REPORT

Hoole Natural Gas Power Generation Facility

Environmental Evaluation Report

Submitted to:

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Submitted by:

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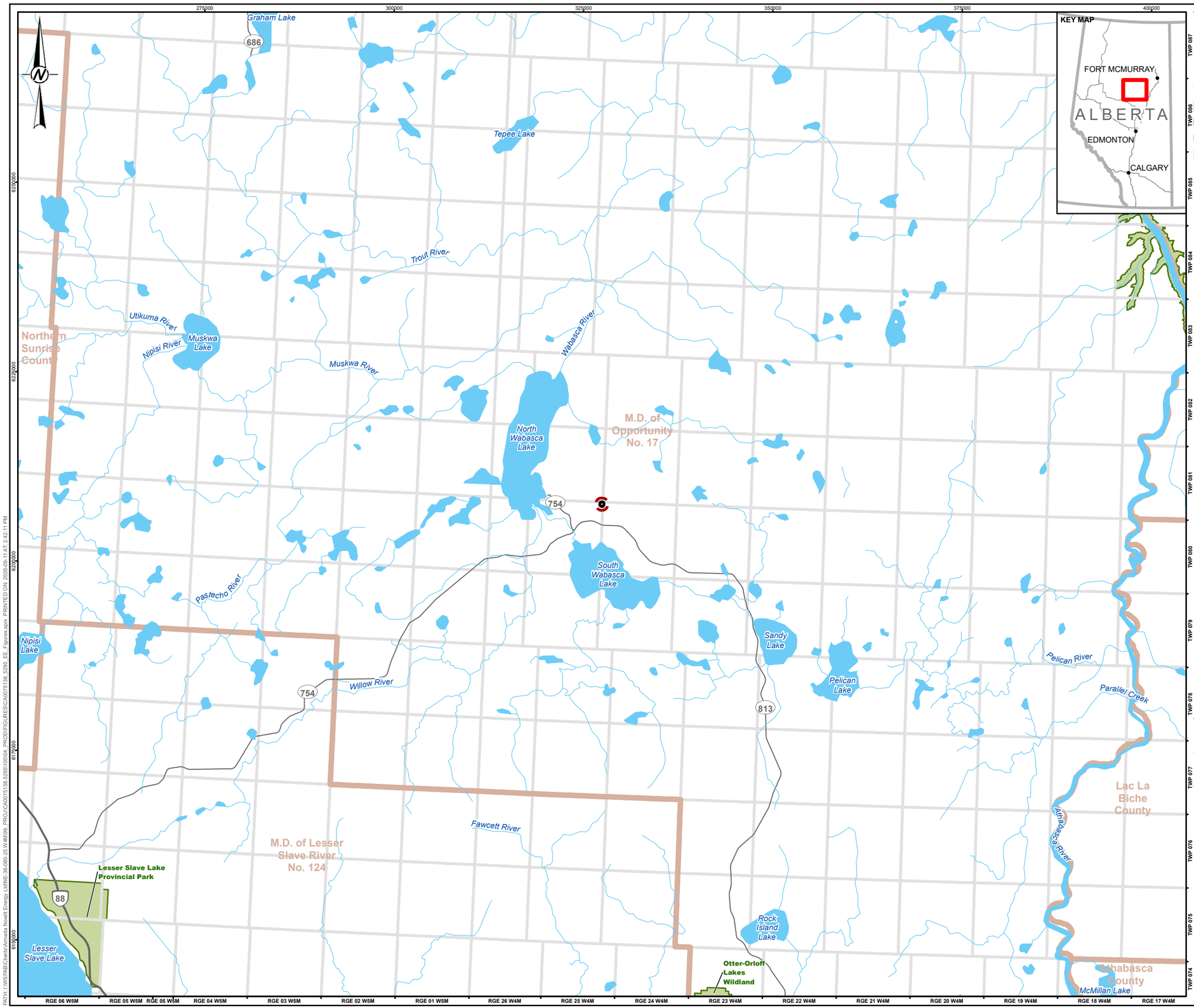
1 INTRODUCTION

Armada Nowlit Energy Ltd. (the Proponent) retained the services of WSP Canada Inc. (WSP) to complete an Environmental Evaluation of the proposed Hoole Natural Gas Power Generation Facility (the Project) located in the Municipal District of Opportunity No. 17 Alberta, approximately 2 km northeast of the hamlet of Desmarais, Alberta.

The Environmental Evaluation describes baseline environmental conditions, identifies potential environmental effects of the Project, describes mitigation measures to be implemented during construction, operation and decommissioning of the Project, and assesses the predicted residual effects. This Environmental Evaluation was prepared to support the Proponent's Facility Application to the Alberta Utilities Commission (AUC) for a permit to construct and a licence to operate the Project. Specifically, the Environmental Evaluation addresses AUC Rule 007 information requirements TP26 (AUC 2025). The AUC Rule 012: Noise Control (AUC 2026) information requirements for assessing potential environmental noise impacts will be provided in a separate document for the Noise Impact Assessment.



LEGEND

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- MUNICIPAL DISTRICT BOUNDARY
- PARK / PROTECTED AREA
- PROJECT FOOTPRINT
- PROJECT STUDY AREA
- WATERBODY

0 10 20

1:500,000 KILOMETRES

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT
ARMADA NOWLIT ENERGY LTD.

PROJECT
NE1/4 36-080-25 W4M

TITLE
PROJECT LOCATION

CONSULTANT

YYYY-MM-DD	2026-09-11
DESIGNED	LB
PREPARED	RA
REVIEWED	LB
APPROVED	TC

PROJECT NO.	CONTROL	REV.	FIGURE
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1.1 Project and Site Description

The Project is located approximately 2 km northeast of Desmarais, Alberta within LSD 16-36-080-25-W4M (Figure 1.1-2). The Project layout submitted to the AUC Rule 007 Application and the Environmental Evaluation is based on a design that will comprise nine (9) natural gas-fired engine generators, specifically MWM TCG 3020 units, each with a nominal capacity of 2.2 MW. The plant will be developed in two phases: Phase 1 will install four (4) units (8.8 MW), and Phase 2 will add the remaining five (5) units (11 MW) of the same make and model to reach the full build-out of 19.8 MW. All electricity generated will be consumed directly on-site, and no power will be exported to the Alberta Interconnected Electric System (AIES).

In addition to the generating units, the power plant includes the following balance-of-plant and auxiliary systems:

- Fuel gas conditioning: pressure regulation to deliver clean, dry fuel gas to each engine at the required inlet conditions.
- Electrical systems: including field switchgear for distributing generated power from the generator set to the electrical equipment to meet the field's power needs.
- Cooling: a closed-loop hydro-cooling system requiring no process water withdrawal or discharge.
- Emissions control and monitoring: selective catalytic reduction (SCR) for NOx control and a predictive emissions monitoring system (PEMS), integrated with an on-site SCADA system.

This Environmental Evaluation pertains solely to the electricity-generating power plant and its auxiliary systems described above. The power plant is a self-contained facility that supplies power to a co-located data infrastructure.

The Project’s footprint is contained within a disturbed area associated with an existing gas plant, which includes the maximum extent of physical disturbance during construction of the Project (Figure 1.1-2). Based on conservative (i.e., maximum) estimate of the Project footprint, the Project has the potential to affect a total of 4.65 ha of land during construction and operations.

The Project Study Area is 126.5 ha and encompasses the Project footprint and a 500 m buffer around the Project footprint. As noted above, disturbance associated with Project infrastructure will be contained within the Project footprint, which covers 4.7 ha of land (3.7% of the Project Study Area) during the construction and operational stages.

This Environmental Evaluation has been prepared in support of the AUC Rule 007 Facility Application. Details pertaining to components of the Project infrastructure are presented in the response for TP1 in the Facility Application.

KEY MAP

LEGEND

- LOCAL ROAD
- PROJECT STUDY AREA
- PROJECT FOOTPRINT

0 150 300

1:6,000 METRES

REFERENCE(S)

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CLIENT
ARMADA NOWLIT ENERGY LTD.

PROJECT
NE1/4 36-080-25 W4M

TITLE
PROJECT FOOTPRINT AND STUDY AREA

CONSULTANT

wsp

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PREPARED	RA
REVIEWED	LB
APPROVED	TC

PROJECT NO.	CONTROL	REV.	FIGURE
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1.2 Project Setting

1.2.1 Natural Region and Subregion

The Project is located in the Central Mixedwood Natural Subregion of the Boreal Forest Natural Region (NRC 2006). The Central Mixedwood is the largest Subregion in Alberta, covering approximately 25 % of the province. It is characterized by upland forests and wetlands occurring on level to gently undulating plains. The Subregion supports diverse plant communities, including aspen, jack pine, black spruce, willows and sedges, and provides summer range for livestock and important habitat for a wide variety of wildlife species.

Upland forests are a mosaic of aspen, mixedwood and white spruce stands. with jack pine stands occurring on coarse textured soils. Common understorey species include low-bush cranberry, prickly rose, green alder, Canada buffaloberry, hairy wild rye, bunchberry, wild sarsaparilla and dewberry. Wetlands are often extensive and are often dominated by black spruce that are present on fens and bogs (NRC 2006).

1.2.2 Existing Infrastructure and Populated Places

The Project is situated within the Municipal District of Opportunity No.17 Alberta. The Project is located approximately 3.5 km north from Highway 813 and is accessible from Gulf Road. The southern boundary of the site is approximately 7 km north of Wabasca-Desmarais, Alberta, which has a population of 1,594 according to the 2021 Census of Population (Statistics Canada 2023). There are no occupied residences located within 1.5 km of the Project site. The surrounding area is predominantly natural areas with oil and gas production, energy and forestry resource development.

1.2.3 Regional Land Use Plans and Policies

The Project overlaps with the boundaries of the Lower Peace Region. The development of the Lower Peace Regional Plan has not yet started.

As the Project is located within the MD of Opportunity No. 17, it must be developed and operated in adherence to Land Use Bylaw 2013-14, as amended.

2 ENVIRONMENTAL EVALUATION METHODS

2.1 Approach to the Assessment

The purpose of this environmental evaluation is to describe the effects that the Project may have on the environment, using an environmental assessment approach. This section describes the approach and methods used to carry out the assessment to identify and address the likely effects of the Project on environmental resources, and analyze and characterize the Project effects (i.e., residual effects) remaining after implementing mitigation. This was undertaken using the following steps:

- Determine the scope of the Project and assessment, including identification of issues to be addressed, characteristics of the natural environment to be assessed, and spatial and temporal boundaries.
- Determine the existing environmental setting (i.e., baseline conditions) in the area potentially affected by the Project based on available desktop data
- Identify potential interactions between assessed characteristics of the natural environment and Project activities.
- Identify mitigation measures that are technically and economically feasible, and accepted by applicable regulators, to avoid, reduce or eliminate potential effects.

- Describe the likely Project residual effects on assessed characteristics of the natural environment following implementation of the proposed mitigation and predict their significance.
- Describe monitoring plans to evaluate the predicted residual Project effects and the effectiveness of applied mitigation.

The Project effects assessment has been conducted by qualified professionals and discipline experts on the study team. The following sub-sections describe the steps taken to conduct the assessment.

2.2 Scope of the Assessment

The scope of the assessment is defined by the interactions between Project activities and the existing natural environment. The assessment of this interaction requires a study area that includes regional and local considerations and is dependent on the activity being undertaken. The environmental baseline information and potential environmental issues addressed in the Environmental Evaluation were identified through a variety of sources, including:

- desktop review of best available information, including government databases and available technical reports and maps
- information received from stakeholder consultation activities
- input from regulators

2.2.1 Identification of Valued Components

To describe and assess the potential effects of the Project, Valued Components (VCs) were identified. The VCs include any part of the natural environment that is considered important by the proponent, members of the public, or scientists and government agencies involved in the assessment process. Importance may be determined on the basis of cultural value or scientific concern and was assessed for the Project based on proponent and assessor experience with similar projects, regulatory requirements and stakeholder consultation.

The VCs selected to address the potential environmental effects in relation to this Project and the rationale for their selection are presented in Table 2.2-1

2.2.1.1 Identifying Project and Environment Interactions

The likely Project-environment interactions are identified at a screening level. The screening approach allows the assessment to focus on the issues of key importance. All relevant Project works or activities are analyzed individually to determine if there is a plausible mechanism for an effect on each VC during normal Project conditions. The analyses are based on professional judgement and experience of the assessment team with the physical and operational features of the Project and their potential for interaction with the environment.

Potential interactions of the Project with the VC and where adverse effects are likely or possible are illustrated in Table 2.2-1. The interactions identified in Table 2.2-1 were used to focus the description of the baseline conditions, and the assessment and mitigation of potential effects. Where potential interactions between the Project component and a VC are not predicted, no further analysis is performed.

Project planning and site selection were based on a number of factors, including land ownership, review of terrain and topography, bylaw requirements, environmental considerations and operational requirements.

Table 2.2-1: Valued Components, Rationale and Potential Project Interactions

Valued Components	Rationale	Potential Project Interactions
Land Cover	■ Provides an indication of both how the land is being used by local landowners or occupants and of the potential for the land to support sensitive wildlife and vegetation species ■ Potential implications for wildlife habitat potential (e.g., effects to different land cover types), species and community diversity, and agricultural capability ■ Regulatory requirement to control noxious weeds and eliminate prohibited noxious weeds (Alberta *Weed Control Act and Regulations* [GOA 2008; GOA 2010])	■ The Project is situated on previously developed industrial land ■ Introduction and/or spread of weed species, including regulated prohibited noxious weeds and noxious weeds, can occur during construction. Movement of equipment may increase the spread of these species. Soil disturbance during construction could also have the potential to lead to the establishment and spread of weeds.
Environmentally Sensitive Areas	■ Represent lands that have been assigned a level of environmental protection, or indicate lands that may have a higher level of environmental sensitivity	■ The Project Study Area overlaps with a one ESA; however the project footprint is contained to a previously developed site, so no interaction is anticipated
Terrain and Soil	■ Altered terrain can change land use and have effects on other environmental components (e.g., surface water) ■ Importance of soil quality to maintain agricultural capability or vegetation communities ■ Terrain and soils are important factors in the successful reclamation of a disturbed site ■ Provincial regulatory requirement for soil conservation and reclamation success (GOA 2022))	■ Surface disturbances within the Project footprint will include regrading of previously disturbed industrial land. No new soil disturbance is planned. Historical soil contamination will be managed by the client under the existing EPEA Approval. ■ Reclamation of the Project footprint will be addressed by the client as part of site-wide reclamation under the *Environmental Protection and Enhancement Act* (EPEA) Approvals for the adjacent Hoole South Sour Gas Processing Plant (10135-03-00, as amended) and for the Project.
Vegetation	■ Regulatory requirement: potential adverse effect on federally listed plant species (*Species at Risk Act* [SARA; Government of Canada 2022]) or plant species of conservation concern (Alberta Conservation Information Management System [ACIMS; ACIMS 2018]) ■	■ The Project is situated on previously developed industrial land. Existing vegetation in the Project footprint is limited. ■
Wetlands and Water Bodies	■ Provincial regulatory requirements: Alberta *Water Act* (GOA 2000a) and the Alberta Wetland Policy (GOA 2013a) ■ Potential implications to wildlife habitat potential and plant species habitat potential ■ Potential implications to species and community level biodiversity ■ Potential impacts to surface water quality and quantity ■ Potential implications to water quality and water attenuation within wetlands ■ Regulatory requirement to control noxious weeds and eliminate prohibited noxious weeds (Alberta *Weed Control Act and Regulations* [GOA 2008; GOA 2010])	■ No wetlands or natural waterbodies are present within the Project footprint. Runoff from the Project footprint is currently controlled, and no changes to runoff management are proposed. ■ The Project has been sited to avoid or minimize direct impacts to wetland areas. The water bodies in the Project Study Area will not be impacted if runoff is contained to the Project footprint.
Groundwater	■ Regulatory requirement: Alberta *Water Act* (GOA 2000a) and associated Water Ministerial Regulation (AR205/1998) ■ Potential public concern and importance of water wells to nearby landowners	■ The Project has the potential to interact with the shallow groundwater table, due to potential spills. These interactions have the potential to affect localized groundwater quality. Historical groundwater contamination will be managed by the proponent under the existing EPEA Approval 10135-00-03, as amended, for the Hoole South Sour Gas Processing Plant.
Surface Water and Aquatic Resources	■ Regulatory requirements: – Alberta *Water Act* (GOA 2000a) and EPEA (GOA 2000b) – *Fisheries Act*: potential to cause harmful alteration, disruption or destruction of fish habitat as defined under the *Fisheries Act* and administered by Fisheries and Oceans Canada (DFO); pollution prevention provisions dealing with the deposition of deleterious substances into water frequented by fish (administered and enforced by Environment and Climate Change Canada [ECCC]) ■ Response to alteration may include erosion and instability ■ Potential to alter natural local / regional drainage patterns ■ Consideration of regional users, regulatory, potential Indigenous, and general public concern ■ Potential to alter water quality and affect aquatic life ■ Ecosystem conservation concerns; importance to ecosystem diversity and inter-relation to other environmental components (e.g., wildlife)	■ The Project has been sited to avoid direct impacts to surface waters. The mapped watercourse in the Project Study Area will not be impacted if runoff is contained to the Project footprint. ■ The Project has been sited to avoid or minimize direct impacts to water courses or water bodies. ■ No wastewater from the Project will be released. Runoff from the Project footprint is currently directed to an on-site stormwater management system, in accordance with the EPEA Approvals for the adjacent Hoole South Sour Gas Processing Plant (10135-03-00, as amended) and for the Project. No changes to runoff management are proposed, therefore no direct effects to surface water quality are anticipated.
Wildlife and Wildlife Habitat	■ Economic importance (i.e., hunting licenses), recreational importance, and ecological importance Regulatory requirement to comply with applicable provincial (Alberta *Wildlife Act* [GOA 2018]) and federal (SARA, *Migratory Birds Convention Act* [MBCA; Government of Canada 1994]) regulations and policies	■ The Project footprint is in a previously disturbed area and habitat quality for wildlife is minimal. As the Project is in an existing fenced area in an existing industrial site, the Project is not anticipated to affect wildlife movement. Wildlife in the area have likely habituated to the current level of sensory disturbance from industrial operations, but construction activities are expected to result in a small zone of reduced habitat effectiveness for the duration of the construction phase, relative to existing conditions. ■ Direct mortality of wildlife may occur because of collisions with construction equipment or Project infrastructure. Wildlife mortality risk increases during site clearing from the potential destruction of nests and dens. To mitigate these effects, timing constraints have been identified to avoid sensitive breeding times, and pre-disturbance wildlife and nest sweeps have been recommended, in addition to the proponents existing wildlife management and deterrent programs.
Air Quality	■ Regulatory requirement to comply with applicable provincial guidance (*EPEA* [GOA 2000b]) and *Alberta Ambient Air Quality Objectives and Guidelines* (GOA 2019) ■ Consideration of nuisance effects	■ A standalone Air Quality Assessment Report has been prepared for the Project by Calvin Consulting Group Ltd. Please refer to this report, which is attached to the main application as Appendix G.

2.2.2 Spatial Boundaries

The spatial boundaries of the assessment were determined based on the footprint needed for the Project. The total Project footprint is 4.7 ha. The Project footprint consists of the entire Licence of Occupation and is a conservative area that is larger than the proposed disturbance, the facility will be constructed entirely within the existing, previously disturbed leasehold that is already designated for industrial use, so no new land will be cleared, disturbed, or fragmented as indicated in the main AUC application.

The Project Study Area considered in this EE Report includes a 500 m buffer around the Project footprint in all directions. The Project Study Area is approximately 126.5 ha.

2.3 Project and Valued Component Interactions

This assessment considers the potential interactions between the Project and the VCs. The Project interactions with VCs may occur directly because of a Project activity or component affecting a VC, or indirectly because of a change to another VC.

Development of mitigation to avoid, reduce or eliminate potential effects on VCs occurs during:

- the engineering design phase
- planning, and consultation and engagement activities
- construction planning and execution
- Project operation
- decommissioning planning and execution

Consideration is focused on mitigation strategies that are technically and economically feasible. Mitigation measures will be continually incorporated into the Project as part of the planning process and are identified in the effects assessment section for each VC.

For this assessment, a potential effect is considered to occur where anticipated future conditions resulting from the Project differ from the conditions otherwise expected from natural change. The evaluation of predicted effects from the Project and VC interactions assumes that identified mitigation measures have been implemented. Effects to VCs that are anticipated even after the application of mitigation measures are identified as residual effects. Where negative residual effects are predicted, the VC is carried forward in the effects assessment to determine the significance of the predicted residual effect on the VC. For VCs where positive or no residual effects are anticipated, the effects assessment is complete, and the VCs are not carried forward for further analysis.

2.4 Effects Analysis

The environmental assessment approach is based on the Alberta Environment and Protected Areas (AEPA) assessment principles and methodology, and associated federal policy, as guided by the following documents:

- Guide to Preparing Project Descriptions (IAAC 2026)
- Guide to Preparing Environmental Impact Assessment Reports in Alberta (ESRD 2013)

2.4.1 Assessment of Predicted Residual Effects

During the completion of the Environmental Evaluation, WSP considered the existing baseline environmental conditions, the likely effects associated with the Project, and the mitigation measures proposed to reduce or avoid potential environmental effects of the Project on environmental components to identify the residual effects (i.e., those remaining following the application of the mitigation measures) of the Project on each VC. The level of importance of the residual effects was then evaluated based on the following criteria, which are defined in Table 2.4-1:

- direction
- magnitude
- geographic extent
- duration, which incorporates consideration of the timing, frequency and reversibility of the effect

Table 2.4-1: Definition of Criteria Used to Describe the Importance of Predicted Residual Effects

Criteria	Definition	Environmental Description
Direction	Direction relates to the value of the effect in relation to the environment.	▪ Positive – net gain or benefit; effect is desirable ▪ Neutral – no change ▪ Negative – net loss or adverse effect; effect is undesirable
Magnitude	Magnitude is the intensity of the effect, or a measure of the degree of change from existing (baseline) conditions.	▪ Minimal – no detectable change is expected from baseline values ▪ Low – residual effect occurs that might be detectable, but is expected to be within the range of baseline or guideline values, or within the range of natural variability ▪ Medium – residual effect is expected to be at or to slightly exceed the limits of baseline or guideline values – clearly an effect and may become a management concern[(a)] ▪ High – residual effect is expected to exceed the limits of baseline or guideline values – the effect can pose a serious risk and represents a management concern[(a)]
Geographic Extent	Geographic extent refers to the spatial extent over which a Project effect will occur.	▪ Local – residual effect is confined to the Project Study Area ▪ Regional – residual effect extends beyond the Project Study Area
Duration	Duration is the period of time over which the environmental effect will be present; and the timing and frequency with which it occurs. Refers to the amount of time between the start and end of a Project activity or stressor (which relates to Project development phases), plus the time required for the effect to be reversed. Duration and reversibility are functions of the length of time the VC is exposed to Project activities.	▪ Immediate – residual effect occurs during construction or decommissioning ▪ Short-term – residual effect occurs during construction or decommissioning, and is reversible less than three years beyond completion of construction or decommissioning ▪ Medium-term – residual effect occurs during the life of the Project ▪ Long-term – residual effect persists beyond decommissioning, but is reversible ▪ Permanent – residual effect persists beyond decommissioning and is irreversible

Notes:

(a) A residual effect that poses a management concern may require actions such as research, monitoring or recovery initiatives that exceed current standard best practices. (b) If direction is Neutral no other classification is required.

Residual effects predicted to have minimal magnitude (i.e., no detectable change expected from baseline values) were screened out of the analysis and were not carried forward. For the remaining effects, the importance of the predicted residual effects is determined by considering the combination of the criteria defined above, as shown in Figure 2.4-1, as well as consideration of the environmental context for each VC using professional judgement based on the experience and expertise of the environmental assessment practitioners for each relevant environmental discipline. The level of importance of a predicted residual effect is described as minimal, low, medium, or high. Table 2.4-2 provides narrative descriptions of the assessed levels of importance that correspond with the predicted residual effects characterization shown in Figure 2.4-1

Figure 2.4-1: Predicted Residual Effect Attributes Leading to Importance

Table 2.4-2: Definitions of the Assessed Levels of Importance of Predicted Residual Effects

Level	Definition
Minimal	Potential negative effect could result in a slight decline in the VC during Project construction and/or decommissioning within the Project Study Area or the geographic context that is appropriate for management of the VC, but the VC should return to baseline levels following construction and/or closure.
	Potential positive effect could result in a slight improvement in the VC during Project construction and/or decommissioning within the Project Study Area or the geographic context that is appropriate for management of the VC, but the VC should return to baseline levels following construction and/or closure.
Low	Potential negative effect could result in a slight decline in the VC area during the life of the Project within the Project Study Area or the geographic context that is appropriate for management of the VC. Research, monitoring, and/or recovery initiatives that exceed current standard best practices would not normally be required.
	Potential positive effect could result in a slight improvement in the VC during the life of the Project within the Project Study Area or the geographic context that is appropriate for management of the VC.
Medium	Potential negative effect could result in a decline in the VC to lower-than-baseline but stable levels after Project closure and into the foreseeable future within the Project Study Area or the geographic context that is appropriate for management of the VC. Regional management actions such as research, monitoring and/or recovery initiatives that exceed current standard best practices may be required.
	Potential positive effect could result in an improvement in the VC to better-than-baseline levels after Project closure and into the foreseeable future within the Project Study Area or the geographic context that is appropriate for management of the VC.
High	Potential negative effect could threaten sustainability of the VC and should be considered a management concern. Research, monitoring and/or recovery initiatives that exceed current standard best practices should be considered.
	Potential positive effect could result in an improvement of a resource condition that is currently a management concern, so that the existing resource concern is resolved.

2.4.2 Likelihood

In addition to their importance, residual effects are also characterized by their likelihood. Likelihood refers to the probability of an occurrence that a Project activity will result in a residual effect. For this assessment, likelihood is characterized as none, unlikely, possible, or likely (Table 2.4-3).

Table 2.4-3: Definitions of the Assessed Levels of Likelihood of Predicted Residual Effects

Likelihood	Definition
None	No evidence to support the occurrence of the residual effect in similar projects.
Unlikely	The residual effect is not likely to occur. The residual effect has been reported only rarely for similar projects.
Possible	The residual effect may occur but is not likely. Evidence supports the occurrence of the residual effect in some, but less than half, of similar projects.
Likely	The residual effect is likely to occur. The residual effect is considered common for similar projects.

2.4.3 Determination of Significance

Sustainable development (i.e., satisfying the needs of present generations without compromising the ability of future generations to meet their own needs) is a key consideration in determining the significance of the effects on the natural environment. Residual effects are considered significant if they compromise the objectives of sustainable development.

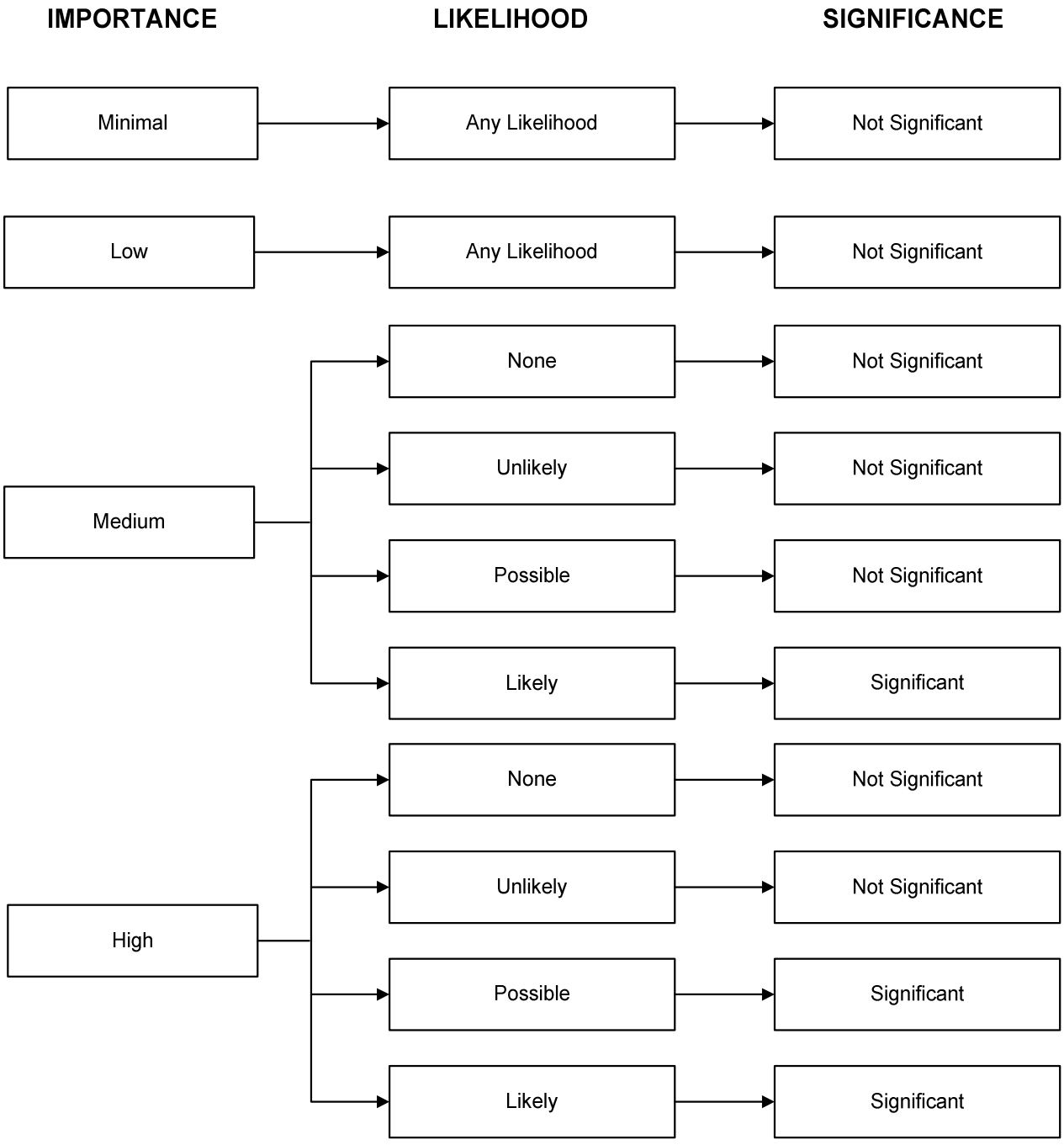
Sustainable development objectives are based on established public objectives such as: land use plan or policy; government commitment on the use/conservation of resources; and legislation, regulations or guidelines. For natural resource VCs (e.g., wildlife species, vegetation communities, fish and fish habitat), the residual effect is determined to be significant if the VC is expected to be altered to a point where it will no-longer be self-sustaining. To be considered not significant, a residual effect might be detectable, but the VC is expected to remain self-sustaining.

The significance ratings of Project-related residual effects on the VCs are defined as follows:

- **Significant:** The residual effects are measurable and result in a change to the VC that will alter its status or integrity beyond an acceptable level.
- **Not Significant**: The residual effects are detectable but are not likely to result in a change that will alter the VC's status or integrity beyond an acceptable level, based on relevant sustainable development objectives, as described above.

The determination of significance considers a predicted residual effect that is adverse in direction, its level of importance and the likelihood of its occurrence (FEARO 1994), as shown in Figure 2.4-2.

Figure 2.4-2: Determination of Residual Effect Significance



3 ENVIRONMENTAL EVALUATION

3.1 Land Cover

3.1.1 Introduction

Land cover, including upland and wetland communities, is considered in the Environmental Evaluation because it provides information on land use, as well as the potential for the land to support sensitive wildlife species, plant species and unique ecosystems. A desktop review was completed to characterize upland and wetland land cover types in the Project Study Area. This section presents landcover in the Project Study Area and Section 3.5 evaluates wetlands specifically.

3.1.2 Baseline Data Collection Methods

3.1.2.1 Desktop Assessment

A preliminary land cover mapping exercise was performed to identify and delineate land cover type polygons in the Project Study Area. The following data sources were used to provide the initial basis for desktop land cover mapping:

- Alberta Derived Ecosite Data v2 (DEP data; GOA 2020a)
- AltaLIS 1:20,000 Base Features Hydrography Layer (GOA 2020b)

During the desktop assessment, DEP land cover polygons were grouped into broad land cover categories:

- Forest
- Wetlands and waterbodies
- Developed, including disturbances and cleared rights-of-way

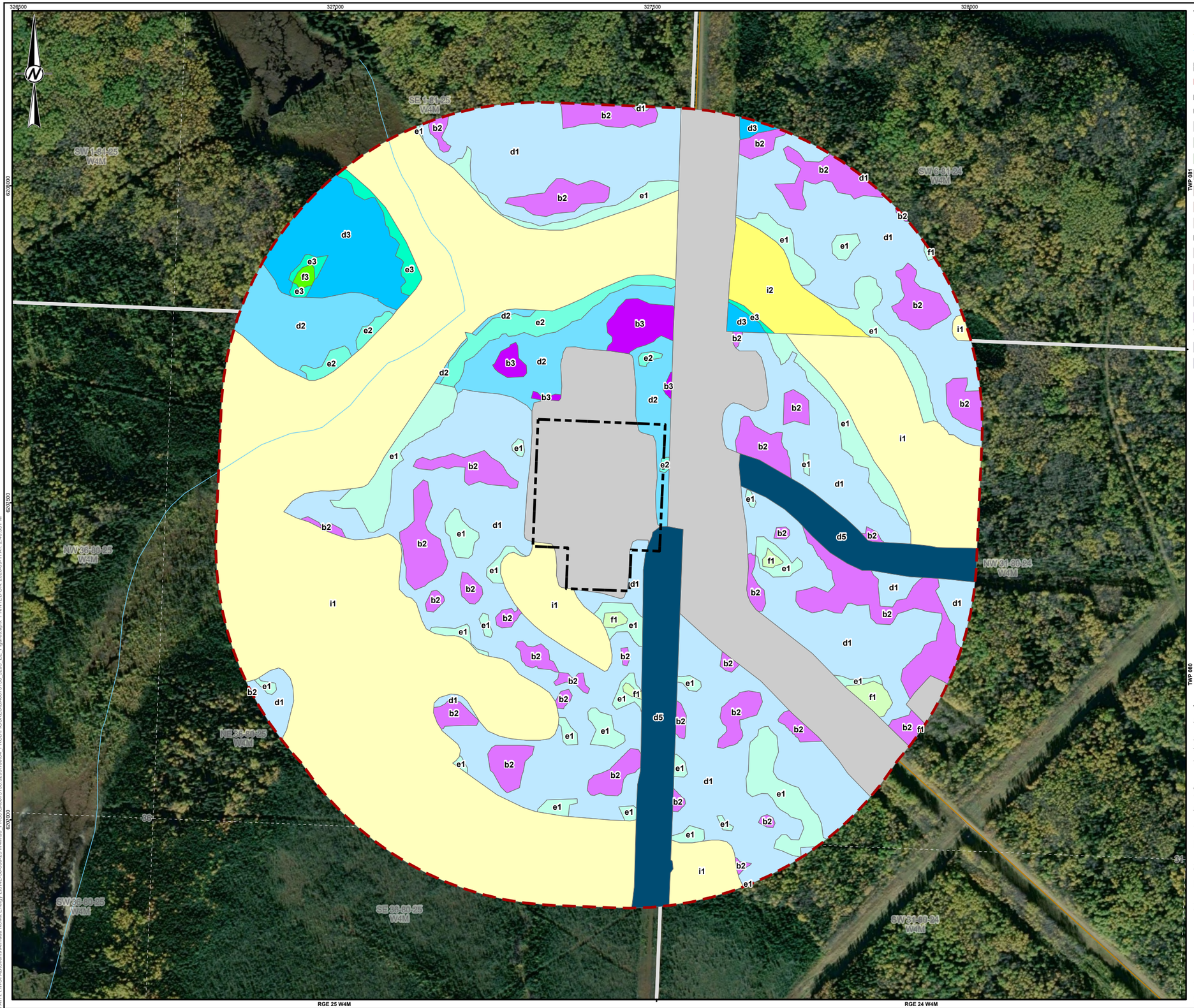
No records of weed occurrences in the Project Study Area were available from publicly accessible databases or site-specific monitoring conducted to date. Potential Project effects on weed occurrence and spread were characterized using knowledge of Project activities, relevant scientific literature, and professional judgment.

3.1.3 Baseline Conditions

Landcover types in the Project Study Area are summarised in Table 3.1-1 and presented in Figure 3.1-1. The Project Study Area is primarily forested land cover types (59.9 ha, or 47.3% of the Project Study Area) with wetlands covering an additional 43.4 ha (34.3 % of the Project Study Area). Existing disturbances, including a gravel pad and associated access roads, pipeline and powerline rights-of-way and nearby energy infrastructure cover 23.2 ha (18.3% of the Project Study Area).

Table *3.1-1: Summary of Land Cover Types in the Project Footprint and Project Study Area*

Land Cover Types	Project Study Area		Project Footprint	
	Area (ha)	Percent of Project Study Area (%)	Area (ha)	Percent of Project Study Area (%)
Forest	59.9	47.3	0.32	7.0
Wetlands	43.4	34.3	0.02	0.4
Disturbed	17.8	14.1	4.31	92.6
Cleared rights-of-way	5.4	4.3	0.0	0.0
Total	126.5	100	4.65	100



LEGEND

- LOCAL ROAD
- WATERCOURSE
- PROJECT FOOTPRINT
- PROJECT STUDY AREA

ECOSITE PHASES

UPLAND

- Disturbed
- b2 - blueberry - Aw(Bw)
- b3 - blueberry - Aw-Sw
- d1 - low-bush cranberry - Aw
- d2 - low-bush cranberry - Aw-Sw
- d3 - low-bush cranberry - Sw
- d5 - low-bush cranberry - tame

RIPARIAN

- e1 - dogwood - Pb-Aw
- e2 - dogwood - Pb-Sw
- e3 - dogwood - Sw
- f1 - horsetail - Pb-Aw (Bw)
- f3 - horsetail - Sw

WETLAND

- i1 - bog - treed
- i2- bog - shrubby

0 150 300

1:6,000 METRES

REFERENCE(S)

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT
ARMADA NOWLIT ENERGY LTD.

PROJECT
NE1/4 36-080-25 W4M

TITLE
LANDCOVER

CONSULTANT

wsp

YYYY-MM-DD	2026-09-11
DESIGNED	TC
PREPARED	RA
REVIEWED	LB
APPROVED	TC

PROJECT NO.	CONTROL	REV.	FIGURE
CA0075139.5295		0	3.1-1

3.1.4 Potential Effects, Mitigation, and Predicted Residual Effects

3.1.4.1 Potential Effects

The Project has the potential to adversely affect forested and wetland land cover types in the Project footprint due to vegetation removal and soil disturbance during construction and operation. The Project also has the potential to introduce or spread weed species listed as noxious or prohibited noxious by the Alberta *Weed Control Act and Regulations* (GOA 2008; GOA 2010).

Although the Project has the potential to affect 0.34 ha of upland and wetland communities (Table 3.1-1), the Project has been designed to align with existing disturbances, and no vegetation clearing is anticipated. The vegetation clearing estimates presented here represent a conservative overestimation of potential effects resulting from the spatial representation of the Project footprint. Project effects to wetlands and other waterbodies are discussed in Section 3.5. Temporary or permanent changes to land cover types outside the Project footprint are not expected during the construction or operational phases of the Project. At the end of the operational life of the Project, the footprint, including existing, baseline disturbances, will be reclaimed in accordance with the EPEA approval requirements to pre-disturbance conditions and/or consistent with the surrounding area.

3.1.4.2 Mitigation

The Project has been designed to align with existing disturbances to minimize forest and wetland clearing. All vehicle traffic and equipment will remain in the designated rights-of-way and associated temporary workspaces. At the end of the Project life, decommissioning and reclamation will occur in accordance with the Decommissioning and Reclamation Plan for the Project (included in the main application as Appendix K). All infrastructure and access roads will be removed and the soil and landcover will be reclaimed to its original land use and/or consistent with adjacent areas. When decommissioning occurs, reclamation standards in place at the time of decommissioning will be followed. Soil management will be incorporated into this process to facilitate site reclamation, in accordance with the Environmental Protection Plan (EPP) and Decommissioning and Reclamation Plan for the Project (included in the main application as Appendices J and K, respectively), the *Soil Conservation Act* and the *Environmental Protection and Enhancement Act* (EPEA) Approvals for the site. After the infrastructure is removed, areas of disturbance will be ploughed to alleviate soil compaction and graded to restore terrain profiles. Soil will be replaced, and the site will be prepared for revegetation consistent with the surrounding areas, and to meet reclamation certificate requirements in place at the time.

Mitigation measures will minimize the potential introduction and spread of weeds and weeds and/or non-native plant species during construction and decommissioning. Vehicle traffic and equipment operation will be restricted to the Project Footprint to minimize the potential for weed introduction and spread. All construction and decommissioning equipment will arrive on-site in a clean condition and will be visually inspected and cleaned off-site, as required, before entering the Project Area. The Proponent will implement the EPP to prevent and control the spread of weeds and/or non-native plant species. Any temporary construction disturbances will be revegetated in accordance with the EPP and the Project Decommissioning and Reclamation Plan (included in the main application as Appendices J and K, respectively). Reclamation activities will use weed-free certified seed, where available at the time of reclamation. The Project footprint will be regularly monitored for weed infestations during operation, and plant species designated as prohibited noxious or noxious (GOA 2008; GOA 2010) will be eliminated or controlled.

A weed assessment should be completed in the field prior to construction. Construction equipment use can result in the introduction of or spread of weed species in an area. By knowing the locations of weed species in the Project Study Area, mitigation strategies can be focused to reduce the introduction or spread of weeds

3.1.4.3 Predicted Residual Effects

The predicted residual Project effects on land cover are:

- loss or alteration of the forest and wetland cover type
- introduction or spread of weeds and/or non-native plant species

3.1.5 Evaluation of Predicted Residual Effects of the Project

A summary of the predicted residual effects of the Project on land cover is provided in Table 3.1-2 and a rationale for the evaluation is provided below. Predicted residual Project effects to wetlands are discussed in Section 3.5.

Table 3.1-2: Predicted Residual Project Effects Description, Importance, and Likelihood

Predicted Residual Effect	Project Activity	Effects Assessment Criteria[(a)]				Importance[(a)]	Likelihood[(a)]
		Direction	Magnitude	Geographic Extent	Duration		
Loss or alteration of vegetated cover types	Construction, operation and decommissioning	Neutral	-	-	-	-	-
Introduction or spread of weeds and/or non-native plant species	Construction, operation and decommissioning	Negative	Low	Local	Medium-term	Low	Likely

(a) Effects assessment criteria are defined in Table 2.6-1 Importance and Likelihood are defined in Table 2.6-2 and 2.6-3, respectively.

Loss or Alteration of Vegetated Land Cover Types Loss or alteration of vegetated land cover types will be neutral in direction, because the Project has been designed to align with existing disturbances and to minimize the need for land clearing.

Introduction or Spread of Weeds and/or Non-native Plant Species

With implementation of mitigation measures, the introduction or spread of weeds and/or non-native plant species will be negative in direction and low in magnitude.

The geographic extent is expected to be limited to the Project footprint and is, therefore, local, and persist through the duration of the project (i.e., medium-term). Overall, the introduction or spread of weeds and/or non-native species is considered to be of low importance and likely.

3.1.6 Determination of Significance

The Project has been designed to align with existing disturbances to minimize forest and wetland clearing. The effect of the Project on the introduction or spread of weeds and/or non-native plant species is considered to be of low importance. Compliance with the Alberta Weed Control Act (GOA 2008; GOA 2010) and its regulations will assist in control of weeds and/or non-native plant species in the Project Study Area.

The residual effects on land cover are predicted to result in a change that will not alter the sustainability of land cover in the Project Study Area beyond a manageable level and are predicted to be not significant.

3.2 Environmentally Sensitive Areas

3.2.1 Introduction

Environmentally Sensitive Areas (ESAs) are considered in the Environmental Evaluation because they represent lands that may have a higher level of environmental sensitivity or significance that should be considered in land use or watershed planning. Activity timing restrictions, restrictions on the location, type or scale of development and the implementation of enhanced mitigation measures may be required within designated areas. ESAs are intended for use as an informational tool, but do not replace other more detailed and indicator specific tools (e.g., wetland inventories).

3.2.2 Baseline Data Collection Methods

Various spatial data sets were mapped in GIS and used to determine the location of designated ESAs relative to the Project Study Area. Information on ESAs associated with the Project Study Area was obtained from ESRD (2014) and is based on the Fish and Wildlife Management Information System (FWMIS; AEPA 2026), Alberta Conservation Information Management System (ACIMS) and other publicly available data sets, which are used to gather baseline data about areas which may contain unique or rare elements, identified at the scale of individual quarter sections. The updated ESA inventory uses a GIS-based multi-criteria decision analysis to organize ESAs into a hierarchy of sub-components, including sub-criteria and indicators, with weighted indicators for each criterion. The ESA framework and associated provincial map generated from this process are intended for land-use planning and do not represent government policy or designate legal land protection (Fiera 2014).

3.2.3 Baseline Conditions

Historical Resources

Historic Resources Act (HRA) approval has been granted under HRA No. 4940-25-0069-001, subject to the Section 31 chance discovery procedures, requiring the reporting of any historic resources discovered during excavations. An amendment will be required with the final project layout.

Parks and Protected Areas

There are no provincially or federally designated protected areas in the Project Study Area. The nearest park or protected area is over 25 km from the Project Study Area.

Environmentally Significant Areas – Provincial

The Project footprint does not overlap with any Environmentally Significant Areas. The nearest Environmentally Significant Area is located 150 m away from the Project Study footprint (ESRD 2014).

Important Bird Areas

Important Bird Areas (IBA) are discrete sites that support either listed avian species, large groups of birds, or avian species that are restricted by either their population range or habitat requirements (IBA 2022). No IBAs are located within 25 km of the Project Study Area.

Key Wildlife and Biodiversity Zones

The Project Study Area does not overlap with any Key Wildlife and Biodiversity Zones; the nearest Key Wildlife and Biodiversity Zone is over 25 km away from the Project Study Area.

Grizzly Bear Zones

The Project Study Area does not overlap with the Grizzly Bear Zone.

Special Access Zones

The Project Study Area does not overlap with the Special Access Zone.

3.2.4 Potential Effects, Mitigation, and Predicted Residual Effects

3.2.4.1 Potential Effects

There is the potential for historic resources to be present in the Project Study Area. No direct or indirect Project effects to ESAs are anticipated from the Project because the Project footprint does not encroach on any parks, protected areas, Environmentally Significant Areas, IBAs, Key Wildlife and Biodiversity Zones, Grizzly Bear Zones or Special Access Zones. The land in the Project footprint has been previously disturbed and there is minimal to no suitable habitat for wildlife so there are minimal potential impacts anticipated. Additionally, the Project has been sited to avoid or minimize direct impacts to all wetlands. Potential effects to wetlands are discussed separately in Section 3.5.

3.2.4.2 Mitigation

No Project activities are proposed to occur within ESAs. As such, mitigation measures to reduce effects to ESAs have not been identified. To mitigate effects to historical resources, an approval under the HRA (GOA 2000c) has been acquired, HRA No. 4940-25-0069-001, and will be amended for the final Project layout, as required, prior to construction.

3.2.4.3 Predicted Residual Effects

With the avoidance of ESAs, no residual effects are predicted. Consequently, this VC was not carried forward in the Project effects evaluation.

3.3 Terrain and Soil

3.3.1 Introduction

The terrain and soils desktop assessment was completed for the Project footprint to identify potentially sensitive areas that may be affected by Project activities. The assessment is based on activities occurring during all phases of the project including construction, operation, decommissioning and reclamation. .

The Project has been designed to align with the existing land disturbance, so no additional soil disturbance beyond the current disturbed footprint is proposed. Accordingly, estimates presented here represent a conservative overestimation of potential effects resulting from the spatial representation of the Project footprint.

Terrain features assessed include soil parent material and slope. Soil quality and productivity features assessed include profile descriptions, wind and water erosion risk, compaction ratings, and degree of salinity.

3.3.2 Baseline Data Collection Methods

3.3.2.1 Desktop Data Collection

Terrain and soils information were gathered from the following sources:

- Physiographic Subdivisions of Alberta (Pettapiece 1986)
- Bedrock Geology of Alberta (Prior et al. 2013)
- Surficial Geology of Alberta (Fenton et al. 2013)
- DEP data (GOA 2020a)
- Soil Series Information for Reclamation Planning in Alberta (Pedocan 1993)

- Alberta Soil Names File (Generation 4) User's Handbook (ASIC 2016)
- National Soil Database, Soil Name and layer data (CanSIS 2019)

Soil profile descriptions and soil characteristics such as modal topsoil and upper subsoil thicknesses, horizon textures, soil parent material, salinity, and wind and water erosion risk were obtained from *Soil Series Information outlined in Reclamation Planning in Alberta* (Pedocan 1993) and/or the *Alberta Soil Names File (Generation 4) User's Handbook* (ASIC 2016). Soil series were selected by comparing the bedrock geology and physiographic subdivision to the soil orders as found in the DEP data to determine parent material (GOA 2020). The most well-suited soil series was selected based on soil order, soil drainage and soil parent material from *Reclamation Planning in Alberta* (Pedocan 1993). If no suitable soil series could be identified from the *Reclamation Planning in Alberta* (Pedocan 1993), then a comparable series was identified from the *Alberta Soil Names File (Generation 4)* (AAFC 2024). Wind and water erosion risks for soil series within the Project footprint were identified by using representative series data from CanSIS (CanSIS 2019). The compaction ratings assigned in the DEP data were used (GOA 2020).

3.3.3 Baseline Conditions

Terrain

The Project footprint is located within the Wabasca Plain Physiographic District, which is characterized by glaciofluvial veneers and blankets overlying undulating morainal (till) deposits (Pettapiece 1986).

The surface sediments are underlain by bedrock of the Second White Specks, Carlile, and Niobrara Formations. These are marine formations with variable colours of material from medium grey to black. The Niobrara Formation is composed of laminated bentonitic shale with silty interbeds; the upper part is highly calcareous. The Carlile Formation is also silty share with local bentonite beds and sideritic concretionary layers. The Second White Specks Formation is organic rich with silty share and is highly calcareous. (Prior et al. 2013).

A review of Google Earth imagery suggests the landscape is planar (level) with elevations between approximately 564 metres above sea level (masl) to approximately 567 masl in the southwest corner.

Soils

The Project footprint occurs in Soil Correlation Area 20 (SCA 20) (AAFC 2024). An SCA identifies areas of similar soil climate and landscape ecology within a specific geographic limit (Alberta Soil Information Centre [ASIC] 2016). Soil Correlation Area 20 is identified as the Central Mixedwood Area of Central and Northern Alberta. Soils in SCA 20 are predominantly Luvisolic and Brunisolic present on uplands and mineral terrain, while Organic and Gleysolic soils occupy poorly and very poorly drained areas (Pedocan 1993). Pedocan (1993) describes the development of soils found in SCA 20 as extending to about 70 cm which would include the topsoil, upper and lower subsoil. Common reclamation issues that may apply to the Project footprint include the risk of soil erosion if slopes are steep; however, there is a low risk for wind erosion except on sandy soils as described in *Soil Series Information for Reclamation Planning in Alberta* (Pedocan 1993).

Soil map units (SMUs) are the spatial representation of similar soil series and landscapes in an area that are grouped together into a soil map unit. Soil series are taxonomic subdivisions of soil Subgroups and Families, which describe soils in a given geographic location. Soil series are grouped based on parent material type, parent material texture, and other physical and chemical parameters (SCWG 1998). Information obtained from DEP indicated there are six polygons with four assigned SMUs found within the Project footprint, including disturbance.

General characteristics of the dominant soil series that comprise the soil map units in the Project footprint are summarized in Table 3.3-1 and Figure 3.3-1

Table 3.3-1: Soil Series and General Soil Characteristics for Soil Map Unit Components within the Project Footprint

Soil Series and Code(a)	Proportion of Project footprint (%)	Landform	Soil subgroup	Parent Material	Parent Material Texture Class	Soil Textures	Salinity	Calcareousness
Disturbed (DL)	92.6	-	-	-	-	-	-	-
Kinosis (KNS1)	6.8	low relief undulating (0.5-2.5% slopes)	Orthic Grey Luvisol	Till	Moderately Fine	Loam to Clay Loam	Non-Saline	Non-calcareous
Dunkirk (DKK1)	0.2	low relief undulating (0.5-2.5% slopes)	Orthic Luvic Gleysol	Till	Moderately Fine	Loam to Clay Loam	Non-Saline	Weakly
Gregoire (GGR1)	0.4	Level (0.0-0.5% slopes)	Typic Fibrisol	Organic	Sphagnum (Bog) Peat	Fibric	Non-saline	Non-calcareous

Source: Alberta Soil Names File (ASIC 2016); Soil Series Information for Reclamation Planning in Alberta (Pedocan 1993)

Based on the published representative soil profiles for soil series located within the Project footprint, mineral topsoil depths are recorded as 12 cm (0.12 m) for DKK11 and 10 cm (0.10 m) for KNS1 (CanSIS 2019). Average peat depth for GGR1 is recorded as160 cm (1.6m) (CanSIS 2019). The Project footprint covers mostly disturbed lands so there will be no stripping or salvage activities for the project thehe topsoil volume to be stripped is therefore estimated to be 0.0 m3 (Table 3.3.2)

Table 3.3-2: Estimated Topsoil Stripping Volumes for the Project footprint

Soil Series	Proportion of the Project footprint (%)	Topsoil Thickness Range [m](a)	Area [m^2]	Approximate Volume of Mineral Topsoil to be Stripped [m^3](b)	Approximate Volume of Peat l to be Stripped [m^3](b)
Disturbed	92.6	-	43,094.8	-	-
Kinosis (KNS1)	6.8	0.10	3,141.4	0.0	-
Dunkirk (DKK1)	0.2	0.12	92.2	0.0	-
Gregoire (GGR1)	0.4	1.60	191.6	-	0.0
		Total	**46,520.0**	**0.0**	**0.0**

Numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

(a) Representative topsoil values taken from CanSIS 2019 or Pedocan 1993

(b) No materials are intended to be stripped as the project is designed to align with the existing land disturbance.

% = percent; m = metres; m^2 = square metres; m^3 = cubic metres.

3.3.3.1 Soil Sensitivities

Wind and Water Erosion

Susceptibility to wind and water erosion risk applies to disturbed or exposed soils as vegetated soils are at a much lower risk of erosion due to a protective surface cover. The wind erosion risk ratings were referenced from “Water Erosion Risk” (Pedocan 1993; Tejak and Coote 1993) and are dependent on slope information (TAC 2005) and texture obtained from CanSIS or Pedocan.

LEGEND

- LOCAL ROAD
- PROJECT FOOTPRINT

SOIL UNIT

- KNS1
- DKK1
- GGR1
- DIS1

0 50 100

1:2,500 METRES

REFERENCE(S)

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PROJECTED COORDINATE SYSTEM: NAD 1983 UTM ZONE 12N

CLIENT
ARMADA NOWLIT ENERGY LTD.

PROJECT
NE1/4 36-080-25 W4M

TITLE
SOIL MAP UNITS

CONSULTANT

YYYY-MM-DD	2026-09-11
DESIGNED	TC
PREPARED	SP
REVIEWED	LB
APPROVED	TC

PROJECT NO.	CONTROL	REV.	FIGURE
CA0075139.5295		0	3.3-1

The soil series mapped within the Project footprint are rated as having a medium to low wind erosion risk based on surface soil textures for the mineral (KNS1 and DKK1) and organic (GGR1) soils. The wind erosion risk for each soil series mapped within the project footprint is presented in Table 3.3-3.

The potential for soil erosion by water is affected by soil texture, organic matter content, water content, permeability, topography, slope gradient, and vegetation cover. Potential for soil erosion by water increases with increasing slope gradient and slope length, regardless of texture. Water erosion risk for exposed soils was assessed for each mapped soil series (Table 3.3-3). Water erosion risk for the mineral soil series (KNS1 and DKK1) within the Project footprint are rated as low to moderate due to the low relief undulating topography (slopes range from 0.5% to 2.5% that characterizes the Project footprint. Organic soils have low water erosion potential because they generally occur on level topography and are usually wet throughout some or all the year.

Compaction and Rutting

Soil compaction ratings were assigned to each soil series within the Project footprint. Compaction ratings were assigned based on soil texture under moist conditions and are listed in Table 3.3-3. Generally, coarse textured soils (e.g., sandy loam, loamy sand) are at a low risk for compaction and rutting, and moderately fine to fine textured soils when wet are at a higher (moderate to high) risk of compaction. Wet soils are at a high risk of compaction. The Project footprint is on land rated as having a high to very high sensitivity to soil compaction due to the presence of moderately fine textured, silt loam topsoil associated with the KNS1 and DKK1 soils and periodic saturated conditions within depressions that are associated with organic soils (GGR1) (Table 3-3-3).

Salinity/Sodicity

Soil series (KNS1, DKK1) mapped within the Project footprint are characterized as non-saline.

Table 3.3-3: Soil Sensitivities of Mapped Soils within the Project Footprint

Soil Series	Dominant Soil Texture (Topsoil/Subsoil)	Slopes [%]	Topsoil Wind Erosion Risk[a]	Topsoil Water Erosion Risk[b]	Topsoil Compaction Rating[c]	Salinity [d]
Kinosis (KNS1)	Loam/Loam	0.5-5	Medium	Moderate	Medium	No
Dunkirk (DKK1)	Silty Loam/Clay Loam	0.5-5	Medium	Low	High	No
Gregoire (GGR1)	Fibric	0.0-0.5	Low	Low	Low	Not Rated

[a] Coote and Pettapiece 1989; Campbell et al. 2002.

[b] TAC 2005

[c] from DEP data (GoA 2020)

[d] Alberta Soil Names File (ASIC 2016) and Soil Series Information for Reclamation Planning in Alberta (Pedocan 1993).

3.3.4 Potential Effects, Mitigation and Predicted Residual Effects

Terrain

The terrain is mapped as largely disturbed (92.6%). Any changes in topography to the terrain from construction activities have the potential to alter drainage and the resulting end land use following decommissioning.

Soils

Surface disturbances associated with the Project that may affect soil quality or productivity include stripping, stockpiling, and grading on temporary and permanent workspaces, and access roads. Construction, operation, decommissioning activities and reclamation, if not properly mitigated, could result in the following effects on soils:

- **Soil erosion:** The physical loss of topsoil and in some cases, upper subsoil, lowers the capability of soil to support vegetation by decreasing the amount of plant available nutrients and soil organic matter in the root zone. The severity of this potential effect is directly related to the proportion of soil lost. Soil loss from wind erosion may occur if soil handling, from either stripping or replacement, occurs during dry, windy conditions. Soil loss from water erosion is more likely to occur on steeper, longer slopes with exposed soil.
- **Compaction and Rutting/loss of soil structure:** The capability of soil to support vegetation can be reduced if the soil becomes compacted or rutted. Compaction and rutting affects soil quality by increasing soil bulk density and soil strength, reducing in soil aeration and soil oxygen, reducing water infiltration and available soil water, restricting root growth, reducing soil microbiological activity, and lowering plant nutrient uptake (Heuer et al. 2008; Blouin et al. 2008). Compaction and loss of soil structure will be greatest when soil handling and equipment movement occurs during wet soil conditions and/or repeated handling.
- **Soil admixing:** Admixing of surface soil and subsoil components during soil salvage operations may cause soil profile integrity to be compromised in the topsoil especially if clear distinctions cannot be maintained between the topsoil and subsoil. This is often the case when topsoil thickness is highly irregular. The potential for soil admixing may be higher if clear distinctions between topsoil and subsoil in soil profiles is not apparent (i.e., poor colour contrast between topsoil and upper subsoil).
- **Soil contamination:** Soil contamination may result from spills and leaks during the construction, operations or decommissioning period (e.g., fueling of equipment) which results in changes in soil pH, nutrient status and overall soil quality and suitability for use in reclamation.

3.3.4.1 Mitigation

This section describes the proposed mitigation that will be applied to limit the potential for adverse environmental effects on terrain and soils.

Terrain

Google Earth imagery was reviewed to confirm that the Project footprint does not overlap any areas with slopes greater than 15% grade.

Soils

Soil Erosion

Limiting the area of disturbance and limiting the time between salvage, storage and reclamation is expected to reduce the potential for loss of soil from erosion. Soil handling activities will not occur during windy conditions. Tackifiers or seeding the stockpiles can be used to stabilize soil stockpiles. After soil replacement, tackifiers (e.g., lignosol), shredded straw or other mulches will be spread over soils to reduce loss of topsoil, prior to re-

vegetation. Track packing will be used to create rough and irregular surfaces on stockpiles to reduce the potential for erosion and increase the area for seed capture, seed germination, and moisture retention. Soil stabilization by re-vegetation will be achieved within the Project footprint by seeding or planting of disturbed areas with seed mixes and species consistent with surrounding areas, as appropriate.

Earthwork-related construction or decommissioning activities on undisturbed areas will be completed during dry or frozen ground conditions to the extent possible. Additional mitigation measures may include limiting equipment travel, restricting activities to areas where topsoil and upper subsoil (if necessary) have been removed (i.e., the access road and those temporary workspaces that have been stripped). In the absence of effective mitigation procedures, Project activities will be suspended. Effective mitigation procedures can be determined through consultation between the contractor and an onsite coordinator/supervisor. In addition, erosion and/or sediment control measures, such as silt fences will be placed along Project components where required. Follow-up inspections of the workspaces will occur so that potential erosion issues are addressed in a proactive manner.

Compaction/Loss of Soil Structure

Heavy equipment activities and soil handling will be restricted on fine (i.e., clay, sandy clay) and moderately fine-textured (i.e., clay loam, sandy clay loam) soils during wet conditions. Heavy equipment and vehicles will operate on these soils during dry or frozen ground conditions, and on previously disturbed areas, wherever possible. Construction and decommissioning will also be carried out using equipment with low ground pressure tires or wide-pad tracks, wherever possible. Rig matting or geotextile material will be used in areas identified as sensitive to compaction when feasible.

Soil Admixing

Potential for admixing can occur whenever surface soils are disturbed. The amount of soil stripping will be limited as the project intends to align with existing disturbances, and no additional soil disturbance beyond the current disturbed footprint are proposed.

Soil Contamination

Project activities will follow standard construction, decommissioning and reclamation practices to minimize the potential for spills. A Spill Response Plan has been developed as part of the EPP (included with the main application as Appendix J) and will be adhered to during all phases of the Project.

Reclamation

When decommissioning occurs, reclamation standards in place at the time of decommissioning will be followed. Soil management will be incorporated into this process to facilitate site reclamation, in accordance with the EPP and Decommissioning and Reclamation Plan for the Project (included in the main application as Appendices J and K, respectively), the *Soil Conservation Act* and the *Environmental Protection and Enhancement Act* (EPEA) Approvals for the site. After the infrastructure is removed, areas of disturbance will be decompacted using appropriate methods (e.g., paratilling, harrowing or deep ripping) to alleviate soil compaction and graded to restore terrain profiles. Soil will be replaced, and the site will be prepared for revegetation consistent with the surrounding areas, and to meet reclamation certificate requirements in place at the time.

3.3.4.2 Predicted Residual Effects

A summary of the predicted residual effects of the Project on terrain and soils is provided in Table 3.3-4 and a rationale for the evaluation is provided below.

Table 3.3-4: Predicted Residual Project Effects Description, Importance, and Likelihood for Terrain and Soils

Predicted Residual Effect	Project Activity	Effects Assessment Criteria[a]				Importance[a]	Likelihood[a]
		Direction	Magnitude	Geographic Extent	Duration		
Loss or alteration of soil and terrain capability to maintain agricultural capability or support vegetation communities	Construction, Operation, Decommissioning, Reclamation	Negative	Low	Local	Medium-term	Low	Likely

[a] Effects assessment criteria are defined in Table 2.6-1. Importance and Likelihood are defined in Table 2.6-2 and Table 2.6-3, respectively.

Loss or alteration of soil capability and terrain to support healthy ecosystems

Construction, operation, decommissioning and reclamation activities of the Project has the potential to result in changes to terrain and soil distribution, and soil quantity and quality and will be negative in direction. These changes can affect other ecosystem components such as vegetation and wildlife. The loss or alteration of soil capability and terrain is expected to be of low magnitude, provided the appropriate mitigations are implemented during construction and decommissioning. The impacts to terrain and soils are not expected to extend beyond the Project footprint and are therefore local. The loss or alteration of soil capability and terrain is expected to be medium-term; following the construction of permanent facilities, areas not containing permanent facilities or operational access roads will be reclaimed. The predicted residual effect is likely to occur but is considered common for similar projects.

3.3.5 Determination of Significance

The residual effects of the Project on terrain and soils are not predicted to result in changes that will alter the conditions of terrain and soils beyond manageable levels and are predicted to be not significant. Given the mitigations that will be implemented to minimize changes in terrain and soil distribution and soil quantity and quality as a result of the Project, outside of where permanent infrastructure components are located, the effects are reversible, as the temporary disturbances will be reclaimed following construction using mitigations outlined in Section 3.3.4 and in the Soil Management Plan which will be available before construction begins.

3.4 Vegetation

3.4.1 Introduction

Listed plant species and rare ecological communities are considered in the Environmental Evaluation because Project-related activities may have the potential to adversely affect federally listed plant species protected under the Species at Risk Act (SARA) and plant species or communities of conservation concern identified by the Alberta Conservation Information Management System (ACIMS). This section describes their occurrence within the Study Area and evaluates potential Project-related effects. A desktop review was completed to provide baseline vegetation information for the Project Study Area.

Landcover is addressed in Section 3.1 and wetlands are addressed in Section 3.5.

3.4.2 Baseline Data Collection Methods

3.4.2.1 Desktop Assessment

A desktop review was completed to identify and characterize listed plants and rare ecological communities in the Project Study Area. The Alberta Conservation Information Management System (ACIMS) online database (ACIMS 2026) was searched on August 12, 2026, for historical occurrences of listed provincial plant species or rare ecological communities in the Project Study Area.

For the purposes of this report, listed plants were defined as vascular and non-vascular plant species that are tracked or watched by the Province of Alberta (ACIMS 2026), or listed as Endangered, Threatened, or Special Concern under the Alberta *Wildlife Act* or the *Species at Risk Act* (SARA) (Government of Canada [GOC] 2026).

Additionally, ACIMS maintains a database of rare ecological communities by Natural Subregion (Allen 2014; ACIMS 2022a,b).

3.4.3 Baseline Conditions

3.4.3.1 Listed Plant Species and Rare Ecological Communities

There are no historical records of provincially or federally listed vascular plant species or rare ecological communities in the Project Study Area (ACIMS 2022a, 2026). The Project Study Area was considered to have a low rare plant potential as the Project footprint is in a previously disturbed industrial area with a low likelihood of listed plant habitat.

The results of the ACIMS database search do not preclude the potential for other listed plant species or rare ecological communities to also be present in the Project Study Area.

3.4.4 Potential Effects, Mitigation and Predicted Residual Effects

3.4.4.1 Potential Effects

Potential effects on listed plant species or rare ecological communities could occur through vegetation clearing and ground disturbance associated with Project construction and operation. However, there are no historical records identified within the Project Study Area, and the Project has been designed to align with existing disturbances, minimizing the potential for disturbance of suitable rare plant habitat. Consequently, effects on listed plant species and rare ecological communities are not anticipated.

3.4.4.2 Mitigation

The Project has been designed to align with existing disturbances to minimize vegetation clearing. All vehicle traffic and equipment will remain in the designated rights-of-way and associated temporary workspaces.

3.4.4.3 Predicted Residual Effects

The predicted residual effects on vegetation are to:

Loss or alteration of listed plant species and rare ecological communities

3.4.5 Evaluation of Predicted Residual Effects of the Project

A summary of the predicted residual effects of the Project on vegetation is provided in Table 3.4-1 and a rationale for the evaluation is provided below.

Table 3.4-1: Predicted Residual Project Effects Description, Importance and Likelihood for Vegetation

Predicted Residual Effect	Project Activity	Effects Assessment Criteria[a]				Importance[a]	Likelihood[a]
		Direction	Magnitude	Geographic Extent	Duration		
Loss or alteration of listed plant species and rare ecological communities	Construction, operation and decommissioning	Neutral	-	-	-	-	-

[a] Effects assessment criteria are defined in Table 2.6-1. Importance and Likelihood are defined in Table 2.6-2 and Table 2.6-3, respectively.

Loss or alteration of listed plant species and rare ecological communities

Given that there are no historical records of listed plant species or rare ecological communities in the Project Study Area, and the Project footprint is disturbed and has very low potential for rare plant habitat, effects on listed plant species and rare ecological communities are not anticipated.

3.4.6 Determination of Significance

The Project has been designed to align with existing disturbances, which would minimize potential effects on listed plant species and rare ecological communities. The residual effects on listed plant species and rare ecological communities are not predicted to be not significant.

3.5 Wetlands and Water Bodies

3.5.1 Introduction

Disturbance to wetlands and waterbodies, including natural drainage features, requires regulatory approvals and compliance under the Alberta *Water Act* (GOA 2000a), and the Alberta Wetland Policy (GOA 2013a) and/or the Alberta *Public Lands Act* (GOA 2021a) as applicable.

The following sections provide a summary of the methods used to identify, classify and describe wetlands and water bodies in the Project Study Area, assess potential effects that the Project may have on wetlands and water bodies, propose mitigation measures as applicable, and provide an evaluation of the predicted residual effects of the Project after implementing mitigation.

3.5.2 Baseline Data Collection Methods

3.5.2.1 Desktop Assessment

Given that wetland field assessments had not been completed at the time of report preparation, wetland data for the Project Study Area were compiled using publicly available spatial datasets using (e.g., Alberta Derived Ecosite Phase Data v2; AltaLIS 1:20,000 water bodies). Table 3.5-1 provides descriptions for wetlands and water body types and summarizes applicable policy and legislation. Given that wetland field assessments have not been completed at the time of report preparation, wetland permanence classes were not available and have not been included in this Environmental Evaluation.

Table 3.5-1: Wetlands and Water Bodies with Associated Provincial Policies and Legislation

Water Body Type	Description	Applicable Policy and Legislation		
		Alberta Wetland Policy	Alberta *Water Act*[a] [b]	Alberta *Public Lands Act*
Natural Wetlands				
Bog[c]	Characterised by thick mats of mosses with some stunted trees and ericaceous shrubs and some water tolerant sedges.	Applicable	Applicable	Not Applicable
Fen[c]	Dominated by sedges and bryophyte species with water table at or within 20 cm of ground surface	Applicable	Applicable	Not applicable
Marsh[c]	Dominated by graminoid vegetation in the deepest wetland zone covering more than 25% of the total wetland area.	Applicable	Applicable	Applicable (Class IV and higher)
Shallow Open Water[c]	Dominated by shallow (i.e., <2 m deep at midsummer) open water in the deepest wetland zone covering more than 25% of the total wetland area; floating and/or submersed aquatic vegetation is common in the shallow open water zone, but sometimes aquatic vegetation is absent.	Applicable	Applicable	Applicable (Class IV and higher)
Swamp[c]	Woody plant cover, such as willows (*Salix* spp.), comprises more than 25% of the total wetland area.	Applicable	Applicable	Not applicable
Natural Drainage	Area where water flow is generally intermittent, often connected to one or more wetland basins. The natural drainage feature does not meet the AWCS definition of a wetland (i.e., land that is saturated with water long enough to promote formation of water altered soils, growth of water tolerant vegetation, and various kinds of biological activity that are adapted to wet environments [GOA 2015]), but it does meet the definition of a water body in the Alberta *Water Act*, which includes “any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent or only occurs during a flood”.	Not applicable	Applicable	Not applicable

[a] An approval under the Alberta *Water Act* is required for any activity that may impact wetlands and other water bodies (e.g., natural drainages and ephemeral (Class I) water bodies. Applications for wetland impacts require the use of Alberta Wetland Policy impacts require the use of Alberta Wetland Policy (GOA 2013a) directives, guides and tools to seek authorization prior to any anticipated wetland impacts.

[b] Water Act Code of Practice notification and associated WAIF are required, documenting wetland impacts and mitigation for eligible activities under Water Act Codes of Practice (e.g., Watercourse Crossing, Pipeline/Telecommunication Line and Powerline Works)

[c] Alberta Wetland Classification System GOA 2015.

3.5.3 Baseline Conditions

Wetlands cover 43.4 ha of the Project Study Area (34.2%), consisting entirely of bog habitat (Table 3.5-2; Figure 3.1-1). Treed bogs represent the majority of wetlands at 41.5 ha (32.8% of the Project Study Area), while shrubby bogs account for 1.8 ha (1.4%).

Information on wildlife use of wetlands and water bodies within the Project Study Area is available in the Wildlife and Wildlife Habitat section of this document (Section 3.8).

Table 3.5-2: Wetlands in the Project Study Area

Land Cover Types[a]	Total Project Study Area[b]		Project Footprint[c]	
	Area [ha]	Percent of Project Study Area [%]	Area [ha]	Percent of Total Project Footprint [%]
Wetlands[d]				
Bog - shrubby	1.8	1.4	-	-
Bog - treed	41.5	32.8	0.02	0.4
Total	43.4	34.2	0.02	0.4

[a] DEP data; GOA 2020a

[b] Project Study Area = 126.5 ha;

[c] Project Footprint = 4.65 ha

[d] Wetlands in the DEP dataset are classified according to ecological site classification and associated site phases described in the Central Mixewood Natural Subregion Ecological Site Guide (GoA 2021b)

Note: Some numbers are rounded for presentation purposes; therefore, totals may not equal the sum of the individual values

3.5.4 Potential Effects, Mitigation and Predicted Residual Effects

3.5.4.1 Potential Effects

The Project has limited potential to alter wetland condition through direct, temporary or permanent disturbances, or indirectly through changes in hydrology, or changes in plant communities in the Project Study Area. Water quality in surrounding wetlands could also be directly or indirectly affected by siltation or spills during Project construction or operation.

Although the Project has the potential to affect 0.02 ha (0.4% of the Project footprint) of a treed bog (Table 3.5-2; Figure 3.1-1) the Project has been sited to avoid or minimize direct impacts to wetlands and water bodies, and no wetland clearing is anticipated. The wetland clearing estimates presented here represent a conservative overestimation of potential effects resulting from the spatial representation of the Project footprint. At the end of the operational life of the Project, the footprint, including existing, baseline disturbances, will be reclaimed in accordance with the EPEA approval requirements to pre-disturbance conditions and/or consistent with the surrounding area.

The Project also has the potential to introduce or spread weed species listed as noxious or prohibited noxious by the Alberta *Weed Control Act and Regulations* (GOA 2008; GOA 2010). Potential effects associated with the introduction and spread of weeds and/or non-native plant species are discussed in Section 3.1.

3.5.4.2 Mitigation

Avoidance of wetlands and other water bodies will be the primary mitigation employed during construction and operation of the Project. If construction activities are required in the vicinity of wetlands or other natural water bodies, measures will be taken to limit the potential for silt or spills to reach these areas, and appropriate approvals will be sought, if needed. Avoidance of wetlands during Project activities reflects the Proponent's efforts to avoid or minimize wetland impacts.

The Project footprint is in a previously disturbed industrial area with limited vegetation cover. Mitigation measures to protect wetlands in adjacent areas will include construction during dry ground conditions to the extent possible, and use of vegetated buffer zones, earthen berms, and/or silt fencing, as appropriate. Vehicle traffic will be limited to existing disturbed areas and roads which will prevent vehicle traffic from entering adjacent wetlands. Permanent erosion and spill control measures will be employed around facilities and operational access roads including re-vegetation or placement of large diameter rock on slopes and the installation of permanent berms, as appropriate.

Although not anticipated, if impacts to wetlands are required, the Proponent will follow authorization and permitting requirements under the Alberta *Water Act* (GOA 2000a) and Alberta Wetland Policy (GOA 2013a) where temporary disturbance to wetlands cannot be avoided. Mitigation for potential wildlife species occurring in wetlands habitats (e.g., amphibians) is described in Section 3.8.4.2.

At the end of the Project life, decommissioning and reclamation will occur in accordance with the Decommissioning and Reclamation Plan for the Project (included in the main application as Appendix K). All infrastructure and access roads will be removed, and the Project footprint will be reclaimed to its original land use and/or consistent with adjacent areas.

Mitigations to minimize effects of weeds and/or non-native plant species are discussed in Section 3.1.

3.5.4.3 Predicted Residual Effects

The predicted residual effects on wetlands and water bodies are:

- loss or alteration of natural wetlands
- introduction or spread of weeds and/or non-native plant species

3.5.5 Evaluation of Predicted Residual Effects of the Project

A summary of the predicted residual effects of the Project on wetlands is provided in Table 3.5-3 and a rationale for the evaluation is provided below.

Table 3.5-3: Predicted Residual Project Effects Description, Importance and Likelihood for Wetlands

Predicted Residual Effect	Project Activity	Effects Assessment Criteria[(a)]				Importance[(a)]	Likelihood[(a)]
		Direction	Magnitude	Geographic Extent	Duration		
Loss or alteration of wetlands	Construction, operation and decommissioning	Neutral	-	-	-	-	-

Introduction or spread of weeds and/or non-native species	Construction, operation and decommissioning	Negative	Low	Local	Medium-term	Low	Likely

[a] Effects assessment criteria are defined in Table 2.6-1 Importance and Likelihood are defined in Table 2.6-2 and 2.6-3 respectively.

Loss or alteration of wetlands

Loss or alteration of wetlands will be neutral in direction, because the Project has been designed to align with existing disturbances and to minimize the need for land clearing.

Introduction or spread of weeds and/or non-native plant species

With implementation of mitigation measures, the introduction or spread of weeds and/or non-native plant species will be negative in direction and low in magnitude.

The geographic extent is expected to be limited to the Project footprint and is, therefore, local, and persist through the duration of the project (i.e., medium-term). Overall, the introduction or spread of weeds and/or non-native species is considered to be of low importance and likely.

3.5.6 Determination of Significance

The Project has been designed to align with existing disturbances to minimize wetland clearing. The effect of the Project on the introduction or spread of weeds and/or non-native plant species is considered to be of low importance. Compliance with the Alberta Weed Control Act (GOA 2008; GOA 2010) and its regulations will assist in control of weeds and/or non-native plant species in the Project Study Area.

The residual effects on land cover are predicted to result in a change that will not alter the sustainability of wetlands in the Project Study Area beyond a manageable level and are predicted to be not significant.

3.6 Groundwater

3.6.1 Introduction

A desktop evaluation was conducted to establish baseline conditions for the Project Study Area to support the determination for potential effects on groundwater resulting from the construction, operation, and decommissioning of the Project. The groundwater evaluation considered the local hydrogeology within a regional context and potential aquifer resources and wells within the Project Study Area.

The following sections outline the methods used to assess groundwater within the Project Study Area, identifies potential effects that the Project may have on groundwater, and summarizes proposed mitigations.

3.6.2 Baseline Data Collection Methods

3.6.2.1 Desktop Assessment

Published geological and hydrogeological information applicable to the Project Study Area, includes bedrock geologic structure, stratigraphy, surficial geology, and hydrogeology. This information was obtained from the following sources:

- bedrock Geology of Alberta, Map 600 (Prior et al. 2013)
- Surficial Geology of Alberta (Fenton et al. 2013)
- Soil and groundwater monitoring reports for the adjacent Hoole South Gas Plant (Summit 2024 and 2025).

A search of provincial water well records, maintained by the Groundwater Information Centre (GOA 2026a), was conducted in June 2026 for the area surrounding the Project.

3.6.3 Baseline Conditions

Surficial and Bedrock Geology

According to Fenton, M.M. et al. (2013), the surficial geology of the Site consists of Pleistocene stagnant ice moraine deposits. Stagnant ice moraine deposits are comprised of sediments resulting from the collapse and slumping of englacial and supraglacial debris due to the melting of buried stagnant ice at the glacier margin. The sediment is mainly till but locally includes stratified glaciolacustrine or glaciofluvial sediments and is characterized by low-to high-relief hummocky topography.

Onsite, surficial deposits consist of a silty clay fill ranging in thickness from 0 to 2 m, underlain by a thick silty clay sequence to the maximum depth of drilling (approximately 15 metres below ground surface [mbgs]). A continuous silty sand unit has been identified within the clay sequence and ranges in thickness from 2 to 5 m. The sand unit appeared to be pinching out to the north, south, and west of the Site (Summit 2024).

The underlying bedrock is part of the Second White Specks, Carlile, and Niobrara Formations. According to Prior, G.J. et al. (2013), the Second White Specks Formation includes dark grey to black, organic-rich, laminated shale and silty shale with silty interbeds, characterized as highly calcareous with abundant white specks, and of marine origin. The Carlile Formation includes medium grey to dark grey siltstone, silty shale, and shale, characterized by local bentonite beds and sideritic concretionary layers (absent in parts of northeastern Alberta), and of marine origin.

The Niobrara Formation includes dark grey to black, laminated shale with silty to silty shale interbeds. Shale is locally bentonitic, with the upper part containing highly calcareous, organic-rich shale (First White Specks Member), characterized by local bentonite beds and sideritic concretionary layers, some silty, fish debris-bearing beds, and of marine origin.

Bedrock has not been encountered in the boreholes completed onsite (Summit 2024).

Hydrogeology

Historical monitoring programs indicate that shallow groundwater at the Site flows to the northwest and southwest, likely a result of the Site being on a topographic high in the area with groundwater flowing radially outward to the lower-lying surrounding areas. The 2024 groundwater monitoring program indicated that groundwater flows to the northwest and southwest at approximately 4.22 and 5.27 m/year, respectively, and was based on a site hydraulic conductivity geometric mean of 6.7 x 10-7 m/second, a 2024 hydraulic gradient of 0.04 and 0.05 m/m, respectively, and an effective porosity of 0.2 (Summit 2025).

Underground utility trenches, conduits, installed drainage systems, structures, fill placement, variations in soil type, and minor fluctuations in topography may influence the shallow groundwater flow. In addition, seasonal fluctuations of the groundwater elevation and flow direction can be expected.

The search of the AEPA groundwater records, conducted on June 18, 2026, did not identify any water wells within the same quarter section as the Site (NE¼ 36-080-25 W4M) or within 300 m of the Site.

The groundwater surveillance program for the adjacent Hoole South Gas Plant was completed as per the requirements of EPEA Approval No. 10135-03-02. The monitoring network consisted of 11 wells at the time of the assessment. In September 2024, eight of the 11 groundwater monitoring wells were monitored and sampled. Wells 07MW04B and 12MW12 were dry, while 07MW08 was destroyed. Groundwater laboratory analytical data was compared to the Alberta Tier 1 guidelines for coarse-grained soils and natural land use. Findings of the assessment included the following:

- Groundwater levels ranged from 4.17 to 7.76 mbgs.
- Groundwater was inferred to flow to the northwest and southwest,
- The PHC, glycol, and amine parameters were below applicable guidelines, consistent with historical analytical results.
- Analytical results from presumed background location MW15-014 showed concentrations of TDS, manganese, aluminum, and cadmium exceeding Alberta Tier 1 guidelines.
- The following routine indicator and dissolved metals parameters exceeded Alberta Tier 1 guidelines at one or more sample locations: TDS, nitrate, and dissolved iron, manganese, sodium, sulphate, cadmium, nickel, selenium, and uranium. The exceedances were consistent with historical laboratory results and appeared to be trending downwards or stable.
- Overall, groundwater flow and quality results were similar in 2024 to historical surveillance monitoring events.

3.6.4 Potential Effects, Mitigation and Predicted Residual Effects

3.6.4.1 Potential Effects

This evaluation focuses on potential effects related to the Project. The Project does not involve dewatering, groundwater withdrawal, or well disposal; however, other activities that may impact groundwater include accidental releases during construction, operations, or decommissioning. The Project may potentially affect groundwater quality, as groundwater contamination may result from such spills during the construction, operations or decommissioning period.

3.6.4.2 Mitigation

The following mitigation measures will be implemented to limit potential adverse effects to groundwater:

- The existing groundwater monitoring program for the gas plant will continue to be implemented in accordance with EPEA Approval 10135-00-00, as amended, and complemented by the groundwater monitoring requirements associated with the EPEA approval for the thermal power plant, to identify potential groundwater quality issues
- Project activities will follow standard construction practices and applicable laws to minimize the potential for and impact of any potential spills. The EPP will be adhered to during all phases of the Project. The EPP includes a contingency plan in the case of chemical or fuel spills, with procedures for containment, removal, and reporting. All spills will be reported to the Alberta 24-hour environmental emergency hotline, within 24 hours of the occurrence and remediated in a timely manner in compliance with Alberta regulations. An emergency spill kit will be kept on site at all times.

- Fuelling stations for construction, if required, will be isolated in case of spills, through methods such as berms and an impermeable liner.
- Secondary containment will be used for the storage of any fuels or chemicals on-Site. Secondary containment measures may include double-walled tanks and/or liners and berms around the containment area.

3.6.4.3 Predicted Residual Effects

The predicted residual Project effects on groundwater are:

3) Localized groundwater contamination in the event of a spill.

3.6.5 Evaluation of Predicted Residual Effects of the Project

A summary of the predicted residual effects of the Project on groundwater is provided in Table 3.6-1 and a rationale for the evaluation is provided below.

Table 3.6-1: Predicted Residual Project Effects Description, Importance and Likelihood for Groundwater

Predicted Residual Effect	Project Activity	Effects Assessment Criteria[(a)]				Importance[(a)]	Likelihood[(a)]
		Direction	Magnitude	Geographic Extent	Duration		
Groundwater contamination	Construction Operations Decommissioning	Negative	Low	Local	Medium-term	Low	Unlikely

Note:

(a) Effects assessment criteria are defined in Table 2.6-1. Importance and Likelihood are defined in Table 2.6-2 and Table 2.6-3, respectively.

Groundwater Contamination

The predicted residual effect of groundwater contamination is described as negative. However, with the use of appropriate mitigation, and in accordance with the requirements of the EPEA approvals for the gas plant and the power plant, groundwater is unlikely to become contaminated through spills during construction, operations or decommissioning. The magnitude of the effect is considered low and is unlikely to be a management concern with the implementation of the EPP, which will minimize the potential for adverse effects. The geographic extent is considered to be local, as potential impacts are likely to be limited to the Project footprint and the existing groundwater monitoring program for the gas plant will continue to be implemented, and complemented by the groundwater monitoring requirements associated with the EPEA approval for the thermal power plant, to identify potential groundwater quality issues. The effect is considered to be of medium-term duration because the potential for groundwater contamination could occur through the life of the Project. The likelihood of this residual effect is unlikely, and the importance is expected to be low.

3.6.6 Determination of Significance

Effective implementation of proven mitigation strategies, as outlined above, will reduce the potential for adverse effects on groundwater. All Project activities will follow standard construction and operational practices to

minimize the potential for spills. Spills will be reported to the appropriate authorities, as required, and remediated in a timely manner. The residual effects of the Project on groundwater are not predicted to result in changes that will alter groundwater conditions beyond manageable levels and are therefore predicted to be not significant.

3.7 Surface Water and Aquatic Resources

3.7.1 Introduction

Water bodies are recognized as valuable resources in the landscape, as they provide wildlife habitat and vital ecosystem services, such as aquifer recharge (Alberta Water Council 2020). Under the provincial *Water Act* (GOA 2000a), the Government of Alberta requires that an approval be obtained prior to affecting any water bodies. A "water body" is defined in the Alberta *Water Act* – Code of Practice (COP) as having a defined bed and banks, whether or not water is continuously present, and includes bodies of standing water, wetlands and watercourses (GOA 2000a, 2013). A watercourse is further defined by the *Water Act* (GOA 2000a) as a natural water channel and the bed along which it flows. Where relevant, Project construction and operation at or near water bodies or watercourses will also need to follow regulations and guidelines in EPEA (GOA 2000b), the *Water Act* or applicable COP, and the federal *Fisheries Act* to avoid or minimize negative effects to aquatic environments and fish and fish habitat. In addition to water bodies and watercourses, other surface features that may be present include drainages (low-lying areas that lack defined waterbodies or watercourses) and irrigation works (i.e., storage water bodies or transport canals).

This section of the Environmental Evaluation provides a description of existing surface water drainage patterns, waterbodies, watercourses, and aquatic resources within the Project Study Area based on a desktop review. The potential effects of the Project were assessed for water features that were determined to be natural water bodies or watercourses, as defined under the *Water Act*.

3.7.2 Baseline Data Collection Methods

3.7.2.1 Desktop Assessment

Surface Water

Surface water features were delineated based on review of spatial datasets (e.g., Alberta Merged Wetland Inventory; Grassland Vegetation Inventory, AltaLIS 1:20,000 Base Feature Hydrography Layer (GOA 2020b), and Natural Resources Canada Atlas (2021) to assist with interpretation of surface water extent and classification, and to identify drainage pathways, water bodies and watercourses crossing or within the Project Study Area.

Aquatic Resources

Aerial and satellite imagery (Canvec and AltaLIS layers) of the Project Study Area were reviewed to identify potential waterbodies and watercourses and a desktop review of available fish and fish habitat information within the Project Study Area was completed using the FWMIS Internet Mapping Tool (AEPA 2026). Available fish and fish habitat information were summarized based on existing data obtained from the FWMIS database.

Additionally, results from the wetland desktop assessment (Section 3.5) were reviewed by WSP fish biologists to characterize the fish and fish habitat potential in the wetlands in the Project Study Area.

3.7.3 Baseline Conditions

3.7.3.1 Surface Water

The Project Study Area is located in the Wabasca sub-watershed basin of the Peace/Slave River Basin and the Project footprint is approximately 7.2 km east of North Wabasca Lake and 4.3 km north of South Wabasca Lake.

The Wabasca sub-watershed basin originates from its headwaters at Sandy Lake in northern Alberta, and covers approximately 29,565 km^2.

According to Google Earth (2024) and Natural Resources Canada Atlas (2021), surface drainage is expected to be primarily to the south in the area of the Project. Elevations of the surrounding lands (all approximate values) 1 km to the north are 572 metres above sea level (masl), 1 km to the east are 560 masl, 1 km to the south are 558 masl, and 1 km to the west are 563 masl (Google Earth 2024). Surface water runoff is expected to infiltrate into exposed soil or vegetated areas or flow overland following topography south towards an unnamed tributary of South Wabasca Lake (Figure 3.3-1).

In the Project Study Area, the desktop assessments identified a total of one natural watercourse to the west of the Project footprint (distance ranging from approximately 235 m to 630 m) and, 17 wetlands and ephemeral water bodies (Figure 3.3-1).

In the Project footprint, there were no defined watercourses present (Figure 3.3-1) and the Project footprint overlaps one small area (0.02 ha) of treed bog wetland that is not overlapped by Project infrastructure.

3.7.3.2 Aquatic Resources

In the Project Study area (Section 3.7.3.1), the portion of the watercourse within the Project Study area overlaps with bog wetland and is unlikely to provide fish habitat. There is no historical documentation of fish presence within the Project Study Area (EPA 2026).

In the Project footprint (Section 3.7.3.1), There were no identified drainages within the Project footprint (Figure 3.3-1) therefore no potential fish or fish habitat was identified (EPA 2026) There were no identified wetlands or drainages within the Project footprint therefore no potential fish or fish habitat was identified (EPA 2026)

3.7.4 Potential Effects, Mitigation and Predicted Residual Effects

3.7.4.1 Potential Effects

Project effects to surface water would be negligible as surface water runoff will be managed within the Project footprint. No Project effects to aquatic species and habitat are anticipated for the Project because the Project footprint does not overlap or interact with any aquatic resources such as potential fish-bearing watercourses or water bodies. Potential effects of the Project to wetlands are described in Section 3.5.

3.7.4.2 Mitigation

During construction and operation, surface water runoff from the Project Footprint will be collected within the existing industrial runoff control system and will be released offsite in a controlled manner, as required. The existing runoff control system was designed with sufficient capacity to storm runoff from a storm event. Collected runoff will be tested prior to release, to confirm compliance with the applicable limits provided in the EPEA Approval for the Hoole South Gas Plant under Approval # 10135-03-00 (Tidewater 2025) and complemented by the EPEA approval for the Project.

Mitigations are in place to maintain and preserve proper surface drainage similar to pre-disturbance conditions during the grading of the land within the Project footprint. No Project effects to surface water, aquatic species, or aquatic habitat are anticipated because the Project footprint does not overlap or interact with any potential fish-bearing watercourses, wetlands, or waterbodies. Mitigation has been described in Section 3.5 – Wetlands and Water Bodies to address the potential effects to wetlands and water bodies from siltation or spills. No additional specific mitigation measures for surface water and aquatic resources have been identified.

3.7.4.3 Predicted Residual Effects

With the implementation of the mitigation described above and in Section 3.5 to manage siltation and spills, and since there are no watercourses, wetlands, or water bodies with the potential for fish or fish habitat, no residual effects are anticipated for surface water and aquatic resources. Consequently, the surface water and aquatic resources VC was not carried forward in the Project effects evaluation.

3.8 Wildlife and Wildlife Habitat

3.8.1 Introduction

Wildlife is considered in the Environmental Evaluation due to its important ecological value to biodiversity and ecosystem integrity. The evaluation is intended to identify potential project related effects on wildlife and wildlife habitat and to ensure the regulatory requirements and mitigation measures are appropriately considered during project planning and implementation.

3.8.2 Baseline Data Collection Methods

3.8.2.1 Desktop Assessment

The government of Alberta's FWMIS database stores historical fish and wildlife inventory information. This information is available to the public via the FWIMT. The FWIMT also provides wildlife sensitivity mapping layers. A review of FWIMT (EPA 2026), ACIMS (ACIMS 2026), LAT (GoA 2026b) and mapped critical habitat layers (GoC 2026a) to 1 km buffer around the Project Footprint was conducted on September 10, 2026.

Sensitive wildlife species were defined as species that:

- are assessed as Endangered, Threatened, or Special Concern in Alberta (GoA 2024)
- are recommended to be assessed as Endangered, Threatened, or Special Concern in Alberta (GoA 2024)
- have a conservation rank of At Risk, May be at Risk, or Sensitive in Alberta (GoA 2020c)
- are assessed as Endangered Threatened, Special Concern, or Extirpated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (GOC 2026b)
- are listed under the SARA as Endangered, Threatened, Special Concern, or Extirpated (GOC 2026b)
- are listed under Schedule 1 of the Migratory Birds Regulations (MBR) (GoC 2022).

3.8.3 Baseline Conditions

3.8.3.1 Wildlife Habitat

The Project Study Area is in the Central Mixedwood Natural Subregion of the Boreal Forest Natural Region (NRC 2006) as described in Section 3.4. Land cover was delineated in the Project Study Area, as described in Section 3.1 Forest and wetland land cover types are the most representative land cover types in the Project Study Area covering 59.9 ha (47.3%) and 43.4 ha (34.3%) o the Project Study Area, respectively(Table 3.1-1). The remaining portions of the Project Study Area are covered by disturbed and cleared rights-of-way land cover types (17.8 ha [14.1%] and 5.4 ha [4.3%], respectively; Table 3.1-1).

Most of the Project Footprint is in disturbed land cover (4.31 ha [92.6% of the Footprint]; Table 3.1-1). Approximately 0.32 ha of forest (7.0% of the Footprint) and 0.02 ha of wetland (treed bog) (0.4% of the Footprint) will be permanently affected during construction and operational stages of the Project (Table 3.1-1). Treed bog can provide potential habitat for breeding or foraging amphibians, birds, and mammals (Table 3.5-4).

3.8.3.2 Wildlife Sensitivities and Historical Records

According to the FWIMT search, the 1 km buffer around the Project Footprint does not overlap any designated sensitive areas or ranges. The FWIMT also indicates that there are no historical sensitive wildlife species observations within 1 km of the Project Footprint (AEPA 2026). The ACIMS query resulted in no occurrences of tracked elements within 1 km of the Project Footprint (AEPA 2026). While the Project Study Area has no historical occurrences in the FWMIS or the ACIMS databases, this does not indicate that occurrences do not occur in this area. Absence of records could indicate that few inventories/surveys have been conducted in this location within the province.

According to the LAT report, the area within 1 km of the Project Footprint did not intersect any sensitive features, federal orders, or grassland and natural regions (GoA 2026b). The Project Study Area does not overlap critical habitat (GoC 2026a).

3.8.4 Potential Effects, Mitigation and Predicted Residual Effects

3.8.4.1 Potential Effects

3.8.4.1.1 Habitat Loss

The Project footprint is in a highly disturbed landscape and habitat quality for wildlife is minimal. Therefore, the Project is not expected to result in a material change in wildlife habitat quantity or quality relative to existing conditions.

3.8.4.1.2 Injury or Direct Mortality

Direct mortality of wildlife may occur because of removal of active nests or dens, collisions with construction equipment or Project infrastructure, and entrapment in fences. Mortality risk due to site clearing is highest during spring and summer nesting and denning periods due to the potential destruction of active nests and dens and breeding wetlands (amphibians).

3.8.4.1.3 Sensory Disturbance

Wildlife in the area have likely habituated to the current level of sensory disturbance from the existing infrastructure, industrial use, increased vehicle use within cleared rights-of-ways, and other human-related activities in and around the Project Study Area. Construction activities are expected to result in a small zone of reduced habitat effectiveness for the duration of the construction phase, relative to existing conditions. Noise associated with construction activities will be limited in duration and will primarily occur during daylight hours.

Dust from construction may have some affect on the composition, palatability, and growth of vegetative species in the Project Study Area. Increased sedimentation into aquatic environments during construction may impact potential amphibian species and reduce primary and secondary productivity, thereby reducing food resources for aquatic insectivore and waterbird species.

Wildlife more tolerant of human disturbance (e.g., coyote [*Canis latrans*], deer species, and some bird species) have likely habituated to the current level of anthropogenic disturbance in the Project Study Area and wildlife displacement will only be temporary for these species. Most terrestrial bird species are highly susceptible to noise disturbance and will generally avoid nesting in and migrating through areas of high human activity. Following construction completion, these species will likely return to adjacent habitats over time as sensory disturbance decreases and wildlife species acclimate to disturbance levels.

3.8.4.1.4 Change in Wildlife Movement

Wildlife movement across the Project Study Area has been impacted because of historical vegetation clearing, cleared rights-of-way, roads, noise associated with an existing gas plant, agricultural fences, and other sensory or physical disturbances that may influence wildlife movements. As the Project is in an existing fenced area in a highly disturbed area, the Project is not anticipated to further affect wildlife movement in the Project Study Area.

3.8.4.2 Mitigation

The following mitigation measures are based on the desktop review and the potential effects identified in Section 3.8.3 and 3.8.4.1:

- The Project Study Area is in Nesting Zone B5 and the nesting period for this zone occurs from April 19 to August 28 (GOC 2025). The Alberta Sensitive Species Inventory Guide shows the nesting/breeding period for boreal raptors as occurring from February 1 to August 31 (GOA 2013b). The timing constraints are when nesting birds are likely to be present and activities must be planned to reduce risk to bird nesting areas and minimize conflicts during construction.
- To be compliant with the *Wildlife Act*, the Project must arrange for a qualified wildlife specialist to complete a pre-disturbance wildlife sweep for the presence of protected wildlife and/or wildlife features (including but not limited to species of regulatory concern, nests, dens, and hibernacula) prior to any Project activities, including the clearing of vegetation. If the pre-disturbance sweep reveals the presence of any active wildlife and/or wildlife features, the qualified biologist will provide written mitigation (e.g., setbacks, timing restrictions) to minimize effects to these features or species.
- Additional wildlife and wildlife feature mitigations may be required if wildlife or wildlife features are observed during construction. All wildlife observations made during construction should be reported to a qualified biologist. The biologist will recommend mitigations, which can include buffer zones, timing restrictions or monitoring and reporting requirements depending on the species or wildlife habitat feature, as needed.
- All construction and operation work related to the Project will adhere to Hoole Natural Gas Power Generator Facility's Environmental Protection Plan (EPP) currently in place at the facility (VL Energy Ltd. 2025). The EPP will be applied to any new infrastructure included in the Project to limit deleterious effects on wildlife.
- Note that the release of deleterious substances to nesting habitat (e.g., wetlands or watercourses) is also prohibited and requires implementation of appropriate spill prevention and hazardous materials handling.
- Dust control measures will be implemented as needed and will reduce adverse impacts on habitats in the Project Study Area.
- Limit the size of permanent and temporary workspaces to the greatest extent possible and reclaim work areas immediately following construction.
- Stake/flag any environmentally sensitive features (e.g., setback distances) prior to construction.
- Limit construction to daylight hours, when possible, to allow animals to move through the Project Study Area overnight.
- Use noise reduction equipment to muffle or control noise levels and reduce sensory disturbance to wildlife
- Prohibit pets, firearms, or recreational use of all-terrain vehicles in construction sites.
- Do not harass or feed wildlife.

- Store hazardous materials securely in an appropriate location in accordance with the EPP to avoid interaction with wildlife.
- Implement appropriate setbacks for wetlands and watercourses.

3.8.4.3 Predicted Residual Effects

The predicted residual Project effects on wildlife and wildlife habitat are:

- Direct habitat loss
- Wildlife mortality
- Sensory disturbance
- Disruption of wildlife movement

3.8.5 Evaluation of Predicted Residual Effects of the Project

For wildlife, magnitude is a function of the numerical and qualitative changes in measurement parameters and the associated influence on the abundance and distribution of the wildlife and wildlife habitat VC. Changes in physical (e.g., habitat quantity, quality, and fragmentation) and biological (e.g., survival, reproduction, movement, and behaviour) measurement parameters result in effects on the abundance and distribution of populations. The magnitude of residual effects is assessed at the population level because the maintenance of self-sustaining and ecologically effective wildlife populations is a common objective for wildlife managers and is an indicator of environmental integrity. Self-sustaining populations are healthy, robust populations capable of withstanding environmental change and accommodating random demographic processes (Reed et al. 2003).

Critical thresholds such as amount of quality habitat required to maintain a self-sustaining population or the specific number of individuals required for an ecologically effective population size are not available for wildlife evaluated in this assessment. Moreover, ecological thresholds vary by species, landscape type, and spatial scale (Fahrig 1997; Swift and Hannon 2010). Consequently, a qualitative discussion is provided of the predicted effects associated with changes to wildlife populations in general, with reference to species-specific examples as appropriate. The discussion is supported with available scientific literature, logical reasoning and experience of the practitioners completing the assessment (a reasoned narrative approach). Because of the uncertainty regarding the effects of development on the wildlife and wildlife habitat VC, magnitude classification was applied conservatively to avoid underestimating effects.

A summary of the predicted residual effects of the Project on wildlife and wildlife habitat is provided in Table 3.8-1, and a rationale for the evaluation is provided in Section 2.4.

Table 3.8-1: Predicted Residual Project Effects Description, Importance and Likelihood for Wildlife and Wildlife Habitat

Predicted Residual Effect	Project Phase	Effects Assessment Criteria[(a)]				Importance[(a)]	Likelihood[(a)]
		Direction	Magnitude	Geographic Extent	Duration		
Direct Habitat Loss	Construction, operation, and decommissioning	Negative	Minimal	Local	Long-term	Minimal	Likely
Wildlife Mortality		Negative	Minimal	Local	Long-term	Minimal	Unlikely
Sensory Disturbance		Negative	Minimal	Local	Medium-term	Minimal	Likely
Disruption of Wildlife Movement		Negative	Minimal	Local	Medium-term	Minimal	Likely

[(a)] Effects assessment criteria are defined in Table 2.4-1. Importance and Likelihood are defined in Table 2.4-2 and Table 2.4-3, respectively.

The construction of the Project will primarily occur on land previously disturbed by Hoole and, therefore, there will be little habitat loss. Similarly, because of current conditions in and surrounding the Project (e.g., existing operations at Hoole, cleared rights-of-way, other industrial activity), changes to wildlife movement and habitat

avoidance from sensory disturbances due to the Project are anticipated to be minimal. Also, Hoole implements an EPP at the facility. Therefore, wildlife mortality from the Project is expected to be minimal. Overall, the magnitude of effect on habitat loss, wildlife mortality, sensory disturbance, and wildlife movements from the Project are predicted to be minimal.

3.8.6 Determination of Significance

Project effects on wildlife are of minimal importance and unlikely to occur to likely to occur. With effective implementation of mitigation measures referenced in Section 3.8.4.2, the predicted residual effects of the Project on wildlife and wildlife habitat are not expected to result in a change that will alter the self-sustainability and ecological effectiveness of wildlife and wildlife habitat beyond a manageable level. Project effects on wildlife are therefore determined to be not significant.

There is a moderate level of confidence in the predictions for wildlife and wildlife habitat because the Project has been appropriately sited primarily in an already disturbed area.

3.9 Air Quality

3.9.1 Introduction

A standalone Air Quality Assessment Report has been prepared for the Project, which confirms that the Project, in combination with other relevant existing and approved emissions sources, will be in compliance with applicable Alberta Ambien Air Quality Objectives and Guidelines. Please refer to this report, which is attached as Appendix G to the main application.

4 SUMMARY OF ENVIRONMENTAL EVALUATION

The predicted residual environmental effects and their predicted level of importance as outlined in the evaluations in Section 3.0 are summarized in Table 5.1-1.

Table 5.1-1: Summary of Predicted Residual Effects and Significance Rankings for Valued Components

Valued Components Subject to Effects	Project Phase	Potential Effects – Short Description	Summary of Mitigation Measures	Residual Predicted Effects	Predicted Level of Importance[(b)]	Significance
Land Cover	■ Construction Operation Decommissioning	■ introduction or spread of weeds and/or non-native species	■ all vehicle traffic and equipment will be limited to the Project Boundary ■ construction equipment will enter the Project site in clean condition (i.e., free of soils and vegetative debris) and in good working order (i.e., no oil or hydraulic fluid leaks). ■ equipment will be visually inspected and cleaned off-site as needed ■ The Proponent will abide by the EPP for the Project and *Alberta Weed Control Act and Regulations* (GOA 2008; GOA 2010) and will and eradicate any prohibited noxious weed species populations and control any noxious weed species populations on the Project site.	■ introduction or spread of weeds and/or non-native species	■ Low	■ Not significant
	■ Construction Operation Decommissioning	■ changes to land cover due to vegetation removal and soil disturbance during construction, operations and decommissioning activities	■ siting of the Project in existing disturbance out of sensitive land cover types ■ restrict disturbance to areas necessary for safe construction ■ restrict activity to designated ROWs and workspaces during construction ■ restrict activity to designated areas necessary for safe operations ■ current land uses expected to continue ■ reclamation in accordance with the Decommissioning and Reclamation Plan is expected to return land to equivalent land use capability	■ No changes predicted ■ residual Project effects to wetlands are discussed in Section 3.5	■ -	

Table 5.1-1: Summary of Predicted Residual Effects and Significance Rankings for Valued Components

Valued Components Subject to Effects	Project Phase	Potential Effects – Short Description	Summary of Mitigation Measures	Residual Predicted Effects	Predicted Level of Importance[(b)]	Significance
Terrain and Soils	■ Construction Operation Decommissioning ■ Reclamation	■ soil erosion ■ soil compaction/soil rutting ■ admixing ■ soil contamination	■ surface run-off controls (e.g., erosion control matting and sediment fences) will be installed as appropriate ■ existing roads and trails will be used to the extent practical and equipment travel will be limited to the extent possible ■ soil will be managed accordance with the EPP and Decommissioning and Reclamation Plan, and current requirements under the *Soil Conservation Act* and EPEA. ■ Erosion and sediment control measures will be used along project components where required. ■ heavy equipment and vehicle traffic will be restricted to identified traffic areas ■ heavy equipment activity will be restricted to dry and frozen ground conditions ■ If areas are identified as sensitive to compaction or tutting, rig matting or geotextile material will be used ■ any spills will be addressed in a timely manner and in accordance with the EPP ■ soil will be de-compacted as necessary prior to reclamation	■ Loss or alteration of soil capability and terrain to support healthy ecosystems	■ Low	■ Not significant
Vegetation	■ Construction Operation Decommissioning	■ loss or alteration of listed plant species or rare ecological communities.	■ all vehicle traffic and equipment will be limited to the Project Boundary ■	■ No changes predicted	■ -	■ Not significant
Wetlands and Water Bodies	■ Construction Operation Decommissioning	■ direct temporary or permanent disturbance to wetlands	■ siting of Project footprint components in existing disturbance ■ the Proponent will follow replacement requirements under the Alberta Wetland Policy (GOA 2013a) if any permanent direct impacts to wetlands are required ■ vehicle traffic and equipment will be required to remain within the Project footprint ■ permanent erosion and spill control measures will be employed around facilities and access roads ■ all disturbed areas not used for operations will be reclaimed following construction to minimize erosion and siltation	■ No changes predicted	■ -	■ Not Significant

Table 5.1-1: Summary of Predicted Residual Effects and Significance Rankings for Valued Components

Valued Components Subject to Effects	Project Phase	Potential Effects – Short Description	Summary of Mitigation Measures	Residual Predicted Effects	Predicted Level of Importance[(b)]	Significance
		■ introduction or spread of weeds and/or non-native species	■ all vehicle traffic and equipment will be limited to the Project Boundary ■ construction equipment will enter the Project site in clean condition (i.e., free of soils and vegetative debris) and in good working order (i.e., no oil or hydraulic fluid leaks). ■ equipment will be visually inspected and cleaned off-site as needed ■ The Proponent will abide by the EPP for the Project and Alberta *Weed Control Act* and Regulations (GOA 2008; GOA 2010), and will and eradicate any prohibited noxious weed species populations and control any noxious weed species populations on the Project site.	■ introduction or spread of weeds and/or non-native species	■ Low	
Groundwater	■ Construction Operation Decommissioning	■ groundwater contamination	■ implementation of the EPP, including a contingency plan in the case of chemical or fuel spills ■ an emergency spill kit will be kept on-Site at all times ■ all spills will be reported to Alberta 24-hour environmental emergency hotline within 24 hours and remediated in a timely manner in compliance with Alberta regulations ■ secondary containment will be used for the storage of fuels or chemicals on-Site ■ ongoing implementation of the groundwater monitoring program, as required within the EPEA Approval for the Hoole South Gas Plant, and the EPEA approval for the Project	■ groundwater contamination	■ Low	■ Not Significant

Wildlife and Wildlife Habitat	■ Construction ■ Operation ■ Decommissioning	■ direct habitat loss ■ wildlife mortality ■ sensory disturbance ■ disruption of wildlife movement ■	■ complete a pre-disturbance wildlife sweep by a qualified wildlife specialist for the presence of protected wildlife and/or wildlife features; if the sweep reveals the presence of any active wildlife and/or wildlife features, the qualified biologist will provide written mitigation ■ avoid clearing activities during the bird nesting/breeding period; if vegetation clearing is required during this period, use non-intrusive passive methods or pre-clearance nest searches to determine presence of bird nests and protect with appropriate setback ■ if migratory bird breeding activity is identified then appropriate setback buffers will be applied to the suspected nest location to minimize the risk of disturbing birds, nests, or eggs in accordance with the MBCA and the *Alberta Wildlife Act* ■ all wildlife observations made during construction should be reported to a qualified biologist, who will recommend appropriate mitigations and potential submission to AEPA ■ all construction and operation work related to the Project will adhere to Hoole's EPP currently in place at the facility. The EPP will be applied to any new infrastructure included in the Project to limit deleterious effects on migratory birds and other wildlife ■ 92.6% of the Project footprint is previously disturbed land ■ spills and material handling and storage will continue to follow the EPP currently in place at the facility ■ dust control measures will be followed as per the EPP ■ limit the size of permanent and temporary workspaces to the greatest extent possible and reclaim temporary work areas immediately following construction ■ limit construction to daylight hours, when possible ■ use noise reduction equipment to muffle or control noise levels and reduce sensory disturbance to wildlife ■ prohibit pets, firearms, or recreational use of all-terrain vehicles in construction sites ■ do not harass or feed wildlife ■	■ direct habitat loss ■ wildlife mortality ■ sensory disturbance ■ disruption of wildlife movement ■	■ Minimal	■ Not Significant

5 CONCLUSION

The Proponent is planning to construct, operate, and decommission a thermal power project with a maximum generating capacity of 19.8 MW, located approximately 7 km north of Wabasca-Desmarais, Alberta. The Project is located in an area characterized by boreal forest and industrial activity. Approximately 92.6% of the Project footprint is located in an existing disturbed area. The Project layout was sited to avoid or minimize overlap with wetlands areas.

The Proponent retained WSP to conduct an Environmental Evaluation of the Project. This Environmental Evaluation assessed baseline environmental conditions, identified the potential environmental effects of the Project, described the mitigation measures to be implemented during Project construction, operation and decommissioning, and assessed the predicted residual effects of the Project. The Environmental Evaluation followed a systematic approach to characterizing the Project's predicted residual effects on the environment and the significance of these effects, in the context of sustainable development objectives.

The potential effects of the Project were assessed for nine VCs. These nine VCs were selected based on their importance to the public, to scientists and/or to government agencies, and based on the experience of the Proponent and WSP with similar projects.

The effects assessment approach was based on the *Impact Assessment Act* and the AEPA assessment principles and methodology, as guided by the following documents:

- Guide to Preparing an Initial Project Description and Detailed Project Description (IAAC 2026)
- Guide to Preparing Environmental Impact Assessment Reports in Alberta (ESRD 2013)

The effects assessment considered the direction, magnitude, geographic extent, and duration of potential effects, after the implementation of mitigation measures. These criteria were then used to assign a level of importance to the predicted residual effects of the Project on each VC. Overall, the importance of predicted residual effects on the VCs is predicted to be minimal to low for all VCs. The residual effects are not predicted to alter the sustainability of the VCs beyond a manageable level and are therefore predicted to be not significant for all VCs.

Based on the information provided in this Environmental Evaluation and summarized above in Table 5.1-1, it is the professional opinion of the assessors that the Project is not likely to cause significant adverse environmental effects considering the implementation of appropriate mitigation measures. This includes adherence to the regulations, requirements, and best practices identified in the EPEA and associated regulations, policies and guidance documents.

6 CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

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