description

In February 2026, Shell Canada Limited (Shell) submitted a Project Summary Questionnaire to the Environmental Impact Screening Committee (EISC) for proposed summer 2026 (and summer 2027 as a contingency) site investigations at five additional former Shell wellsites (Ikhil I-37, Reindeer C-36 [also known as F-36], Ya Ya A-28, Ya Ya I-17 and Ya Ya P-58) in the Inuvialuit Settlement Region (ISR). The EISC approved the summer activities in April 2026 (Registry File [02/26-05]). The five former wellsites were drilled by Gulf Canada between 1973 and 1975, and subsequently abandoned. Following a court decision in the fall of 2024, the five former wellsites were added to Shell's portfolio in the ISR.

This Project Description (PD) was developed for proposed Phase II Environmental Site Assessments (ESAs; the Project) at two of the five additional former wellsites: Ikhil I-37 and Reindeer C-36 (the Sites). The Sites are on Inuvialuit 7(1)(A) Private Land in the east-central Mackenzie Delta, between 49 and 90 kilometres (km) northwest of Inuvik, in the ISR, Northwest Territories (NWT). Based on a review of available historical information, historical features at the Sites potentially include: a well centre, drilling waste sump, a former fuel storage area, flare pit, camp sump, wood pilings and/or former access roads.

In September 2025, the Inuvialuit Land Administration (ILA) inspected Ikhil I-37 and suspected that the sump may have leaked drilling waste fluids. The ILA reported their findings, and communications between Shell and the ILA are ongoing, with Shell proposing initial summer site investigations (Registry File [02/26-05]) and to subsequently progress the assessment of Ikhil I-37 with winter stage ESAs in the winter of 2026/2027. For the purposes of obtaining the required regulatory approvals, the Ikhil I-37 and Reindeer C-36 former wellsites, both on Inuvialuit Private Lands, have been grouped together in this PD, with the three remaining additional wellsites on territorial lands (Ya Ya A-28, Ya Ya I-17 and Ya Ya P-58) to be addressed at a later time as part of a separate PD and under separate regulatory approvals.

This PD is the fifth of six PDs to be submitted, which together will include the detailed description of the proposed ESAs at an updated total of 28 former Shell wellsites in the ISR.

- The first PD for eight sites in the Kendall Island Bird Sanctuary was submitted to the EISC on 3 May 2024 (Registry File [05/24-01]) and approved to proceed without environmental impact assessment on 28 August 2024.

- The second PD for four sites in the south-central Mackenzie Delta was submitted to the EISC on 23 July 2024 (Registry File [07/24-06]) and approved to proceed without environmental impact assessment on 7 October 2024.
- The third PD for five sites in the northern Mackenzie Delta was submitted to the EISC on 10 September 2024 (Registry File [09/24-01]) and approved to proceed without environmental impact assessment on 15 November 2024.
- The fourth PD for six sites in the north-central Mackenzie Delta was submitted to the EISC on 31 October 2024 (Registry File [10/24-04]) and approved to proceed without environmental impact assessment on 31 January 2025.
- This fifth PD includes two additional former wellsites added to Shell's portfolio in 2024 in the east-central Mackenzie Delta (Ikhil I-37 and Reindeer C-36).
- The sixth PD will include the remaining three additional former wellsites added to Shell's portfolio in 2024 in the eastern Mackenzie Delta (Ya Ya A-28, Ya Ya I-17 and Ya Ya P-58). The sixth PD will be submitted at a later time.

The 28 former wellsites are presented in Figure 2 (Appendix A).

Similar to the projects described in the first four PDs, Shell is proposing a multi-season, multi-year Project that will allow staged ESAs to be completed at the Sites, which includes the following stages.

- Summer ESAs using appropriate hand tools and equipment to complete soil, sediment and surface water sampling, collect ecological information, assess the depth of the active layer and complete geophysical surveys. The Sites will be accessed via helicopter or boat (currently approved for the summers of 2026 and 2027; Registry File [02/26-05]).
- Winter ESAs using heavy equipment (e.g., environmental drill rig) to complete soil and ice sampling at depths (more than 2 metres below ground surface [mbgs]) and locations (e.g., drilling and camp sumps) not accessible by hand auger, and complete geophysical surveys. The Site access will be via ice road, snowpack ramps and temporary overland winter access (Figure 3, Appendix A).

The layout maps for the Sites are presented in Figures 4 and 5 (Appendix A).

The goal of the staged ESAs is to identify and delineate potential contaminants of concern at the Sites, including but not limited to petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOCs), salinity and metals, and to assess the general condition of the Sites (e.g., drilling and camp sumps, wood pilings, ecological health). Shell is proposing a six year (2026 to 2031) timeframe to complete these assessments. This timeframe will allow the flexibility to access the Sites during more than one summer or winter season, if needed. At a minimum, one summer stage and one winter stage ESAs will be completed at the Sites. Based on the findings of the initial summer and winter stage ESAs, additional summer or winter stage supplemental ESAs may be completed at the Sites to delineate detected contaminants of concern or to investigate areas of the Sites that are identified for additional assessment following the initial ESA activities. The six year timeline will also allow additional time to complete the assessments should site access be restricted due to, for example, wildfire smoke, fog or seasonal flooding of the Sites.

The ESAs will be conducted as per the Canadian Standards Association (CSA) Standard for Phase II Environmental Site Assessment (2023) and the Government of Northwest Territories (GNWT) Best Practices for

Environmental Site Assessment in the NWT (GNWT 2023, Appendix 4). Soil analytical results will initially be compared to the Environmental Guideline for Contaminated Site Remediation, Tier 1 Guidelines for residential/parkland (GNWT 2003) and the more recent Draft 2023 Environmental Guidelines for Contaminated Site Remediation, Tier 2 Pathway Specific Criteria for Residential Land (GNWT 2023, Appendix 5). Once the draft guidelines are finalized, the updated document will be used. Sediment analytical results will initially be compared to Canadian Council of Ministers of the Environment (CCME) Sediment Quality Guidelines for the Protection of Freshwater Aquatic Life (CCME 1999 and updates). Surface water analytical results will initially be compared to CCME Water Quality Guidelines for the Protection of Freshwater Aquatic Life (CCME 1999 and updates). Site-specific criteria may be used following the development of site-specific conceptual site models after the completion of the staged ESAs.

The objective of this multi-season, multi-year Project is to obtain the necessary environmental and geotechnical information to determine if additional remedial steps need to be taken to address potential risks at the Sites. Should the ESA results of this Project indicate that remedial work (e.g., wood piling removal, soil remediation) will be required, a new PD will be developed for this work and submitted to the EISC.

4.2 Regulatory and Other Authorizations

Shell, through WSP Canada Inc. (WSP), is submitting this PD to the EISC for approval. Pursuant to the terms established under the Inuvialuit Final Agreement of 1984, Shell understands that EISC approval is required for the proposed Project.

A summary of potential permitting requirements and relevant legislation is listed in Table A. Note that all applications are either approved, currently ongoing or requirements for approvals being determined. Section 13.0 provides details on this process.

Table A: Approvals Potentially Required for the Proposed Project

Agency and Contact Person	Relevant Legislation / Required Approval
Patricia Sung Environmental Impact Screening Coordinator Environmental Impact Screening Committee P.O. Box 2120 Inuvik, NT, X0E 0T0 Telephone: (867) 777-2828 Fax: (867) 777-2610 Email: eisc@jointsec.nt.ca	Inuvialuit Final Agreement *Western Arctic (Inuvialuit) Claims Settlement Act* Approval of PD
Bijaya Adhikari Science and Regulatory Coordinator Inuvialuit Water Board P.O. Box 2531 Inuvik, NT X0E 0T0 Telephone: (867) 678-8610 Fax: (867) 678-2943 Email: adhikarib@inuvwb.ca	*Waters Act* and Waters Regulations Type B Water Licence

Agency and Contact Person	Relevant Legislation / Required Approval
Charles Klengenberg Director of Inuvialuit Lands Inuvialuit Land Administration P.O. Box 290 Tuktoyaktuk, NT X0E 1C0 Telephone: (867) 777-7009 Fax: (867) 977-7101 Email: cklengenberg@inuvialuit.com	Inuvialuit Final Agreement *Western Arctic (Inuvialuit) Claims Settlement Act* Land Use Permit
Fish and Fish Habitat Protection Program Fisheries and Oceans Canada 867 Lakeshore Rd Burlington ON L7S 1A1 Telephone: 1-855-852-8320 Email: FisheriesProtection@dfo-mpo.gc.ca	*Fisheries Act* and *Species at Risk Act* Request for Review of Project
Navigation Protection Program Transport Canada, Prairie and Northern Group 1100 9700 Jasper Avenue Edmonton, Alberta, T5J 4E6 Telephone: (844) 425-7787 Email: NPPPNR-PPNRPN@tc.gc.ca	*Canadian Navigable Waters Act* No Interference with Navigation Notification of Work
Department of Education, Culture and Employment Government of the Northwest Territories 4750 48th Street, P.O. Box 1320 Yellowknife, NT X1A 2L9 Telephone: (867) 767-9347 ext. 71472 Fax: (867) 873-0205 Email: archaeology@gov.nt.ca	*Archaeological Sites Act* and *Access to Information and Protection of Privacy Act* Archaeological Site Data Access Request
Scientific Services Office Department of Education, Culture and Employment Government of the Northwest Territories P.O. Box 2884 Inuvik, NT X0E 0T0 Telephone: (867) 777-3298 Email: ResearchLicensing@gov.nt.ca	*NWT Scientists Act* Scientific Research Licence
Department of Infrastructure Beaufort Delta Region 106 Veterans Way, Bag Service #1 Inuvik, NT X0E 0T0 Telephone: (867) 777-7146 Fax: (867) 777-3463	*Public Highways Act* Public Highway Access Permit
Department of Infrastructure Beaufort Delta Region 106 Veterans Way, Bag Service #1 Inuvik, NT X0E 0T0 Telephone: (867) 777-7146 Fax: (867) 777-3463	*Public Highways Act* Public Highway Sign Permit

5.0 SUMMARY OF THE PROJECT DESCRIPTION

Figures 1 to 8B for this PD are provided in Appendix A.

5.1 The Proposed Project

Gulf Canada developed and subsequently abandoned the Sites for oil and gas exploration in 1973. General features of the Sites may include a well centre (e.g., a historic well marker), a drilling waste sump, a camp sump, a drilling flare pit, a former fuel storage area and/or wood pilings used to support surface infrastructure above the ground. The Sites are on Inuvialuit 7(1)(A) Private Land in the east-central Mackenzie Delta, between 49 and 90 km northwest of Inuvik, in the ISR, NWT (Figure 1, Appendix A).

Subsequent to abandonment of the Sites, the following activities were completed.

- 1974 to 1975: Restoration work completed at the Ikhil I-37 site, including opening drainage channels to allow water to drain from the edge of the drilling waste sump. The Reindeer C-36 site was relevelled.
- 2005: Site assessments via helicopter. Soil and surface water samples were collected at the Sites.
- 2010: Ikhil I-37 site walkover and soil sample collection.
- 2022, 2025: Aerial site reconnaissance.
- 2025: ILA site inspection and reporting for Ikhil I-37.

The following sections provide a description of the proposed Project.

5.2 Summer Scope of Work

The summer stage of the Project may consist of the following activities.

- Light Detection and Ranging (LiDAR) and orthographic imagery of the Sites collected through overflights between May and September.
- Site access via helicopter or boat (Reindeer C-36 only). If accessed by boat, a low ground pressure non-rutting summer vehicle [e.g., ARGO/SHERP or similar] may be used to transport field staff and equipment from the boat landing area(s) to the assessment area(s).
- Aerial (via helicopter) and ground-based visual inspection of the Sites, including site photography and drone surveys to collect high resolution imagery.
- Completion of soil sampling from approximately 20 hand auger boreholes. Additional hand auger boreholes may be completed based on field observations.
- Completion of sediment, surface water and porewater sampling from approximately 10 locations using appropriate hand tools and equipment. Co-located sediment, surface water and porewater samples may be collected from ponded areas (potential drilling waste sump, camp sump and/or flare pit) and from background locations.
- Completion of geotechnical soil sampling using hand tools (e.g., hand auger, shovel/spade) from areas near the drilling waste sumps.
- Assessing the depth of the active layer at locations on and around the Sites using a hand auger or a thaw probe/poking rod.
- Collecting ecological information (such as information on aquatic and terrestrial habitats and incidental observations, and vegetation tissue samples).

- Temporary fuel storage at the Sites will be in jerry cans for refueling of the ARGO/SHERPs, if applicable. The boats will be fueled in Inuvik at the start of each trip and at the Sites from jerry cans, as needed.
- Loose and accessible historical debris, if encountered, that can be safely transported by helicopter or boat may be recovered and transported off site for disposal at a licensed facility (e.g., in Inuvik).
- Geophysical surveys (e.g., electromagnetic [EM], electrical resistivity tomography [ERT] or other) and sump pond bathymetry may be completed.

This multi-year (2026 to 2031) Project is proposed to allow for the flexibility to complete the summer scopes of work over multiple summers, as needed.

5.2.1 Accommodations

No temporary camp will be established at the Sites and accommodations will be provided in Inuvik or at a temporary, self-contained camp permitted and established at Camp Farewell (EISC Registry File: [04/25-06]) for similar work in the ISR.

5.2.2 Equipment Mobilization and Demobilization

Field crew and equipment (i.e., hand tools, personal protective equipment [PPE], sampling supplies) will be mobilized daily to the Sites via helicopter or boat (Reindeer C-36 only). If accessed by boat, a low ground pressure non-rutting summer vehicle [e.g., ARGO/SHERP] may be used to transport field staff and equipment from the boat landing area(s) to the assessment area(s).

5.3 Winter Scope of Work

The winter stage of the Project may consist of the following activities.

- Construction of an ice road extension from a junction approximately 30 km along the Inuvik to Aklavik public ice road to the Sites (Figure 3, Appendix A). This will allow site access for equipment as well as the off-site transport and disposal of waste materials. The ice road extension may be approximately 70 km long. It is expected that ice road reconnaissance and profiling will begin in early winter and construction will be finished in January/February.
- Construction of spur ice road, snowpack ramps and temporary overland winter access to allow access to the Sites (Figures 3 to 5, Appendix A). Access to the Sites will be completed in late winter/early spring.
- Limited vegetation (e.g., willows and small growth trees) brushing may be required for site and borehole access.
- Mobilization of equipment (e.g., environmental drilling rig, trucks) to the Sites on the ice road/temporary overland winter access for the duration of the winter stage of the Project.
- Completion of soil sampling using an environmental drill rig. Approximately 35 boreholes will be drilled at each Site to depths appropriate for assessment. Additional boreholes may be completed based on field observations. Several of these boreholes may be completed with temporary thermistor installations.
- Temporary fuel storage at the Sites will be in a fuel truck and pick-up truck with slip tank for refueling of equipment and vehicles.
- Loose and accessible historical debris, if encountered, may be collected, transported and disposed of off site at approved facilities.

- Geophysical surveys (e.g. EM, ERT or other) may be completed.

This multi-year (2026 to 2031) Project is proposed to allow for the flexibility to complete the winter scopes of work over multiple winters, as needed.

5.3.1 Accommodations

No temporary camp will be established at the Sites and accommodations will be provided in Inuvik or at a temporary, self-contained camp permitted and established at Camp Farewell (EISC Registry File: [04/25-06]), or at a temporary, self-contained camp permitted and potentially established on the river ice in the north-central Mackenzie Delta (EISC Registry File: [10/24-04]) for similar work in the ISR.

5.3.2 Ice Road and Temporary Overland Winter Access

In early winter, an ice road extension will be constructed from the Inuvik to Aklavik public ice road to the Sites to allow site access for the crew and equipment (e.g., trucks, environmental drilling rig, warming trailer) as well as off-site transport and disposal of waste materials. The route from Inuvik to the Sites will originally follow the GNWT Inuvik to Aklavik public ice road to approximately the 30 km mark. From there, an approximate 70 km ice road extension may follow the Mackenzie River East Channel north crossing through Inuvialuit 7(1)(A) Private Lands. At approximately the 25 km point of the ice road extension, a short snowpack ramp and an approximately 7.5 km long temporary overland winter access will be constructed to access the Ikhil I-37 site. At approximately the 70 km point of the ice road extension, an approximately 3.3 km spur ice road will be constructed leading west along a channel and lake from where a short snowpack ramp and an approximately 0.4 km long temporary overland winter access will be constructed to access the Reindeer C-36 site (Figures 3 to 5, Appendix A). The proposed routing of the ice road extension, snowpack ramps and temporary overland winter access are subject to change based upon river level and bank conditions at the time of construction, and the proposed routing may need to be adjusted to account for field conditions at the time of the work.

5.3.3 Equipment Mobilization and Demobilization

After construction of the ice road extensions, snowpack ramp and temporary overland winter access, snow and vegetation clearance (if needed), work at the Sites will be completed. An environmental drill rig, fuel truck, water truck and other miscellaneous equipment will be mobilized once the access to the Sites is completed and demobilized prior to breakup.

5.4 Community Engagement and Consultation

Shell initiated both written and in-person community consultations in Inuvik, Aklavik and Tuktoyaktuk in the summer of 2022 regarding planned ESA work at former Shell wellsites in the ISR, and consultations have been ongoing since. The following organizations were consulted with:

- Inuvik Hunters and Trappers Committee (HTC) and Community Corporation (CC);
- Tuktoyaktuk HTC and CC; and
- Aklavik HTC, CC and Elders.

5.5 Environmental Effects Assessment

5.5.1 Valued Components

Based on the assessed site conditions, type of work and timing of work, the following Valued Components (VCs) were selected for the environmental effects assessment:

- sensitive terrain;
- permafrost;
- soil quality;
- vegetation communities;
- polar bear;
- grizzly bear;
- wolverine;
- barren-ground caribou;
- woodland caribou (boreal population; hereafter referred to as boreal caribou);
- migratory birds;
- water quality;
- fish and fish habitat; and
- subsistence harvesting.

5.5.2 Mitigation of Potential Effects

The primary mitigation measures include the following.

- Construct ice roads and water course crossings using best management practices (Project-specific ice-road engineered design plans and quality assurance/quality control [QA/QC] plans) and build up the snow cover (and supplement with ice if required) on the snowpack ramps and temporary overland winter access to protect underlying vegetation and terrain.
- No camp will be established at the Sites; a warming trailer, fuel storage area and equipment/supplies staging area will be in previously disturbed areas of the Sites, where possible.
- Clearing of vegetation (if required) will be limited to the temporary overland winter access and the area of the assessment. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill.
- Use of trucks and heavy equipment will be restricted, where possible, to flat terrain, avoiding sensitive slopes on land, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 centimetres (cm).
- Shorelines will be avoided wherever possible, except as required to complete the work and the site access ramp.
- Inuvialuit Wildlife Monitors will be present during the completion of the Project, and the site-specific Wildlife Management and Monitoring Plan (Appendix B) will be implemented.

- Clean work areas will be maintained with appropriate wildlife-proof temporary waste storage and regular removal of waste for disposal at approved facilities in accordance with the site-specific Waste Management Plan (Appendix C).
- The fuel storage area and refueling areas will be bermed and lined (winter) or use drip trays (summer) (i.e., secondary containment) at least 30 metres (m) away from the ordinary high-water mark of the nearest water body.
- Drip trays or secondary containment will be used at fuel storage and refueling areas to contain any drips or accidental spills.
- Drip trays will be placed under all vehicles and equipment when not in use.
- Helicopter transportation and LiDAR/orthographic imagery overflights will follow all requirements in the GNWT guidelines for flying low (GNWT 2019) and the Canadian Aviation Regulations (2025) (e.g., adhere to flight altitudes, avoid hovering).
- Should active bird nests be encountered, a species-specific no-disturbance buffer area will be established.
- Should suspected heritage resources be found during Project activities, work will cease in the immediate vicinity and regulators, and the Department of Education, Culture and Employment (ECE) will be notified.
- The site-specific Spill Contingency Plan (Appendix D), Emergency Response Plan (ERP) (Appendix E) and Erosion and Sediment Control Plan (Appendix F) will be implemented and made available to all staff.
- HTCs and CCs will be advised of Project schedule and any possible interference with subsistence harvesting, and meetings will continue to be held with Tuktoyaktuk, Inuvik and Aklavik HTCs and CCs.
- There will be effective communication between Project team, field crew members, Inuvialuit communities and other affected parties prior to, during and after the Project.
- All mitigation measures described in this PD will be implemented and terms and conditions of regulatory authorizations will be adhered to.

5.5.3 Effects Assessment Results

The environmental effects assessment predicts that the Project, including implementation of proposed mitigation measures, will result in residual effects that are not significant. The effects assessment results for the identified VCs are summarized in Table B.

Table B: Summary of Potential Effects, Proposed Mitigation, Residual Effect Characteristics and Predicted Significance for each Valued Component

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
Sensitive terrain	Soil compaction /disturbance	■ Use track-mounted or low ground-bearing heavy equipment where possible. ■ Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying terrain to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access. ■ If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain. ■ Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization. ■ Minimize access to shorelines by mobile equipment/vehicles (i.e., restrict to mobilization/demobilization). ■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible. ■ Minimize overall truck and equipment use to the extent feasible.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Permafrost	Permafrost melt	■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible. ■ Minimize overall truck and equipment use to the extent feasible. ■ Use track-mounted or low ground-bearing heavy equipment where possible. ■ Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
		winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization. ■ Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying terrain to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access. ■ If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain. ■ Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain. ■ Backfill completed boreholes with either the original material or with bentonite/barite mix and/or sand. ■ Minimize access to shorelines by mobile equipment/vehicles (i.e., restrict to mobilization/demobilization). ■ Limit clearing of vegetation (if required) to the temporary overland winter access and the assessment area. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill. ■ If permafrost degradation is observed at the Sites, cease drilling activities in that location and backfill boreholes immediately. If other activities at the Sites should result in permafrost degradation, these activities will cease, and the affected area stabilized and restored.		
Soil quality	Spills/contamination	■ Implement the Project-specific Spill Contingency Plan (Appendix D). ■ On-site fuel storage in the winter will consist of one fuel truck (18,200 litres [L]) and one pick-up truck with slip tank (500 L). On-site fuel storage in the summer will consist of jerry cans (20 L each). All storage containments will be securely stored in a designated bermed and lined storage area (winter) or drip tray (summer). ■ Locate spill kits wherever fuel is stored or used. ■ Use portable drip trays and appropriately sized fuel transfer hoses when refuelling motorized equipment. ■ A designated fuel monitor will conduct daily visual inspections to check for leaks or damage to any fuel storage containment and refueling equipment. ■ Regular maintenance and checks of all motorized equipment will be undertaken to avoid preventable leaks. ■ Place drip trays under all equipment when not in use.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
Vegetation communities	Alteration/loss of habitat; damage/removal of vegetation; introduction of invasive species	■ Use track-mounted or low ground-bearing heavy equipment where possible. ■ Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization. ■ Limit clearing of vegetation (if required) to the temporary overland winter access and the area of assessment. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill. ■ Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying vegetation to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access. ■ If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain. ■ Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain. ■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible. ■ Travel with trucks and equipment on flat terrain, avoiding sensitive slopes and shorelines, where feasible. ■ All equipment, vehicles and the crew's footwear (in summer) will be cleaned of soil and seeds before mobilizing to the Sites to avoid accidental introduction of invasive vegetation species.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Polar bear	Sensory disturbances; negative human-bear encounters	■ Implement the Project-specific Wildlife Management and Monitoring Plan (Appendix B). ■ Wildlife Monitors will continuously assess the Sites and surrounding area, and advise on any wildlife concerns. ■ Wildlife Monitors will work in alternating shifts to ensure monitoring takes place during all work activities. ■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant
Grizzly bear	Sensory disturbances; negative human-bear encounters		■ low magnitude ■ localized geographic extent	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
		■ Crews will keep the Sites clean at all times, and food, attractants and waste will be temporarily stored in wildlife-proof containers and removed from the Sites regularly as described in the Project-specific Waste Management Plan (Appendix C). ■ Crews will be instructed to not feed or harass wildlife, and workers will not be allowed to hunt, trap or have dogs on the Project. ■ Project activities will cease if bears or caribou are observed in proximity to the Sites (i.e., within 500 m) or if wolverine are seen within 250 m of the Sites; activities will only resume once the animals have left the area. ■ Limit disturbance in potential nesting areas. Avoid any active nests by implementing species-specific setback distances. ■ To mitigate potential effects on nesting bank swallows, follow Environment and Climate Change Canada's (ECCC's) pamphlet on Bank swallow [*Riparia riparia*] in sandpits and quarries (ECCC 2016; Appendix C of the Wildlife Management and Monitoring Plan [Appendix B]). ■ The Migratory Bird Regulations (GOC 2022) and ECCC's Guidelines to Avoid Harm to Migratory Birds and Fact Sheet: Nest Protection Under the Migratory Birds Regulations (ECCC 2023a,b, internet site) will be reviewed and followed. ■ On the ice road and temporary overland winter access, wildlife will have the right of way at all times; speed limits will be implemented. ■ If wildlife is observed in proximity to the ice road, their location will be communicated to all Project staff. ■ Implement all applicable ice road measures (in Section 6.4.2). ■ Snowbanks along the ice road will not exceed 1 m in height and will have regular gaps (e.g., every 30 m) to avoid entrapment of crossing wildlife. ■ Ice roads and temporary overland winter access will be abandoned at the end of the winter work to limit public access to the Sites. ■ Helicopter transportation and LiDAR/orthographic imagery overflights will follow all requirements in the GNWT guidelines for flying low (GNWT 2019) and the Canadian Aviation Regulations (2025) (e.g., adhere to flight altitudes, avoid hovering). ■ Crews will receive bear awareness training and will follow the Project-specific Wildlife Management and Monitoring Plan including the GNWT's Safety in Bear Country guidelines (GNWT ECC 2026a, internet site).	■ infrequent occurrence ■ short-term duration ■ fully reversible	
Wolverine	Sensory disturbances; negative human-wolverine encounters		■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant
Barren-ground and boreal caribou	Sensory disturbances; indirect habitat alteration; direct habitat disturbance		■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Migratory birds	Sensory disturbances; indirect habitat alteration; direct habitat disturbance		■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Water quality	Disturbance of sediment/increase in turbidity/contaminant spills into nearby water bodies at the Sites or on the ice road	■ Implement the Project-specific Spill Contingency Plan (Appendix D) and ERP (Appendix E). Keep spill response equipment easily accessible. Store fuel and hazardous materials in bermed, lined areas (winter) or drip tray (summer) a minimum of 30 m from the ordinary high-water mark of the nearest water body.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
Fish and fish habitat	Sensory and physical disturbances; habitat disturbances	■ Minimize overall vehicle use (trucks, heavy equipment ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ During summer, use feasible landing area for boat landing at the Reindeer C-36 site based on the landing areas used in the past (if present) or based on experience of boat operator. ■ Boats used to access the Sites will be locally owned (i.e., used for work in the ISR) and will be cleaned prior to use to reduce the potential of accidentally introducing invasive aquatic species. ■ Implement speed limits on the ice road and limit public use to minimize auditory disturbance of fish. ■ Implement Fisheries and Oceans Canada's (DFO's) Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) for water withdrawals during ice road construction and, if required, during snowpack ramp and temporary overland winter access construction. ■ Implement DFO's Code of Practice: Ice Bridges and Snow Fills (DFO 2025a, internet site) for constructed water course crossings and when removing or v-notching snow fills at snowpack ramps and temporary overland winter access decommissioning to not impede drainage during breakup. Any woody or other debris observed on water course crossings will be removed immediately. ■ If snowbanks were created during access construction, they will be removed before breakup to allow the temporary overland winter access route to drain. ■ All snow berms created at the Sites will be spread and levelled at time of demobilization to allow the Sites to drain. ■ Implement all applicable ice road measures (in Section 6.4.2).	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant
Subsistence harvest	Harvesting interference	■ Advise HTCs and CCs of Project schedule and any possible interference with traditional harvesting and schedule meetings with Tuktoyaktuk, Inuvik and Aklavik HTCs and CCs. ■ There will be effective communication between Project team, field crew members, Inuvialuit communities and other affected parties prior to, during and after the Project.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant

5.5.4 Cumulative Effects

For this Project, it is anticipated that the proposed mitigation measures implemented during work activities will result in no significant cumulative effects. Additional mitigation is not considered to be practical or feasible.

6.0 SUMMARY OF THE PROPOSED DEVELOPMENT

6.1 Purpose

The proposed Project focuses on obtaining the necessary information (i.e., soil, sediment, surface water, geotechnical and ecological data) needed to determine if additional work is required in the future to address potential risks at the Sites.

6.2 Location

The Sites are between 49 and 90 km northwest of Inuvik, in the ISR. The location of the Sites are presented in Figure 1 (Appendix A) and in Table C.

Table C: Locations of the Sites

Site Name	Latitude	Longitude	Distance from Inuvik (km)
Ikhil I-37	68°46'33.53" N	134° 7'51.26" W	49
Reindeer C-36	69° 5'10.47" N	134°39'25.13" W	90

6.3 Summer Scope of Work

The summer stage of the Project may consist of the following activities.

- LiDAR and orthographic imagery of the Sites collected through overflights between May and September.
- Site access via helicopter or boat (Reindeer C-36 only). The option to access the Reindeer C-36 by boat is included to allow flexibility to continue field work when the helicopters are grounded due to wildfire smoke or fog. If accessed by boat, a low ground pressure, non-rutting summer vehicle [e.g., ARGO/SHERP or similar] may be used to transport field staff and equipment from the boat landing area(s) to the assessment area(s).
- Aerial (via helicopter) and ground-based visual inspection of the Sites, including site photography and drone surveys to collect high resolution imagery. If present, surficial features pertinent to the wellsite such as habitat condition, historic site infrastructure and sump condition, will be documented.
- Soil, sediment, surface water and porewater sampling may be conducted if warranted by site observations, such as potentially affected vegetation, areas void of vegetation, evidence of a potential release of sump material, surface staining, presence of a sheen on surface water, soil crusting and olfactory evidence of hydrocarbon presence.
    - If warranted, based on visual observations, soil sample locations may be advanced using a hand auger to a maximum depth of 2.0 mbgs, or until frozen soil or refusal due to lithology is encountered. Approximately 20 locations may be sampled. Additional hand auger boreholes may be completed based on field observations. Soil samples may be submitted for select laboratory analysis including PHCs (benzene, toluene, ethylbenzene, xylenes [BTEX], PHC fractions F1 to F4), PAHs, VOCs, salinity, metals and/or grain size/texture. Hand auger locations will be backfilled with native soil.

  - If warranted, based on visual observations, surface water samples may be collected using appropriate hand tools and equipment. Approximately 10 locations may be sampled, including background locations. Additional surface water samples may be collected based on field observations. Surface water samples may be submitted for select laboratory analysis including PHCs (BTEX, PHC Fractions F1 and F2), PAHs, VOCs, dissolved organic carbon (DOC), dissolved and/or total metals, and/or routine potability parameters. Select surface water samples may be submitted to the laboratory for invertebrate toxicity testing.
  - If warranted, based on visual observations, sediment samples may be collected from the top 10 cm of sediment using appropriate hand tools and equipment. Approximately 10 locations may be sampled at locations that coincide with surface water samples. Additional sediment samples may be collected based on field observations. Sediment samples may be submitted for select laboratory analysis including PHCs (BTEX, PHC Fractions F1 to F4), PAHs, VOCs, total organic carbon (TOC), salinity, metals and/or grain size/texture. Select sediment samples may be submitted to the laboratory for invertebrate toxicity testing.
  - Porewater samples may be collected from locations co-located with the sediment samples submitted for invertebrate toxicity testing. Porewater samples may be collected using temporary drive-point piezometers, installed into the sediment at the shoreline of the surface water bodies, and a peristaltic pump. The drive-point piezometers will be removed after sampling. Porewater samples may be submitted for select laboratory analysis including total and dissolved metals, ammonia, DOC and/or routine potability parameters.
- Surface soil samples may be collected from intact drilling waste sump caps (i.e., not collapsed and ponded) or from areas near the drilling waste sump for laboratory geotechnical assessment of water/solid content, Atterberg limits, grain size via hydrometer, specific gravity and standard proctor maximum dry density. Where possible, this will coincide with above-described potential soil sampling locations, using a hand auger. Depending on sample recovery, additional material may be obtained adjacent to soil sampling location from a shallow test pit hand dug with a shovel. Surface sample locations will be backfilled with native soil cuttings.
- Depth of the active layer may be assessed around site features such as sump caps and ponds, along the perimeter of the Sites and at background or undisturbed areas. These locations may coincide with soil sampling locations, if completed as noted above, using a hand auger advanced until frozen ground is encountered. Alternatively, a thaw probe/poking rod may be used to assess the thaw depth.
- Ecological information may be collected, including:
  - general terrestrial and aquatic habitat characteristics at the Sites and surrounding area;
  - identification of potential aquatic receptors through incidental observations or visual evidence (e.g., fish, aquatic vegetation, aquatic invertebrates) in the on-site water bodies;
  - identification of potential terrestrial receptors through incidental observations or visual evidence (e.g., sign of terrestrial or avian wildlife); and
  - vegetation tissue samples.
- Fuel to be used will be Jet A for helicopters. The helicopters will be refueled each day in Inuvik before flying to the Sites. Temporary fuel storage at the Sites will be in jerry cans for refueling of the ARGO/SHERPs, with appropriate secondary containment measures (e.g., drip trays) and spill kits (as per the Spill Contingency Plan provided in Appendix D). Fuel storage and refueling areas will be at least 30 m from the ordinary

high-water mark of the nearest water body. The boats will be fueled in Inuvik at the start of each trip and at the Sites from jerry cans, as needed.

- Loose and accessible historical debris, if encountered, that can be safely transported by helicopter or boat may be recovered and transported off site for disposal at a licensed facility (e.g., in Inuvik).
- Geophysical surveys (e.g. EM, ERT or other) and sump ponds bathymetry may be completed.

6.3.1 Accommodations

No temporary camp will be established at the Sites and accommodations will be provided in Inuvik or at a temporary, self-contained camp permitted and established at Camp Farewell (EISC Registry File: [04/25-06]) for similar work in the ISR.

6.3.2 Equipment Mobilization and Demobilization

Field crew and equipment (i.e., hand tools, PPE, sampling supplies) will be mobilized daily to the Sites via helicopter or boat (Reindeer C-36 only). If accessed by boat, a low ground pressure non-rutting summer vehicle [e.g., ARGO/SHERP] may be used to transport field staff and equipment from the boat landing area(s) to the assessment area(s). The boat landing areas will make use of landing areas used in the past, if present, and are subject to change based upon river level and bank conditions at the time of access and experience of the boat operator.

6.4 Winter Scope of Work

The winter stage of the Project may consist of the following activities.

- Construction of an ice road extension from a junction approximately 30 km along the Inuvik to Aklavik public ice road to the Sites (Figure 3, Appendix A). This will allow site access for equipment as well as the off-site transport and disposal of waste materials. The ice road extension may be approximately 70 km long.
- It is expected that ice road reconnaissance and profiling will begin in early winter and construction will be finished in January/February. The construction of the ice road will follow Project-specific ice-road engineered design plans and QA/QC plans that meet or exceed the Guidelines for Safe Ice Construction 2015 (GNWT 2015a).
- Construction of spur ice road, snowpack ramps and temporary overland winter access, including water course crossings (e.g., Peter Lake), to allow access to the Sites (Figures 3 to 5, Appendix A). Access to the Sites will be completed in late winter/early spring.
- Limited vegetation (e.g., willows and small growth trees) brushing may be required for site and borehole access.
- Mobilization of equipment (e.g., environmental drilling rig, trucks) to the Sites on the ice road/temporary overland winter access for the duration of the winter stage of the Project.
- Completion of soil sampling using an environmental drill rig. Approximately 35 boreholes will be drilled at the Sites to appropriate depths for assessment. When drilling through the ice of frozen sumps, the drilling depth does not include the frozen surface water. Additional boreholes may be completed based on field observations. Collected soil samples will be submitted for laboratory analysis of PHC, PAH, VOC, TOC, salinity and/or select metals and geotechnical parameters. Surface water samples may be collected from ice for laboratory analysis of routine parameters. Completed boreholes will be refilled with either the original

material or with bentonite/barite mix and/or sand. Several of these boreholes may be completed with temporary thermistor installations.

- Temporary fuel storage at the Sites will be in a fuel truck and pick-up truck with slip tank for refueling of equipment and vehicles, with appropriate secondary containment measures (e.g., drip trays) and spill kits in a bermed and lined fuel storage area (as per the Spill Contingency Plan provided in Appendix D). Designated fuel storage and refueling areas will be at least 30 m from the ordinary high-water mark of the nearest water body.
- Loose and accessible historical debris, if encountered, may be collected, transported and disposed of off site at approved facilities.
- Geophysical surveys (e.g. EM, ERT or other) may be completed.

6.4.1 Accommodations

No temporary camp will be established at the Sites and accommodations will be provided in Inuvik or at a temporary, self-contained camp permitted and established at Camp Farewell (EISC Registry File: [04/25-06]), or at a temporary, self-contained camp permitted and established on the river ice in the north-central Mackenzie Delta (EISC Registry File: [10/24-04]) for similar work in the ISR.

6.4.2 Ice Road and Overland Access Construction and Use

The annual Inuvik to Aklavik public ice road is built and maintained by the GNWT and is usually in operation by the end of December.

In early winter, an ice road extension will be constructed from the Inuvik to Aklavik public ice road to the Sites to allow for site access for equipment (e.g., environmental drill rig, trucks) as well as off-site transport and disposal of waste materials in Inuvik. The route from Inuvik to the Site will originally follow the GNWT Inuvik to Aklavik public ice road to a point approximately 30 km along the road (Figure 3, Appendix A).

Moveable wooden barricades (approximately 2 m long and with reflective materials) and warning signs (i.e., “use at own risk” and “no heavy traffic” with the associated weight limit) will be placed at the junctions with the GNWT Inuvik to Aklavik ice road. From there, an approximately 70 km ice road extension may follow the Mackenzie River East Channel north crossing Inuvialuit 7(1)(A) Private Lands.

At approximately the 25 km point of the ice road extension, a short snowpack ramp and an approximately 7.5 km long temporary overland winter access will be constructed to access the Ikhil I-37 site (Figures 3 and 4, Appendix A). The proposed temporary overland winter access to Ikhil I-37 may follow the existing access historically used to construct and later re-supply the Ikhil plant, for approximately 3.5 km. From the Ikhil plant, the overland access may continue northeast approximately 1.5 km to Peter Lake where a short snowpack ramp may be constructed to the lake surface, an approximately 950 m ice road constructed to cross the lake and another short snowpack ramp constructed onto land with a final overland access of approximately 1.5 km to the Ikhil I-37 site.

At approximately the 70 km point of the ice road extension, an approximately 3.3 km long spur ice road will be constructed leading west along a channel and lake from where a short snowpack ramp and an approximately 0.4 km long temporary overland winter access will be constructed to access the Reindeer C-36 site, utilizing the former access road (Figures 3 and 5, Appendix A). The proposed routing of the ice road extensions, snowpack ramps and temporary overland winter access are subject to change based upon river level and bank conditions at

the time of construction, and the proposed routing may need to be adjusted to account for field conditions at the time of the work.

Prior to ice road construction, reconnaissance and ice profiling will be conducted, beginning in December to determine the ice thickness and conditions along the proposed routes. The construction of the ice road will follow Project-specific ice-road engineered design plans and QA/QC plans that meet or exceed the Guidelines for Safe Ice Construction 2015 (GNWT 2015a). Once in place, ongoing maintenance will be completed along the ice road extension, including monitoring ice for signs of deterioration, weather checks for wind and sun damage, snowfall and clearing operations. Operations will cease on the ice road extensions should it be deemed necessary. The construction and use of the ice road extensions will include the following tasks:

- completion of ice profiles;
- construction of the ice road;
- maintenance of the ice road;
- use of the ice road; and
- abandonment of ice road.

6.4.2.1 Completion of Ice Profiles

Beginning in December, ice road reconnaissance and ice profiling will be conducted to determine the ice thickness and conditions prior to ice road construction. The primary purpose of this is to confirm that there is sufficient minimum ice thickness to support the construction equipment. The collection of extensive ice thickness data is completed using ground penetrating radar (GPR) ice profiling and is considered the industry best practice. The GPR equipment will be calibrated at the start of each shift and at approximately halfway through the planned profiling for the day. This is a minimum requirement and may be done more frequently at the discretion of the operator.

6.4.2.2 Construction of Ice Road

Prior to deployment for ice road construction, the minimum ice thickness from the ice profile data and corresponding allowable weight will be assessed based on the road construction equipment being used. Permitted loads will be calculated according to the Project-specific ice road design. The following procedures will be implemented.

- Two-way traffic lanes will be established on the ice road and will be managed using two-way radios and inReach devices.
- A barricade will be set up at the entrance of the ice road extension (at the junctions with the public Inuvik to Aklavik ice road) to prevent any equipment or vehicles from accessing the road while it is under construction.
- Once minimum ice thickness is confirmed safe for construction vehicles, graders and plow trucks will push snow to open the ice road along the same route that the ice profile was measured.
- The minimum width of the ice road will be 30 m from snowbank to snowbank from initial construction.
- Once the ice roads have been cleared of all snow, both natural and artificial methods of growing the ice may be employed to achieve the desirable ice thickness to support hauling operations. Flooding to artificially thicken the ice surface may be achieved by pumping water from beneath the ice layer onto the surface following the DFO Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site).

- Transition between water bodies and land will be achieved by ramping the entrance (using packed snow and, if required, ice, to a minimum thickness of 20 cm) to a grade adequate to support hauling vehicles. Water potentially required for ramp construction will be withdrawn from the river following follow the DFO Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site).
- After the initial passes of snow clearing have been completed, the ice road contractor will conduct a visual inspection to determine ice integrity and record observations on the Ice Cover Inspection Report (Appendix G).
- Route marking and appropriate signage will be erected and maintained on the ice road during the construction, operation and maintenance phases. These include the entrance sign, speed limits where allowable speed limits vary, turn signs where the radius is less than 100 m, narrow road width ahead, speed signs and hazard awareness signs where maintenance crews are operating, and delineators where there are no other obvious delineations (i.e., snowbanks) to mark the safe limits of the travel way.
- A sign will be placed at each entrance to the ice road and will include the maximum loading limits of the ice road, minimum 300 m spacing between vehicles travelling over river ice sections and the status as either “OPEN” or “CLOSED”.

6.4.2.3 Ice Road Maintenance

Once the ice road has been constructed, it will require regular maintenance throughout the winter program to keep the ice road free of snow cover. Clear ice will result in the quickest growth with fewest cracks, allowing the activities to progress as planned. One grader and one plow truck may remain at the Sites, and grader(s) and plow truck(s) will mobilize from Inuvik, as needed, for ice road maintenance for the duration of the Project.

Maintenance will be completed as follows.

- GPR profiling will be conducted at least once a week at the start of the program. Once confidence in ice thickness is established, the frequency of GPR profiling can be re-assessed.
- The ice roads will be visually inspected daily and the results recorded on the Ice Cover Inspection Report (Appendix G). Dry cracks, wet cracks, pressure ridges, thermal contraction or expansion cracks and water level changes will be recorded and discussed with the Site Supervisor.
- Repairs and maintenance will be undertaken to address cracks, thin ice zones or damaged areas.
- Routine flooding/spraying operations will be conducted to build and maintain the ice cover. Water for ice road construction and maintenance may be directly pumped from beneath the ice layer onto the surface following’s DFO’s Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) and the ice road contractor will record the quantity of used water on the daily report. Water will be taken using a portable pump, only when needed, and will be supervised.
- Dry cracks, large ice pop-outs and potholes will be marked and repaired as needed.
- Tight blading of the road surface with a grader will be performed as required to improve ice levelling, improve vehicle traction on the ice or clean spills.

6.4.2.4 Ice Road Use and Abandonment

The following measures will be implemented during the operation (i.e., use) of the ice roads.

- Weight of each piece of equipment will be determined before mobilization and will be within permitted loads based on the ice thickness. As there will be no scale on site, a conservative approximation will be used for loads.
- The minimum distance between vehicles on the ice road will be 300 m.
- The maximum speed limits will be implemented and communicated through signage.
- Vehicles should remain at least 5 m away from snowbanks on the over river ice portions of the ice roads to avoid cracks which develop in the thinner ice underneath snowbanks, except during snow clearing activities.
- If poor weather conditions or poor ice conditions make it unsafe for operation, the ice roads will be temporarily closed.
- After the ice road transport is complete for the season, the entrance to the ice road extension will be bermed, signed and abandoned for all construction and public use. Adequate signage warning the public that there is no further inspection or maintenance being done on the ice road will be placed at both ends, at the junctions with the existing Inuvik to Aklavik ice road and at the Sites.

6.4.2.5 Snowpack Ramps, Temporary Overland Winter Access and Water Course Crossings

Snow will be used to compact the snowpack ramps and temporary overland winter access to the Sites (Figures 3 to 5, Appendix A) following the GNWT Northern Land Use Guidelines – Access: Roads and Trails (GNWT 2015b). If required, water will be used to strengthen the overland access for the protection of underlying vegetation and terrain to a minimum thickness of 20 cm. For that purpose, water may be withdrawn from the Mackenzie River (where the ice road extensions are ending). Water withdrawal will follow the DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site). The proposed locations and routing of the snowpack ramps and temporary overland winter access, including water course crossings, are subject to change based upon river level and bank conditions at the time of construction, and the proposed routing may need to be adjusted to account for field conditions at the time of the work.

Snowpack ramps and temporary overland winter access will only be constructed to the Sites if winter assessment is planned in any given winter season.

For the temporary overland winter access to Ikhil I-37, a water course crossing will be constructed across Peter Lake (Figure 4, Appendix A). For the temporary overland winter access to Reindeer C-36, a spur ice road will be constructed leading west along a channel and lake (Figure 5, Appendix A).

Once these two water course crossings have been cleared of all snow, the ice surfaces may be flooded to build up the ice thickness, so that vehicles can cross the water course without causing disturbances to the bed and banks, and without restricting the water flow beneath the ice (if water body is not frozen to the ground). Flooding may be achieved by pumping water from beneath the ice layer onto the surface following the DFO Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site). No other material (e.g., logs, woody debris, cleared vegetation or rocks) will be used when constructing water course crossings. Following DFO's Code of Practice: Ice Bridges and Snow Fills (DFO 2025a, internet site), any snow fill will be removed or v-notched at snowpack ramp and temporary overland winter access decommissioning to not impede drainage during breakup. Any woody or other debris observed on water course crossings will be removed immediately. If snowbanks were created during construction, they will be removed before breakup to allow the temporary overland winter access route to drain. The construction of the snowpack ramps and temporary overland winter access (including water course

crossings) will use approximately 200 cubic metres (m^3) of water per day, will at no time exceed 299 m^3 per day and the water requirement will be for a duration of approximately six to eight weeks each winter. The field crew will maintain a water withdrawal log that will include, at a minimum, the day, time, water body and location, name of contractor/employee and volume of water withdrawn.

6.4.3 Equipment Mobilization and Demobilization

Field crew and equipment will mobilize to the Sites for winter assessment in any given winter season via the proposed access comprising an ice road extension, snowpack ramps and temporary overland winter access.

After construction of the access, snow and (if required) some vegetation may be cleared at the Sites. The fuel truck, pick-up truck with slip tank, environmental drill rig, light stands and other miscellaneous equipment will be mobilized to the Sites. The ice road construction equipment will then be demobilized. One grader and one plow truck may remain on site for ice road and water course crossing maintenance for the duration of the Project. The fuel truck (diesel; 18,200 L) and pick-up truck with slip tank (gasoline; 500 L) will mobilize to Inuvik as needed to refuel and then return to the Sites. The fuel truck/pick-up truck will be parked at least 30 m from the ordinary high-water mark of the nearest water body in a bermed and lined fuel storage area (with containment volume of 110% of the total volume of stored fuel) and drip tray/spill kits.

The environmental drill rig, fuel trucks and other miscellaneous equipment will be demobilized via the ice road and temporary overland winter access prior to breakup. Following demobilization, the area will be graded and all snow berms will be spread and levelled.

6.5 Project Timeline

The proposed Project schedule is presented in Table D below. Shell is proposing a multi-season, multi-year (2026 to 2031) Project that will allow staged environmental assessments to be completed at the Sites.

Table D: Proposed Project Schedule

Project Activity	Estimated Time Frame
Engagement and consultation	Ongoing
Regulatory permitting	February 2026 to November 2026
Logistics planning	Ongoing and seasonally for both summer and winter
Analysis and reporting, annually	October to March
Summer	
Field program – Summer ESAs	Late June to mid-September (up to 11 weeks)
Winter	
Field program – Winter access to Sites (reconnaissance and construction)	Early winter (approximately six to eight weeks)
Field program – Winter ESAs	February to April (up to 10 weeks)

6.6 Personnel and Equipment Requirements

During the field programs, local businesses and community members will have the opportunity to supply goods and services. The proposed personnel and equipment list for the Project are presented in Tables E and F (summer) and Tables G, H and I (winter).

Table E: Proposed Summer Project Personnel

Personnel	Estimated Number Required On Site
Field Lead	1
Environmental Scientist	1
Geophysics Specialist	1
Inuvialuit Wildlife Monitor	1
Inuvialuit Environmental Monitor	1
Inuvialuit boat operators	2
Helicopter pilots	4
Drone Operator	1
Surveyor	1
Equipment operators (ARGO/SHERP) and support personnel	As required

Note: There will be multiple work rotations and personnel will cross-shift throughout the program. The table provides a summary of site personnel of one shift.

Table F: Proposed Summer Equipment List – Environmental Site Assessments

Equipment	Number Required	Local / Inuvialuit (Yes/No)
Helicopter(s)	2	No
Boats	2	Yes
ARGO or SHERP (or equivalent)	1	Yes
Jerry cans with fuel and drip trays	10	Yes
Portable hand auger and associated tooling (augers, bits and hand tools)	2	No
Miscellaneous environmental field equipment, drone, geophysics equipment, depth sounder (bathymetry)	1	Yes
Emergency kit (first aid, spill and firefighting)	1	Yes
Satellite phone	2	Yes

Note: All equipment will be inspected and verified to be suitable for the summer scope of work. Equipment quantities are listed on a per site basis.

Table G: Proposed Winter Project Personnel

Personnel	Number Required On Site
Site Supervisor	1
Drilling crew	2 to 3
Environmental Scientist	2
Geophysics Specialist	1
Inuvialuit Wildlife Monitor	2
Inuvialuit Environmental Monitor	1
Surveyor	1
On-site Advanced Level Medic	1
Equipment operators and support personnel (e.g., ice road profiling and construction/maintenance, and off-site transport of generated waste)	As required

Note: There will be multiple work rotations and personnel will cross-shift throughout the program. The table provides a summary of site personnel of one shift.

Table H: Proposed Winter Equipment List – Ice Road Extensions and Temporary Overland Winter Access Construction and Maintenance

Equipment	Number Required	Local / Inuvialuit (Yes/No)
Ice profiler equipment (pre-construction)	1	Yes
Grader (construction and maintenance)	1	Yes
Plow trucks and/or loaders (construction and maintenance)	2 to 4	Yes
Snowcat	2	Yes
Nodwell	2	Yes
Water truck	2	Yes
Brush mulcher mounted on excavator or skid steer	2	Yes
ARGO or SHERP (or equivalent)	2	Yes
Dozer (clear snow)	2	Yes
Snowmobiles	2	Yes
Stoneboat	1	Yes
Pick-up truck, including emergency transport vehicle	4	Yes
Fuel truck (diesel)	2	Yes
Pick-up truck with slip tank (gasoline)	1	Yes
Spill kits and drip trays	Multiple	Yes
Satellite phone (and other communication devices)	2	Yes
First aid kit	2	Yes

Note: All equipment will be inspected and verified to be suitable for the winter scope of work.

Table I: Proposed Winter Equipment List – Environmental Site Assessments

Equipment	Number Required	Local / Inuvialuit (Yes/No)
Environmental drill rig appropriate for conditions	2	Yes
Haul truck for movement of equipment	2	Yes
Loader	1	Yes
Snowcats	2	Yes
Nodwell	2	Yes
Water truck	2	Yes
Snowmobiles	2	Yes
Pick-up truck, including emergency transport vehicle	4	Yes
Fuel truck (diesel)	1	Yes
Pick-up truck with slip tank (gasoline)	1	Yes
Service truck (for mechanic)	1	Yes
Warming trailer	1	Yes
Light stand	2	Yes
Spill kit	1	Yes
Satellite phone (and other communication devices)	2	Yes
First aid kit	1	Yes
Miscellaneous environmental field equipment	1	No
Firefighting equipment (e.g., fire extinguishers [multiple 20 to 30 pound Type ABC on vehicles/equipment], portable water pump, shovels and hand tools)	1	Yes

Note: All equipment will be inspected and verified to be suitable for this winter scope of work. Equipment quantities are listed on a per site basis.

6.7 Waste Handling and Disposal

Shell and their contractors are responsible for the removal and appropriate disposal of all waste products generated from the Project and will use an integrated waste management system to ensure that wastes generated by the Project are disposed of in a manner that does not adversely affect the environment, public health, or safety. A Waste Management Plan was prepared and is provided in Appendix C. Waste handling and disposal procedures will be conducted in accordance with all applicable legislation, including GNWT waste management and disposal guidelines, transportation rules and regulations, and others as outlined in the Waste Management Plan.

All waste generated during the Project will be transported and disposed of off site at approved facilities (e.g., at the Inuvik Solid Waste Disposal Facility or outside the NWT).

6.7.1 Historic Waste

General infrastructure remaining at the Sites may include a well centre (e.g., a historic well marker), a drilling waste sump, a camp sump, a drilling flare pit, a former fuel storage area and/or wood pilings used to support surface infrastructure above the ground. Removal or remediation of this infrastructure is not included in the scope proposed for the Project.

Loose and accessible historic debris, if encountered, may be collected, safely transported and disposed of appropriately at off-site approved facilities as described in Sections 6.7.2 and 6.7.3.

6.7.2 Non-Hazardous Waste

The following non-hazardous waste is anticipated to be generated during the Project:

- non-recyclable domestic waste (organic and non-organic waste including garbage, office garbage and food scraps);
- construction materials (lumber and similar items); and
- recyclable domestic waste (beverage containers, tin cans, plastic and glass).

Non-hazardous solid waste will be transported off site and disposed of at an approved disposal facility as per the Waste Management Plan (Appendix C).

Recyclable materials will be separated, transported and recycled as outlined in the Waste Management Plan (Appendix C).

6.7.3 Hazardous Waste and Sewage

Hazardous waste generated from Project activities is expected to include waste oil, oil, fuel filters, batteries and waste antifreeze/solvents. All hazardous waste will be properly packed in approved transport containers, manifested as per GNWT requirements and shipped to an approved out-of-territory disposal site as per the Waste Management Plan (Appendix C).

Sewage from the Pacto waterless toilets (or equivalent) in the on-site warming trailers will be emptied as required and disposed of at an approved facility (e.g., the Inuvik sewage lagoon). Sewage generated at the off-site camps will be under separate EISC Files (Registry File: [04/25-06], [10/24-04]).

6.8 Fuel Requirements, Storage, Transportation and Handling

Summer

On-site fuel storage during summer seasons will consist of jerry cans (diesel or gasoline; 20 L) to re-fuel the ARGO/SHERPS (if used) that will be transported by boat and re-filled in Inuvik, as needed. The jerry cans will be stored with appropriate secondary containment measures (e.g., drip trays) and spill kits, in accordance with the Spill Contingency Plan (Appendix D).

The boats will be fueled in Inuvik at the start of each trip and at the Sites from jerry cans, as needed. The helicopter will re-fuel in Inuvik or other possible fuel staging area (e.g., Camp Farewell) and will not re-fuel at the Sites.

The Project-specific Spill Contingency Plan is provided in Appendix D; it will be implemented and made available to all staff and contractors.

Winter

On-site fuel storage during winter seasons will consist of one fuel truck (diesel; 18,200 L) and one pick-up truck with a slip tank (gasoline; 500 L) that will travel to Inuvik via the ice road as needed to refuel and then return to the Sites. The fuel storage and refueling areas will be bermed and lined, with a containment volume of at least 110% of the total volume of stored fuel and be 30 m away from the ordinary high-water mark of the nearest water body. Spill kits will be located wherever fuel is stored or used. Portable drip trays and appropriately sized fuel transfer hoses will be used when refuelling motorized equipment, to avoid any leaks/drips. In accordance with the Spill Contingency Plan (Appendix D), established procedures and drip trays will be used during refuelling operations to prevent any spills.

A designated fuel monitor will conduct daily visual inspections to check for leaks or damage to any fuel storage facilities and refueling equipment. Regular maintenance and checks of all motorized equipment will also be undertaken to avoid preventable leaks.

The Project-specific Spill Contingency Plan provided in Appendix D will be implemented and made available to all staff and contractors on the Sites.

7.0 DEVELOPER COMMITMENTS

The Project consists of different components, all to be completed with proven, best management practices to limit the potential for adverse effects on environmental and cultural resources. The following list summarizes the proposed key mitigation measures. More detailed Project-specific mitigation measures are provided in Section 14.0.

- Construct ice roads and water course crossings using best management practices (Project-specific ice-road engineered design plans and QA/QC plans) and build up the snow cover (and supplement with ice if required) on the snowpack ramps and temporary overland winter access to protect underlying vegetation and terrain.
- Water withdrawal from the Mackenzie River will follow DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) and be approximately 200 m^3 per day, will not exceed 299 m^3 per day, for approximately six to eight weeks. All water intakes will be measured and recorded.
- Implement speed limits on the ice roads and temporary overland winter access, and limit public use to minimize disturbance of wildlife. During the winter stage of the Project, signage will be installed to limit public use of the ice roads and temporary overland winter access, and after seasonal demobilization, snow barriers will be established to discourage public use.
- On the ice roads and temporary overland winter access, wildlife will have the right of way at all times.
- Snowbanks along the ice road will not exceed 1 m in height and will have regular gaps to avoid entrapment of crossing wildlife.
- Use of trucks and heavy equipment will be restricted, where possible, to flat terrain, avoiding sensitive slopes on land, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm.
- No Project-generated wastes will remain at the Sites. All waste will be separated, removed from the Sites and disposed of appropriately (as outlined in the Waste Management Plan [Appendix C]).

- Clean work areas will be kept at all times and the GNWT's Safety Bear Country guidelines (GNWT ECC 2026a, internet site) will be followed.
- Wildlife-proof containers will be used to temporarily store food, attractants and waste prior to removal and appropriate off-site disposal.
- Inuvialuit Wildlife Monitors will be present during all Project activities and advise of any wildlife concerns.
- An Inuvialuit Environmental Monitor will be present during all Project activities and advise on any environmental concerns.
- Work will be temporarily suspended if bears, caribou or wolverine are observed close to the Project area.
- All on-site staff will receive bear awareness training.
- No camp will be established at the Sites; a warming trailer, fuel storage area and equipment/supplies staging area will be in previously disturbed areas of the Sites, where possible.
- Clearing of vegetation (if required) will be limited to the temporary overland winter access and the area of the assessment. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill.
- The fuel storage and refueling areas will be bermed and lined (winter) or use drip trays (summer) and be 30 m away from the ordinary high-water mark of the nearest water body.
- The Project-specific Wildlife Management and Monitoring Plan (Appendix B), Waste Management Plan (Appendix C), Spill Contingency Plan (Appendix D), ERP (Appendix E), and Erosion and Sediment Control Plan (Appendix F) will be implemented, made available to all Project staff and contractors, and followed at all times.
- Helicopter transportation and LiDAR/orthographic imagery overflights will follow all requirements in the GNWT guidelines for flying low (GNWT 2019) and the Canadian Aviation Regulations (2025) (e.g., adhere to flight altitudes, avoid hovering).
- The Migratory Bird Regulations (GOC 2022) and ECCC's Guidelines to Avoid Harm to Migratory Birds and Fact Sheet: Nest Protection Under the Migratory Birds Regulations (ECCC 2023a,b, internet site) will be reviewed and followed. If active bird nests are encountered, a species-specific no-disturbance buffer area will be established until the nest has been abandoned.
- The ECE has been contacted and it was determined there are no known heritage sites in the Project areas (or their vicinity). Should suspected heritage resources be found during Project activities, work will cease in the immediate vicinity. Regulators and the ECE will be notified.
- All permits, licences and authorizations, including all terms and conditions, will be adhered to.
- Wildlife Monitors will report all wildlife observations and encounters in accordance with the requirements (Wildlife Management and Monitoring Plan [Appendix C]).

8.0 NEW TECHNOLOGY

WSP proposes using proven technology previously used in Arctic environments during similar projects (e.g., hand augering and drilling, soil, surface and sediment sampling, geophysical surveys) to complete the proposed activities.

9.0 ALTERNATIVES

No alternative methodologies are being proposed for this Project. Alternative accommodation and fuel storage options for the summer stage ESAs (e.g., the use of a barge camp) were evaluated but are not included for further consideration.

10.0 BIOPHYSICAL ENVIRONMENT

10.1 Physical Environment

10.1.1 Climate

The region where the Project is located is classified as having a high subarctic ecoclimate (ESWG 1996).

In general, the region experiences very cold winters and cool summers. Daylight hours vary from near total darkness during December to January, to 24 hours of daylight from approximately mid-May to mid-July. Based on the Inuvik Airport weather station, the mean annual daily temperature is -7.0 degrees Celsius (˚C) and daily average temperatures range from -24.9˚C in January to 14.2˚C in July (GOC ENR 2024, internet site). The Inuvik area receives an average 240.6 millimetres of precipitation a year, approximately 50% of which falls as snow (GOC ENR 2024, internet site).

10.1.2 Physiography

The Sites are within the Mackenzie Delta physiographic region. The Ikhil I-37 site is within the Caribou Hills Low Arctic north (LA*n*) Ecoregion, along the east central part of the Mackenzie Delta, and is within the Tundra Plains LA*n* Southern Arctic Ecoregion (ECG 2012). The Caribou Hills LA*n* Ecoregion is characterized by a range of till-covered hills with minor pockets of glaciofluvial and lacustrine materials over shaly bedrock with vegetation characteristic of milder low Arctic climates. Tundra cover is continuous and dominated by low-shrub and sedge tussock communities (ECG 2012). The Caribou Hills region is sensitive to climate-driven changes affecting the landscape, particularly through the occurrence of landslides and slumps along the coastline, inland to the valleys, water channels and along slopes (Giff 2021, internet site). Blueberry Hill is a hill in the Caribou Hills region in close proximity to the Mackenzie River East Channel (Kritsch and Andre 1994).

The Reindeer C-36 site is in the Richards Island Coastal Plain (LA*n*) Ecoregion, which includes the northeastern most part of the Mackenzie Delta, and is within the Tundra Plains LA*n* Southern Arctic Ecoregion (ECG 2012). The Richards Island Coastal Plain LA*n* Ecoregion is characterized by a low-relief landscape with undulating to hummocky calcareous till and outwash deposits, numerous ponds and lakes, mostly continuous tundra with locally extensive pingos (ECG 2012).

10.1.3 Topography and Drainage

The Caribou Hills LA*n* Ecoregion has surface elevations ranging from 30 to 200 metres above sea level (masl) (ECG 2012). The western boundary with the Mackenzie Delta is characterized by a steep escarpment and gullies. The ecoregion is well drained with few ponds on the hill crests and slopes with wetlands occurring mainly in stream discharges (ECG 2012). The Ikhil I-37 site is on the east side of Peter Lake with ground surface elevations of approximately 145 masl and anticipated surface drainage toward Peter Lake.

The Richards Island Coastal Plain LA*n* Ecoregion has surface elevations ranging from 0 to 70 masl (ECG 2012). Undulating to hummocky calcareous tills cover approximately two-thirds of the ecoregion, with a central lower-lying area of complex lacustrine, glaciofluvial and marine sediments, and glaciofluvial sands and gravels with thin till veneers and lacustrine pockets along the eastern coastline, and eastern islands of the ecoregion

(ECG 2012). The Reindeer C-36 site is on the southern boundary of the ecoregion with ground surface elevations of approximately 20 masl and anticipated surface drainage toward the small ponds surrounding the site.

10.1.4 Bedrock Geology

The Mackenzie Delta is about 200 km long and 65 km wide, extending to the north-northeast (Rampton 1988). The region is characterized by Mesozoic and Cenozoic rocks that were deposited in the Beaufort-Mackenzie Basin and underly unlithified floodplain and delta deposits (Rampton 1987).

The rivers in the area drain a range of bedrock terrain. On the west side of the Mackenzie Delta is the Yukon Coastal Plain, which consists of folded and faulted Mesozoic rocks. On the east side of the Mackenzie Delta is an unlithified coastal plain that is underlain by Proterozoic and lower Palaeozoic clastics and carbonates which are in turn overlain by Cretaceous clastic sediments (Solomon 2003).

10.1.5 Surficial Deposits

Turbic Cryosols are the most extensive soil types of the Caribou Hills LA*n* Ecoregion, characterized by weakly to moderately calcareous fine-clayey and fine-loamy glacial till deposited by the Laurentide glaciers approximately 13,000 years ago. Coarser-textured glaciofluvial deposits, fine-textured lacustrine deposits and organic veneers occur in small pockets in lowlands between the hills and along the eastern boundary of the ecoregion (ECG 2012). Shallow soil samples collected at the Ikhil I-37 site in 2005 were described as grey silty clay (Komex/IEG 2006).

Turbic Cryosols are the most extensive soil types of the Richards Island Coastal Plain LA*n* Ecoregion, characterized by weakly to moderately calcareous fine clay and fine loamy glacial till and marine clays. Static Cryosols are associated with sandy glaciofluvial sediments (ECG 2012). Shallow soil samples collected at the Reindeer C-36 site in 2005 were described as grey silty clay (Komex/IEG 2006).

10.1.6 Permafrost

The Caribou Hills LA*n* Ecoregion is characterized by earth hummocks that develop in clayey permafrost-affected soils. High-centre polygons occur in drainages and pingos are uncommon, occurring on lowlands along the east boundary with the Tuktoyaktuk Coastal Plan LA*n* Ecoregion (ECG 2012). Depth of the active layer was measured at the Ikhil I-37 site in 2005 and ranged from 0.29 (background areas) to 0.97 mbgs (previously disturbed areas) (Komex/IEG 2006).

The Richards Island Coastal Plain LA*n* Ecoregion is characterized by low-and high-centre polygon and ice-wedge polygon permafrost features, and over 100 pingos typically associated with drained lakes on tills (ECG 2012). Depth of the active layer was measured at the Reindeer C-36 site in 2005 and ranged from 0.35 (drilling waste sump cap perimeter) to greater than 1.1 mbgs (drilling waste sump cap and background) (Komex/IEG 2006).

10.1.7 Site Hydrology/Hydrogeology

Surface drainage patters in the Caribou Hills LA*n* Ecoregion are radial or linear on slopes, resulting from the hilly topography (ECG 2012). There are no known groundwater monitoring wells at the Sites; however, shallow groundwater flow (above permafrost) is anticipated to mimic surface drainage, toward Peters Lake at Ikhil I-37 and toward the small ponds surrounding the Reindeer C-36 site.

10.1.8 Groundwater and Surface Water Quality

There are no groundwater sample analytical results available for the Sites.

Surface water samples from a background pond and sump ponds were collected at the Ikhil I-37 site in 2005. Concentrations of select parameters (sulphate, total dissolved solids [TDS], aluminum, cadmium, copper, iron, lean, manganese and/or selenium) from the analyzed background pond and sump pond surface water samples were greater than the applied guidelines and PHCs were detected (Komex/IEG 2006).

Surface water samples from a background pond and a small pond on the drilling waste sump cap were collected at the Reindeer C-36 site in 2005. Concentrations of select parameters (TDS, aluminum, cadmium, iron, manganese and/or silver) from the analyzed background pond and sump pond surface water samples were greater than the applied guidelines (Komex/IEG 2006).

10.2 Biological Environment

10.2.1 Species of Conservation Concern

The Government of Canada's *Species at Risk Act* (SARA; 2002) was enacted to prevent Canadian indigenous species, subspecies and distinct populations of wildlife from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, and to encourage the management of other species to prevent them from becoming at risk. The enactment established the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as an independent body of experts responsible for assessing and identifying species-at-risk (SAR). It provided that COSEWIC's assessments were to be reported to the Minister of the Environment and to the Canadian Endangered Species Conservation Council and it authorized the Governor in Council to establish the official list of SAR based on that process. It required that the best available knowledge be used to define long and short-term objectives in a recovery strategy for endangered and threatened species and it provides for action plans to identify specific actions. The SARA (2002) created prohibitions to protect listed threatened and endangered species and their critical habitat. Species can be listed under three schedules. Schedule 1 is the official list of species that are classified as extirpated, endangered, threatened and of special concern. Species listed in Schedule 2 are species that had been designated as endangered or threatened and have yet to be re-assessed by COSEWIC using revised criteria.

Once these species have been re-assessed, they may be considered for inclusion in Schedule 1. Species listed in Schedule 3 are species that had been designated as special concern and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1 (SARA 2026, internet site).

In addition to federal legislation, the GNWT established the NWT Species General Status Ranking Program, which produces the General Status Ranks of Wild Species in the NWT (Working Group on General Status of NWT Species 2021). Under this program, species' ranks are reviewed and published every five years. The 2021 report presents the general status ranks for 8,228 species known or expected to be present in the NWT.

Species may be ranked as 'at risk' (have been assessed in detail and ranked by the NWT Species at Risk Committee [SARC] or COSEWIC as 'threatened' or 'endangered'), 'may be at risk' (may be at risk of extinction or extirpation and candidates for detailed risk assessments), 'sensitive' (may require protection to keep from becoming at risk), 'secure' (not at risk or sensitive), 'undetermined' (insufficient information to determine status), 'not ranked' (not ranked under program), 'alien' (introduced through human activities), 'extirpated/extinct' (no longer found in the NWT/world), 'vagrant' (infrequent and/or unpredictable occurrences outside normal distribution range) and 'presence expected' (species not yet recorded but expected to occur in the NWT) (Working Group on General Status of NWT Species 2021).

The NWT Species General Status Ranking Program provides species ranks to the NWT SARC, which was established under the SARA (NWT) to assesses the biological status of species that may be at risk in the NWT, to identify threats and positive influences on species and their habitats, and to recommend whether a species should be added to the NWT list of SAR (NWT SARC 2026, internet site).

The following sections include summaries of species potentially occurring in the Project area that are currently listed territorially and/or federally.

10.2.2 Vegetation

Vegetation in the Caribou Hills LA*n* Ecoregion is characterized by the presence of white spruce (*Picea glauca*) along lakeshores, spruce stands with tall willows (*Salix spp.*) and paper birch (*Betula papyrifera*) in sheltered gullies of the west facing escarpment along the Mackenzie Delta, low-shrub tundra on uplands in the southern half of the ecoregion, and in valleys and lowlands of the northern half. Tussock-sedge-dwarf shrub-moss tundra is most common on tills in the northern half and occurs with the low-shrub tundra in the southern half (ECG 2012).

Vegetation in the southern portion of the Richards Island Coastal Plain LA*n* Ecoregion is characterized by low-shrub tundra on tills and sedge – moss – low-shrub communities on wetlands. Vegetation in the northern portion of the ecoregion is characterized by graminoid – prostrate dwarf-shrub – forb tundra on drier upland sites and wet sedge – moss – dwarf-shrub communities associated with drained lakes and other low-lying areas (ECG 2012).

Based on the Aklavik Inuvialuit Conservation Plan (AICCP; 2016), Inuvik Conservation Plan (ICCP; 2016) and Tuktoyaktuk Community Conservation Plan (TCCP; 2016), the Ikhil I-37 site is within or near to the following Special Designated Lands recognized for vegetation importance (Figure 6A; Appendix A).

- Caribou Hills (702B): Caribou Hills have a unique successional plant life. The Middle Mackenzie Delta is a unique transition zone between alluvial taiga and low tundra habitats. It is also an important subsistence berry picking area and important for subsistence harvesting, including fishing.

The only vascular plant species currently listed by the NWT SARC does occur in the ISR – the hairy braya (*Braya pilosa*). It is listed territorially as ‘threatened’ and as ‘endangered’ under the federal SARA and COSEWIC. However, this species is endemic to Cape Bathurst (Conference of Management Authorities 2026, internet site), over 300 km northeast of the Sites.

10.2.3 Avian Wildlife

The vast majority of birds that are found in and around the Mackenzie Delta are migratory waterfowl and shorebirds that are present from May to October. The delta provides important nesting, breeding and staging grounds for avian wildlife, in addition to key subsistence harvesting for Inuvialuit hunters.

Based on the AICCP (2016), ICCP (2016) and TCCP (2016), the Reindeer C-36 site is within or near to the following Special Designated Lands recognized for avian species, their habitat and/or subsistence harvesting (Figure 6B; Appendix A).

- Fall Goose Harvesting Areas (312C): key area for subsistence harvesting of waterfowl during the fall.

At least 125 bird species may be found in the Mackenzie Delta region (AICCP 2016; ICCP 2016; TCCP 2016). Several of these species are listed federally and/or territorially. Table J below provides a summary of these listed species.

Table J: Avian Species of Conservation Concern Potentially Occurring at the Sites

Common Name	Scientific Name	NWT SAR[1]	COSEWIC[2]	SARA[3]
Bank swallow	*Riparia riparia*	n/a	Threatened	Threatened
Barn swallow	*Hirundo rustica*	n/a	Special concern	Threatened
Eskimo curlew	*Numenius borealis*	n/a	Endangered	Endangered
Gray-headed Chickadee	*Poecile cinctus*	n/a	Endangered	Under consideration
Harris's sparrow	*Zonotrichia querula*	n/a	Special concern	Special concern
Horned grebe (western population)	*Podiceps auritus*	n/a	Special concern	Special concern
Hudsonian godwit	*Limosa haemastica*	n/a	Threatened	Under consideration
Lesser yellowlegs	*Tringa flavipes*	n/a	Threatened	Under consideration
Red-necked phalarope	*Phalaropus lobatus*	n/a	Special concern	Special concern
Rusty blackbird	*Euphagus carolinus*	No status	Special concern	Special concern
Short-eared owl	*Asio flammeus*	No status	Threatened	Special concern
Snowy Owl	*Bubo scandiacus*	No status	Threatened	Under consideration

[1] Conference of Management Authorities (2026, internet site). NWT List of Species at Risk. Species listed under the *Species at Risk (NWT) Act*.

[2] Species recommended by the COSEWIC for listing under Schedule 1 of the federal SARA (2026, internet site).

[3] Species listed under Schedule 1 of the federal SARA (2026, internet site).

n/a – not applicable

Both subspecies of the red knot (*Calidris canutus islandica* and *Calidris canutus rufa*) breed on the central and high Arctic islands of the ISR hundreds of kilometres northwest of the Sites. They may cross through the general area of the Sites during migration. The *islandica* subspecies is listed as 'not at risk' by COSEWIC and as 'special concern' under SARA while the *rufa* subspecies is listed as 'endangered' through both COSEWIC and SARA. NWT SAR lists the status of both subspecies as 'not applicable'.

Most of the birds found in and around the Mackenzie Delta are migratory. They will be wintering in southerly locations during the winter months and may be using the Sites and surrounding area for nesting, breeding and staging habitat during the summer months.

10.2.4 Mammals

Terrestrial wildlife in the vicinity of the Sites may include moose (*Alces alces*), barren-ground caribou (*Rangifer tarandus groenlandicus*), boreal caribou (*Rangifer tarandus caribou*), muskox (*Ovibos moschatus*), grizzly bear (*Ursus arctos*), black bear (*Ursus americanus*), wolverine (*Gulo gulo*), grey wolf (*Canis lupus*), Arctic fox (*Vulpes lagopus*), red fox (*Vulpes vulpes*), lynx (*Lynx canadensis*), mink (*Neovision vison*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), snowshoe hare (*Lepus americanus*) and small mammals.

Polar bears (*Ursus maritimus*) may be encountered in the vicinity of the Sites. Typically, they are restricted to high Arctic areas with sea ice in summer and, in winter, they may be found in coastal on-shore areas with maternity dens along the Yukon North Slope, Herschel Island, Kay Point, eastern Mackenzie Delta coastal and off-shore areas (as defined by the Mainland Coastal Polar Bear Denning Areas [323C]; TCCP 2016).

Based on the AICCP (2016) , ICCP (2016) and TCCP (2016), the Sites are within or near to the following Special Designated Lands recognized for terrestrial and marine mammals and their habitat (Figures 6A and 6B; Appendix A).

- Spring Moose Harvesting Areas (303B): important area for the subsistence hunting of moose;
- Winter Wolverine Harvesting Areas (314C): key area for subsistence harvesting of wolverine during the winter;
- Critical Grizzly Bear Denning Areas (322C): considered important for denning grizzly bears from October to May;
- Caribou Herds Winter Range (701E): important winter habitat for the Tuktoyaktuk Peninsula, Cape Bathurst and Bluenose-West caribou herd, which are valued for subsistence harvest year-round;
- Caribou Hills (702B): Caribou Hills have a unique successional plant life; the Middle Mackenzie Delta is a unique transition zone between alluvial taiga and low tundra habitats and it is also an important subsistence berry picking area and important for subsistence harvesting, including fishing; and
- Central Mackenzie Estuary (718D): important area for beluga.

At least 39 mammal species may be found in the Mackenzie Delta region (AICCP 2016; ICCP 2016; TCCP 2016). Several of these species are listed federally and/or territorially. Table K below provides a summary of these listed species.

Table K: Mammal Species of Conservation Concern Potentially Occurring at the Sites

Common Name	Scientific Name	NWT SAR[1]	COSEWIC[2]	SARA[3]
Barren-ground caribou	*Rangifer tarandus groenlandicaus*	Threatened	Threatened	Under consideration
Boreal caribou	*Rangifer tarandus caribou*	Threatened	Threatened	Threatened
Polar bear	*Ursus maritimus*	Special concern	Special concern	Special concern
Grizzly bear (western population)	*Ursus arctos*	No status	Special concern	Special concern
Wolverine	*Gulo gulo*	No status	Special concern	Special concern

[1] Conference of Management Authorities (2026, internet site). NWT List of Species at Risk. Species listed under the *Species at Risk (NWT) Act*.

[2] Species recommended by the COSEWIC for listing under Schedule 1 of the federal SARA (2026, internet site).

[3] Species listed under Schedule 1 of the federal SARA (2026, internet site).

Of the species listed in Table K, grizzly bears, will be hibernating during the winter months and may be encountered at the Sites during the summer months of the Project. Polar bears are restricted to areas with sea ice during summer months; however, polar bears may be using the general area around the Sites and female polar bears may be denning in maternity dens during the winter months in on- and off-shore areas along the coast north of the Sites. The Cape Bathurst Herd of barren-ground caribou may be wintering near the Sites, the Tuktoyaktuk Peninsula Herd of barren-ground caribou may be wintering to the north and east of the Sites, boreal caribou of the continuous NT1 range may be using an area to the south of the Sites and wolverine may be encountered

year-round (Conference of Management Authorities 2026, internet site). More details on some of these species are provided in Section 14.5.

10.2.5 Freshwater Fish

The Mackenzie Delta provides important feeding, spawning and overwintering habitat for anadromous and freshwater fish species, in addition to providing a major conduit for fish migration from spawning areas in the delta/upstream of the delta to overwintering areas in the delta or the nearshore Beaufort Sea.

Common species that may be found and/or harvested within the vicinity of the Sites include Arctic cisco (*Coregonus autumnalis*), Arctic grayling (*Thymallus arcticus*), broad whitefish (*Coreganus nasus*), inconnu (*Stenodus leucichthys*), dolly varden (*Salvelinus malma*), lake trout (*Salvelinus namaycush*), lake whitefish (*Coreganus clupeaformis*), least cisco (*Coregonus sardinella*), burbot (*Lota lota*) and northern pike (*Esox lucius*).

Based on the AICCP (2016), ICCP (2016) and TCCP (2016), the Sites are within or near the following Special Designated Lands recognized for fish, fish habitat and/or subsistence harvest (Figures 6A and 6B, Appendix A).

- Winter Fishing Areas (316C): key area for subsistence fishing during the winter;
- Caribou Hills (702B): Caribou Hills have a unique successional plant life, the Middle Mackenzie Delta is a unique transition zone between alluvial taiga and low tundra habitats and it is also an important subsistence berry picking area and important for subsistence harvesting, including fishing;
- Fish Lakes and Rivers (704C): important fish habitat and important historic and present subsistence harvest area for people of Inuvik and Tuktoyaktuk; and
- Central Mackenzie Estuary (718D): used extensively by feeding anadromous whitefish and as overwintering and nursery areas for a variety of fish.

At least 28 freshwater fish species may be found in the Mackenzie Delta region (AICCP 2016; ICCP 2016; TCCP 2016). Table L below provides the only species that is listed federally and/or territorially in the general area of the Sites.

Table L: Freshwater Fish Species of Conservation Concern Potentially Occurring at the Sites

Common Name	Scientific Name	NWT SAR[1]	COSEWIC[2]	SARA[3]
Dolly Varden	*Salvelinus malma*	n/a	Special concern	Special concern

[1] Conference of Management Authorities (2026, internet site). NWT List of Species at Risk. Species listed under the *Species at Risk (NWT) Act*.

[2] Species recommended by the COSEWIC for listing under Schedule 1 of the federal SARA (2026, internet site).

[3] Species listed under Schedule 1 of the federal SARA (2026, internet site).

Many of the fish species that occur within the vicinity of the Sites may be encountered in the Mackenzie River and its channels during the proposed Project activities.

10.2.6 Insects

Numerous insect species are found in and around the Mackenzie Delta. Table M provides a summary of insect species that are listed federally and/or territorially that may potentially occur in the general Project area.

Table M: Insect Species of Conservation Concern Potentially Occurring at the Sites

Common Name	Scientific Name	NWT SAR[1]	COSEWIC[2]	SARA[3]
Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	No status	Endangered	Endangered
Suckley's Cuckoo Bumble bee	*Bombus suckleyi*	No status	Threatened	Under consideration
Transverse Lady Beetle	*Coccinella transversoguttata*	No status	Special concern	Special concern
Yellow-banded Bumble Bee	*Bombus terricola*	No status	Special concern	Special concern

Notes:

[1] Conference of Management Authorities (2026, internet site). NWT List of Species at Risk. Species listed under the *Species at Risk (NWT) Act*.

[2] Species recommended by the COSEWIC for listing under Schedule 1 of the federal SARA (2026, internet site).

[3] Species listed under Schedule 1 of the federal SARA (2026, internet site).

Insects will be dormant during the winter months and may be using the Sites and surrounding area during the summer months.

11.0 TRADITIONAL AND OTHER LAND USES

The 2016 AICCP (2016), ICCP (2016) and TCCP (2016) classify the general area of the Sites as Management Category B, C, D and E Lands.

- Category B: where there are cultural or renewable resources of some significance and sensitivity, but where terms and conditions associated with permits and leases shall assure the conservation of these resources.
- Category C: where cultural or renewable resources are of particular significance and sensitivity during specific times of the year. These lands and waters shall be managed so as to eliminate, to the greatest extent possible, potential damage and disruption.
- Category D: where cultural or renewable resources are of particular significance and sensitivity throughout the year. As with Category C, these lands and waters shall be managed so as to eliminate, to the greatest extent possible, potential damage and disruption.
- Category E: where cultural or renewable resources are of extreme significance and sensitivity. There shall be no development on these areas. These lands and waters shall be managed to eliminate, to the greatest extent possible, potential damage and disruption.

As described in Sections 10.2.3 to 10.2.5, the Sites are on or near Special Designated Lands (listed in Table N), that consider land, aquatic and marine resources important to the Inuvialuit (AICCP 2016; ICCP 2016; TCCP 2016; Figures 6A and 6B, Appendix A).

Table N: Special Designated Lands and Management Categories

Former Wellsite Name	Special Designated Lands	Management Categories
Ikhil I-37	314C - Winter Wolverine Harvesting Areas 316C - Winter Fishing Areas 322C - Critical Grizzly Bear Denning Areas 701E - Caribou Herds Winter Range 702B - Caribou Hills 704C - Fish Lakes and Rivers	B, C, E

Former Wellsite Name	Special Designated Lands	Management Categories
Reindeer C-36	303B - Spring Moose Harvesting Areas 312C - Fall Goose Harvesting Areas 314C - Winter Wolverine Harvesting Areas 322C - Critical Grizzly Bear Denning Areas 704C - Fish Lakes and Rivers 718D - Central Mackenzie Estuary	B, C, D

12.0 COMMUNITY ENGAGEMENT AND CONSULTATION

Shell initiated community consultations with the Inuvik, Aklavik and Tuktoyaktuk HTCs, CCs and Elders in the spring of 2022 regarding planned ESA work at former Shell wellsites in the ISR, and consultations have been ongoing since. Consultations have taken the form of:

- letters describing planned work;
- letters describing the work completed;
- teleconferences; and
- in-person meetings.

Shell informed the Inuvik, Aklavik and Tuktoyaktuk HTCs and CCs of the five additional former wellsites added to the portfolio at in-person meetings held in November 2025 and June 2026. A summary letter of the proposed summer 2026 activities at the five former wellsites was provided to the Inuvik, Aklavik and Tuktoyaktuk HTCs on 12 January 2026.

A summary of the consultations to-date is provided in Appendix H, along with examples of letters provided to the communities in January 2026. Additional in-person meetings are planned for October 2026.

13.0 CO-MANAGEMENT, INUVIALUIT ORGANIZATIONS AND GOVERNMENT ENGAGEMENT AND CONSULTATION

Shell submitted a Request for Review of the proposed Project to the Fish and Fish Habitat Protection Program, DFO, and it was determined that an authorization under the *Fisheries Act* was not required (23-HCAA-02053) and the Project can proceed as proposed.

Shell will be submitting a Type B Water Licence application for the Project to the Inuvialuit Water Board.

Shell obtained a Class A Land Use Permit (ILA26IS002) from the ILA for summer site assessment activities at the Sites. An amendment will be requested to include winter site assessment activities.

In February 2026, information about previously recorded heritage resources in the vicinity of the Sites was provided by the ECE (Buysse 2026, pers. comm.). The closest known archaeological sites are approximately 2.4 km northwest of Ikhil I-37 and approximately 3.5 km northwest of Reindeer C-36. The archaeological sites consist of a modern cabin, and a historic workshop and campsite. Given the distance and location of the recorded archaeological sites, no interactions with any proposed Project activities are expected.

Shell was in contact with the Scientific Services Office, GNWT ECE and it was determined that a Scientific Research Licence is not required for the Phase II ESAs (Research Licensing 2026, pers. comm.).

WSP was in contact with Transport Canada's Navigation Protection Program, and it was determined that no notification (i.e., No Interference with Navigation Notification of Work) will be required for the winter ice road construction and maintenance component of the Project due to the nature of the work. The pump will be portable, temporarily placed in the river (through ice cover), only on an as-needed basis and always supervised. Therefore, water intake is considered an activity and not a work (nothing is being placed or constructed) (Chamberlain 2024, pers. comm.). No notification is required for the summer works as all activities will be a minimum of 10 m away from the ordinary high-water mark of any channel and no part of the channel will be obstructed during the Project.

14.0 RESIDUAL EFFECTS AND SIGNIFICANCE DETERMINATION

Residual effects are the effects that remain after the implementation of all mitigation measures and are the expected consequences of the Project on the selected VCs. To assess residual effects resulting from the Project, each effect was characterized based on residual effect criteria (Table O) and their significance determined. The direction of a residual effect (i.e., adverse or positive) was not included in this assessment as only adverse effects were considered in the assessment. The Ecological Context of a residual effect was not rated separately but was considered as part of the Magnitude characteristic.

The significance of the anticipated residual effects was assessed using a qualitative approach, which uses best professional judgment of experienced environmental assessment specialists, supplemented by available data from regulatory agencies and community knowledge.

Table O: Effects Criteria and Levels for Determining Significance

Effects Criteria	Effects Level Definition		
Magnitude (amount of change relative to baseline conditions)	Low	Medium	High
	For physical VCs: No violations of quality standards and guidelines For ecological VCs: Affects individuals within a year-class or cohort of a population or stock within the range of natural variability	For physical VCs: Occasional violations of quality standards and guidelines For ecological VCs: Affects a portion of a year-class or cohort of a population so that it is noticeable above background conditions	For physical VCs: Persistent violations of quality standards and guidelines For ecological VCs: Loss of a whole year-class or cohort of a population or stock
Geographic Extent (geographic area within which the residual effect is expected to occur)	Localized	Within Project area[1]	Regional
	Effect is localized within specific area.	Effect extends to the entire Project area, but not beyond.	Effect extends beyond the Project area.
Frequency (how often the residual adverse effect is expected to occur)	Infrequent	Frequent	Continuous
	Effect occurs several times at sporadic intervals.	Effect occurs many times on a regular basis.	Effect occurs continuously.

Effects Criteria	Effects Level Definition		
Duration (length of time over which the residual effect is expected to persist)	Short-term	Medium-term	Long-term
	For physical VCs: Less than the duration of the Project For ecological VCs: Recovery within two years or less	For physical VCs: The entire duration of the Project For ecological VCs: Recovery within two to five years	For physical VCs: Extending past the duration of the Project For ecological VCs: Recovery in more than five years
Reversibility (can the residual effect be reversed once the activity ceases)	Fully reversible	Partially reversible	Irreversible
	Residual effect diminishes to baseline conditions.	Residual effect partially diminishes, but not to baseline conditions	Residual effect will not diminish to baseline conditions.

[1] For the purpose of this assessment, the Project area considers the maximum area to be used during the Project.

The EISC Guidelines (EISC 2024) consider the following aspects when making a significance determination:

- whether a proposed development could have significant adverse environmental effects;
- whether a proposed development could have significant adverse effects on wildlife or wildlife habitat; and
- whether a proposed development could have significant adverse effects on resource harvesting.

Significance Determination: Based on these aspects, significance in this PD was determined as follows: **Significant residual effects** are those that are predicted to cause a change in a VC that may alter its status or integrity beyond an acceptable level (e.g., where it is not sustainable or is unavailable to contribute to ecological function or cultural use). A residual effect that does not meet this criterion is considered **Not Significant**.

Confidence Level: A precautionary approach to the evaluation of residual effects was adopted for this assessment to recognize areas of uncertainty and subsequently using conservative assumptions. Where a high degree of uncertainty regarding a residual effect was evident, the Confidence Level in the assessment prediction was assessed as Low. A High Confidence Level was assigned to predictions that had direct, site-specific data to support the predictions or based on past experience (i.e., professional judgement).

14.1 Spatial and Temporal Scope

The Project area refers to the disturbed area of the Project and will be the primary focus of the assessment. For the purpose of this assessment, the Project area considers the maximum area to be used during the Project and, therefore, reflects the zone of influence of Project activities.

This area will include the ice road extensions and temporary overland winter access to connect the Sites with the existing public ice road between Aklavik and Inuvik, and the area of ESA work at the Sites (Figures 4 and 5, Appendix A). It excludes the portion of the existing public ice road between Aklavik and Inuvik.

The temporal scope of the Project is determined through the work schedule described in Section 6.5. The field program is anticipated to be executed both during winter and summer months starting in 2026 through 2031, as needed, and may take up to 16 weeks (ice road construction and assessment work) during the winter and up to 10 weeks during the summer. While this PD is intended to allow both winter and summer work, the Sites will not be accessed each year. As previously described, the Sites will be assessed in a staged manner during the six year timeframe.

Effects potentially lasting beyond the Project schedule were considered and it is anticipated that the potential for long-term effects are limited to the localized effects of the ground disturbance.

14.2 Selection of Valued Components

The VCs are environmental, cultural and/or social attributes considered important in Project decisions.

For this PD, based on sensitivity to Project effects, their importance to Inuvialuit, their territorial or national importance, VCs were chosen for each environmental and socio-economic component, as listed in Table P below, to assist in the analysis of the potential effects as a result of the Project.

Table P: Project Environmental or Socio-economic Components and Corresponding Valued Components

Environmental or Socio-economic Component	VC(s)
Soils and Terrain	Sensitive terrain Permafrost Soil quality
Vegetation	Vegetation communities
Wildlife and Wildlife Habitat	Polar bear Grizzly bear Wolverine Barren-ground caribou Boreal caribou Migratory birds
Aquatic Resources	Water quality Fish and fish habitat
Traditional Land Use	Subsistence harvest

14.3 Soils and Terrain

The VCs for the soil and terrain component were selected based on their sensitivity to disturbance from the Project activities. For the purpose of this effects assessment, soils and terrain are represented by three VCs:

- sensitive terrain;
- permafrost; and
- soil quality.

14.3.1 Sensitive Terrain

Sensitive terrain may be affected as a result of Project traffic (e.g., heavy equipment and pick-up trucks in winter) on snowpack ramps and/or temporary overland winter access that will be constructed to access the Sites, low ground pressure, non-rutting summer vehicles (e.g., ARGO/SHERP) and ESA work at the Sites. Potential Project effects may include soil compaction/disturbance (Table Q).

The following mitigation measures will be implemented to avoid or minimize the potential for effects on sensitive terrain.

- Use track-mounted or low ground-bearing heavy equipment where possible.

- Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work.
- Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm.
- Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying terrain to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access.
- Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization.
- If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain.
- Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain.
- Minimize access to shorelines by mobile equipment/vehicles (i.e., restrict to mobilization/demobilization).
- Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible.
- Minimize overall truck and equipment use to the extent feasible.

It is anticipated that there may be residual effects of the Project on sensitive terrain. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of medium-term duration and fully reversible. Therefore, the effects are predicted to be Not Significant. The confidence level for this prediction is high.

14.3.2 Permafrost

The Mackenzie Delta is underlain by discontinuous to continuous permafrost with low to medium ice content. Limited short-term effects on permafrost are expected during the Project. Potential Project effects may include permafrost melting (Table Q).

The following mitigation measures will be implemented to avoid or minimize the potential for effects on permafrost.

- Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible.
- Minimize overall truck and equipment use to the extent feasible.
- Use track-mounted or low ground-bearing heavy equipment where possible.
- Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work.

- Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm.
- Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying terrain to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access.
- Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization.
- If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain.
- Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain.
- Minimize access to shorelines by mobile equipment/vehicles (i.e., restrict to mobilization/demobilization).
- Limit clearing of vegetation (if required) to the temporary overland winter access and the area of the assessment. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill.
- If permafrost degradation is observed at the Sites, cease drilling activities in that location and backfill boreholes immediately. If other activities at the Sites should result in permafrost degradation, these activities will cease, and the affected area stabilized and restored.
- Backfill completed boreholes with either the original material or with bentonite/barite mix and/or sand.

It is anticipated that there may be residual effects of the Project on permafrost. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of medium-term duration and fully reversible. Therefore, the effects are predicted to be Not Significant. The confidence level for this prediction is high.

14.3.3 Soil Quality

Soil quality can be affected as a result of accidental spills of fuel or hazardous materials during Project activities. Appropriate regulatory agencies will be contacted immediately in the event of an emergency. In the event of a spill, the Spill Contingency Plan (Appendix D) will be implemented and the NWT's 24-Hour Spill Report Line [(867) 920-8130] will be contacted for reportable quantities. Other safety, contingency and emergency response procedures will be followed, as outlined in the Spill Contingency Plan. This Project-specific Spill Contingency Plan contains information on spill containment procedures and all relevant contact information. In addition, equipment will be clean and free of oil and grease and maintained free of fluid leaks.

Potential Project effects may include spills/contamination (Table Q).

The following mitigation measures will be implemented to avoid or minimize the potential for effects on soil quality.

- On-site fuel storage in the winter will consist of one fuel truck (18,200 L) and one pick-up truck with slip tank (500 L). On-site fuel storage in the summer will consist of jerry cans (20 L each).

- All storage containments will be securely stored in a designated bermed and lined storage area (winter) or use drip trays (summer), 30 m from the ordinary high-water mark of the nearest water body.
- Spill kits will be located wherever fuel is stored or used.
- Portable drip trays and appropriately sized fuel transfer hoses will be used when refuelling motorized equipment.
- A designated fuel monitor will conduct daily visual inspections to check for leaks or damage to any fuel storage containment and refueling equipment.
- Regular maintenance and checks of all motorized equipment will be undertaken to avoid preventable leaks.
- Drip trays will be placed under all equipment when not in use.

It is anticipated that there may be residual effects of the Project on soil quality. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of medium-term duration and fully reversible. Therefore, the effects are predicted to be Not Significant. The confidence level for this prediction is high.

14.4 Vegetation

Selection of VCs for vegetation was based on ecosystem function and process, including soil protection, local and regional biodiversity, and provision of wildlife habitat. For the purpose of this effects assessment, vegetation is represented by one VC: vegetation communities (as there are no listed plants potentially occurring at the Sites).

14.4.1 Vegetation Communities

Based on site observations, the vegetation within the Project area is dominated by shrubs, grass, moss and willows (Komex/IEG 2006). Vegetation communities may be affected as a result of the constructed snowpack ramps and/or temporary overland winter access and associated traffic, low ground pressure, non-rutting summer vehicle use (e.g., ARGO/SHERP) and ESA work at the Sites.

Potential Project effects on vegetation may include (Table Q):

- alteration/loss of habitat;
- damage/removal of vegetation; and
- introduction of invasive species.

The following mitigation measures will be implemented to avoid or minimize the potential effects on vegetation.

- Use track-mounted or low ground-bearing heavy equipment where possible.
- Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP), and where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work.
- Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm.

- Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization.
- Limit clearing of vegetation (if required) to the temporary overland winter access and the area of assessment. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill.
- Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying vegetation to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access.
- If snowbanks were created during access construction, removed them before breakup to allow the temporary overland winter access route to drain.
- Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain.
- Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible.
- All equipment, vehicles and the crew's footwear (in summer) will be cleaned of soil and seeds before mobilizing to the Sites to avoid accidental introduction of invasive vegetation species.

It is anticipated that there may be residual effects of the Project on vegetation communities. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of medium-term duration and fully reversible. Therefore, the effects are predicted to be Not Significant. The confidence level for this prediction is high.

14.5 Wildlife and Wildlife Habitat

Wildlife VCs were selected for the detailed Project effects assessment based on their likelihood of using the general Project area, sensitivity to Project effects, community importance and conservation status:

- polar bear;
- grizzly bear;
- wolverine;
- caribou; and
- migratory birds.

Direct disturbance of wildlife VCs is expected to be minimal and primarily restricted to sensory (i.e., noise, olfactory and/or visual) disturbances. Wildlife habitat disturbances may occur as indirect habitat alteration via sensory disturbance (i.e., the effects of noise, light, dust and human presence on undisturbed adjacent habitats) or as direct habitat disturbance caused by vegetation clearing (if required) or disturbance. Winter and summer activities may overlap with the presence of wildlife VCs.

Potential Project effects on wildlife may include (Table Q):

- sensory disturbance (all wildlife VCs);
- indirect habitat alteration (caribou and migratory birds);
- direct habitat disturbance (caribou and migratory birds); and

- negative human-animal encounters (polar bear, grizzly bear and wolverine).

The following mitigation measures will be implemented to avoid or minimize the potential effects on wildlife and wildlife habitat.

- Implement the Project-specific Wildlife Management and Monitoring Plan (Appendix B).
- Wildlife Monitors will continuously assess the Sites and surrounding area, and advise on any wildlife concerns.
- Wildlife Monitors will work in alternating shifts to ensure monitoring takes place during all work activities.
- Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible.
- Crews will keep the Sites clean at all times, and food, attractants and waste will be temporarily stored in wildlife-proof containers and removed from the Sites regularly as described in the Project-specific Waste Management Plan (Appendix C).
- Crews will be instructed to not feed or harass wildlife, and workers will not be allowed to hunt, trap or have dogs on the Project.
- Project activities will cease if bears or caribou are observed in proximity to the Sites (i.e., within 500 m) or if wolverine are seen within 250 m of the Sites; activities will only resume once the animals have left the area.
- Limit disturbance in potential nesting areas. Avoid any active nests by implementing species-specific setback distances.
- On the ice road and temporary overland winter access, wildlife will have the right of way at all times; speed limits will be implemented.
- If wildlife is observed in proximity to the ice road, their location will be communicated to all Project staff.
- Implement all applicable ice road measures (in Section 6.4.2).
- Snowbanks along the ice road will not exceed 1 m in height and will have regular gaps (e.g., every 30 m) to avoid entrapment of crossing wildlife.
- Ice roads and temporary overland winter access will be abandoned at the end of the winter work to limit public access to the Sites.
- Crews will receive bear awareness training and will follow the Project-specific Wildlife Management and Monitoring Plan including GNWT's Safety in Bear Country guidelines (GNWT ECC 2026a).
- Helicopter transportation and LiDAR/orthographic imagery overflights will follow all requirements in the GNWT guidelines for flying low (GNWT 2019) and the Canadian Aviation Regulations (2025) (e.g., adhere to flight altitudes, avoid hovering).

14.5.1 Polar Bear

Polar bears are designated as Special Concern by COSEWIC and are listed under Schedule 1 of the federal SARA as Special Concern (Table M). The species is also listed as Special Concern under the territorial *Species at Risk (NWT) Act* (Conference of Management Authorities 2026, internet site).

Polar bears in the NWT are distinguished into four subpopulations that are shared with Alaska, Yukon and Nunavut, and exact numbers for the NWT part of their ranges are difficult to estimate (NWT SARC 2021). Polar bears are restricted to areas with sea ice during summer months. During the winter months, polar bears of the Southern Beaufort Sea subpopulation (shared with Alaska and Yukon) may be using the general area around the Sites and females may use maternity dens along the north coast (e.g., in the Mainland Coastal Polar Bear Denning Areas [323C], TCCP 2016).

Climate-change-related losses in sea ice in the range of the Southern Beaufort Sea have been associated with declines in survival and reproduction in the Alaskan portion of their range. Evidence suggests that declines in sea ice habitat are also occurring in the NWT range, and this is likely negatively affecting polar bears of this subpopulation in the NWT (NWT SARC 2021).

The potential for negative bear-human encounters exists for the Project during the winter months (potentially resulting in injury or fatality on both sides). Stored fuels and chemicals as well as food and waste products can be attractive to bears and lead to negative encounters with humans. Additional potential adverse effects on polar bears that may be caused by the Project include sensory disturbance that may result in habitat avoidance.

The potential for negative bear encounters will be minimized by using Wildlife Monitors. The Wildlife Monitors will patrol the Sites thoroughly upon first arrival and on a continual basis during workdays to ensure that encounters are avoided. If bears (or signs of bears) are seen within 500 m of the Sites, active work will cease temporarily until the animal moves out of the area and the Wildlife Monitor determines the work can proceed. Additionally, risks of bear encounters will be reduced through the maintenance of a clean work site and the use of appropriate bear-proof containers for the temporary storage of food and waste. The Project-specific Waste Management Plan (Appendix D) will be implemented during all Project activities. Any helicopter site access (post-remedial monitoring) will follow applicable guidance (e.g., in the GNWT guidelines for flying low) (GNWT 2019) and the Canadian Aviation Regulations (2025) (e.g., adhere to flight altitudes, avoid hovering). All personnel at the Sites will receive bear awareness training and the Project-specific Wildlife Management and Monitoring Plan (Appendix C) will be implemented and reviewed daily.

It is anticipated that there may be residual effects of the Project on polar bears. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of short-term duration and fully reversible. Therefore, any effects that may occur are predicted to be Not Significant. The confidence level for this prediction is high.

14.5.2 Grizzly Bear

Grizzly bears are designated as Special Concern by COSEWIC and are listed under Schedule 1 of the federal SARA as Special Concern (Table K). The species has no status under the territorial *Species at Risk (NWT) Act* (Conference of Management Authorities 2026, internet site).

The Mackenzie Delta has a low-density population of grizzly bears that reside year-round. Local grizzly bear denning generally occurs in landscapes between sea level and 100 masl, and on south and west facing lakes and/or channel banks (AICCP 2016; ICCP 2016; TCCP 2016).

The TCCP (2016) describes grizzly bears as a furbearing species with important habitat in the Mackenzie River Delta and along other major water courses. Important denning habitat is known to occur in esker areas and on south-facing slopes. The TCCP (2016) identifies Site 322C – Critical Grizzly Bear Denning Areas as important for denning grizzly bears from October to May (Figures 6A and 6B, Appendix A).

The range of grizzly bears in the NWT includes most of the mainland and their presence is increasing on Arctic islands. The estimated population size in the NWT is 4,000 to 5,000 bears (NWT SARC 2017a) with highest densities in the Mackenzie and Richardson mountains, and lowest north of the treeline in the Mackenzie River Delta, on the central barrens, and on Arctic islands (NWT SARC 2017a). Based on current data, the grizzly bear population in the NWT appears to be stable and may be increasing in certain areas (NWT SARC 2017a).

The potential for negative bear encounters will be minimized using Wildlife Monitors. The Wildlife Monitors will patrol the Sites thoroughly upon first arrival and on a continual basis during the workday to ensure that encounters are avoided. If bears (or signs of bears) are seen within 500 m of the Sites, Project work will cease temporarily until the animal moves out of the area and the Wildlife Monitor determines the work can proceed. Additionally, risks of bear encounters will be avoided through the maintenance of a clean work site and the use of appropriate bear-proof containers for the temporary storage of food and waste. The Project-specific Waste Management Plan (Appendix C) will be implemented during all Project activities. Any overflights and helicopter site access will follow applicable guidelines. All personnel at the Sites will receive bear awareness training and the Project-specific Wildlife Management and Monitoring Plan (Appendix B) will be implemented and reviewed daily.

It is anticipated that there may be residual effects of the Project on grizzly bears. Residual effects are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of short-term duration and fully reversible. Therefore, any effects that may occur are predicted to be Not Significant. The confidence level for this prediction is high.

14.5.3 Wolverine

Wolverine are designated as Special Concern by COSEWIC and are listed under Schedule 1 of the federal SARA as Special Concern (Table K). The species has no status under the territorial *Species at Risk (NWT) Act* (Conference of Management Authorities 2026, internet site).

The TCCP (2016) describes that wolverine fur is important for local use and wolverine play an important part in maintaining balanced ecosystems, and identifies a key area for subsistence harvesting of wolverine during the winter (i.e., Winter Wolverine Harvesting Areas, Site 314C; Figures 6A and 6B, Appendix A).

Wolverines occur across most of the NWT except the High Arctic islands (NWT SARC 2014). They occur at low densities and the population in the ISR is considered to be stable; however, recent declines have been detected in the NWT central barrens and may be related to barren-ground caribou population declines (NWT SARC 2014).

The potential is low for negative wolverine encounters and the likelihood will be further minimized using Wildlife Monitors. The Wildlife Monitors will patrol the Sites thoroughly upon first arrival and on a continual basis during the workday to ensure that encounters are avoided. If a wolverine is seen within 250 m of the Sites, Project work will cease temporarily until the animal moves out of the area and the Wildlife Monitors determine that the work can safely proceed. Additionally, risks of wolverine encounters will be reduced through the maintenance of a clean work site and the use of appropriate bear-proof containers for the temporary storage of food and waste. The Project-specific Waste Management Plan (Appendix C) will be implemented during all Project activities. Any overflights and helicopter site access will follow applicable guidelines. All personnel at the Sites will have had wildlife awareness training and the Project-specific Wildlife Management and Monitoring Plan (Appendix B) will be implemented and reviewed daily.

It is anticipated that there may be residual effects of the Project on wolverines. Residual effects are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of short-term duration

and fully reversible. Therefore, any effects that may occur are predicted to be Not Significant. The confidence level for this prediction is high.

14.5.4 Caribou

Barren-Ground Caribou

Barren-ground caribou are designated as Threatened by COSEWIC and are Under Consideration for Schedule 1 of the federal SARA (Table K). The species is also listed as Threatened under the territorial *Species at Risk (NWT) Act* (Conference of Management Authorities 2026, internet site).

Barren-ground caribou undergo seasonal migrations, often travelling long distances throughout the year (NWT SARC 2017b). Herds calve and summer in tundra habitats along the Arctic coast before migrating southwards in the fall to winter in areas below the treeline. Once spring arrives, herds migrate northwards back to their calving grounds (NWT SARC 2017b).

Calving grounds are an important habitat area for barren-ground caribou, with the calving/post-calving season considered a sensitive period (Nagy 2011). Other important seasons include the late summer and fall when barren-ground caribou (particularly females) regain their body condition to successfully breed, survive the winter and/or calve the following spring, and the winter season, which barren-ground caribou spend below the treeline in areas where they can better survive harsh Arctic winters (Nagy 2011).

The TCCP (2016) describes that barren-ground caribou herds in the region are valued for subsistence harvest year-round. The TCCP (2016) identifies Site 701E – Caribou Herds Winter Range as important winter habitat for the Tuktoyaktuk Peninsula, Cape Bathurst and Bluenose-West caribou herd, which are valued for subsistence harvest year-round.

The Tuktoyaktuk Peninsula Herd's year-round range is generally limited to the Tuktoyaktuk Peninsula (GNWT ECC 2026b, internet site). The herd was declining for several years with a population of 1,500 in 2018; however, the size of the herd has increased recently and was estimated at approximately 2,798 animals in 2024 (GNWT ECC 2026c, internet site). Their traditional calving grounds are at the northern tip of the peninsula and the animals will migrate south in the fall. The likelihood of overlap with Project activities is minimal as the herd typically uses an area northeast of the Project area.

The Cape Bathurst Herd utilizes the Cape Bathurst and Tuktoyaktuk peninsulas (GNWT ECC 2026b, internet site) east of the Mackenzie River. The herd's calving grounds are on the Cape Bathurst Peninsula (east of the Tuktoyaktuk Peninsula) and their winter range may include the most southern parts of the Tuktoyaktuk Peninsula. The herd's numbers have been increasing over the past decade and were estimated at approximately 8,533 animals in 2025 (GNWT ECC 2026c, internet site). It is assumed that the herd may potentially use the general Project area.

The Bluenose-West caribou herd calving grounds are on and near the Arctic coast west of the NWT/Nunavut border, and they range south and west of the calving grounds in the NWT (GNWT ECC 2026b, internet site). The herd's numbers were estimated to be 112,000 in 1992, declined to 18,440 in 2021 and have increased slightly to 20,476 in 2025 (GNWT ECC 2026c, internet site). The likelihood of overlap with Project activities is minimal as the herd typically uses an area east of the Project area.

Mitigation measures for barren-ground caribou will include the use of Wildlife Monitors to conduct continuous patrols of the Sites during the workdays to scout for any caribou (or signs of caribou) in the vicinity. If caribou are observed within 500 m of the Sites, Project work will cease temporarily until the animals move out of the area and

the Wildlife Monitor determines the work can proceed. If vehicles travelling on the ice road encounter caribou, the traffic will stop and wait at least five minutes for the caribou to move off the ice road. If the caribou do not move off within five minutes, the vehicle can start moving slowly to encourage the caribou to move off the ice road. Snowbanks along the ice road will not exceed 1 m in height and will have regular gaps (e.g., every 30 m) to avoid entrapment of crossing animals and ice roads and temporary overland winter access will be abandoned at the end of the winter work to limit public access to the Sites. Any overflights and helicopter site access will follow applicable guidelines. Vegetation disturbance will be limited to the extent practicable.

It is anticipated that there may be residual effects of the Project on barren-ground caribou. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of medium-term duration and fully reversible. Therefore, the effects are predicted to be Not Significant. The confidence level for this prediction is high.

Boreal Caribou

The boreal ecotype of woodland caribou is designated as Threatened by COSEWIC and is listed under Schedule 1 of the federal SARA as Threatened (Table K). The species is also listed as Threatened under the territorial *Species at Risk (NWT) Act* (Conference of Management Authorities 2026, internet site).

The Project is at the northern limit of the NT1 boreal caribou range (NWT SARC 2022). The NT1 range includes boreal forest habitat in the western NWT along the Mackenzie River valley, from the Mackenzie Mountains east to the Canadian Shield around Great Bear Lake and Great Slave Lake, and from the Alberta-NWT border north to Inuvik. This ecotype of woodland caribou prefers mature coniferous forest habitats with abundant lichen resources. Boreal caribou live in small groups throughout the boreal forests in the NWT and stay within the forest year-round. They have declined in most of Canada and the population in the NWT is estimated to be approximately 7,400 (NWT SARC 2022). The likelihood of overlap with Project activities is low. However, for the purpose of this assessment, it is assumed that the herd may potentially use the area around the Ikhil I-37 site in both winter and summer.

Mitigation measures for boreal caribou will include the use of Wildlife Monitors to conduct continuous patrols of the Sites during the workdays to scout for any caribou (or signs of caribou) in the vicinity. If caribou are observed within 500 m of the Sites, Project work will cease temporarily until the animals move out of the area or when the Wildlife Monitor determines the work can proceed. If vehicles travelling on the ice road encounter caribou, the traffic will stop and wait at least five minutes for the caribou to move off the ice road. If the caribou do not move off within five minutes, the vehicle can start moving slowly to encourage the caribou to move off the ice road. Snowbanks along the ice road will not exceed 1 m in height and will have regular gaps (e.g., every 30 m) to avoid entrapment of crossing animals and ice roads, and temporary overland winter access will be abandoned at the end of the winter work to limit public access to the Sites. Any overflights and helicopter site access will follow applicable guidelines. Vegetation disturbance will be limited to the extent practicable.

It is anticipated that there may be residual effects of the Project on boreal caribou. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of medium-term duration and fully reversible. Therefore, any effects that may occur are predicted to be Not Significant. The confidence level for this prediction is high.

14.5.5 Migratory Birds

As most of the birds found in and around the Mackenzie Delta are migratory, they will be wintering in southern locations during the winter months and may be using the Sites and surrounding area for nesting, breeding and habitat during the summer months of the Project.

The TCCP (2016) identifies Site 312C – Fall Goose Harvesting Areas, considered a key area for subsistence harvesting of waterfowl in fall (Figure 6B, Appendix A).

As ground-nesting birds, most waterfowl species may be affected directly by sensory disturbance (during the summer) and/or disturbance of nesting habitat, such as clearing or compaction of vegetation (during winter and summer).

Direct disturbance or the loss or alteration of habitat resulting from the Project is predicted to be localized to the assessment areas and the temporary overland winter access. During the summer months, potential sensory disturbance results in habitat avoidance. Mitigation measures for birds will include the use of Wildlife Monitors to conduct continuous patrols of the Sites during the workdays to scout for any birds (or signs of birds) in the vicinity. Personnel working on the Project will be made aware of the potential presence and conservation status of birds, in particular bank swallows and ECCC's pamphlet on the bank swallow will be consulted (ECCC 2016; Appendix C of the Wildlife Management and Monitoring Plan [Appendix B]). The Migratory Bird Regulations (GOC 2022) and ECCC's Guidelines to Avoid Harm to Migratory Birds and Fact Sheet: Nest Protection Under the Migratory Birds Regulations (ECCC 2023a,b, internet site) will be reviewed and followed. If active nests of any bird species are encountered within the Project area, they will be addressed through establishing a species-specific no-disturbance buffer zone (i.e., a setback). Any overflights and helicopter site access will follow applicable guidelines, including specific guidelines listed in the Wildlife Management and Monitoring Plan (Appendix B).

It is anticipated that there may be residual effects of the Project on migratory birds and their habitat. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of medium-term duration and fully reversible. Therefore, the effects are predicted to be Not Significant. The confidence level for this prediction is high.

14.6 Aquatic Resources

The VCs for the aquatic resources component were selected based on their sensitivity to disturbance from the Project activities. For the purpose of this effects assessment, aquatic resources are represented by two VCs:

- water quality; and
- fish and fish habitat.

Potential effects on aquatic resources may include (Table Q):

- disturbance of sediment;
- sediment generation/increase in turbidity; and
- contaminant spills into nearby water bodies.

The following mitigation measures will be implemented to avoid or minimize potential effects on aquatic resources:

- Implement the Project-specific Spill Contingency Plan (Appendix D) and ERP (Appendix E). Keep spill response equipment easily accessible. Store fuel and hazardous materials in bermed, lined areas (winter) or use drip trays (summer) a minimum of 30 m from the ordinary high-water mark of the nearest water body.
- Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP), and where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work.

- Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm.
- During summer, use feasible landing area for boat landing at the Sites based on the landing areas used in the past (if present) or based on experience of boat operator.
- Boats used to access the Sites will be locally owned (i.e., used for work in the ISR) and will be cleaned prior to use to reduce the potential of accidentally introducing invasive aquatic species.
- Implement speed limits on the ice road and limit public use to minimize auditory disturbance of fish.
- Implement DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) for water withdrawals during ice road construction and, if required, during snowpack ramp and temporary overland winter access construction.
- Implement DFO's Code of Practice: Ice Bridges and Snow Fills (DFO 2025a, internet site) for constructed water course crossings and when removing or v-notching snow fills at snowpack ramps and temporary overland winter access decommissioning to not impede drainage during breakup. Any woody or other debris observed on water course crossings will be removed immediately.
- If snowbanks were created during access construction, they will be removed before breakup to allow the temporary overland winter access route to drain.
- All snow berms created at the Sites will be spread and levelled at time of demobilization to allow the Sites to drain.
- Implement all applicable ice road measures (in Section 6.4.2).

14.6.1 Water Quality

Disturbance of aquatic resources (in particular substrate disturbances and sediment generation) may result from ice road construction and use, summer boat access (including landing at Reindeer C-36) and the assessment activities (including surface water and sediment sampling). The Erosion and Sediment Control Plan (Appendix F) will be implemented throughout the Project to mitigate any adverse effects from these activities. Boat access to the Reindeer C-36 site during summer will be based on traditional site access procedures and the landing areas used in the past will be re-used (if present) or a landing area will be selected based on experience of the boat operator.

Accidental fuel spills at the Sites, traffic accidents or leaks on the ice road and leaks from boats on the water have the potential to affect water quality. Drip trays and spill kits will be used for all refueling activities in designated refueling areas. Spill kits will be available on vehicles travelling the ice road and in boats traveling on the river, and motors will be kept in good working order. The Spill Contingency Plan (Appendix D) will be implemented and made available to all staff and contractors working at the Sites. This includes responses to spills on ice and snow, on the land under non-frozen conditions and in open water. Despite the above precautions, in the event of an accidental spill of a reportable quantity of fuel or hazardous material that is released into a water body, it will be immediately reported to the NWT 24-hour spill line.

Surface water and sediment sampling will be conducted using best practices to limit substrate disturbance and sediment generation. Surface water and sediment samples will be collected from the shore or surface of the water using appropriate (thoroughly cleaned) hand tools and equipment. Water course crossings on overland access (if required) will be constructed following DFO's Code of Practice: Ice Bridges and Snow Fills (DFO 2025a, internet site). Any snow fill will be removed or v-notched at snowpack ramp and temporary overland winter access decommissioning to not impede drainage during breakup. Any woody or other debris observed on water course crossings will be removed immediately.

It is anticipated that there may be residual effects of the Project on water quality. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of short-term duration and fully reversible. Therefore, any effects that may occur are predicted to be Not Significant. The confidence level for this prediction is high.

14.6.2 Fish and Fish Habitat

The Mackenzie Delta is frequented by a large variety of anadromous and freshwater fish species using the area for different life stages. The potential water quality effects (Section 14.6.1) resulting from the ice road construction and use, summer boat access and the assessment activities could potentially affect the fish present in the area and their habitat.

Vehicle traffic on the ice road and boat traffic on the river can potentially adversely affect fish through auditory disturbance. Mitigation measures to be used to limit potential effects on fish during Project activities include:

- Reduce traffic to necessary vehicles/boats and trips.
- Restrict public use of the ice road.
- Implement speed limits on the ice road.

In addition, fish will be protected by following DFO's Standards and Codes of Practice (DFO 2026b, internet site) and Measures to Protect Fish and Fish Habitat (DFO 2025b, internet site), DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) including the flow rate limit up to 150 litres per second during construction and maintenance of the ice road and DFO's Code of Practice: Ice Bridges and Snow Fills (DFO 2025a, internet site) during water course crossing construction and abandonment.

In accordance with DFO's Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada (DFO 2013), water withdrawal activities will not alter the natural flow regime in the Mackenzie River.

As noted in Section 13.0, a Request for Review of the proposed Project was reviewed by the Fish and Fish Habitat Protection Program, DFO, and it was determined that an authorization under the *Fisheries Act* was not required (23-HCAA-02053). DFO will be notified (FisheriesProtection@dfo-mpo.gc.ca or 1-855-852-8320) if the Project has caused, or is about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat.

The Sites are within NWT Zone 1 of the Northwest Territories Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat (DFO 2013, internet site). As per Table 3 (DFO 2013, internet site), in-water works are not permitted from 15 September to 15 July. The only work activities planned in water bodies during this period are surface water and sediment sampling (summer), and water withdrawal for ice road and temporary overland access construction (winter). In addition to the above noted DFO guidance to be followed, the Erosion and Sediment Control Plan (Appendix F) will be implemented.

The TCCP (2016) identifies Site 316C – Winter Fishing Areas as a key area for subsistence fishing during the winter, Site 702B – Caribou Hills as important for subsistence harvesting, including fishing, Site 704C – Fish Lakes and Rivers as important fish habitat and important historic and present subsistence harvest area for people of Inuvik and Tuktoyaktuk, and Site 718D – Central Mackenzie Estuary as an important concentration area for beluga, used extensively by feeding anadromous whitefish and as overwintering and nursery areas for a variety of fish (Figures 6A and 6B, Appendix A).

It is anticipated that there may be residual effects of the Project on fish and fish habitat. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of short-term duration and fully reversible. Therefore, any effects that may occur are predicted to be Not Significant. The confidence level for this prediction is high.

14.7 Traditional Land Use

For the purpose of this effects assessment, traditional land use is represented by one VC: subsistence harvest.

14.7.1 Subsistence Harvest

Potential effects on subsistence harvest may include harvesting interference (Table Q).

The Sites are on or near the Special Designated Lands listed in Section 11.0 that consider land, aquatic and marine resources important to the Inuvialuit (AICCP 2016; ICCP 2016; TCCP 2016).

The following mitigation measures will be implemented to avoid or minimize potential effects on subsistence harvest.

- HTCs and CCs will be advised of Project schedule and any possible interference with traditional harvesting; and schedule meetings with Tuktoyaktuk, Inuvik and Aklavik HTCs and CCs.
- There will be effective communication between Project team, field crew members, Inuvialuit communities and other affected parties prior to, during and after the Project.

The goal of the Project is to assess the Sites to determine a path forward where the ultimate goal is to return the Sites to a state in which it can be used again by Inuvialuit residents.

As described in Section 12.0 and Appendix H, past and ongoing consultations with the Aklavik, Tuktoyaktuk and Inuvik HTCs and CCs informed the communities of the Project, collected their input and feedback into Project approach, and Shell will regularly inform them of all upcoming work and associated schedules that may affect harvesting activities in the general vicinity.

It is anticipated that there may be residual effects of the Project on subsistence harvest. They are predicted to be of low magnitude, localized in their geographic extent, infrequent in their occurrence, of short-term duration and fully reversible. Therefore, any effects that may occur are predicted to be Not Significant. The confidence level for this prediction is high.

14.8 Effects and Mitigation Summary

The residual effects that may occur as a result of the Project were considered for all physical works and activities during the Project's life cycle. Effects were identified and assessed, taking into consideration applicable mitigation measures and standard practices.

Applicable mitigation measures have been identified to avoid or minimize adverse effects. Under the *Canadian Environmental Assessment Act* (2012), mitigation is defined as the measures for the elimination, reduction or control of adverse environmental effects of a project. Mitigation of adverse effects has been introduced at the Project design stage and adverse effects will be avoided to the extent practical.

Table Q provides a summary of potential Project effects on VCs, mitigation measures to be implemented to avoid or minimize those effects, the anticipated residual effects characteristics (i.e., after mitigation) and predicted significance.

Table Q: Summary of Potential Effects, Proposed Mitigation, Residual Effect Characteristics and Predicted Significance

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
Sensitive terrain	Soil compaction /disturbance	■ Use track-mounted or low ground-bearing heavy equipment where possible. ■ Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying terrain to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access. ■ If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain. ■ Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization. ■ Minimize access to shorelines by mobile equipment/vehicles (i.e., restrict to mobilization/demobilization). ■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible. ■ Minimize overall truck and equipment use to the extent feasible.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Permafrost	Permafrost melt	■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible. ■ Minimize overall truck and equipment use to the extent feasible. ■ Use track-mounted or low ground-bearing heavy equipment where possible. ■ Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
		historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization. ■ Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying terrain to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access. ■ If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain. ■ Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain. ■ Backfill completed boreholes with either the original material or with bentonite/barite mix and/or sand. ■ Minimize access to shorelines by mobile equipment/vehicles (i.e., restrict to mobilization/demobilization). ■ Limit clearing of vegetation (if required) to the temporary overland winter access and the assessment area. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill. ■ If permafrost degradation is observed at the Sites, cease drilling activities in that location and backfill boreholes immediately. If other activities at the Sites should result in permafrost degradation, these activities will cease, and the affected area stabilized and restored.		
Soil quality	Spills/contamination	■ Implement the Project-specific Spill Contingency Plan (Appendix D). ■ On-site fuel storage in the winter will consist of one fuel truck (18,200 L) and one pick-up truck with slip tank (500 L). On-site fuel storage in the summer will consist of jerry cans (20 L each). All storage containments will be securely stored in a designated bermed and lined storage area (winter) or drip tray (summer). ■ Locate spill kits wherever fuel is stored or used. ■ Use portable drip trays and appropriately sized fuel transfer hoses when refuelling motorized equipment. ■ A designated fuel monitor will conduct daily visual inspections to check for leaks or damage to any fuel storage containment and refueling equipment. ■ Regular maintenance and checks of all motorized equipment will be undertaken to avoid preventable leaks. ■ Place drip trays under all equipment when not in use.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
Vegetation communities	Alteration/loss of habitat; damage/removal of vegetation; introduction of invasive species	■ Use track-mounted or low ground-bearing heavy equipment where possible. ■ Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization. ■ Limit clearing of vegetation (if required) to the temporary overland winter access and the area of assessment. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill. ■ Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying vegetation to a minimum thickness of 20 cm. If required, use water to strengthen the ramps and overland access. ■ If snowbanks were created during access construction, remove them before breakup to allow the temporary overland winter access route to drain. ■ Spread all snow berms created at the Sites and level them at time of demobilization to allow the Sites to drain. ■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible. ■ Travel with trucks and equipment on flat terrain, avoiding sensitive slopes and shorelines, where feasible. ■ All equipment, vehicles and the crew's footwear (in summer) will be cleaned of soil and seeds before mobilizing to the Sites to avoid accidental introduction of invasive vegetation species.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Polar bear	Sensory disturbances; negative human-bear encounters	■ Implement the Project-specific Wildlife Management and Monitoring Plan (Appendix B). ■ Wildlife Monitors will continuously assess the Sites and surrounding area and advise on any wildlife concerns. ■ Wildlife Monitors will work in alternating shifts to ensure monitoring takes place during all work activities. ■ Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible. ■ Crews will keep the Sites clean at all times, and food, attractants and waste will be temporarily stored in wildlife-proof containers and removed from the Sites regularly as described in the Project-specific Waste Management Plan (Appendix C).	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant
Grizzly bear	Sensory disturbances; negative human-bear encounters		■ low magnitude ■ localized geographic extent ■ infrequent occurrence	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
		■ Crews will be instructed to not feed or harass wildlife, and workers will not be allowed to hunt, trap or have dogs on the Project. ■ Project activities will cease if bears or caribou are observed in proximity to the Sites (i.e., within 500 m) or if wolverine are seen within 250 m of the Sites; activities will only resume once the animals have left the area. ■ Limit disturbance in potential nesting areas. Avoid any active nests by implementing species-specific setback distances. ■ To mitigate potential effects on nesting bank swallows, follow ECCC's pamphlet on Bank swallow [*Riparia riparia*] in sandpits and quarries (ECCC 2016; Appendix C of the Wildlife Management and Monitoring Plan [Appendix B]). ■ The Migratory Bird Regulations (GOC 2022) and ECCC's Guidelines to Avoid Harm to Migratory Birds and Fact Sheet: Nest Protection Under the Migratory Birds Regulations (ECCC 2023a,b, internet site) will be reviewed and followed. ■ On the ice road and temporary overland winter access, wildlife will have the right of way at all times; speed limits will be implemented. ■ If wildlife is observed in proximity to the ice road, their location will be communicated to all Project staff. ■ Implement all applicable ice road measures (in Section 6.4.2). ■ Snowbanks along the ice road will not exceed 1 m in height and will have regular gaps (e.g., every 30 m) to avoid entrapment of crossing wildlife. ■ Ice roads and temporary overland winter access will be abandoned at the end of the winter work to limit public access to the Sites. ■ Helicopter transportation and LiDAR/orthographic imagery overflights will follow all requirements in the GNWT guidelines for flying low (GNWT 2019) and the Canadian Aviation Regulations (2025) (e.g., adhere to flight altitudes, avoid hovering). ■ Crews will receive bear awareness training and will follow the Project-specific Wildlife Management and Monitoring Plan including the GNWT's Safety in Bear Country guidelines (GNWT ECC 2026a). ■ Implement the Project-specific Spill Contingency Plan (Appendix D) and ERP (Appendix E). Keep spill response equipment easily accessible. Store fuel and hazardous materials in bermed, lined areas (winter) or drip tray (summer) a minimum of 30 m from the ordinary high-water mark of the nearest water body. ■ Minimize overall vehicle use (trucks, heavy equipment ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work. ■ Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4,	■ short-term duration ■ fully reversible	
Wolverine	Sensory disturbances; negative human-wolverine encounters		■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not Significant
Barren-ground and boreal caribou	Sensory disturbances; indirect habitat alteration; direct habitat disturbance		■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Migratory birds	Sensory disturbances; indirect habitat alteration; direct habitat disturbance		■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ medium-term duration ■ fully reversible	Not significant
Water quality	Disturbance of sediment / increase in turbidity / contaminant spills into nearby water bodies at the Sites or on the ice road		■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant
Fish and fish habitat	Sensory and physical disturbances; habitat disturbances		■ low magnitude ■ localized geographic extent ■ infrequent occurrence	Not significant

VC	Potential Effects	Proposed Mitigation	Residual Effect Characteristics	Predicted Significance
		Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm. ■ During summer, use feasible landing area for boat landing at the Reindeer C-36 site based on the landing areas used in the past (if present) or based on experience of boat operator. ■ Boats used to access the Sites will be locally owned (i.e., used for work in the ISR) and will be cleaned prior to use to reduce the potential of accidentally introducing invasive aquatic species. ■ Speed limits on the ice road and limit public use to minimize auditory disturbance of fish. ■ Implement DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) for water withdrawals during ice road construction and, if required, during snowpack ramp and temporary overland winter access construction. ■ Implement DFO's Code of Practice: Ice Bridges and Snow Fills (DFO 2025a, internet site) for constructed water course crossings and when removing or v-notching snow fills at snowpack ramps and temporary overland winter access decommissioning to not impede drainage during breakup. Any woody or other debris observed on water course crossings will be removed immediately. ■ If snowbanks were created during access construction, they will be removed before breakup to allow the temporary overland winter access route to drain. ■ All snow berms created at the Sites will be spread and levelled at time of demobilization to allow the Sites to drain. ■ Implement all applicable ice road measures (in Section 6.4.2).	■ short-term duration ■ fully reversible	
Subsistence harvest	Harvesting interference	■ Advise HTCs and CCs of Project schedule and any possible interference with traditional harvesting and schedule meetings with Tuktoyaktuk, Inuvik and Aklavik HTCs and CCs. ■ There will be effective communication between Project team, field crew members, Inuvialuit communities and other affected parties prior to, during and after the Project.	■ low magnitude ■ localized geographic extent ■ infrequent occurrence ■ short-term duration ■ fully reversible	Not significant

15.0 CUMULATIVE EFFECTS

Cumulative effects refer to those effects resulting from the residual effects of the Project interacting with the residual effects of other past, present and reasonably foreseeable projects and activities on the selected VCs. When residual project effects interact spatially and temporally, their combined effects can result in cumulative effects on a VC. This section assesses if the anticipated residual effects from the proposed Project interact cumulatively with residual effects on the same VC resulting from past, present, and reasonably foreseeable projects and activities within and surrounding the Project area (as summarized in Table R). The Cumulative Effects Assessment (CEA) for the Project follows the guide for proponents developed for CEA in the ISR (Kavik-Axys Inc. 2002). The four steps to evaluate possible cumulative impacts are as follows.

1) Negative effects on VC should be determined. This step is based on the assessment of the proposed mitigation and anticipated environmental impacts, which included a prediction of the significance of the residual effects, as well as an assessment of the environmental or social consequence.

2) Determine whether these residual effects act cumulatively with the effects of other activities. For the Project effects to act cumulatively, there must be other human activities affecting the same VC. Two factors that are considered are the temporal and spatial scope of the activities. Typically, activities that interact in either scope are considered in a CEA.

3) Determine how the Project-specific effects contribute to the cumulative effects. This involves an analysis of the relevance of the interactions between activities.

4) Assess the need for further mitigation measures if the cumulative effects are anticipated to be significantly negative.

Potential Project-specific effects assessed on the selected VCs for the Project, as discussed in Section 14.0, completes Step 1 of the CEA. When considered individually, residual effects of this Project on each VC are predicted to be not significant. However, the identification of a residual effect indicates some possibility that negative cumulative effects may occur. The CEA must, therefore, consider these and potential effects from past, current and reasonably foreseeable activities that may interact with the Project.

15.1 Past, Current and Potential Future Activities

Past, current and potential (reasonably foreseeable) future activities considered by this CEA, in addition to the Project, are listed in Table R below. Past activities include those that have occurred; current activities include those that are occurring or have been applied for/or approved; and reasonably foreseeable activities include those that are proposed or that are expected to occur.

Table R: Summary of Past, Current and Potential Future Site Activity

Date(s)	Description and Location
Past Activities	
Prior to 1973	No known development
1973	Drilling exploratory wells at the Sites. Site features included well centre, drilling waste sump, camp sump, pilings, potential flare pit and fuel storage (Komex/IEG 2006).
1974-1975	Further restoration work completed at the Ikhil I-37 site, including cutting pilings, opening drainage changes to allow water to drain from the edge of the drilling waste sump. The Reindeer C-36 site was relevelled.

Date(s)	Description and Location
1998 to 1999	Construction of the Ikhil gas plant and pipeline
2000 to 2012	Operation of the Ikhil gas plant; occasional overland resupply and regular monitoring work
2013 and beyond	Maintenance of Ikhil gas plant and pipeline to supply emergency gas
2005	Site assessments via helicopter. Soil and surface water samples collected at the Sites (Komex/IEG 2006).
2010	Site visit and select soil sample collection
2022	Aerial site reconnaissance at both Sites
2022 to 2025	Assessment of former wellsites owned by Shell and other companies in the ISR
2025	Aerial site reconnaissance at Ikhil I-37
2025	ILA site inspection and spill report for Ikhil I-37
Current Activities	
2026	Summer site reconnaissance completed via helicopter to support the collection of ecological information, an environmental sampling program and inventory of remaining and visible infrastructure on the Sites
Potential Future Activities	
2026 to 2031	Staged summer and winter ESAs at Shell's former wellsites in the ISR
2026 and beyond	Assessment of former wellsites owned by other companies in the ISR

15.2 Interaction of Activities

Step 2 of the CEA, the determination of the possible interaction of activities in the area and the potential for cumulative effects, is determined by comparing the spatial and temporal scope of the known activities. The relevance of this interaction is assessed using a qualitative approach, which uses best professional judgment of experienced environmental assessment specialists, supplemented by available data and community knowledge.

It is generally assumed that the analysis of any spatial interaction of activities is useful only in the case of temporal interaction. The analysis of temporal interactions of other current and reasonably foreseeable activity on the area considers the effects conservatively. This approach assumes that, if logical, the current and reasonably foreseeable activities may be considered to interact temporally.

Spatial interaction is indicated by any activities that overlap or are adjacent. Generally, the zone of influence (the distance from an activity in which an effect on a VC is measurable) of Project activities is along the ice roads and temporary winter access (Figure 3, Appendix A), within the area of the proposed assessment at each of the Sites (Figures 4 and 5, Appendix A) and adjacent to the river channels used for boat access.

15.2.1 Possible Project Interactions

Use of the Sites for oil and gas exploration resulted in site features including a well centre, a drilling waste sump, a camp sump, wood pilings used to support surface infrastructure above the ground, and a potential drilling flare pit and former fuel storage area.

The Project is not expected to result in any further significant effects on any identified VCs. Therefore, interaction between the Project and the past activities is not expected to contribute to cumulative effects at the previously disturbed Sites.

15.2.2 Positive Effects of Project

Shell is proposing ESAs at the Sites. Information obtained through the Project will be used to determine a path forward with the Sites where the ultimate goal is to return the Sites to a state in which they can be used again by Inuvialuit residents. This will contribute positively to the environmental conditions in and around the Sites. Shell is proposing Project-specific mitigation measures so that VCs such as soil, permafrost, vegetation communities, polar bear, grizzly bear, wolverine, barren-ground and boreal caribou, migratory birds, water quality, fish and fish habitat, and traditional land use are protected from any future adverse effects.

15.3 Potential Cumulative Effects

The determination of potential cumulative effects, comprising Step 3 of the CEA, involves an analysis of the Project-specific effects using the VCs to assess the significance of any cumulative effects. Project VCs were organized according to the environmental components described in Section 14.0. The same effects criteria and levels for determining significance as described in Section 14.0 were used to assess cumulative effects and results are provided in Table S.

15.3.1 Soils and Terrain

Site-specific disturbances to terrain and soils are predicted to be localized and affect mostly previously disturbed areas. Residual effects on sensitive terrain, permafrost and soil quality resulting from the Project, in combination with residual effects of other past, present and reasonably foreseeable future projects, are expected to result in cumulative effects that are Not Significant.

15.3.2 Vegetation

The Sites are dominantly vegetated by shrubs, grass and willows, and the vegetation communities are expected to be minimally disturbed.

Residual effects from the Project on vegetation communities, in combination with residual effects of other past, present and reasonably foreseeable future projects, are expected to result in cumulative effects that are Not Significant.

15.3.3 Wildlife and Wildlife Habitat

Wildlife species may be subjected to temporary, low-level sensory disturbances through use of heavy equipment and other Project activities. By using Wildlife Monitors, maintaining clean work area conditions, ceasing work temporarily when caribou or bears are observed and following vegetation mitigation measures to protect wildlife habitat, residual effects from the Project, in combination with residual effects of other past, present and reasonably foreseeable future projects, are expected to result in cumulative effects that are Not Significant.

Migratory birds and their habitats may be adversely affected by sensory disturbance, and the removal and/or compaction of vegetation, as a result of Project activities. Through avoiding the disturbance of active nesting areas and implementing wildlife specific mitigation measures, residual effects from the Project on migratory birds, in combination with residual effects of other past, present and reasonably foreseeable future projects, are expected to result in cumulative effects that are Not Significant.

15.3.4 Aquatic Resources

Accidental fuel spills at the Sites, traffic accidents or leaks on the ice roads or river have the potential to affect water quality. Implementation of the Spill Contingency Plan (Appendix D) and ERP (Appendix E) are expected to reduce the potential of accidental spills and if they should occur despite the precautions, they will be dealt with appropriately. With the implementation of these plans and other proposed mitigation measures for aquatic resources, it is predicted that residual effects from the Project on water quality, in combination with residual effects of other past, present and reasonably foreseeable future projects, will result in cumulative effects that are Not Significant.

Fish and fish habitat in the Mackenzie Delta may be adversely affected by ice road construction and use (during winter) and boat access (during summer). Adverse effects from vehicle traffic on the ice roads (in winter) will be mitigated by reducing traffic, restricting public use, imposing speed limits and spill response actions as per the Spill Contingency Plan (Appendix D). In addition, DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) will be followed during construction and maintenance of the ice road extension, snowpack ramps, temporary overland winter access and on-site ESA activities. Adverse effects from the Project on fish and fish habitat, in combination with residual effects of other past, present and reasonably foreseeable future projects, are expected to result in cumulative effects that are Not Significant.

15.3.5 Traditional Land Use

The Project will be taking place during the winter and summer months, and the Sites are on or near the Special Designated Lands listed in Section 11.0. The Tuktoyaktuk, Inuvik and Aklavik HTCs and CCs will be informed of Project activities including anticipated start-up and end dates to avoid potential disturbance or disruptions of subsistence harvest activities and no cumulative effects on traditional land use are predicted as a result of the Project.

15.4 Mitigation of Cumulative Effects

Cumulative effects are predicted to be Not Significant; therefore, no additional mitigation measures are required. However, if residual effects of the Project are later considered to be contributing to cumulative effects (e.g., as identified through anticipated monitoring) adaptive management will be applied. These initiatives would be coordinated with regulators and potentially affected communities, as applicable.

15.5 Summary of Cumulative Effects

Table S below summarizes the assessed cumulative effects of the Project and their predicted significance. Incremental environmental disturbance effects may occur at the Sites as a result of the interaction of individual activities with the existing environment. The anticipated limited adverse effect of the proposed Project, in combination with past, current and reasonably foreseeable activities, is predicted to result in no significant cumulative effects. Additional mitigation is not considered to be practical or feasible.

Table S: Summary of Assessed Project Cumulative Effects and Predicted Significance

CEA Steps	Step 1		Step 2		Step 3		Step 4
VC	Project-specific effects		Possible interaction with other activities		Potential Cumulative Effects		Additional mitigation
	Anticipated residual effects	Predicted significance	Spatial	Temporal	Anticipated residual effects	Predicted significance	
Soils and Terrain							
Sensitive terrain	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	None
Permafrost	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	None
Soil quality	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	None
Vegetation							
Vegetation communities	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	None

CEA Steps	Step 1		Step 2		Step 3		Step 4
Wildlife							
Polar bear Grizzly bear Wolverine	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ short-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ short-term duration ▪ fully reversible	Not significant	None
Barren-ground and boreal caribou	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	None
Migratory birds	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ medium-term duration ▪ fully reversible	Not significant	None
Aquatic Resources							
Water quality	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ short-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ short-term duration ▪ fully reversible	Not significant	None
Fish and fish habitat	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ short-term duration ▪ fully reversible	Not significant	Expected	Expected	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ short-term duration ▪ fully reversible	Not significant	None

CEA Steps	Step 1		Step 2		Step 3		Step 4
Traditional Land Use							
Subsistence harvesting	▪ low magnitude ▪ localized geographic extent ▪ infrequent occurrence ▪ short-term duration ▪ fully reversible	Not significant	Not expected	Not expected	n/a	n/a	None

Note: n/a – not applicable as no cumulative effect is expected

16.0 ASSESSMENT OF GREENHOUSE GAS EMISSIONS

The anticipated greenhouse gas emitted by the proposed Project can be divided into two groups: direct sources and indirect sources. Direct sources include equipment (environmental drilling rig), vehicles (pickup trucks, water, sewage and fuel trucks, excavators, loaders, helicopter, boat), ice road construction (snowcat, graders, plow trucks), camp and camp operations. Table T below summarizes direct sources of greenhouse gas emissions for the Project and rough estimates of the emissions for one year (winter and summer Project activities).

Table T: Direct Sources of Greenhouse Gas Emissions for the Project for One Year

Source	Estimated Fuel Burn (L/day)	Location	Duration (Day)	Fuel Type	Emission Factor	Estimated CO_2-e Emission (T)	Notes
Calculation	**B**		**D**		**F**	**B * D * F**	
Winter Mobilization							
Ice Road Construction and Maintenance	4,120	Inuvik to Sites	60	Diesel	0.00268	662	Equipment: a, b, c, f
Equipment to-from Site	880	Inuvik to Sites	3	Diesel	0.00268	7	Equipment: c, f
Transport fuel to Site	500	Inuvik to Sites	3	Diesel	0.00268	4	Equipment: f
Environmental drill Rig	200	Sites	20	Diesel	0.00268	11	20 L per hour, 10 hours a day
Winter Camp	250	Sites	60	Diesel	0.00268	40	Accommodation for up to 15 people
Hotel Nights	n/a	Inuvik	30	n/a	0.0075	0.2	Non-resident crew accommodations
Air Transport (km)	5,000	Base to Inuvik	15	Jet-A	0.00015	11	Average 5,000 km

Source	Estimated Fuel Burn (L/day)	Location	Duration (Day)	Fuel Type	Emission Factor	Estimated CO_2-e Emission (T)	Notes
Summer Mobilization							
Helicopter	1,400	Inuvik to Sites, between Sites	14	Jet-A	0.00268	53	Equipment: i
Crew Boat	250	Inuvik to Sites	7	Diesel	0.00268	5	Equipment: h
Tugboat	1,500	Inuvik to Sites	7	Diesel	0.00268	28	Equipment: g
Hotel Nights	n/a	Inuvik	28	n/a	0.0075	0.2	Non-resident crew accommodations
Air Transport (km)	5,000	Base to Inuvik	2	Jet-A	0.00015	2	Average 5,000 km
Miscellaneous Emissions	n/a	n/a	n/a	n/a	25%	206	25% miscellaneous emissions, additional mobilization events, light vehicles (ARGO/SHERP, pick-up trucks), warming shack, porta-potty heater, etc.
Total						1,029	Total CO_2-e emissions estimate

Notes:

CO_2-e – carbon dioxide equivalent

L/day – litres per day

T – tonnes

Assumptions:

CO_2-e Emitted (kg)	Notes	Source
2.68	per L of diesel burned	autolexicon.net, https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/output-based-pricing-system/federal-greenhouse-gas-offset-system/emission-factors-reference-values.html Table 4
0.15	per passenger km	ourworldindata.org, https://www.icao.int/environmental-protection/Carbonoffset/Pages/default.aspx
7.5	per hotel-camp night	circularecology.com

Equipment (or equivalent)	Diesel Combustion (L/day)	Source
(a) Cat 14G	840	Ritchie Specs (https://www.ritchiespecs.com/) – assume 10 hours working, 14 hours idle operation
(b) Cat D6M	680	Ritchie Specs (https://www.ritchiespecs.com/) – assume 10 hours working, 14 hours idle operation
(c)Cat 928	380	Ritchie Specs (https://www.ritchiespecs.com/) – assume 10 hours working, 14 hours idle operation
(d) Cat 320	656	Ritchie Specs (https://www.ritchiespecs.com/) – assume 10 hours working, 14 hours idle operation
(e) Cat 246	180	Ritchie Specs (https://www.ritchiespecs.com/) – assume 10 hours working, 14 hours idle operation
(f) Kenworth T800 & T880	500	Ritchie Specs (https://www.ritchiespecs.com/) – assume 12 hours working, 12 hours idle operation
(g) Delta Eagle River Tugboat	1,500	E. Gruben's Transport Ltd.
(h) Dennie Lennie - Crew Boat	250	E. Gruben's Transport Ltd.
(i) Helicopter E135	1,400	https://www.exclusiveaircraft.co.uk/sites/default/files/brochure/Eurocopter-EC135-Brochure_0.pdf,
(j) Environmental drill rig (e.g., Marl M10)	200	20 L per hour for 10 hours a day

Note:
kg – kilogram

To achieve (and potentially reduce) these estimates, the following mitigation measures will be implemented.

- Use an experienced crew.
- Turn off equipment and engines when not in use.
- Limit time of equipment use to what is necessary.
- Limit the number of people at the Sites to what is necessary.
- Use efficient heating systems.
- Limit duration of Project to what is necessary by following detailed execution plan.

Indirect sources of greenhouse gas emissions for the Project include cargo shipments and laboratory services. Indirect sources of greenhouse gases will be mitigated by limiting travel and shipment of cargo to only what is necessary.

17.0 PROPOSED MITIGATION MEASURES TO ADDRESS POTENTIAL EFFECTS

A variety of proposed mitigation measures to address potential adverse environmental effects and adverse effects on subsistence harvesting have been proposed and are described throughout the previous sections of this PD, in

particular in Sections 7.0 and 14.0. In summary, the following key mitigation measures will be implemented during all Project-related activities.

- Construct ice roads and water course crossings using best management practices (Project-specific ice-road engineered design plans and quality assurance and quality control plans) and build up the snow cover (and supplement with ice if required) on the snowpack ramps and temporary overland winter access to protect underlying vegetation and terrain.
- Water withdrawal from the Mackenzie River will follow DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026a, internet site) at a withdrawal rate of approximately 200 m^3 per day, and which will not exceed 299 m^3 per day, for approximately six to eight weeks. All water intakes will be measured and recorded.
- No camp will be established at the Sites; a warming trailer, fuel storage area and equipment/supplies staging area will be in previously disturbed areas of the Sites, where possible.
- Clearing of vegetation (if required) will be limited to the temporary overland winter access and the area of the assessment. Avoid clearing trees and tall shrubs on the slopes of Blueberry Hill.
- Use of trucks and heavy equipment will be restricted, where possible, to flat terrain, avoiding sensitive slopes on land, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access historically used to construct and later re-supply the Ikhil gas plant (Figure 4, Appendix A). These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm.
- Shorelines will be avoided wherever possible, except as required to complete the work and the site access ramp.
- Inuvialuit Wildlife Monitors will be present during the completion of the Project, and the site-specific Wildlife Management and Monitoring Plan (Appendix B) will be implemented.
- An Inuvialuit Environmental Monitor will be present during all Project activities and advise on any environmental concerns.
- Clean work areas will be maintained with appropriate wildlife-proof temporary waste storage and regular removal of waste for disposal at approved facilities in accordance with the site-specific Waste Management Plan (Appendix C).
- The fuel storage area and refueling areas will be bermed and lined (winter) or use drip tray (summer) (i.e., secondary containment) at least 30 m away from the ordinary high-water mark of the nearest water body.
- Drip trays or secondary containment will be used at fuel storage and refueling areas to contain any drips or accidental spills.
- Drip trays will be placed under all vehicles and equipment when not in use.
- Helicopter transportation and LiDAR/orthographic imagery overflights will follow all requirements in the GNWT guidelines for flying low (GNWT 2019) and the Canadian Aviation Regulations (2025) (e.g., adhere to flight altitudes, avoid hovering).
- Should active bird nests be encountered, a species-specific no-disturbance buffer area will be established.
- Should suspected heritage resources be found during Project activities, work will cease in the immediate vicinity and regulators, and the ECE will be notified.

- The site-specific Spill Contingency Plan (Appendix D), ERP (Appendix E), and Erosion and Sediment Control Plan (Appendix F) will be implemented and made available to all staff.
- Advise HTCs and CCs of Project schedule and any possible interference with subsistence harvesting; and schedule meetings with Tuktoyaktuk, Inuvik and Aklavik HTCs and CCs.
- There will be effective communication between Project team, field crew members, Inuvialuit communities and other affected parties prior to, during and after the Project.
- All mitigation measures described in this PD will be implemented and terms and conditions of regulatory authorizations will be adhered to.

18.0 CLEAN-UP, RECLAMATION, DISPOSAL AND/OR DECOMMISSIONNING PLANS

Shell's objective is a multi-season, multi-year Project to obtain the necessary environmental and geotechnical information to determine if additional remedial steps need to be taken to address potential risks at the Sites.

Clean-up following the Project activities is expected to consist of removing all equipment and generated wastes from the Sites. Should additional activities (i.e., wood piling removal, soil remediation) be identified as required to address risks at the Sites, a new PD will be developed and submitted to the EISC for this work. Waste management and disposal procedures for waste streams generated through this proposed Project are provided in the Waste Management Plan (Appendix C).

Spill and emergency response and reporting procedures are addressed in the Spill Contingency Plan (Appendix D) and ERP (Appendix E), respectively.

All areas will be inspected prior to final personnel and equipment demobilization to ensure equipment and waste materials have been removed from the Sites.

19.0 OTHER ENVIRONMENTAL SITE ASSESSMENTS

WSP and Shell have not completed environmental assessments at the Sites; however, the most recent known assessments completed by others were conducted in 2010.

In August 2010, a site visit was completed at Ikhil I-37 to update the field-based description of site conditions. At the time of the site visit, approximately 50% of the drilling waste sump and camp sump had subsided, approximately 25% of the vegetation cover was absent, primarily in the former location of the drilling rig, and approximately 100 wooden pilings were observed in the former location of the drilling rig. Non-native material was observed in the south bank of the north pond on the subsided drilling waste sump (Kavik-Axys Inc. 2011).

In August 2010, a site visit was completed at Reindeer C-36 to update the field-based description of site conditions. At the time of the site visit, the drilling waste sump and camp sump were not subsided, with minor ponding, approximately 75% of the vegetation cover was absent, primarily in the former location of the drilling rig and camp pad, and there were no wooden pilings.

A helicopter fly-over aerial reconnaissance of the Sites was completed in 2022 and of Ikhil I-37 in 2025. In general, the drilling waste sump and camp sump were partially collapsed and covered in surface water.

Site photographs obtain during the aerial reconnaissance in 2022 are provided in Appendix I.

20.0 VISUAL INFORMATION

Visual information has been provided in Figures 1 to 8 in Appendix A as follows:

- Figure 1: Ikhil I-37 and Reindeer C-36 Site Locations;
- Figure 2: Site Locations of 28 Former Wellsites;
- Figure 3: Ikhil I-37 and Reindeer C-36 Site Locations with Proposed Ice Road;
- Figure 4: Ikhil I-37 Proposed Approximate Site Assessment Area;
- Figure 5: Reindeer C-36 Proposed Approximate Site Assessment Area;
- Figures 6A and 6B: Ikhil I-37 and Reindeer C-36 Site Locations with Community Conservation Plan Designated Lands;
- Figure 7: Scale map (1:250,000) of Project location; and
- Figures 8A and 8B: Scale maps (1:50,000) of Project location.

Site photographs from the 2022 aerial reconnaissance are provided in Appendix I.

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22.0 STATEMENT OF LIMITATIONS

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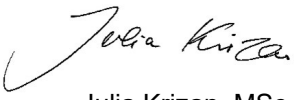
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