BEACON AI CENTERS

Beacon AI Centers Indus Project

Initial Description of Designated Project

Prepared for:

IMPACT ASSESSMENT AGENCY OF CANADA

Prepared by:

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Acronyms / Abbreviations

AAAQO/G	Alberta Ambient Air Quality Objectives and Guidelines
AACSW	Alberta Arts, Culture and Status of Women
ACC	Air-Cooled Condenser
ACIMS	Alberta Conservation Information Management System
ACO	Aboriginal Consultation Office
AEPA	Alberta Environment and Protected Areas
AER	Alberta Energy Regulator
AESO	Alberta Electric System Operator
AGC	Automatic Generation Control
AI	Artificial Intelligence
AIES	Alberta Interconnected Electric System
AQMG	Alberta Air Quality Modelling Guideline
ASL	Ambient Sound Level
ASP	Area Structure Plan
ASME	American Society of Mechanical Engineers
ATS	Automatic Transfer Switch
AWCS	Alberta Wetland Classification System
AUC	Alberta Utilities Commission
BACT	Best Available Control Technology
bgs	Below ground surface
C&R	Conservation and reclamation
CCS	Carbon capture and storage
CCGT	Combined Cycle Gas Turbine
CEMS	Continuous Emission Monitoring System
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
COD	Commercial Operation Date
CRAZ	Calgary Regional Airshed Zone
DFO	Fisheries and Oceans Canada
DTS	Demand Transmission Service
ECCC	Environment and Climate Change Canada
EGAT	NGTL pipeline capacity open-season framework
EIA	Environmental Impact Assessment
EPEA	Environmental Protection and Enhancement Act
ESA	Environmentally Significant Area
ESC	Erosion and Sediment Control
FWIMT	Fish and Wildlife Internet Mapping Tool
GGP	Gas Generation Pod
GHG	Greenhouse Gas
GIC	Groundwater Information Centre
GOA	Government of Alberta
GPS	Global Positioning System
GSU	Generator Step-Up
GT	Gas Turbine
GWh	Gigawatt-hour
HPC	High-performance computing
HRA	Historical Resources Act
HRSG	Heat recovery steam generator
Hz	hertz
IAAC	Impact Assessment Agency of Canada
IEC	International Electrotechnical Commission
IPD	Initial Project Description
IPCC	Intergovernmental Panel on Climate Change
km	Kilometer
kPa	Kilopascal
kV	Kilovolt
LAIRT	Landscape Analysis Indigenous Relations Tool
LiDAR	Light Detection and Ranging
LCRC	Land Conservation and Reclamation Council
LSR	Land Suitability Rating
m	meter (unit)
m^3	Cubic meter
m^3/day	Cubic meter per day
MBCA	Migratory Birds Convention Act
MDP	Municipal Development Plan
MSSC	Master Schedule of Standards and Conditions
MVA	megavolt-amperes
MW	Megawatt
MWh	Megawatt hour
MWe	Megawatt-electric
MW(th)	Megawatt-thermal
N_2O	Nitrous oxide
NGTL	Nova Gas Transmission Ltd.
NIA	Noise Impact Assessment

NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
O&M	Operations and Maintenance
OCC	Operations Control Centre
PAH	Polycyclic aromatic hydrocarbons
PLC	Programmable Logic Controller
PM_{10}	Particulate matter ≤ 10 µm
$PM_{2.5}$	Particulate matter ≤ 2.5 µm
PF	Power factor
PSIP	Project-specific information package
PSL	Project-Specific Sound Levels
psi	Pounds per square inch
Q1	First quarter
Q2	Second quarter
Q3	Third quarter
QPAC	Quick-deploy Power and Containerized system
RAP	Restricted Activity Period
RVCRWWS	Rocky View County Regional Waste Water System
S-DAT	Special Data Centre District
SAR	Sodium Adsorption Ratio
SARA	Species at Risk Act
SASR	System Access Request Request
SCA	Soil Correlation Area
SCADA	Supervisory Control and Data Acquisition
SCC	Supreme Court of Canada
SCR	Selective catalytic reduction
SCWG	Soil Classification Working Group
SMU	Soil Map Unit
SSIG	Sensitive Species Inventory Guidelines
ST	Steam Turbine
STS	Supply Transmission Service
T-Tap	Transmission line Tap Connection
t/GWH	Tonnes per gigawatt- hour
TAA	Terrestrial Assessment Area
TF/EE	Transboundary flows / exceptional events
TJ/day	Terajoules per day
TJ/hr	Terajoules per hour
TSP	Total suspended particulate
UPS	Uninterruptible Power Supply
VOC	Volatile organic compound
W4M	West of the Fourth Meridian
WAA	Wildlife Assessment Area
µm	Micrometer
$µg/m^3$	micrograms per cubic meter

PART A: General Information

1. The Project's Name, Type or Sector and Proposed Location

Indus Power Generation LP and its general partner, Northbridge Power GPC Inc. (Indus Power), is submitting this Initial Project Description (IPD) for the proposed 1,494 megawatt-electric (MWe) "Beacon AI Centers Indus" power generation facility (the Project). The Project is being developed by Beacon AI Centers (Beacon) under the project-specific entity Indus Power.

This IPD has been prepared in accordance with the Impact Assessment Agency of Canada (Agency or IAAC) Guide to Preparing an Initial Project Description and a Detailed Project Description under the Impact Assessment Act, Annex 1 (IAAC 2024). This IPD is being submitted in accordance with the Physical Activities Regulations (Government of Canada 2019a). Indus Power understands that IAAC aligns its implementation of the Impact Assessment Act and associated regulations with the Supreme Court of Canada's decision in Reference re Impact Assessment Act, 2023 SCC 23 (Supreme Court of Canada 2023).

If the Project can be carried out without requiring federal authorizations or permits, then, in light of the Supreme Court of Canada's decision, the Impact Assessment Act ought not to apply to the Project. Furthermore, as demonstrated through the information provided herein, the Project will not result in "non-negligible adverse change" within federal jurisdiction (Supreme Court of Canada 2023).

1.1 Project Name

Beacon AI Centers Indus

1.2 Type or Sector

The Project is a power generation facility with a maximum installed capacity of approximately 1,494 MWe. It is designed to supply a minimum of 1,200 MWe of continuous, fully dispatchable electricity to four (4) on-site data centres. The Project combines fast-response reciprocating engine generation with high-efficiency combined-cycle gas turbine technology (CCGT) to meet both variable and baseload power requirements while maintaining high reliability and operational flexibility.

The Project will operate on natural gas as the primary fuel to support rapid load changes, redundancy, and continuous operation, consistent with data-centre power reliability requirements.

The Project makes use of two (2) separate but complementary power-generating technologies: (i) reciprocating engine generation systems; and (ii) combined-cycle gas turbine generation systems.

Reciprocating Engine Generation System

The Project includes one hundred (100) INNIO Jenbacher J624 lean-burn natural gas reciprocating engine generators, each with a nominal electrical output of approximately 4.6 MWe. These units are deployed within Quick-deploy Power and Containerized (QPAC) modules. Each QPAC module integrates five (5) of each type of reciprocating engines, alternators, exhaust-treatment systems, and air-cooled radiators within a single three-storey steel enclosure engineered for industrial acoustic performance and emissions compliance. The QPAC modules are then arranged into two (2) gas generation pods (GGPs) (i.e., ten QPAC modules per GGP).

Combined-Cycle Gas Turbine (CCGT) Generation System

The four (4) combined-cycle gas turbine (CCGT) generating plants form the high-efficiency baseload generation backbone of the facility.

Each CCGT plant consists of:

- Three (3) Siemens SGT-800 combustion gas turbines (GT), each with a gross capacity of approximately 62 MWe; and
- One (1) Siemens SST-500 condensing steam turbine (ST), with a nominal capacity of approximately 75 MWe.

The major ancillary structures include:

- A natural gas pipeline to fuel the Project. The Project will require up to 285 Terajoules per day (TJ/day) at capacity. Indus Power/ Beacon is looking at three (3) gas supply and pipeline options:
    - Indus Power/Beacon is developing a proposal to connect natural gas to the existing integrated Nova Gas Transmission Ltd. (NGTL)/ATCO Pipeline system. Indus Power/Beacon is expecting another open season for NGTL pipeline capacity, although NGTL has made no formal announcement. In the previous August 2025 NGTL EGAT open season, Indus Power/Beacon's preassessment was approved at this location, proving technical feasibility and capacity availability; thereby allowing Beacon to submit a bid. Indus Power/Beacon submitted a bid that varied on the contract term but was unsuccessful.
    - Indus Power/Beacon is working with ATCO Gas on pipeline options that could potentially serve the Project, connecting natural gas to the existing integrated NGTL/ATCO Pipeline system.
    - Indus Power/Beacon is working with TC Energy on gas supply and pipeline options that could potentially serve the Project.
- Four (4) data halls with a power requirement of 300MW each, totalling 1200MW, within a co-located, on-site data center capable of supporting Tier IV data centre operations. Although Indus Power/Beacon is including information related to the data center, it is not relevant to the assessment of the Project because the data center is not a Project component and is not associated with the construction, operation or decommissioning of the Project. Indus Power/Beacon is providing the most accurate information and assumptions known at this time in respect to the data center and doing so exclusively for informational purposes.

New substation and Transmission line Tap Connection (T-tap) connection to an existing 240 kV transmission line owned by AltaLink, with the point of interconnection at AltaLink Langdon 102S substation, about 1km away. Electricity will be delivered from the Project to the Alberta provincial grid through several transmission lines. One (1) new on-site substation with a listed capacity of 400 MWe is currently configured. The final substation capacity and configuration will be determined in the coming months as the Project progresses through the AESO (Alberta Electric System Operator) connection process.

1.3 General Project Location and Land Use

The Project is located approximately three (3) km east of the City of Calgary and approximately two (2) km northwest of the Hamlet of Indus, Alberta, within Rocky View County, immediately south of Township Road 232, as shown in Figure 1.3.1.

The Project coordinates are:

- Legal land description: SW and SE Quarters 11-23-28-W4M, NW Quarter 11-23-28-W4M and Pt. N.E. Quarter 11-23-28-W4M
- Deg-Min-Sec Latitude and longitude coordinates: 50°56'36.3"N 113°48'25.9"W ; and
- Decimal Latitude and longitude coordinates: 50.943405, -113.807201.

The Project is located within a 627.2 acre (253.82 hectares) data center campus at an elevation of approximately 1,027 meters above sea level. The Project will occupy a 45 acre footprint, arranged into two (2) gas generation pods (GGPs) and four (4) CCGT plants, within the data center campus.

The Project sits on privately owned land that is already disturbed and previously used for agricultural purposes, as shown in Figure 1.3.2.

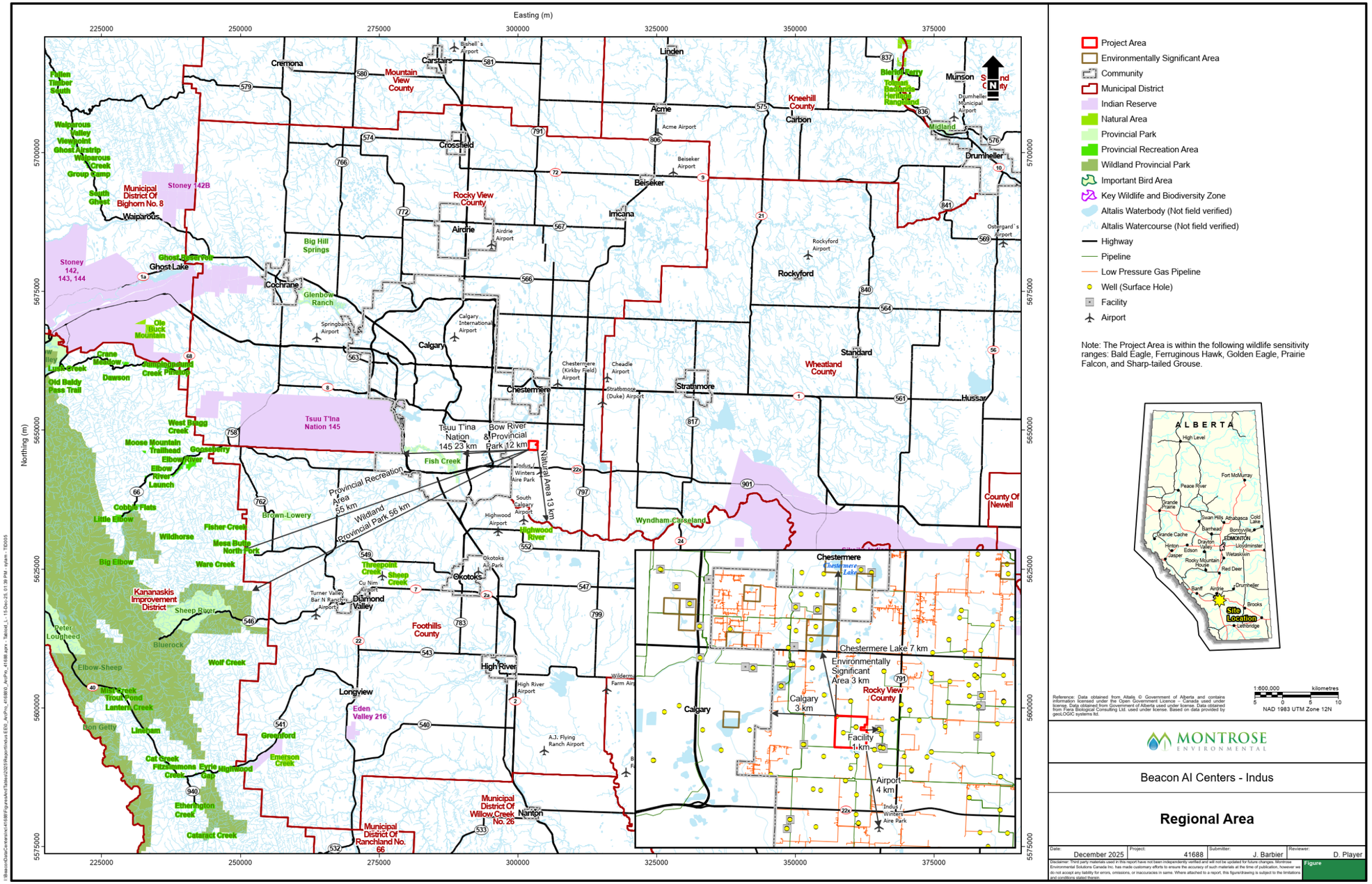

Figure 1.3.1 Regional Area

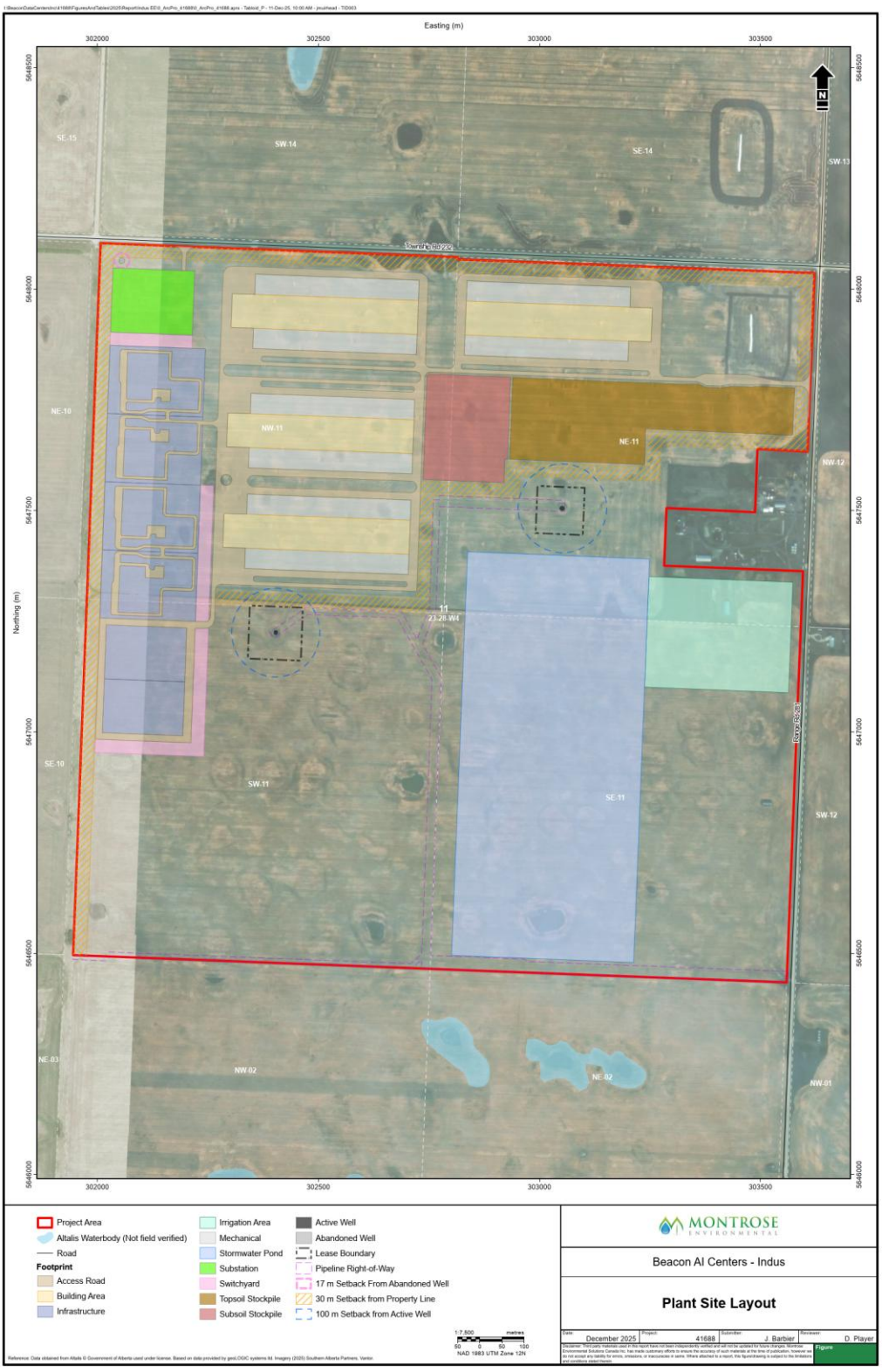

Figure 1.3.2 Project Site

2. Proponent's Name and Contact Information The Project's Name, Type or Sector and Proposed Location

Table 2.1.1 Proponent's Name and Contact Information

Name of Project:	Beacon AI Centers Indus
Name of Proponent:	Indus Power Generation LP and its general partner, Northbridge Power GPC Inc. (Indus Power)
Address of Proponent:	27 FL- 140 4th Avenue SW, Calgary, AB T2P 3N3
Website	https://beaconaicenters.com/
Principal Contact Person:	Joseph Shovlin, Co-Founder, Beacon Data Centers Email: joseph@beacondatacenters.com Phone: +1 825 964 4339 27 FL- 140 4th Avenue SW, Calgary, AB T2P 3N3
Regulatory Contact Person:	Troy Adams, Regulatory Lead (JouleGrid) Email: Troy.adams@joulegrid.ca Phone: T: 403.836.3535 (office & mobile) 27 FL- 140 4th Avenue SW, Calgary, AB T2P 3N3

3. Summary of Engagement with Jurisdictions or Agencies

Federal, provincial, and municipal agencies that have been or will be consulted regarding the Project are listed below. At the municipal level, Indus Power/Beacon has engaged Rocky View County to support local planning, permitting, and coordination. Rocky View County has been engaged to support local planning, permitting, and coordination. Engagement with agencies and stakeholders will continue throughout the Project's development.

Table 3.1.1 Federal, Provincial and Municipal Agencies Engaged

Agency and Submission	Date	Purpose of Engagement	Next Steps
Impact Assessment Agency of Canada (IAAC) and Impact Assessment (IA)	Nov 2025 ongoing	Initial contact made to provide basic Project information and receive process direction in preparation for a submission.	Submit IAAC IA, Annex 1 (IAAC 2024)
Alberta Arts, Culture and Status of Women (AACSW)	Ongoing	Request for Historical Resources Act approval for Project	Historical Resources Act approval granted on December 2, 2025. Any chance discovery of historical resources will be managed in accordance with the Historical Resources Act, including Section 31 reporting requirements (AACSW 2023; AACSW 2025).
Alberta Electric System Operator (AESO) and System Access Service Request (SASR) applications	Nov 2025 ongoing	Initial contact made to provide basic Project information and receive process direction in preparation for a submission. A system access service request (SASR) for the Demand Transmission Service (DTS) (receiving power from the grid) for the data center halls has been submitted.	A system access service request (SASR) for Supply Transmission Service (STS) (exporting power to the grid) will be submitted.
Alberta Environment and Protected Areas (AEPA) – Environmental Impact Assessment (EIA)	Nov 2025 ongoing	Initial contact made to provide basic Project information and receive process direction in preparation for a submission.	Submit the required application prior to December 31, 2025.
Alberta Environment and Protected Areas (AEPA) – Industrial Approval Application	Nov 2025 ongoing	Initial contact made to provide basic Project information and receive process direction in preparation for a submission.	Submit Industrial Approval Application prior to December 31, 2025.
Alberta Utilities Commission (AUC)	Nov 2025 ongoing	Initial contact made to provide basic Project information and receive process direction in preparation for a submission.	Submit the AUC Power Plant Application before December 31, 2025.
Aboriginal Consultation Office (ACO)	Nov 2025 ongoing	Initial contact made to provide basic Project information and receive process	ACO confirmed no consultation is required as the Project is located on

Agency and Submission	Date	Purpose of Engagement	Next Steps
		direction in preparation for a submission.	private land.
Alberta Transportation and Economic Corridors	Nov 2025 ongoing	Notification of the Project and planning for transportation requirements	None at this time
Rocky View County	Q2 2025 ongoing	Initial contact made to provide basic Project information and receive process direction in preparation for a submission. Development permit submission and review completed; approval received.	Continue engagement as required for building permits and municipal coordination.

4. Engagement with Indigenous Groups, Public, Other Stakeholders

4.1 Indigenous Groups

The Project is located on privately owned land in Rocky View County, Alberta, within Treaty 7 territory, the traditional lands of the Blackfoot Confederacy (Siksika, Kainai, Piikani), the Tsuut'ina First Nation, and the Stoney Nakoda Nations (Bearspaw, Chiniki, and Goodstoney), and within the Rocky View Métis District of the Otipemisiwak Métis Government.

No Crown land disposition or federal authorization is anticipated for the Project. However, as a matter of proponent-led due diligence and in recognition of the Crown's Duty to Consult, Indigenous engagement was undertaken in advance of regulatory applications.

Indus Power/Beacon followed the Government of Alberta's Proponent Guide to First Nations, Métis Settlements and Credibly Asserted Métis Communities and submitted a Pre-Consultation Assessment (PCA) Request to the Alberta Aboriginal Consultation Office (ACO) in November 2025 to confirm Indigenous consultation requirements. Additional information requested by the ACO was provided in December 2025. The ACO confirmed that no formal Indigenous consultation was required, as the Project is located on privately owned land (Beacon AI Centers Inc. 2025).

Notwithstanding the ACO determination, Indus Power/Beacon provided Project notification and information to the following Indigenous communities (Government of Alberta 2019):

1) Tsuut'ina Nation;
2) Piikani Nation;
3) Siksika Nation;
4) Blood Tribe;
5) Stoney Nakoda Nation – Bearspaw;
6) Stoney Nakoda Nation – Chiniki;
7) Stoney Nakoda Nation – Goodstoney;
8) Metis Nation of Alberta Region 3;
9) Métis Nation of Alberta - Otipemisiwak Métis Government; and

10) Metis Nation of Alberta - Otipemisiwak Métis Government - Battle River Territory - Rocky View Metis District.

Indigenous communities in the regional area of the Project are shown on Figure 4.1.1. The Project does not overlap reserve lands, Métis settlements, or federally owned lands, and the Project area is not used for Indigenous harvesting or other traditional practices.

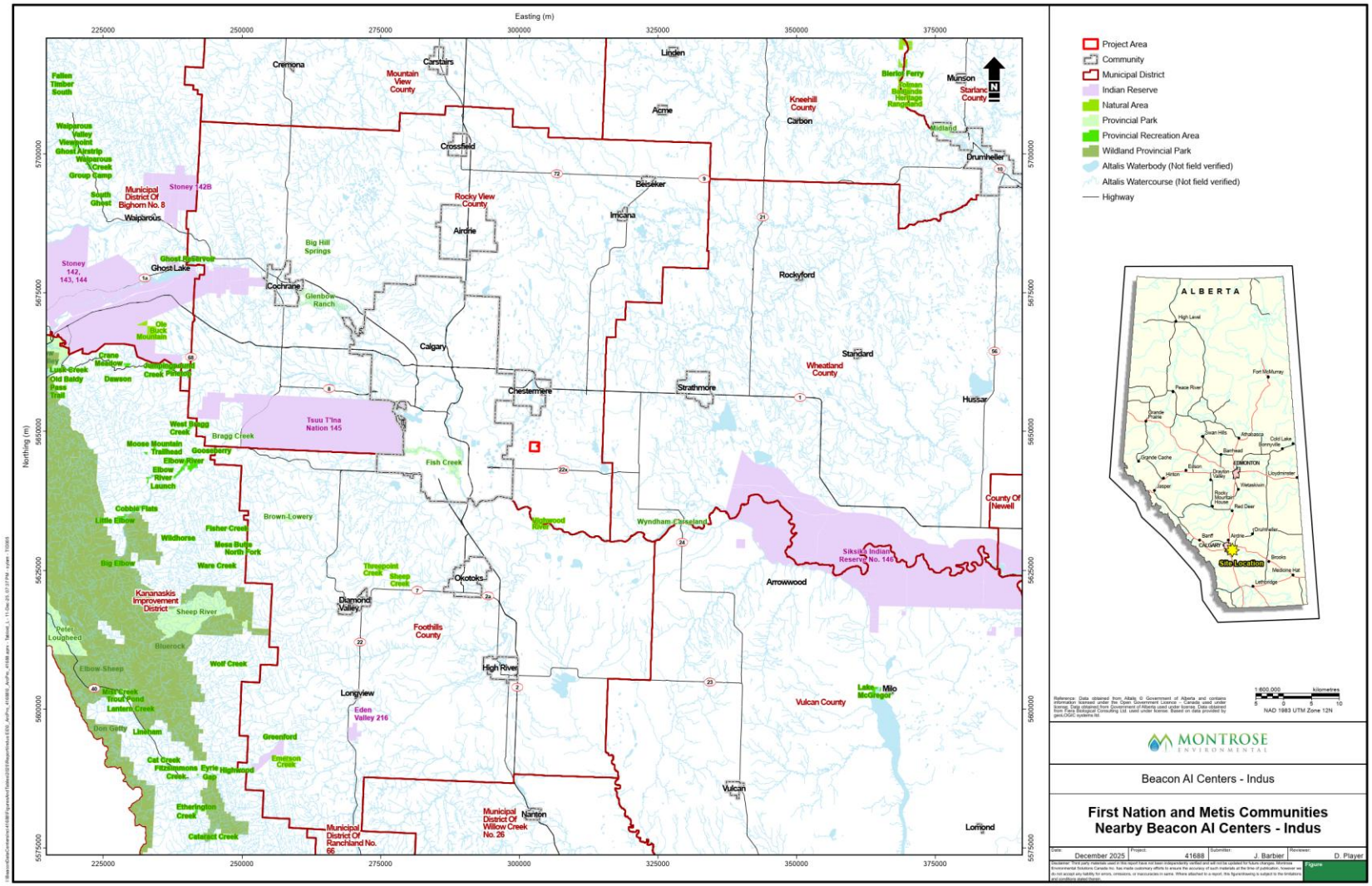

Figure 4.1.1 First Nation and Metis Communities Nearby Beacon AI Centers – Indus Project

4.2 Engagement with Indigenous Groups

Indus Power/Beacon acknowledge and respect the rights of Indigenous people. Indus Power/Beacon sent a Project-specific information package (PSIP) via email on November 20, 2025, to the identified Indigenous Communities listed above. The November 2025 Project notification included:

1. An introductory cover letter with a Project and Proponent description;
2. An open house invitation; and
3. AUC brochure titled Public Involvement in a Proposed Utility Development.

See Appendix A for a full engagement summary, PSIP materials and all issues and concerns raised.

As of December 2025, Siksika Nation is the only Indigenous Community that has requested a Project information meeting, which is anticipated to occur in the new year. No issues or concerns were raised through Indigenous engagement activities to date (Beacon AI Centers Inc. 2025).

4.3 Engagement with Public and Other Stakeholders

Feedback received through Indigenous engagement activities, the public open house, and written correspondence was documented and reviewed by the Proponent.

No Project-specific concerns were raised by Indigenous Communities to date. Consistent with the Project's location on privately owned land and within an established industrial planning area, no issues were identified related to direct impacts on Indigenous lands, traditional harvesting, or constitutionally protected rights.

Stakeholder feedback received during the public open house and through written correspondence focused on land use compatibility, noise, air quality, water use, and the duration of engagement activities. Key issues raised and the Proponent's responses are summarized in Table 4.3.1. Additional details are provided in Appendix A.

Table 4.3.1 Issues, Concerns and Mitigations

Key Concerns	Specific Interests	Response/Mitigative Measure
Land Use	Change of Land Use	The Project will be situated on private agricultural land within the Special, Data Centre District (S-DAT) in Rocky View County, approximately seven kilometers west of Langdon.
Noise Impact	Impact that sound may have on neighbours, community or region.	The Project will comply with AUC Rule 012 noise standards, implementing design and site-specific mitigation measures such as silencers and acoustic barriers to ensure sound levels remain within permissible limits at nearby receptors. Noise modeling predicts compliance with daytime and nighttime limits without low frequency noise effects (AUC 2024b).
Air Impact	Impacts to air quality from the power generation proposed at the site.	Dispersion modeling indicates that emissions of NO_2 (Nitrogen Dioxide), CO (Carbon Monoxide) and $PM_{2.5}$ (particulate matter with a diameter of 2.5 micrometers or smaller) from the Project will remain below Alberta's Ambient Air Quality Objectives/Guidelines (AEPA 2024).

Key Concerns	Specific Interests	Response/Mitigative Measure
Water Usage	Project participants have read concerns that Data Centres use excessive amounts of water.	Indus Power/Beacon has an agreement with Langdon Waterworks Ltd. to receive 1,500 cubic meters per day of potable water, addressing concerns about excessive water consumption by data centers.
Continued Consultation	When will consultation end.	Indus Power/Beacon is committed to continuing conversations with interested parties for the life of the Project. As a new project in the Special, Data Centre District (S-DAT) we look forward to continuing to share project information, updates to the Project, and to answer any questions interested parties may have.

4.4 Engagement with Public and Other Stakeholders

Public and stakeholder engagement activities for the Project were conducted between November and December 2025 in accordance with Alberta Utilities Commission (AUC) Rule 007 (AUC 2024a): Facility Applications. Engagement was undertaken to provide Project information, identify potential issues or concerns, and facilitate opportunities for feedback from interested and potentially affected parties.

Stakeholder Identification

Stakeholders were identified based on defined consultation and notification radii surrounding the Project boundary, as well as regulatory, municipal, and community interests. Potentially affected and interested stakeholder groups are listed in Table 4.4.1.

Table 4.4.1 Potentially Affected Stakeholder Groups

Affected	Stakeholders
Directly Affected	Occupants, landowners, and residents (within an 800 m consultation radius of the Project boundary).
Nearby / Adjacent	Occupants, landowners, and residents (within a 2,000 m notification radius of the Project boundary).
Federal Government	Impact Assessment Agency of Canada
Provincial Government	• Alberta Environment and Protected Areas; • Alberta Aboriginal Consultation Office; • Alberta Arts, Culture and the Status of Women; • Alberta Utilities Commission; and • Alberta Electric System Operator.
Local / Regional Government	• Rocky View County, Alberta; and • Wheatland County, Alberta.
Government and Industry Collaboration	Rocky View County; Wheatland County
Other Interested Groups	• Community associations; • Local businesses; • Special interest groups; • Recreational users; • Disposition holders; and • Caveat holders.

Engagement Activities Undertaken

Engagement activities undertaken for the Project are summarized in Table 4.4.2.

Table 4.4.2 Stakeholder Engagements Undertaken

Method	Audience	Action
Project-Specific Information Packages (PSIPs)	Stakeholders within 800 m and 2,000 m radii; municipalities; Indigenous Communities	PSIPs were distributed via tracked mail and email, where available, and included a project description, an open house invitation, and an AUC public involvement brochure.
Public Open House	• Indigenous Communities; • Local stakeholders; • Landowners; and • Municipal representatives.	An open house was held on November 24, 2025, at the Indus Recreation Center in Indus, Alberta, to provide project information and respond to questions.
Follow-up Letter – "What We Heard"	• Indigenous Communities; • Local stakeholders; • Landowners; and • Municipal representatives.	In response to the concerns raised by Stakeholders who provided feedback the Proponent provided a follow up letter on December 18 & 19, 2025 to address those concerns, provide specific information and mitigative measures.
Ongoing Contact	• All interested parties	A toll-free phone number, project email address, and website were established to receive inquiries and feedback.

Ongoing Engagement

Indus Power/Beacon will continue to communicate with Indigenous Communities and stakeholders following submission of the Project application. Additional notifications will be provided to share updates on regulatory submissions, Project milestones, and next steps. Indus Power/Beacon is committed to maintaining open and transparent dialogue with interested parties throughout Project development.

Plans for Future Engagement

Indus Power/Beacon will continue to communicate with Indigenous Communities and Stakeholders following the Project application being submitted. Additional notifications will be circulated to provide updates on further Project submissions and next steps. Indus Power/Beacon is committed to ongoing, open dialogue with all Indigenous Communities, Stakeholders, Municipalities, and special interest groups that have an interest in the Project. Indus Power/Beacon is committed to planning, developing, and operating the Project with a respectful, socially, environmentally, and economically responsible approach.

Indus Power/Beacon intends to maintain the community relationships it has formed and to foster potential business and capacity-development opportunities to ensure long-term community growth and well-being.

One-on-one Meetings

Indus Power/Beacon will organize and facilitate one-on-one meetings with stakeholders if requested. These meetings provide a confidential opportunity to discuss specific topics in greater detail. Meetings will occur in person or virtually, as requested.

Open House and Community Meetings

Project information will be communicated, and local information will be gathered through community stakeholder meetings. If requested, community meetings will be planned collaboratively with any stakeholder group.

5. Study or Plan, Relevant to The Project

There are no known regional assessments of the area in which the Project is located that were conducted under Sections 92 or 93 of the *Impact Assessment Act*.

Two (2) municipal plans establish a policy framework for the Project area: the Rocky View County Municipal Development Plan (MDP) (Rocky View County 2025c) and the Beacon AI Hub Area Structure Plan (Rocky View County 2025a). In addition, the Rocky View County Land Use Bylaw regulates development of the Project site.

The Rocky View County MDP is a policy document adopted by Council that provides general direction for growth over the next 20 years. The MDP recognizes the benefits of commercial and industrial development and has identified designated areas for such development. The MDP also provides direction for long-range planning for future growth, including land use, environmental stewardship, infrastructure, and social, cultural, and economic considerations.

Rocky View County adopted the Beacon AI Hub Area Structure Plan (ASP) in June 2025, which delineates the future development blueprint for the specific area where the Project is proposed. It encompasses aspects such as land use, transportation, environmental protection, emergency services, general design, and utility service needs.

6. Strategic Assessments Relevant to The Project

No strategic assessments have been carried out that are relevant to the Project.

A *Strategic Assessment of Climate Change* (Government of Canada [GOC] 2020), conducted under Subsection 95(2) of the Impact Assessment Act, may apply to the Project. The quantification of greenhouse gas (GHG) emissions per the Strategic Assessment of Climate Change guidelines are presented in Section 23.

PART B: Project Information

7. Project Purpose and Need

7.1 Project Purpose

Indus Power is proposing to construct, own and operate the Project an electricity generation facility located within a data center campus in one of Rocky View County's Industrial areas. The total electrical site production of the Project features a capacity is 1,494 MWe, providing 1,200 MWe of continuous, reliable, affordable, and dispatchable electricity to the four on-site data centres and Albertans.

The Project will form the cornerstone of a purpose-built digital-energy campus capable of supporting Tier IV data-centre operations while reducing dependence on the provincial grid. It will also help ensure Albertans receive safe, reliable electricity for cooling and heating during extreme events, when output from Alberta's renewable electricity sources has historically been limited or non-existent.

7.2 Project Need

The Project addresses Alberta's growing need for reliable, high-density electrical supply for data-centric industries, particularly artificial-intelligence (AI), high-performance computing (HPC), and cloud-service infrastructure. The Province of Alberta is actively seeking $100 billion in AI investment to drive innovation, create jobs, and diversify its economy.

This Project reduces dependence on provincial grid infrastructure by deploying a localized, modular power system integrated into the data center campus, in alignment with Alberta's data center policies that are likely to require data centers to "bring your own power".

Key outcomes:

- Reliability: 24/7 availability with <1-minute start-up time and isolated redundancy;
- Scalability: Modular architecture enabling incremental 25 MW build steps;
- Baseload Capable: Resilience from utility-scale turbine technology;
- Sustainability: High-efficiency lean-burn operation, >90 % NO_x removal, and future hydrogen-fuel compatibility; and
- Economic Development: Creation of up to 4,500 construction jobs and 300 permanent positions, strengthening Rocky View County and the Calgary metropolitan region.

7.3 Project Benefits

The Project is part of a 627-acre (254 hectares) data center campus planned with sustainability and community in mind. Key features include environmental buffers, wetlands, and infrastructure upgrades that benefit both industry and residents.

Community benefits associated with the Project are summarized below and are informed by the Project's socioeconomic assessment (Beacon AI Centers Inc. 2025):

- Construction and operations of the Project will play an important role in the local economy by providing well-paying jobs that will benefit the local Indigenous communities and business owners;
- Substantial tax contributions to Rocky View County and the Alberta Government;

- Collaboration with local colleges for technical training;
- Infrastructure enhancements, including roads and utilities; and
- Environmentally engineered wetlands and stormwater features.

Design Integration:

- Low-profile, architecturally screened power modules & ancillary equipment;
- Landscaping to blend industrial and natural spaces;
- Acoustic and visual buffer zones along the perimeter; and
- Stormwater ponds and vegetation corridors to support biodiversity.

8. Physical Activities Regulation

The ***Impact Assessment Act***, administered by the, IAAC has two regulations that may be applicable to the Project:

- *Physical Activities Regulations* (Government of Canada 2019a); and
- *Information and Management of Time Limits Regulations* (Government of Canada 2019b).

The *Physical Activities Regulations* list the activities and types of projects (designated projects) that may require an impact assessment (IA). Section 30 of the Regulations includes the following:

> *The construction, operation, decommissioning, and abandonment of a new fossil fuel-fired power generating facility with a production capacity of 200 MW or more (Government of Canada 2019a).*

The *Information and Management of Time Limits Regulations* set out the information that must be included in a project description. They also identify the criteria under which legislated timelines may be suspended, the guidance IAAC must provide to proponents, and the format for submitting information (Government of Canada 2019b).

9. Activities, Infrastructure, Permanent or Temporary Structures and Physical Works

A list of all activities, infrastructure, permanent or temporary structures and physical works to be included in and associated with the construction, operation and decommissioning of the Project.

9.1 Project Structures

The Project is a power generation facility comprised of several permanent structures. The Project includes twenty (20) QPAC modules, each containing five (5) INNIO Jenbacher J624 lean-burn natural gas engine generators. Each QPAC module integrates five (5) reciprocating engines, alternators, exhaust-treatment systems, and air-cooled radiators within a single three-storey steel enclosure engineered for industrial acoustic performance and emissions compliance.

The Project also incorporates four (4) individual combined-cycle gas turbine (CCGT) plants, each with its associated accessory & auxiliary systems.

Notably, there will be four (4) generation plants, each comprising three (3) combustion gas turbines (GTs) and one (1) steam turbine (ST), in a 3x1 configuration, commonly referred to as a 3x1 CCGT plant. Turbines, air-cooled radiators, emissions control devices, and heat recovery steam generators (HRSGs) are integrated into each plant as a single structure. The CCGT configuration uses air-cooled condensers (ACO), thereby reducing water consumption to a negligible amount per megawatt-hour (MWh).

A more granular list of structures follows in Table 9.6.1.

In addition to the QPAC modules and CCTG buildings, there will be permanent structures for the maintenance and lubricants storage, including outdoor switchgear.

The Project design incorporates controls to address potential environmental risks associated with:

- Stack emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), fine particulate matter ($PM_{2.5}$) and carbon dioxide (CO_2);
- Noise from engine modules, radiator banks, and auxiliary equipment;
- Storage and handling of fuels, lubricants, coolants, and selective catalytic reduction (SCR) reagents;
- Stormwater management and runoff from developed industrial surfaces; and
- Decommissioning and removal of above-grade equipment at the end of life.

Environmental-protection elements embedded in the design include:

- Compact generation layout within a 45 acre power-generation zone with acoustic enclosures, vertical exhaust stacks, and dispersion-controlled spacing to reduce off-site noise and air-quality effects;
- High-efficiency INNIO Jenbacher J624 engines with SCR systems providing approximately 90% NO_x reduction (AEPA 2025);
- Continuous Emissions Monitoring System (CEMS) for the three (3) combustion gas turbines exhausts with SCR systems providing approximately 70% NO_x reduction;
- Closed-loop glycol cooling with minimal process-water use or blowdown streams; and
- Stormwater ponds, ditches, and landscaped buffers function as runoff management and environmental separation features within the 627 acres (254 hectares).

The conceptual (Site Plan) layout is shown in Figure 9.1.1.

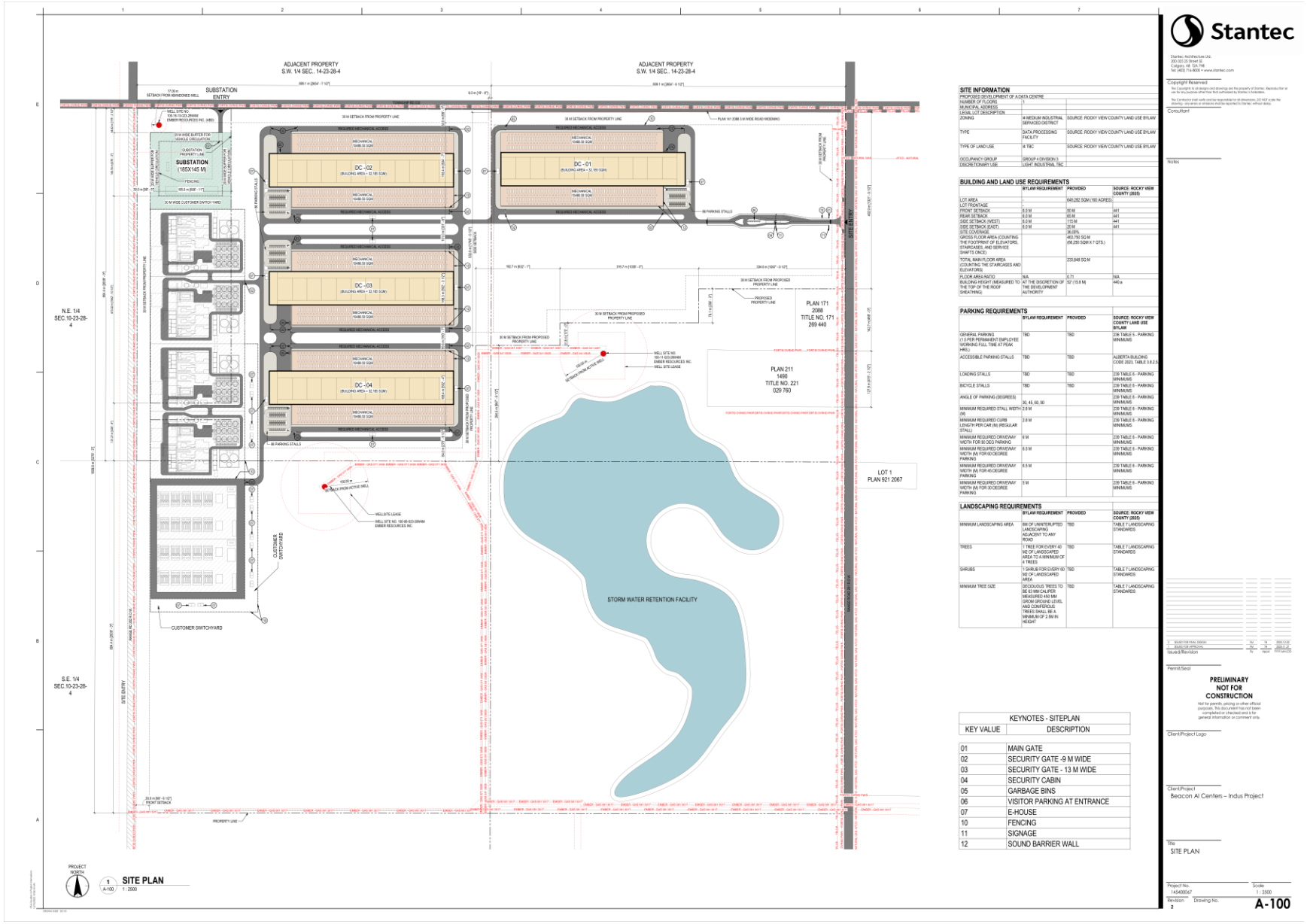

Figure 9.1.1 Site Plan

9.2 Plant Process Overview

The Project comprises one hundred (100) INNIO Jenbacher J624 lean-burn natural-gas engine generators, organized into QPAC modules, and four CCGT plants comprising three (3) GTs with one steam turbine (ST) in an air-cooled configuration.

Fuel supply and conditioning

- A natural gas pipeline to fuel the Project. Of which, the Project will require up to 285 Terajoules per day (TJ/day) at capacity. Indus Power is looking at three (3) gas supply and pipeline option operating at approximately 450 psi (≈ 3103 kPa);
- Once on-site, the natural gas passes through a dual-train custody-transfer station with filtration, heating and redundant pressure regulators;
- Gas pressure is reduced at the site meter station and continues to each CCGT plant via buried, corrosion-protected carbon-steel piping equipped with double-block-and-bleed valves, flame arrestors and automated isolation;
- Gas pressure is reduced at the engine manifolds and distributed to each QPAC module via buried, corrosion-protected carbon-steel piping equipped with double-block-and-bleed valves, flame arrestors and automated isolation; and
- All gas piping and fuel trains will be designed and constructed in accordance with American Society of Mechanical Engineers (ASME) and CSA B149.1 for natural gas.

Combustion and power generation

- Within each QPAC module, five Jenbacher J624 engines combust natural gas using a microprocessor-controlled ignition system and pre-chamber lean-burn combustion to optimize the air–fuel ratio and minimize NO_x formation;
- The engines convert fuel energy to mechanical output that drives 13.8 kV synchronous generators;
- Typical individual engine output is 4.6 MWe, resulting in approximately 460 MWe across 100 engines;
- Within each CCGT plant, three (3) Siemens SGT-800 gas turbines rated at 62 MWe in combination with one Siemens SST-500 condensing steam turbine rated at 75 MWe produce a site rated ~1044 MWe across all four (4) plants;
- The steam turbine system is driven mechanically by the thermal energy recovered in the three HRSG units integrated into the gas turbine's (GT) exhaust flow; and
- The turbines convert fuel energy to mechanical output that drives the 13.8kV synchronous generators.

Exhaust treatment

- Engine exhaust flows to the upper deck of each QPAC module, where it passes through Selective Catalytic Reduction (SCR) systems, achieving approximately 90 % NO_x removal from the combustion exhaust (AEPA 2025);
- Treated exhaust is released to the atmosphere through the exhaust system on the upper level of each QPAC module
- Turbine exhaust flows through each HRSG through SCR catalyst beds achieving approximately 70% NO_x removal, CO catalyst modules and then to the atmosphere through stack assemblies with silencing; and
- Units include emissions access, sampling ports, and maintenance platforms.

Emission Monitoring

- CEMS on each HRSG stack measures:
  - NO_x (post-SCR);
  - CO (post-catalyst);
  - SO_2 (calculated from fuel sulfur content or measured directly);
  - O_2 for reference methodology;
  - CO_2 concentration or inferred CO_2 mass flow;
  - Stack temperature and moisture content;
- Volumetric stack flow rate (via pitot, ultrasonic, or differential pressure technologies);
- A centralized CEMS analyzer shelter for each CCGT plant, housing analyzers, calibration gas panels, pumps, dryers, and data-acquisition systems;
- Redundant analyzers for NO_x and O_2 to maintain uptime;
- Continuous verification of SCR and CO catalyst performance
- Supports regulatory reporting under Alberta's emissions frameworks;
- Automated calibration sequences using certified span and zero gases; and
- Integration with plant SCADA enables real-time emissions control and trending.

Cooling and thermal management

- Reciprocating gas engine jacket-water and charge-air heat are removed via closed-loop glycol circuits connected to air-cooled radiator arrays, complete with spill containment within the enclosure;
- Total thermal rejection at full output is approximately 530 MW(th), dissipated via the radiator & heat exchanger loops for all 100 reciprocating engine generators;
- CCGT System, the steam turbine exhaust steam is condensed via air-cooled condensers (ACC); and
- Total thermal rejection per CCGT plant at full output is approximately 178.3 MW(th) dissipated via the combined exhaust flow and ACC loops. The total site capacity for all four (4) CCGT plants is approximately 713.2 MW(th).

Electrical Distribution

- The Jenbacher J624 engine generators generate electrical power. It is produced at 13.8 kV, 60 Hz and transmitted within each QPAC module through local switchgear;
- Ten QPAC modules form one GGP. Each pod includes a 13.8 kV collector bus, pod-level protection, local control and can operate in islanded mode;
- Each Siemens CCGT plant generates electrical power. It is produced at 13.8 kV, 60 Hz, and is transmitted through individual switchgear to a 13.8 kV collector bus. Plant-level protection and local control allow each plant to operate in islanded mode; and
- Individual generation switchgear and generator step-up (GSU) transformers located at the plant extremities convey power at 24.5kV to the data centre auxiliaries.

Black-start capability

- The facility does not require a separate black-start capability. Each engine can restart independently of the Alberta Interconnected Electric System (AIES) or on-site auxiliary power; and
- The Siemens CCGT plants can be black-started from the INNIO Jenbacher J624 engine modules, as they are locally interconnected.

Control and monitoring

- The plant is controlled from an Operations Control Centre (OCC) using redundant Programmable Logic Controllers (PLCs) and International Electrotechnical Commission (IEC)-based SCADA; and
- Automatic Generation Control (AGC) maintains frequency and voltage within tight tolerances, and real-time monitoring covering engine performance, emissions and electrical states across all QPAC modules and data halls.

9.3 Major Equipment

The major equipment and associated systems for the Project are summarized in Table 9.3.1.

Table 9.3.1 Major Equipment and Associated Systems

Project Feature	Description
Major Generation Equipment (CCGT) Plants	Four (4) combined-cycle gas turbine (CCGT) plants, each configured with three (3) Siemens SGT-800 gas turbines (~62 MWe each) and one Siemens SST-500 condensing steam turbine (~75 MWe). Exhaust heat from each GT is recovered in its own heat-recovery steam generator (HRSG), equipped with SCR/CO catalyst systems, which supplies steam to the SST-500. ACC provide steam-cycle heat rejection, eliminating evaporative cooling or surface-water intake. 13.8 kV, 60Hz, MVA varies, Gearbox-Coupled.
Major Generation Equipment (Engines)	INNIO Jenbacher J624 engines (100 units), lean-burn natural-gas-fired, each with an electrical production capacity of 4.6 MWe; arranged in twenty VoltaGrid-supplied QPAC modules (five (5) engines per module) within a three-story steel acoustic enclosure. Synchronous generators rated at 13.8 kV, 6.9 MVA, 0.8 PF, direct-coupled to each engine.
Combustion and Fuel Systems	Sales-grade natural gas is supplied via a new pipeline delivering gas at ~450 psi (≈ 3,103 kPa) to a dual-train custody-transfer station. The station includes filtration, heating, metering, and redundant pressure regulation. Gas is routed to both the

Project Feature	Description
	CCGT fuel systems and the QPAC engine manifolds using buried, corrosion-protected carbon-steel piping fitted with double-block-and-bleed valves, flame arrestors, and automated isolation valves. All systems are constructed in accordance with ASME pressure codes and CSA B149.1.
Exhaust and Emission Control Systems	Engine exhaust passes through Selective Catalytic Reduction (SCR) systems integrated within the QPAC upper decks, achieving ~90% NO_x reduction before atmospheric discharge. CCGT HRSGs include SCR and CO catalyst modules achieving approximately 70% NO_x removal, stack assemblies, silencers, and emissions sampling ports.
Emissions Monitoring	CCGT units would have stack-mounted CEMS on each HRSG measuring NO_x, CO, O_2, CO_2, temperature, moisture, and stack flow; ensuring continuous compliance for all four SGT-800/SST-500 plants and verifying catalyst-system performance.
Cooling and Thermal Management	Reciprocating engines: Closed-loop glycol systems remove jacket-water and charge-air heat; thermal loads are discharged through air-cooled radiator arrays integrated into each QPAC enclosure. CCGT system: Steam is condensed via ACC. HRSG blowdown is routed to dedicated blowdown tanks and drainage systems. No evaporative cooling or surface-water withdrawal is required.
Electrical Distribution	All generators produce power at 13.8 kV, 60 Hz. Medium-voltage switchgear aggregates power and distributes it to: (1) four onsite data centers (300 MWe each), (2) a new 400 MWe on-site substation, and (3) a 240 kV T-tap interconnection to AltaLink at the Langdon 102S substation. The system includes generator step-up transformers, MV collectors, protection relays, grounding, and synchronization controls.
Black-Start and Backup Systems	No dedicated black-start generator is required. Each Jenbacher J624 engine can self-start without grid power or external auxiliary supply, providing inherent black-start capability for the site and enabling staged startup of CCGT plants if required.
Control and Communications	The facility is controlled from an OCC using redundant PLC-based controls and IEC-compliant SCADA systems. Integration encompasses engine controls, GT/ST controls, HRSG systems, protection relays, substation automation, and data hall interfaces. Automatic Generation Control (AGC) maintains frequency, voltage, and power balance across the hybrid plant and the data centre loads. Real-time monitoring includes emissions, thermal systems, equipment status, and electrical state.
Buildings and Site Infrastructure	Infrastructure includes: QPAC engine modules; CCGT turbine/HRSG structures; air-cooled condensers; the onsite 400 MWe substation; NGTL meter station and gas-conditioning compound; control and operations buildings; maintenance and warehouse areas; stormwater management features; internal access roads; parking; and landscaped buffers. The Project is co-located with four (4) hyperscale data halls that require 1,200+ MWe of continuous power supply.

9.4 Raw Materials

Raw materials used by the Project are limited to natural gas as fuel and auxiliary consumables for the engine, CCGT, emissions control, and cooling operations.

Table 9.4.1 Raw Materials

Raw Material	Description	Average Operation	Maximum Operation	Emergency / Upset
Natural gas	Primary fuel for reciprocating engines; supplied from NGTL lateral at approximately 250 psi (≈1,724 kPa) and regulated to ≈400 kPa(g) at engine manifolds.	≈ (4.1 TJ/h)	(4.55 TJ/hr)	(4.55 TJ/hr)
Engine Oil	Engine lubricating oil	2320 Liters/day	2635 Liters/day	2635 Liters/day
SCR reagent (ammonia)	Injected into SCR reactors to achieve ≈90% NO_x removal from exhaust.	7 % by volume Fuel Consumption	8 % by volume Fuel Consumption	8 % by volume Fuel Consumption
Combined Cycle Power Plants				
Natural gas	Primary fuel for reciprocating engines; supplied from NGTL lateral at approximately 250 psi (≈1,724 kPa) and regulated to ≈400 kPa(g) at engine manifolds.	5.23TJ/h	6.12 TJ/h	6.12 TJ/h
Engine Oil	Engine lubricating oil	1248litres/day	1248litres/day	1248litres/day
SCR reagent (ammonia)	Injected into SCR reactors to achieve ≈70% NO_x removal from exhaust.	3 % by volume Fuel Consumption	3.1 % by volume Fuel Consumption	3.1 % by volume Fuel Consumption
Water	Make up process water	~730 m^3/day	~945 m^3/day	~945 m^3/day

Steam cycle and HRSG is included in the Project design, air cooling significantly reduces water use. Potable and domestic water requirements for personnel and building services will be addressed separately in the infrastructure design and are not part of the industrial process description.

9.5 Products

Under normal operating conditions, the Project will produce the following principal product:

Electrical energy

- Installed capacity: 1,494 MWe;
- Configuration: One hundred (100), J624 engines in twenty (20) QPAC modules (five (5) engines per module), arranged in two 200MWe GGPs; and
- Four (4) combined-cycle gas turbine (CCGT) plants, each consisting of three Siemens SGT-800 gas turbines and one Siemens SST-500 steam turbine, operating in an air-cooled configuration, produce an average of 261 MWe.

Annual net energy production (GWh/year) will depend on operational dispatch, load profiles of the data centre campus, and grid export conditions. It will be finalized during detailed design and commercial arrangements. Annually, electricity production will approach 10,510 GWh. Final values will be confirmed during detailed design and commercial optimization.

The Project does not produce steam, process heat, or industrial products for export.

Steam produced within each CCGT plant is fully condensed in the ACC and returned to the HRSG feedwater system; there are no external steam users.

By-Products

The Project's main by-products are:

- Combustion exhaust gases from the Power Plants, treated through SCR systems before release via vertical stacks. Based on Table 23.1.1 (Estimated Maximum Project GHG Emissions Associated with Operation) (Stantec 2025a) in the Power Generation Project Description, post-SCR emissions include:
    - NO_x, CO and VOC at low specific emission rates;
    - CO_2 is the primary greenhouse gas emission associated with fuel combustion; and
    - $PM_{2.5}$.

  Facility-wide emission totals (t/year) are presented in Table 23.1.1 and will be used in dispersion modelling and GHG inventory reporting.
- Waste heat is rejected via the closed-loop glycol systems and air-cooled radiators, with a total thermal rejection of approximately 1,244 MW(th) at the complete output site. This heat is dissipated to the atmosphere, with minimal process-water blowdown and steam-cycle exhaust;
- Operational wastes, including:
    - Waste lubricating oil and used oil filters from engines, GTs, and auxiliary systems;
    - Spent SCR and CO catalyst at the end of service life;
    - Waste glycol from cooling-system maintenance;
    - HRSG blowdown solids, where applicable; and
    - General non-hazardous solid waste from maintenance, packaging, and plant operations.

All waste will be managed in accordance with applicable regulatory requirements and sent to licensed third-party waste management facilities. More detailed characterization and volumes of waste streams will be provided in Section 24 (Substances Generated and Waste Management) once vendor data and maintenance schedules are finalized.

9.6 Facilities

Table 9.6.1 lists the expected tanks, buildings, or enclosures at the Project.

Table 9.6.1 Facility Buildings and Enclosures

Name	Type
Administration & OCC	Building
Data Centre Halls	Buildings
Gas Metering/Regulating	Building
Maintenance Yards	Building
QPAC Engine Modules (x20)	Industrial enclosures
SCR Reagent Storage	Building
CCGT Gas Turbines & Steam Turbines	Building
Heat Recovery Steam Generator Structure	Industrial Process Structures
Air Cooled Condenser Platform	Industrial Process Structures
MV Switchgear & E-house Structures	Industrial enclosures
Water Treatment & Demineralization System	Building

Table 9.6.2 lists the total quantity of major equipment to be installed in the power plant area. This list is subject to revision based on the final Project design.

Table 9.6.2 Power Generation Major Equipment

Name	Type
INNIO Jenbacher J624 Engine Generator Sets	100
QPAC Engine Enclosures / Modules	20(1 per 5 engines)
Closed-Loop Cooling Pumps – Engines	100 (1 per engine module)
Fuel Gas Heater / Filter / Metering Trains (Custody Transfer)	2 (dual-train)
SCR Reactor Systems – Engine Exhaust	100 (1 per engine exhaust path)
Engine Generator Step-Up Transformers (13.8 kV → kV)	100
CCGT Gas Turbines – Siemens SGT-800	12 (3 per CCGT plant × 4 plants)
CCGT Steam Turbines – Siemens SST-500	Four total ST
Heat Recovery Steam Generators (HRSGs)	12 (one (1) per GT exhaust)
ACC Units / Modules	Four (4) ACC arrays (one (1) per CCGT plant)
CCGT Auxiliary/Startup Heaters	Four (4) (optional, one (1) per plant)
Medium-Voltage Switchgear Lineups	Multiple, supporting both engine and CCGT generation (final count to be determined during detailed design).
24.5 kV & 13.8 kV Distribution Buses	As required (typically one collector per engine group + CCGT side).

Name	Type
HV Substation (400 MWe) — Breakers & Protection Panels	One (1) complete system.
240 kV Interconnection Equipment (AltaLink T-Tap)	One (1) intertie system.
Control and SCADA Systems – Engine Fleet	One (1) per engine (100 total).
Control and SCADA Systems – CCGT	One (1) per plant (four (4) total).
Plant-Wide Operations Control Centre (OCC)	One (1) system for all generation assets and data-centre distribution.

9.7 Ancillary Infrastructure

Table 9.7.1 Ancillary Infrastructure

Name	Type
Power Transmission Line and Interconnection	• The Project will interconnect with the Alberta Interconnected Electric System (AIES) through a new AltaLink 240 kV T-tap connection at the Langdon 102S substation; • Indus Power/Beacon is completing a detailed System Access Service Request (SASR) and system impact assessment to support AESO connection approval; and • AltaLink will design, permit, and construct the transmission facilities under AUC jurisdiction, in accordance with the Hydro and Electric Energy Act and AUC Rule 007.
Natural Gas Pipeline	• Natural gas will be supplied through a new pipeline. It will be operating at approximately 450 psi (≈3,103 kPa); • NGTL/ATCO will obtain required regulatory approvals and construct the lateral pipeline; and • On-site metering, heating, filtration, and dual-train pressure regulation deliver conditioned gas to both the CCGT plants and the QPAC engine fleet.
Water Supply	• Total data-centre campus water demand is estimated at ≈1,500 m^3/day, subject to final design; water will be supplied through Rocky View County's municipal water system; • The reciprocating engine power generation systems are air-cooled and require no process water for steam-cycle cooling; and • Approximately 750 m^3/day will be required for ancillary uses (HRSG makeup water, fire protection reserves, domestic water, maintenance).
Ancillary Roads and Utilities	• The area's infrastructure supports industrial development; and • Additional internal access roads, buried utilities, duct banks, drainage systems, and site services will be constructed to support the QPAC engine modules, CCGT plants, ACC structures, substation, and data halls.
Telecommunications	• Telecommunications will be provided by a wide-area fibre-optic network serving plant control, SCADA, CEMS, data-centre connectivity, cybersecurity systems, and administrative communications; and

Name	Type
	• Redundant fibre routes will support high-availability operations for both the power plant and data-centre campus.

9.8 Project Activities

Project construction, operation, decommissioning, and abandonment are discussed below.

Construction

Construction of the Project is planned to occur over approximately 24 months, targeting commercial in-service operation in Q3 2027. The construction program has been structured to overlap detailed design, equipment fabrication, and civil development so that installation milestones align with the delivery of the QPAC modules & CCGT components, along with the required civil structures.

The Project laydown yard will be within the campus project boundary, while maintaining proximity to the power generation construction site to minimize the impacted footprint and concurrent construction activities.

Table 9.8.1 Construction Sequence

Phase	Schedule Window	Key Activities
Permitting & Detailed Engineering	Q4 2025 – Q2 2026	Completion of regulatory submissions to the IAAC, AEPA and AUC, development permit approval from the Rocky View County, and detailed civil, mechanical, and electrical design. Long-lead procurement of engines, turbines, switchgear, and SCR systems begins mid-2025.
Civil Works & Foundations	Q2 2026 – Q4 2026	Site clearing, grading, and drainage; installation of underground utilities, NGTL gas lateral tie-in, and pile foundations for QPAC modules, CCGTs and data-center structures. Construction of a stormwater retention pond and an internal road network.
Module Delivery & Mechanical Installation	Q3 2026 – Q1 2027	Delivery of fully assembled QPAC modules; placement on foundations; mechanical interconnection of fuel piping, exhaust systems, and radiator banks; electrical cabling to 13.8/24.5kV distribution.
Electrical Integration & Testing	Q1 2027 – Q2 2027	Assembly of 24.5 kV bus; installation of control wiring, protection systems, and SCADA; pre-commissioning checks of electrical, fuel, and safety systems.
Commissioning & Performance Testing	Q2 2027 – Q3 2027	Sequential energization of pods, combined-cycle gas turbines (CCGTs), and data-centre halls; engine run-in testing, selective catalytic reduction (SCR) validation, acoustic survey, and full-load performance testing under oversight of the Alberta Utilities Commission (AUC) and the Alberta Energy Regulator (AER)
Commercial Operation Date (COD)	Q3 2027	All 20 QPAC modules, 4 CCGTs, and data-center halls are placed into continuous service.

Sitework

The Project's construction activities at the Project site will include topsoil salvage, subsoil stripping, and the creation of stockpile zones to support future reclamation. Vegetation clearing, grading of operational areas, development of internal access routes, and stormwater and

erosion-control works will be required to establish stable, level terrain for the placement of the QPAC engine modules, CCGT plants, ACC arrays, the 400-MWe substation, and the associated data halls.

Topsoil and subsoil will be salvaged and stockpiled on-site in accordance with the *Conservation and Reclamation Regulation* (Alta. Reg. 115/1993) and reused for final contouring and reclamation during decommissioning.

Initial activities will consist of:

- Surveying and staking of the Project boundary and major equipment footprint;
- Vegetation removal and soil stripping;
- Stockpiling and erosion control of salvaged soils;
- Site grading to meet design elevations and load-bearing requirements;
- Installation of perimeter fencing and controlled access points;
- Construction of internal access roads and heavy-haul equipment pads; and
- Development of site drainage channels, culverts, and stormwater management ponds.

Foundation work—including excavation & piling (if determined in detailed engineering completion), and substructure construction will follow. Installation of duct banks, grounding grids, underground utilities, process-water lines and gas distribution piping will occur during this stage.

Subsequent phases will involve the construction of:

- The control building and OCC;
- Turbine halls, HRSG structures, ACC arrays;
- QPAC engine modules and mechanical auxiliaries
- The 400-MWe substation and 240-kV interconnection infrastructure
- Data hall structures and electrical feeders

Mechanical installation includes placement of the 20 QPACs, 12 Siemens SGT-800 gas turbines, 4 SST-500 steam turbines, and 12 HRSG units. Electrical installation includes MV and HV switchgear, GSUs, protection systems, fibre-optic cabling, and SCADA integration. Natural gas distribution, lube-oil systems, glycol cooling loops, and condensate/feedwater systems will be interconnected across the site.

Commissioning activities will cover system energization, gas-turbine roll-up and steam-turbine synchronization, HRSG steam loops, QPAC engine commissioning, and reliability testing of all systems, including AGC, CEMS, and data-centre power integration.

Continuous cleanup will occur throughout construction. Upon completion, temporary storage (seacans) will be removed, salvaged soil reinstated in non-operational areas, and landforms stabilized and revegetated to meet equivalent land capability requirements.

Power Transmission Line and Interconnection

The Project will interconnect with the provincial grid, the Alberta Interconnected Electric System (AIES), via an AltaLink-owned and AltaLink-constructed transmission line. The interconnection will consist of a T-tap to the existing 240-kilovolt (kV) transmission line located near the Project.

Indus Power/Beacon has initiated a System Access Service Request (SASR) with the AESO. A connection study is underway and will be used by the AESO to determine transmission capacity and approve the required connection alternative. The transmission line and associated facilities will be developed, permitted, and constructed by AltaLink, and will be regulated by the Alberta Utilities Commission (AUC 2024a). Natural Gas Pipeline

Natural gas will be supplied from the NGTL/ATCO high-pressure transmission system via a new dedicated lateral operating at approximately 450 psi (≈3,103 kPa), originating approximately 0.5 km east of the Project site in Indus.

Pipeline design and operation will follow ASME B31.3/B31.8 and CSA B149.1.

Water Supply

The total water demand for the data center campus is projected to be approximately 1,500 m^3 per day, subject to final design specifications. To meet these requirements, water will be supplied through the Langdon Waterworks municipal system.

Ancillary Roads and Utilities

Existing infrastructure in the Project vicinity is limited; additional internal roads and utility services will be constructed as part of the Project.

Telecommunications

Project operations require high-reliability digital communication. A wide-area fibre-optic network will provide:

- SCADA and PLC communication;
- Control centre connectivity;
- CEMS and environmental monitoring data paths;
- Redundant data-centre feeds; and
- Cybersecure plant administration and operations channels.

Redundant fibre routes will be incorporated to support mission-critical uptime performance.

Operation and Maintenance

The Project will be owned by Indus Power and operated under contract by a qualified Operations and Maintenance (O&M) provider Volta Grid for the engine and Siemens for the turbines. Day-to-day activities will be performed by a team of operators, engineers, and maintenance personnel, with additional support staff available from the operator's other Alberta facilities.

During steady-state operation, the facility will maintain 100 percent availability by utilizing modular isolation to allow maintenance without overall derating. Control and monitoring will be

performed from the on-site Operations Centre through redundant SCADA and fibre-optic networks linking each QPAC.

A qualified power-generation O&M contractor will operate the Project. Daily operation will be performed by certified operators, maintenance technicians, instrumentation specialists, and engineers, with additional expertise sourced from regional facilities.

Routine maintenance will occur at daily and weekly intervals, with major overhauls scheduled to ensure spare parts availability and minimal downtime. Expected operational uptime is 99.995%, in line with hyperscale data centre requirements.

Operational compliance includes (AEPA 2024; AUC 2024b; Government of Canada 2016; Government of Canada 2019a; Government of Canada 2019b):

- Water and wastewater management consistent with AEPA and municipal requirements;
- Air-emission limits under AEPA and federal Environment and Climate Change Canada (ECCC) standards, with continuous emissions monitoring (CEMS) for CCGTs only;
- Noise compliance in accordance with AUC Rule 012; and
- Solid and hazardous waste management under Environmental Protection and Enhancement Act (EPEA) using licensed third-party waste facilities.

All monitoring data will be integrated into the facility's Environmental Management System (EMS) and reported as required by regulatory conditions.

During operations, the Project will comply with all regulatory requirements for water use, wastewater management, air emissions, noise, and waste handling. Process and domestic wastewater will be routed to Rocky View County's sanitary system, where feasible, or handled through approved alternatives if system capacity is unavailable. Air emissions will comply with applicable provincial and federal standards. Noise levels will meet AUC Rule 012 limits, and routine inspections will ensure compliance. Solid and hazardous wastes will be managed in accordance with EPEA requirements and removed by licensed contractors. Environmental monitoring and reporting will be incorporated into the facility's operational environmental management system.

Decommissioning and Abandonment

At the end of its 25-year design life, Indus Power will remove all above-grade equipment, recycle reusable metals, and remediate any hydrocarbon-containing infrastructure in accordance with the relevant environmental regulations in existence at the time of decommissioning and abandonment (AEPA 2024a; GOA 1997). A Decommissioning and Abandonment Plan, or a similar plan, will be developed for the Project at that time. The site is currently zoned S-DAT for data halls. At the end of life, it would either remain zoned as such or be redesignated to its earlier agricultural designation or to an industrial designation, given the infrastructure this Project would put in place.

Incidental Activities

All activities undertaken as part of the Project construction and operations will be for power generation and will be under Indus Power's care and control. Activities that are incidental to the Project construction and operation that would not be under Indus Power's care and control

include telecommunications, provision of power and fuel to the Project, and highway access to the Project site.

10. Estimate of the Maximum Production Capacity and Description of the Production Processes

10.1 Estimated Maximum Production Capacity

The Project is a hybrid natural-gas-fired power generation facility consisting of:

- One hundred (100) INNIO Jenbacher J624 lean-burn reciprocating engine generators, each rated at approximately 4.6 MWe and housed in QPAC modular enclosures; and
- Four (4) combined-cycle gas turbine (CCGT) plants, each configured with three Siemens SGT-800 gas turbines (~62 MWe each) and one Siemens SST-500 steam turbine (~75 MWe) operating with ACC.

The total installed electrical capacity of the hybrid facility is approximately:

- ≈1,494 MWe Installed Capacity.

The facility is designed to deliver:

- 1,200 MWe of continuous, fully dispatchable power to four onsite hyperscale data halls, each with a maximum load of 300 MWe.

Annual net energy generation (GWh/year) will depend on the dispatch strategy of the reciprocating engine fleet, the operating schedule of the CCGT plants, data-hall load profiles, and any AESO export arrangements. Based on expected utilization, the facility is anticipated to produce 10,500 GWh/Year.

Final annual production and utilization factors will be confirmed during detailed design and commercial optimization.

10.2 Description of the Production Processes

1 Fuel supply and conditioning

- Sales-grade natural gas is delivered to the site through a lateral pipeline operating at approximately 450 psi (≈3,103 kPa).
- Upon entering the site, fuel gas passes through a dual-train custody-transfer station consisting of filtration, gas heating, redundant pressure regulation, and metering.
- Gas is routed to both the CCGT plants and the reciprocating engines through buried, corrosion-protected carbon-steel piping equipped with:
  - double-block-and-bleed valves,
  - flame arrestors, and
  - automated isolation valves.
- Final pressure reduction occurs at the engine manifolds and gas turbine fuel skids, ensuring appropriate fuel delivery conditions.

2 Combustion and power generation

- Reciprocating Engines:
  - Each J624 engine combusts natural gas using microprocessor-controlled ignition and pre-chamber lean-burn combustion, enabling high efficiency and low NO_x formation.
  - Engines drive 13.8 kV synchronous generators, producing approximately 460 MWe across the 100-engine fleet.
  - Engines provide fast-response, flexible generation, capable of rapid load-following to match real-time data-centre power demand.

3 Combined Cycle Gas Turbine Plants:

Each plant includes:

- Three Siemens SGT-800 gas turbines, three (3) Heat Recovery Steam Generators (HRSGs), and one (1) Siemens SST-500 steam turbine;
- Gas turbine exhaust enters the HRSGs, where it generates steam to drive the SST-500. The steam cycle operates in a dry-cooling configuration, using air-cooled condensers (ACCs) to eliminate evaporative water consumption; and
- The four (4) plants combined provide approximately 1044 MWe of high-efficiency baseload capacity.

4 Exhaust treatment

Engine exhaust flows to the upper deck of each QPAC module, where it passes through an SCR system, achieving approximately 90% NO_x removal from the combustion exhaust. Treated exhaust is released to the atmosphere through the exhaust system on the upper level of each QPAC module. The CCGT plants comprise gas turbines with individual HRSGs.

Each HRSG is equipped with the following:

- SCR catalyst for 70 % NO_x reduction;
- CO catalyst modules;
- Stack assemblies with sampling ports; and
- All CCGT stacks will be fitted with CEMS.

5 Cooling and thermal management

- Engine jacket-water, and charge-air heat, are removed via closed-loop glycol circuits connected to air-cooled radiator arrays.
- No process water is used for cooling, and the plant does not include cooling-tower blowdown

Steam turbine exhaust steam is condensed in air-cooled condenser (ACC) arrays, eliminating the need for cooling towers or evaporative cooling.

- HRSG blowdown is directed to dedicated tanks and managed through the water treatment system.
- Total thermal rejection at full output is approximately 1,244 MW(th), dissipated via the radiator and heat exchanger loops.

6 Electrical distribution and onsite microgrid supply

- All generation is produced at 13.8 kV, 60 Hz.
- Power from reciprocating engines and CCGT generators is collected via medium-voltage switchgear, protection systems, and collector buses.

Generation is delivered to:

- Four onsite data halls (300 MWe each),
- A new 400-MWe onsite substation, and
- A 240-kV interconnection via an AltaLink T-tap.

Microgrid Architecture

- The hybrid plant forms a resilient internal microgrid integrating both the reciprocating engine fleet and CCGT baseload plants.
- Redundant MV feeders, sectionalizing breakers, protective relays, and SCADA-controlled bus ties provide:
    - multiple supply paths,
    - fault isolation capability,
    - islanded-operation capability if required.

Data-Centre Distribution

- Power is stepped down through data-centre transformers and delivered to Uninterruptible Power Supply (UPS) systems and Automatic Transfer Switches (ATS).
- The electrical design supports high-availability (Tier III/Tier IV-aligned) data halls with minimal transfer interruption.
- Power is delivered to the on-site, co-located data-centre campus using data center e-houses, step-down transformers, UPS systems, and automatic transfer switches (ATS) within the data centres.

11. Project Schedule

The anticipated Project schedule is presented in Table 11.1.1.

Table 11.1.1 Project Schedule

Project Phase	Schedule
Permitting & Design Work	Q1 2025 – Q3 2026
Civil Works & Foundations	Q2 2026 – Q4 2026
Module Delivery & Mechanical Installation	Q3 2026 – Q2 2027
Electrical Integration & Testing	Q1 2027 – Q2 2027
Commissioning & Performance Testing – Site Wide	Q2 2027 – Q3 2027
Commercial Operation Date (COD)	Q3 2027
Project decommissioning and abandonment (after an estimated 25-year life)	2050-2055

If IAAC determines that a federal IA is required, the schedule would be extended by approximately two (2) years, with an estimated in-service date in 2030 Q3 (IAAC 2024).

12. Potential Alternatives

12.1 Alternative Means of Carrying Out the Project

Alternative means of carrying out the Project were considered in respect of:

- Facility siting;
- Alternatives to meet Project cooling duties – water versus air; and
- Selection of gas-fired turbines and gas-fired lean-burn reciprocating engine power generation technology – configuration and sizing.

Facility Siting

Indus Power evaluated several other potential locations to develop the Project, but, based on its initial screening analysis, concluded that the selected site was optimal given the factors assessed. The locations considered proximity to off-site infrastructure, including electric and gas interconnections. The chosen location is located on a privately owned parcel within “S-DAT Special, Data Centre District” (Rocky View County 2025).

The Project's layout has been developed to minimize land disturbance. Project development is contained within a single parcel and does not require clearing of undisturbed lands beyond the existing boundaries. The site layout also incorporates internal circulation routes that allow maintenance and emergency access without requiring new external roads.

Cooling

Traditional water-based cooling systems circulate large volumes of water through heat exchangers to absorb heat from equipment. The warmed water is typically directed to a cooling tower, where evaporation removes heat before the cooled water is recirculated. While effective, this approach requires significant water consumption, ongoing treatment to prevent scaling and biological growth, and infrastructure for cooling towers and make-up water supply.

In contrast, the selected technology for the 100 lean-burn natural gas fired engines uses a closed-loop glycol cooling system paired with air-cooled radiators. Glycol-based coolant circulates in serviceable yet sealed loop, transferring heat from process equipment to air-cooled radiators. Ambient air is blown across the radiator surfaces to dissipate heat, eliminating the need for evaporative cooling and large water volumes. This design minimizes water use, reduces environmental impact, and enhances reliability by preventing contamination and scaling. Additionally, the closed-loop system simplifies maintenance and supports consistent thermal performance without reliance on external water sources.

Efficiency

Indus Power evaluated other means of power production and settled on having the majority of its power production be supplied by the Siemens CCGT. The combination of gas turbines and a steam turbine generator yields highly efficient power production, reducing fuel consumption while maintaining high energy output.

12.2 Alternatives to The Project

Currently, there are no technically and economically feasible alternatives to the Project that generate up to 1,200 MWe of reliable baseload electricity for data centers.

PART C: Location Information

13. Description of the Proposed Location

13.1 Geographic Coordinates

The Project will be situated on the lands privately owned/ controlled by Indus Power located at SW and SE Quarters 11-23-28-W4M, NW Quarter 11-23-28-W4M and Pt. N.E. Quarter 11-23-28-W4M (Indus Power land) located in Rocky View County, Alberta at 50°56'36.3"N 113°48'25.9"W . This parcel of land is in the "S-DAT Special, Data Centre District" according to the Rocky View County Land Use Bylaw C-8000-2020 and subsequent amendments (Rocky View County 2025).

The S-DAT zoning provides an opportunity to develop a comprehensive Data Centre Campus and allows for a "Natural Gas Plant" as a Discretionary Use. The S-DAT district may only be applied for in an area structure plan that accommodates Data Centres as the primary development form. The Beacon AI Hub Area Structure Plan - Bylaw C-8638-2025 (Rocky View County 2025) was approved on June 17, 2025.

The Bow River is approximately 12 km west of the Project, which is located approximately two (2) km northwest of the Hamlet of Indus. Highwood River Natural Area and Fish Creek Provincial Park are located 13 km south and 12 km west, respectively. The Winters Aire Park Aerodrome in Indus is located approximately four (4) km south of the Project.

13.2 Site Maps

The Project location is shown in Figure 1.3.1. The conceptual site map layout is provided in Figure 1.3.2 Site Plan.

13.3 Legal Description of Land

The Project is located approximately three (3) km east of the City of Calgary and approximately two (2) km northwest of the Hamlet of Indus, Alberta, within Rocky View County, immediately south of Township Road 232, as shown in Figure 1.3.1.

The Project coordinates are:

- Legal land description: SW and SE Quarters 11-23-28-W4M, NW Quarter 11-23-28-W4M and Pt. N.E. Quarter 11-23-28-W4M
- Deg-Min-Sec Latitude and longitude coordinates: 50°56'36.3"N 113°48'25.9"W ; and
- Decimal Latitude and longitude coordinates: 50.943405, -113.807201.

13.4 Permanent, Seasonal or Temporary Residences to The Nearest Affected Communities

The Project is located within the S-DAT area zoned for Data Centre development.

There are ten (10) residences within 1.5 km of the Project, the nearest one (1) located approximately 35 meters (m) south of the Project. The City of Calgary and the Hamlet of Indus are approximately three (3) km west and two (2) km respectively to the south.

13.5 Proximity to Land Used for Traditional Purposes

The Project is located in Treaty Seven (7) territory. Proximity to Indigenous groups and organizations is shown in Figure 4.1.1, based on the Landscape Analysis Indigenous Relations Tool (LAIRT) and the IAAC directory (IAAC 2024; Government of Alberta [LAIRT 2025]).

Table 13.5.1 summarizes the distances to First Nations Reserves and Métis settlements within 150 km of the Project.

Table 13.5.1 First Nation Reserves and Métis Settlements Distance from the Project

Peoples	Distance (km)
Tsuut'ina Nation	23
Piikani Nation	138
Siksika Nation	36
Blood Tribe	142
Stoney Nakoda Nation – Bearspaw	55
Eden Valley 216	58
Stoney Nakoda Nation – Chiniki	55
Stoney Nakoda Nation – Goodstoney	55
Stoney Nakoda Nation - Bighorn 144A	230
Metis Nation of Alberta Region 3	N/A
Métis Nation of Alberta - Otipemisiwak Métis Government	N/A
Metis Nation of Alberta - Otipemisiwak Métis Government - Battle River Territory - Rocky View Metis District	N/A

Special Note: As the Project is located on private land, the Project area is not used for Indigenous harvesting or other traditional practices.

13.6 Proximity To Federal Land

The Project will be located on privately owned land and will not overlap any federally owned land (IAAC 2024) (see Figure 4.1.1).

The nearest federally owned lands to the Project include the Crown interest at the shoreline of the Bow River where Indigenous Treaty Rights and Metis Settlements Harvesting Rights apply (approximately nine (9) km southwest), Banff National Park (approximately 110 km to the west), CFB Currie Military Barracks (approximately 22 km west), HMCS Tecumseh Canadian Forces Naval Reserve (approximately 23 km northwest of the Project).

14. Physical and Biological Environment

The information below was compiled and delivered by Montrose Environmental Solutions Canada (Montrose) and Stantec.

14.1 Project Environmental Setting

The Project is located on private land within Rocky View County in the White Area of Alberta. Land use on the surrounding quarter sections is primarily agricultural, consisting of cultivated fields and tame pasture. An enhanced recovery scheme facility is located approximately 1.5 km west of the Project site. The nearest named waterbody is the Bow River, located approximately 12 km to the west.

Several wetlands and water bodies are present within the terrestrial assessment area (TAA), defined as the Project area plus a 100 m buffer. The wildlife assessment area (WAA) comprises the Project area and a 1,000 m buffer.

The Project is situated within the Area Structure Plan (ASP) study area identified in the Master Drainage Plan (MDP; Stantec 2025), which encompasses approximately 387.44 ha. The ASP study area exhibits gently undulating to relatively flat topography, with a maximum slope of 0.77% and elevations ranging from 1,025 m to 1,041 m above sea level. The landscape includes several low-lying depressions that contain temporary or seasonally wet wetlands (Montrose 2025a). Terrain data indicate that two areas of external drainage from agricultural lands east of the ASP boundary contribute runoff to the Project area, including drainage from off-site agricultural lands and an existing catchment to the east.

The Project does not overlap with any environmentally significant areas (ESAs) as defined in Environmentally Significant Areas in Alberta: 2014 Update (Fiera 2014).

The Project is located within the Foothills Fescue Natural Subregion of the Grassland Natural Region. This subregion is characterized by cooler summers, shorter growing seasons, and higher elevations, with approximately 80% of the native prairie remaining in the southern portion (Natural Regions Committee 2006). The primary land use in the region is agriculture. However, the extent of cultivation varies, ranging from approximately 80% in the plains to less than 20% in the hilly uplands, where grazing predominates.

The Foothills Fescue Natural Subregion occupies an irregular south–north belt approximately 15 to 100 km wide, extending from the Alberta–Montana border northward to northwest of Drumheller (Natural Regions Committee 2006). Elevations within the subregion range from approximately 800 m in the north near Drumheller to over 1,500 m along the eastern slopes of the Porcupine Hills (Natural Regions Committee 2006). Rolling to hummocky uplands are typical of the southern and western portions of the subregion, while undulating plains dominate the northern and eastern areas. Remnant prairie areas are characterized by mountain rough fescue–dominated vegetation communities, and Black Chernozemic soils are prevalent, reflecting cooler, moister conditions and relatively high organic matter content. Open water and wetlands are generally uncommon in the hillier foothills portions of the subregion (Natural Regions Committee 2006).

Mean annual precipitation within the Foothills Fescue Subregion is approximately 469.6 mm, with the majority falling in June (Natural Regions Committee 2006). The mean temperature of the warmest month (July/August) is approximately 16.3°C, while the mean temperature of the coldest month (December/January) is approximately 9.7°C (Natural Regions Committee 2006). Relative to other Grassland Natural Subregions, the Foothills Fescue Subregion experiences higher precipitation, warmer winters, and a shorter growing season due to its proximity to the Rocky Mountains and the frequent occurrence of Chinook winds.

Designated ESAs within the WAA were identified through a review of publicly available information and the Environmentally Significant Areas in Alberta: 2014 Update Final Report (Fiera 2014). ESAs represent areas considered important for the long-term maintenance of biological diversity, physical landscape features, and other natural processes at local and broader spatial scales. The ESA dataset integrates multiple environmental indicators, ranked using multidisciplinary criteria, and presents them at a quarter-section resolution. ESAs are not protected by legislation, but are intended as a land-use and watershed planning tool to identify potentially sensitive areas; however, certain attributes within ESAs may be subject to legislative protection. No ESAs are located within the Project area; the nearest ESA is approximately 3.4 km northwest of the Project.

The Project site itself is located within cultivated agricultural land. It exhibits gently undulating to relatively flat topography, with a maximum slope of 0.77% and elevations ranging from 1,025 m to 1,041 m above sea level. As noted above, surface drainage to the site includes contributions from off-site agricultural lands and an existing eastern catchment (Montrose 2025a).

No surface water quality sampling was conducted, as there are no watercourses located within the Project area and no receiving watercourses are proposed (Montrose 2025).

14.2 Air Quality

The City of Calgary and the Hamlet of Indus, Alberta, are approximately three (3) km west and two (2) km south, respectively, within Rocky View County.

The Project is located within the Calgary Regional Airshed Zone (CRAZ) in a rural setting. The CRAZ ambient monitoring stations are primarily located in urban centers such as Calgary, Airdrie, and Cochrane, where air quality is influenced by significant traffic volumes, residential and commercial heating, and industrial emissions. These stations are not considered representative of the Project location.

The closest ambient monitoring stations measuring the primary substances of interest are located in Brooks and Lethbridge. Brooks is a smaller town located in a rural setting similar to the Project area. Continuous NO_2 and $PM_{2.5}$ data from Brooks stations (Brooks Airpointer and Brooks Meadow Place) and CO data from the Lethbridge station were obtained from the AEPA Data Management Platform (AEPA 2025a). Carbon monoxide (CO) is not measured at any CRAZ station outside Calgary and is also not monitored at Brooks stations. Although the Lethbridge station is located within an urban area, the City of Lethbridge is smaller than Calgary. It has lower traffic volumes and fewer industrial emissions, making it a more representative case for this purpose.

Representative baseline ambient air quality concentrations for the air quality study area were determined based on analysis of regional ambient air quality monitoring data (Stantec 2025). Ambient data representing the most recent three (3)-year period (2022–2024) with a complete record were analyzed to determine background concentrations. The Brooks Airpointer station provides data from January 2022 through September 2024, while the Brooks Meadow Place station began operation in September 2024. For NO_2 and $PM_{2.5}$, data from January 2022 to August 2024 were obtained from the Brooks Airpointer station, and data from September to December 2024 were obtained from the Brooks Meadow Place station.

The representative baseline concentrations used for the assessment of the Project emissions are summarized in Table 14.2.1 and compared to the Alberta Ambient Air Quality Objectives and Guidelines (AAAQO/G) (AEPA 2024). The background NO_2 concentrations are 6% and 12% of the 1-

hour and annual AAAQO, respectively. The background CO concentrations range between 2% and 6% of the 1-hour and 8-hour AAAQOs, respectively. The $PM_{2.5}$ concentrations range from 17% to 44% of the 1-hour and 24-hour AAAQO/G/G, respectively. Please refer to Appendix B – Air Quality Assessment for further details.

Table 14.2.1 Baseline Air Quality Concentrations

Substance	Averaging Period	Ambient Background Concentration [a b] (µg/m³)	AAAQO/G (µg/m³)	Percentage of Applicable AAAQO/G/G
NO_2 [c]	1-hour	17.9	300	6%
	Annual	5.5	45	12%
$PM_{2.5}$ [d]	1-hour	13.4	80	17%
	24-hour	12.8	29	44%
CO	1-hour	343	15,000	2%
	8-hour	343	6,000	6%

Source: AEPA Data Management Platform (AEPA 2025a)

Notes:

[a] For a 1-hour averaging period, the 90th percentile value from the cumulative frequency distribution of the background monitoring data is calculated for each year. For the 24-hour and annual averaging periods, the average value is calculated from the reduced dataset (after removing values above the 90th percentile) for each year.
[b] The background concentrations are calculated as the 3-year average, as per the Alberta Air Quality Modelling Guideline (AQMG) (AEPA 2023).
[c] Brooks Airpointer data (January 2022 to August 2024) and Brooks Meadow Place data (September 2024 to December 2024).
[d] Identified transboundary flows/exceptional events (TF/EE) influences removed from data; based on 2022-2024 data.

14.3 Acoustic Environment

As required under AUC Rule 007, a Noise Impact Assessment (NIA) was completed for the Project by Stantec, following the methodology in AUC Rule 012 (AUC 2024b)(Stantec 2025b). The NIA evaluated the Baseline Case, Project Case, and Application Case sound levels:

- Baseline Case: includes the noise effect from the Ambient Sound Level (ASL) and other existing third-party energy-regulated facilities;
- Project Case: noise contribution from the Project alone; and
- Application Case: cumulative noise from the Baseline Case + Project Case.

The noise modelling results indicated that the predicted cumulative sound levels of the Application Case meet the daytime and nighttime Permissible Sound Levels (PSLs) at all receptors. Also, based on the AUC Rule 012 prescribed approach and the Health Canada Noise Guidance, the low-frequency noise effect is not expected at any receptor.

The NIA concluded that the Project is compliant with all requirements of AUC Rule 012.

See Appendix C – Noise Impact Assessment for further details.

14.4 Geology and Hydrogeology

Montrose Environmental Solutions Canada (Montrose) conducted a desktop geology and hydrogeology assessment for the Project. An assessment area was defined as a 5 km radius surrounding the Project footprint boundary. The following sections provide geological and hydrogeological information for the assessment area. Data sources for the geological and hydrogeological information include reports and maps from the Alberta Geological Survey, technical publications, and local water well records within the assessment area pulled from the Government of Alberta's water well information database (GOA 2023a).

Physiography and Topography

The topography of the area assessed is relatively flat to slightly undulating, with higher elevations in the Project area that slope radially downward. Elevations within the assessment area range from 1,033 to 1,015 m above sea level.

Surficial Geology

Surficial geology for the assessment area is described as Stagnant Ice Moraine with sediments resulting from the collapse and slumping of englacial and supraglacial debris in response to the melting of buried stagnant ice near the glacial margin. It is characterized by low to high-relief hummocky topography (Abacus 2025). The sediment is mainly till (a mixture of unsorted clay, silt, sand, and gravel with locally water-sorted material and bedrock). Still, it locally includes stratified glaciolacustrine or glaciofluvial sediments (Fenton et al. 2013). Local water well records report surficial geology consisting of interbedded clay and shale, and sand and clay deposits, consistent with regional reports of till and glaciolacustrine deposits.

Bedrock Geology

The bedrock geology in the assessment area consists of the Paskapoo Formation, with interbedded sandstone, siltstone, and mudstone lithologies (Prior et al. 2013). Regionally, the bedrock topography slopes to the south-southeast and ranges from 1,010 to 1,030 in the assessment area (Atkinson et al. 2020a). Water well records in the area indicate shale and sandstone lithologies with a shallow bedrock surface ranging from 3 to 15 m below ground surface, which is consistent with the regional AGS sediment thickness mapping (Atkinson et al. 2020b).

Hydrogeology

In the prairies, topography is limited, but "upland" areas outside of lower-lying ephemeral drainages, coulees, and watercourses tend to be recharge areas, where groundwater flows downward into the soil and towards the shallow groundwater table. Therefore, it is expected that surface water at the site will infiltrate downward. Springs are generally associated with groundwater discharge areas; hence, the likelihood of springs in the project area is deemed negligible. This is consistent with available data in the Groundwater Information Center Database and the Alberta Springs Compilation (Stewart 2014), which did not report any springs in the assessment area. Shallow groundwater flow direction across the site is assumed to be radial locally and southward towards the Bow River regionally, as this is the major drainage feature of the area.

Regionally extensive sandstone intervals within the Paskapoo Formation constitute the primary bedrock aquifers in the area. According to regional mapping (Atkinson et al. 2018), there is an interpreted minor meltwater channel in the northwest section of the assessment area that runs northeast to southwest, and an interpreted esker that runs north to south, just west of the Project area boundary, and is truncated laterally within the assessment area. These features may contain coarse-grained deposits that act as local surficial aquifers within the assessment area, as there are no actively flowing watercourses.

Local Groundwater Users

Groundwater Information Centre (GIC) water well records within 5 km of the Project were identified by searching the Government of Alberta's water well information database (GOA 2023a). The water well records presented herein have not been field-verified, and the reported well locations are often only accurate to the centre of the reported legal site description or quarter section.

A hydrostratigraphic completion unit for each GIC well record was interpreted by assigning the base of the screen to the lowest reported completion depth (i.e., perforation interval, screen interval, or total well depth). If the completion interval was deeper than the reported depth to bedrock, then the well record was interpreted to be completed within bedrock. If the completion interval was shallower than the reported depth to bedrock, then the well record was interpreted to be completed within the unconsolidated drift. A total of 376 water well records were identified and are summarized in Appendix D and shown on Figure 14.4.1.

The majority of well records are reported to have a total depth of less than 75 m (Appendix D). Two wells are reported to have depths greater than 150 m. 309 well records are interpreted to be completed within bedrock aquifers. The remaining 67 well records did not have a reported depth to bedrock but are assumed to be completed within the bedrock due to the shallow bedrock surface present throughout the assessment area. No well records were interpreted to be completed within the unconsolidated drift. One well record reported depth to the top of screened interval, which was 22.86 m bgs; the screened interval was 6.1 m. There are 280 well records within the assessed area that report depth to perforations, ranging from 5.79 to 94.49 m bgs. Depth to water measurements from 325 well records range from 0.61 to 53.34 m bgs.

Of the 376 well records within the assessment area, the type of work is distributed as follows:

- *300 New Wells;*
- *55 Chemistry;*
- *17 Well Inventory;*
- *Three (3) Deepened; and*
- *One (1) Reconditioned.*

Of these 376 well records, the proposed use for the well is distributed as follows:

- 332 Domestic;
- 18 Domestic & Stock;
- Nine (9) Stock;
- Five (5) Unknown;

- Three (3) Commercial;
- Two (2) Domestic & Industrial;
- Two (2) Industrial
- Two (2) Municipal;
- Two (2) Other; and
- One (1) Observation.

A search was also completed for active groundwater or surface water diversion licences within 5 km of the Project (Appendix D; GOA 2023b). A total of 10 active Water Act groundwater licences and two (2) surface water licences were reported (Appendix D; GOA 2023b). The two surface water licences are withdrawn from unknown sources. Groundwater licences are for diversion from unnamed aquifers for the following purposes (GOA 2023b):

- Two (2) Agricultural/industrial/oilfield services
- One (1) Cement & concrete plants
- One (1) Institution/ senior-nursing-children's homes/ correctional centres/ schools/ training centres/ hospitals/ fire protection
- Two (2) Parks & recreation/campgrounds
- Two (2) Stock watering
- Two (2) Subdivisions/condominium-townhouses/ mobile homes-complexes/ cooperatives/ colonies

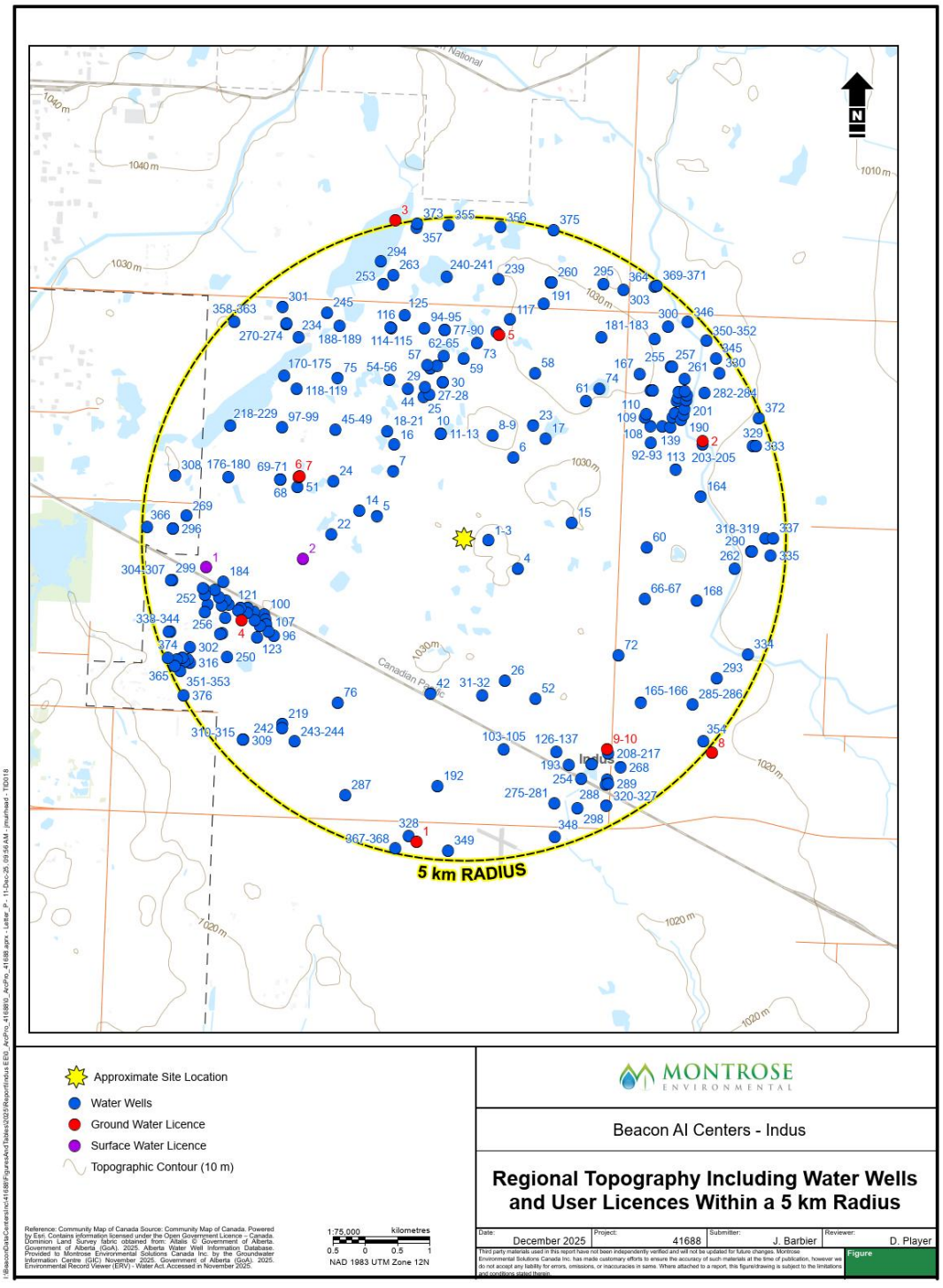

Figure 14.4.1 Regional Topography Including Water Wells Within a Five (5) KM Radius of the Project

14.5 Surface Water, Fish and Fish Habitat

The Project is located within the South Saskatchewan River watershed, within the Middle Bow River sub-watershed. The five (5) km surrounding the Project were evaluated as the aquatic assessment area (AAA). Waterbody data for the AAA and downstream tributaries were obtained using the Alberta Environment and Protected Area (EPA) Fish and Wildlife Internet Mapping Tool (FWIMT) (GoA 2025). Watercourses and waterbodies in this assessment are discussed using the waterbody mapped name (if available) and their waterbody identification numbers as denoted in FWIMT. Within the FWIMT database, the AAA intersects with the Bow-Chestermere (Western Irrigation Diversion [WID]) Canal (Waterbody ID 23533), numerous isolated waterbodies with no fish data reported in FWIMT, and two unnamed tributaries (Waterbody ID 27211 and 67429). The unnamed watercourse (Waterbody ID 67429) flows south of the Project into a ditch (Waterbody ID 66606) before entering the Bow River (Waterbody ID 1988). Historical fish capture data were available for the ditch (FWIMT ID 23533) and the Bow River (Waterbody ID 1988); however, no data were available for the other tributaries or waterbodies.

- The following named watercourses and bodies are either located within the AAA or their downstream tributaries and are described below: Bow River (waterbody ID 1988) is located ten (10) km south of the study area and identified as a Class C watercourse with a Restricted Activity Period (RAP) of May 1 to July 15 and September 16 to April 5 (GoA 2012). The Bow River upstream of Calgary and some of its tributaries downstream of Calgary have been designated as potentially containing listed species (Extirpated, Endangered, or Threatened);
- Bow-Chestermere WID Canal (waterbody ID 23533) is located approximately four (4) km to the east of the study area; and
- Dalemead Lake 4398 is located eleven (11) km to the east of the project area.

The following uncoded, unnamed watercourses with no RAP are located within the AAA and are described below:

- Unnamed watercourse (waterbody ID 27211) located five (5) km to the northwest and
- Unnamed watercourse (waterbody ID 67429) located five (5) km to the southwest.

The following unnamed waterbodies are located within the AAA or are located downstream of watercourses from within the AAA. All the water bodies. Due to the number of waterbodies that are not connected to downstream features, only waterbodies larger than 5000 m^2 have been discussed here:

- Four (4) unnamed waterbodies are located northwest within the AAA:
  - Waterbody ID 316959 (4 km);
  - Waterbody ID 317000 (4 km);
  - Waterbody ID 316979 (4 km); and
  - Waterbody ID 316988 (5 km).
- Two (2) unnamed waterbodies to the northeast within 5 km of the study location:
  - Waterbody ID 316965 (5 km); and
  - Waterbody ID 323208 (3 km).
- One (1) unnamed waterbody to the southwest within 5 km of the study location:
  - Waterbody ID 317050 (2 km).

Historical fish presence records from the Fish and Wildlife Internet Mapping Tool (FWIMT) and Fisheries and Oceans Canada (DFO) aquatic species at risk mapping (DFO 2025) were reviewed to identify the potential for fish presence in watercourses and water bodies surrounding the Project area.

The search results included fish for the following waterbodies:

- The entire reach of the Bow-Chestermere WID Canal, including 10 km upstream and downstream of the section of the watercourse closest to the project area;
- Dalemead Lake, a downstream reservoir; and
- The Bow River is ten (10) km upstream and downstream of the confluence where tributaries from within the study area enter the river.

Species documented from the species search area are listed in Table 1. Species were classified as large-bodied fish if adults are typically larger than 15 cm, or small-bodied fish if adults are typically smaller than 15 cm. Twelve large-bodied fish were identified, of which eight (8) were considered sport fish. Four (4) small-bodied fish were identified.

Bull Trout are listed as threatened under the Federal Species At Risk Act (SARA) (Government of Canada 2025) and the Provincial Wildlife Act (Government of Alberta 1997). These were all identified in the Bow River, which is poorly connected to the AAA.

Watercourses or waterbodies in the AAA area (whether named or unnamed) were not designated as supporting Species at Risk, nor were they mapped as critical habitat or as potentially having an Extirpated (removed from the region) status (DFO 2025).

The middle Bow River sub-watershed of the South Saskatchewan River is a “Red Zone” for whirling disease risk, which represents a high to moderate risk of waters for the introduction and/or spread of whirling disease due to the presence of susceptible species and high use of and access to water (AEPA 2020). Any potential instream work or activities associated with the Project occurring in waters identified as potentially carrying Whirling Disease will require special decontamination protocols before and after entering the waterbody.

Table 14.5.1 Historical Fish Presence Near Study Area and its downstream tributaries

Family	Common Name	Scientific Name	Large/Small Bodied?	Sportfish?	SARA (Federal)[a]	Wildlife Act (Provincial)[b]
Catostomidae	Longnose Sucker	Catostomus catostomus	Large	No	No Status	Not listed
Catostomidae	White Sucker	Catostomus commersonii	Large	No	No Status	Not listed
Ciprinidae	Prussian Carp	Carassius auratus	Large	No	No Status	Not listed
Esocidae	Northern Pike	Esox lucius	Large	Yes	No Status	Not listed
Gadidae	Burbot	Lota lota	Large	Yes	No Status	Not listed
Salmonidae	Brown Trout	Salmo trutta	Large	Yes	No Status	Not listed
Salmonidae	Mountain Whitefish	Prosopium williamsoni	Large	Yes	No Status	Not listed
Salmonidae	Rainbow Trout	Oncorhynchus mykiss	Large	Yes	No Status	Not listed
Salmonidae	Bull Trout (Saskatchewan-Nelson River Populations)	Salvelinus confluentus	Large	Yes	Threatened	Threatened
Salmonidae	Lake Whitefish	Coregonus clupeaformis	Large	Yes	No Status	Not listed
Percidae	Yellow Perch	Perca flavescens	Large	Yes	No Status	Not listed
Cottidae	Spoonhead Sculpin	Cottus recei	Small	No	No Status	Not listed
Leuciscidae	Longnose Dace	Rhinichthys cataractae	Small	No	No Status	Not listed
Leuciscidae	Pearl Dace	Margariscus margarita	Small	No	No Status	Not listed
Gasterosteidae	Brook Stickleback	Culea inconstans	Small	No	No Status	Not listed

Species at Risk Act (Government of Canada 2025)

a. Alberta Wildlife Act – Wildlife Regulation (Government of Alberta 1997)

14.6 Soils

The Project will be located on land under annual cultivation and is within Soil Correlation Area 6. The purpose of the soil and terrain assessment is to identify soil classification and distribution information and soil suitability for reclamation. The soil survey information collected for the Project will be used to outline conservation and reclamation (C&R) practices, including soil salvage requirements.

Methods

A soil and terrain survey was conducted within the Terrestrial Assessment Area (TAA) on June 3, 2024. Soil inspections were completed with a shovel and a hand-held Dutch auger to a maximum depth of 100 cm. Six soil inspections were completed within the Project area and four within the TAA. Soil and terrain at each inspection site were described and classified according to the Canadian System of Soil Classification (SCWG 1998) and assigned a soil series name from the Alberta Soil Names File (Bock 2016) based on the soil subgroup and parent material classification.

Soil samples from each horizon were collected at all soil inspection sites and submitted for physical and chemical analyses, including particle size and texture, pH, electrical conductivity (EC), sodium adsorption ratio (SAR), saturation percentage, soluble ions, total organic carbon, and calcium carbonate equivalence (Appendix D).

Soil physical and chemical analyses were used to determine the following soil quality ratings for the TAA:

- Land suitability for agricultural crops according to the Land Suitability Rating System for Agricultural Crops 1. Spring-seeded small grains (Agronomic Interpretations Working Group 1995);
- Reclamation suitability for the Plains Region according to Soil Quality Criteria Relative to Disturbance and Reclamation (AAFRD 2004);
- Wind erosion risk according to Wind Erosion Risk – Alberta (Coote and Pettapiece 1989); and
- Water erosion risk according to Water Erosion Risk – Alberta (Tajek and Coote 1993).

Soil map units (SMUs) were delineated within the TAA by reviewing aerial imagery and Light Detection and Ranging (LiDAR), the Alberta Merged Wetland Inventory, and by extrapolating soil inspection information collected within the TAA. Each SMU is identified by a dominant soil series, average topsoil depth, topsoil depth range and slope class. For example, a Delacour soil series (DEL) with an average topsoil depth of 22 cm, minimum and maximum topsoil depths of 13 cm and 28 cm, and a slope class range of 1 to 3 would be assigned the following:

DEL 22(13-28)

1-3

Table 14.6.1 Soil Map Unit Code Description

Soil Map Unit Code	Land Suitability for Agriculture
1	Dominant soil series occupies ≥ 80% of the map unit. Inclusions within the map unit (≤20%) are Gleyed and/or Calcareous Black Chernozems.
2	Dominant soil series occupies ≥ 80% of the map unit. Inclusions within the map unit include ≤10% Black Chernozems of till and/or GLLC parent material, and ≤10% gleyed or calcareous Black Chernozems.

Land Suitability for Agriculture Crops

The Land Suitability Rating System for Agricultural Crops (Agronomic Interpretations Working Group, 1995) was used to determine soil suitability for agricultural use. The Land Suitability Rating (LSR) System uses a base rating, assessed on soil moisture, soil nutrient regimes, and applies deductions for the most limiting soil physical and chemical properties (Table 14.6.2). Subclasses are then assigned to identify specific limiting factors (Agronomic Interpretations Working Group 1995).

Table 14.6.2 Land Suitability Rating System Classes

Suitability Class	Index Points	Limitations	Description
1	80-100	None too slight	Land has no significant limitations for the production of the specified crops.
2	60-79	Slight	Land in this class has slight limitations that may restrict the growth of the specified crops or require modified management practices.
3	45-59	Moderate	Land has moderate limitations that restrict the growth of the specified crops or require special management practices.
4	30-44	Severe	Land in this class has severe limitations that restrict the growth of the specified crops, require special management practices, or both. This class is marginal for the sustained production of the specified crops.
5	20-29	Very severe	Land in this class has very severe limitations for the sustained production of the specified crops. Annual cultivation using conventional crop rotation practices is not recommended.
6	10-19	Extremely severe	Land in this class has extremely severe limitations for the sustained production of the specified crops. Annual cultivation is not recommended even on an occasional basis.
7	0-9	Unsuitable	Land in this class is not suitable for the production of specified crops.

Source: Adapted from Agronomic Interpretations Working Group 1995

The classification system is used to determine the suitability of land for the production of spring-seeded small grains. The final rating is determined by combining the individual soil, landscape and climate deductions into one final rating. The limitations are based on the predicted effects on sustained crop production.

Soil Suitability for Reclamation

The surface and subsurface material for mineral soils in the TAA were rated for their reclamation suitability according to Soil Quality Relative to Disturbance and Reclamation for the Plains Region (AAFRD 2004). The criteria rate overall reclamation suitability by interpreting the physical and chemical properties of the topsoil and subsoil horizons across various soil types. Topsoil and subsoil lifts were rated according to their degree of suitability for plant growth. The most limiting rating was used to determine the overall suitability rating. The four reclamation suitability classes are presented in Table 14.6.3. Criteria for evaluating the suitability of surface and subsurface soil for reclamation purposes in the Plains Region are found in the Soil Quality Relative to Disturbance and Reclamation for the Plains Region (Region (AAFRD 2004).

Table 14.6.3 Reclamation Suitability Classes

Reclamation Suitability Class	Reclamation Suitability Description
Good	None to slight limitations that affect use as a reclamation medium.
Fair	Moderate soil limitations that affect reclamation but that can be overcome by proper planning and good soil management.
Poor	Severe soil limitations make reclamation more challenging. These soils can be used for reclamation, but require careful planning and effective soil management.
Unsuitable	The chemical or physical properties of the soil are so severe that reclamation might not be economically feasible or, in some cases, even impossible.

Source: Adapted from Alberta Agriculture (AAFRD 2004)

Soil Sensitivity to Wind Erosion

The rating of sensitivity to wind erosion is derived from an equation that accounts for surface roughness and aggregation, soil resistance to movement, drag velocity of surface wind, soil moisture, shear resistance, and available moisture of the soil surface (Coote and Pettapiece 1989). The resulting ratings are based on soil under agricultural production with no cover. Soils with a sandy texture are more susceptible to wind erosion than those with a clay texture. The wind erosion risk classes are presented in Table 14.6.4.

Table 14.6.4 Wind Erosion Risk Classes

Wind Erosion Risk Classes	Soil Texture
High	Very fine sand, sand, coarse sand, loamy sand, gravely sand, dry humic organic materials
Moderate	Sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, sandy clay, mesic organic material
Low	Silt, silty clay loam, clay loam, silty clay, clay, heavy clay, fibric organic material

Adapted from Coote and Pettapiece (1989).

Soil Sensitivity to Water Erosion

Water erosion risk is estimated through an equation that accounts for erosivity for rainfall and snowmelt, soil erodibility, slope length and steepness, crop cover and management, and conservation practices (Tajek and Coote 1993). Erosivity for rainfall and snowmelt (R factor) has been estimated for various parts of the province. Slope length is considered a topographical expression because very long slopes may increase erosion risk of fine-grained materials, just as steep slopes also increase erosion potential. Soil erodibility (K factor) and length-slope (LS factor) have been estimated for various topographical expressions and slope lengths. The rating system used to evaluate soils is based on the approximate R, K, and LS values presented by Land Conservation and Reclamation Council (LCRC) et al. (1993) and Tajek and Coote (1993) for various soil textures, slopes, and slope lengths found in each soil map unit. Medium textured soils (loam to silty loam) have a K factor of approximately 0.030 to 0.036. More sandy soils have a K factor of 0.015. The system used to rate erosion risk on the Project footprint is presented in Table 14.6.5.

Table 14.6.5 Water Erosion Risk Classes

Water Erosion Risk Classes	Slope Class	Slope Percent (%)	Slope Length (m)	LS Factor	K Factor
Low	1 to 3	<5	0 to 500	0.5 to 0.8	0.015 to 0.036
Moderate	4	5 to 9	50 to 500	0.8 to 2.2	0.015 to 0.036
High	5+	9+	50 to 500	2.2 to 3.5	0.015 to 0.036

Adapted from Tajek and Coote (1993) and LCRC et al. (1993) for Chernozemic soils.

Results

The TAA is in Soil Correlation Area (SCA) 6 (Bock 2016) and located on Orthic, Gleyed and Eluviated Black Chernozems of the Delacour (DEL) soil series and Orthic Humic Gleysols of the Indus (IND) series (atypical subgroup, zz; Figure 4-8). Anthropogenic effects on these soils include annual cultivation.

The Delacour soil series is developed on moderately fine till parent material within a gently undulating landscape with slope gradients less than or equal to 5% and surface stoniness ranging from non-stony to moderately stony. Saline topsoil and/or subsoil were observed at three Delacour soil inspections within the TAA and were associated with seasonal wetlands. The Indus soil series is also developed on moderately fill till parent material in the depressions of the gently undulating landscape with similar slope gradients.

Four (4) soil map units were delineated within the TAA (Figure 14.6.1), and their site-specific properties are summarized in Table 14.6.6 below. Existing vegetation in the TAA is described under the pre-disturbance setting and vegetation and wetlands sections of this report.

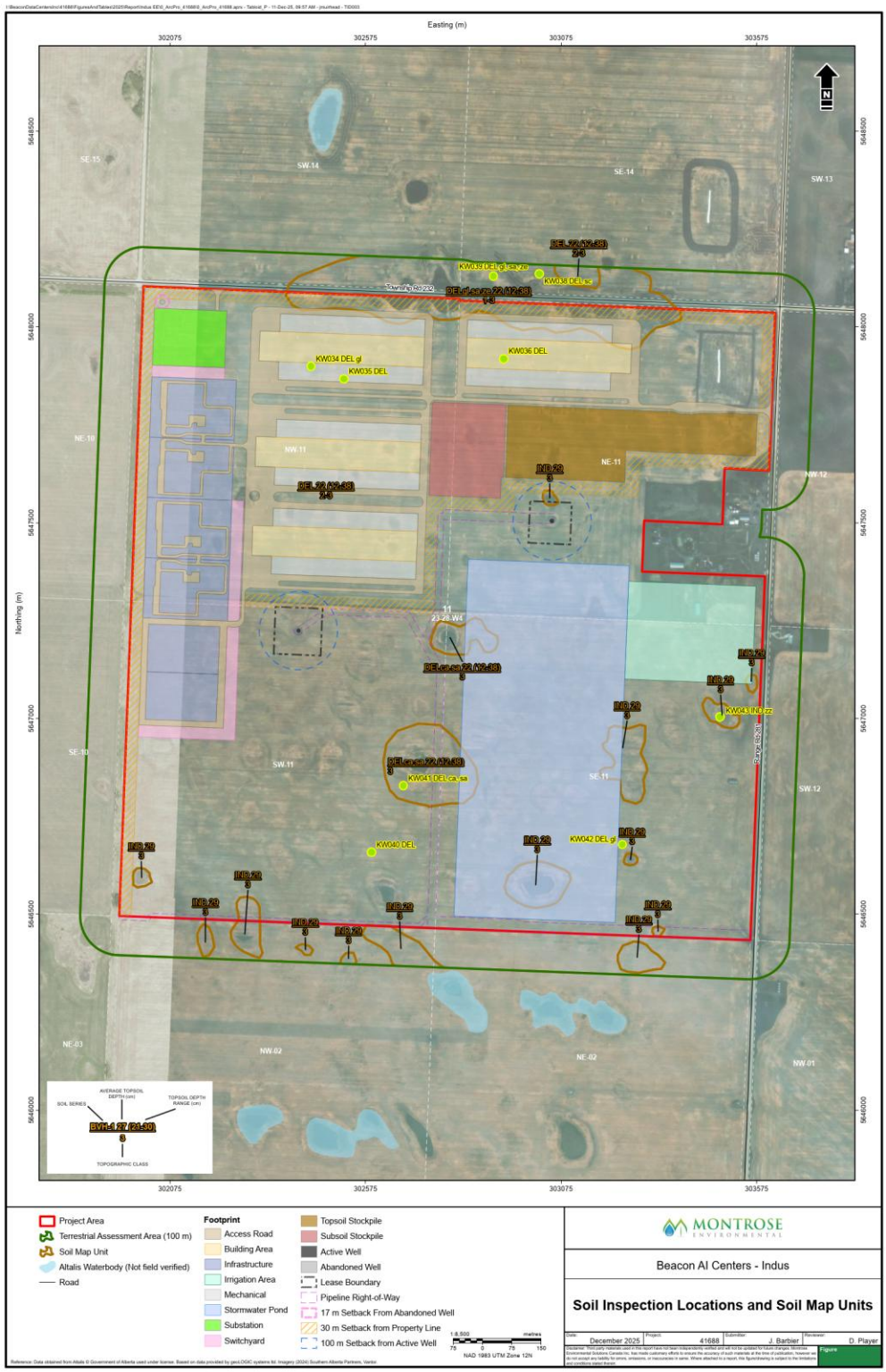

Figure 14.6.1Disturbed Soils within TAA Map

Table 14.6.6 Summary of Soil Map Units within the Terrestrial Assessment Area

Soil Map Unit Series	Slope Class	Drainage	Surface Texture	Topsoil Depth Range in cm (LFH/O and A horizons)	Upper Subsoil Depth in cm (B horizons)
DEL	2 to 3	Imperfect to Moderately Well	Loam to Sandy Loam	14 to 38	10 to 22
DELca,sa	3	Moderately Well	Clay Loam	35	15
DELgl,sa,ze	1 to 3	Imperfect to Moderately Well	Silt Loam to Clay Loam	18 to 27	12 to 26
INDzz	3	Poor	Clay Loam	29	N/A

Note: N/A, not applicable, DEL, Delacour soil series, DELca,sa, Delacour soil series with ca = clay, sa = sand modifiers indicating textural variations, DELgl,sa,ze, Delacour series with gl = glacio-lacustrine influence, sa = sand, ze = saline/sodic or "zeolitic."
INDzz, Indeterminate or Industrial fill soil series (zz = modifier indicating disturbed or unclassified material)*
LFH, Leaf litter–Fibric–Humic organic horizon
O horizon, Organic soil layer
A horizon, Topsoil/mineral horizon
B horizon, Upper subsoil/mineral horizon

A summary of soil quality ratings for each soil map unit within the TAA is provided in Table 14.6.7, with full supporting data in Appendix E.

Land suitability ratings for agricultural crops were Class 2 and 3 for the Delacour soil series, and Class 4 for the Indus series, indicating slight, moderate and severe limitations for agricultural production, respectively. A limitation for all Class 2 ratings was temperature (H), which considers the length of the growing season, degree days, and day length. Soil water-holding capacity (M) and structure (D) were common limitations in the Delacour map units, whereas short, complex slope (T) limitations were present but not common. Although saline variants of the Delacour series were present within the TAA, the amount of soluble salts was not sufficient to have an adverse effect on specified crop growth (subclass N). Similar to the Delacour series, the Indus series had soil structure (D) limitations on rooting depth and poor drainage (W) that limited crop production.

Reclamation suitability ratings for the topsoil (upper lift) ranged from poor to good for the Delacour soil series. Poor ratings were associated with reaction (pH) of the DEL map unit, and fair ratings were associated with texture, reaction, salinity and sodicity for the DELca,sa and DELgl,sa,ze map units (Table 14.6.7). Reclamation suitability rating for the upper subsoil (lower lift) was fair for the majority of the Delacour series, with limitations of texture and consistency for the DEL map unit, and salinity, sodicity, texture and consistency for the DELca,sa and DELgl,sa,ze map units. The DELgl,sa,ze map unit had a poor rating due to the saturation percentage at KW039. Low-lying Gleysols (INDzz) were rated fair for topsoil with limitations associated with finer surface textures (clay loam). The DELgl,sa,ze and DELca,sa SMUs are located primarily outside the project area that will require soil salvage. With appropriate mitigation measures in place, the poor reclamation suitability ratings associated with reaction, salinity and sodicity are not expected to impact successful reclamation of the site.

Wind erosion risk for the Project was moderate for the majority of the Project area (DEL map unit) due to loam to sandy loam surface textures. The DELgl,sa,ze map unit has moderate to low wind erosion risk, and the

DELca,sc and INDzz map units have low wind erosion risk due to finer surface textures (clay loam). Water erosion risk was low due to the presence of gentle slope gradients (≤ 5%) across the TAA.

Table 14.6.7 Summary of Soil Map Unit Ratings within the Terrestrial Assessment Area

Soil Map Unit	Land Suitability Rating and Subclass	Reclamation Suitability Upper		Reclamation Suitability Lower		Wind Erosion Risk	Water Erosion Risk
		Rating	Limitation	Rating	Limitation		
DEL	2H, 2HMT, 2DHM to 3 DM	Good to Poor	None to Stoniness and Reaction	Fair	Texture, Consistency	Moderate	Low
DELca,sa	2 HT	Fair	Texture	Fair	Salinity, Saturation, Texture, Consistency	Low	Low
DELgl,sa,ze	3D, 3DM to 4DMY	Good to Fair	None to Reaction, Salinity, Sodicity and Texture	Fair to Poor	Salinity, Sodicity, Saturation, Texture and Consistency	Moderate to Low	Low
INDzz	4DW	Fair	Texture	N/A	N/A	Low	Low

N/A, Not Applicable

14.7 Vegetation and Wetlands

The Project is located in the White Area of Alberta. Based on a review of historical aerial imagery and field surveys conducted within the Project area and TAA, the Project is sited on cultivated, gently undulating upland soil with moderately well to poor drainage. Township Road 232 is located adjacent north of the Project, and the nearest off-site residence(receptor from noise study) is approximately 35 m south of the Project. The closest facility is one (1) km west of the Project area.

The planned post-reclamation long-term (closure) land use will be agricultural; however, other end land uses at closure are not precluded. The final long-term end land use and land capability will be determined during the preparation of the decommissioning and land reclamation plan.

Field work to verify land use in the Project Area was conducted by a qualified Montrose vegetation ecologist on September 16-17, 2024. Verification was conducted by foot within the project area and by publicly available access roads for the WAA.

This section describes the presence and distribution of terrestrial and wetland vegetation species and communities potentially affected by the proposed Project, including any provincially regulated weeds, rare species and ecological communities. The objective of the desktop assessment was to identify potential vegetation and wetland features within or near the Project area and provide guidance on project site selection and potential risks. The objective of the field assessment was to confirm desktop analyses and to collect information on vegetation and wetland resources in the Project area to develop site-specific mitigation, where applicable.

Methods

The TAA was assessed to capture potential direct impacts (i.e., disturbance) to vegetation and wetlands from construction and operations, and indirect effects of the Project (e.g., erosion and sedimentation in adjacent water bodies). Land use and broad vegetation communities were mapped within a 1 km buffer of the Project area to inform the wildlife assessment (i.e., WAA).

Desktop

The Alberta Conservation Information Management System (ACIMS; GOA 2021) database was searched for records of rare species or rare ecological communities, and publicly available aerial imagery was used to determine vegetation community cover and land use within the WAA.

Desktop assessments of wetlands and water bodies were conducted by Stantec using the following methods. Wetlands in the TAA identified from current and historical aerial photography were mapped, and a preliminary classification was assigned based on image texture, colour, and water permanence following the Alberta Wetland Identification and Delineation Directive (GOA 2015). Historical aerial photography corresponding to dry and wet conditions was used to help identify wetland and ephemeral water body boundaries, and to determine a preliminary classification for each. Stantec provided field-verified wetland and water body shapefiles for the purposes of this report.

Potential ephemeral water bodies are not classified as wetlands according to the Alberta Wetland Classification System (AWCS; ESRD 2015), but they are protected under the Water Act, and were, therefore, included in this assessment.

Field

Wetland field assessments were conducted by Stantec, which provided the following information on its methods. “A wetland survey was conducted on July 29 and 30 and October 22 and 23, 2025. Soils, hydrology, and vegetation were examined to confirm the presence of wetlands and, if present, to classify the feature according to the AWCS (ESRD 2015). The following methods were used (where applicable, environment permitting):

- Soils were examined using a shovel to a depth of 29 centimeters (cm; the active rooting zone) in the outermost community of the potential wetland. The depth, texture, colour, and abundance of redox features (i.e., gleys and mottling) in each soil horizon were recorded. Redox features in the upper soil profile develop under conditions on inundation or saturation over a long period of time and are therefore used to determine the extent of each wetland and waterbody. In non-problematic soils (i.e., soils that have not been historically altered by agriculture or other human impacts), an area is considered a wetland if redox features were recorded within the top 29 cm and plant species characteristic of wet conditions were also recorded;
- Wetland and ephemeral waterbody hydrology indicators were assessed qualitatively by:
    - Observing whether surface water was present at the site;
    - Looking for evidence of recent saturation or ponding; and
    - Observing the topography of the site, including any landscape features that would lead to water accumulation. Evidence of these features includes watermarks on woody vegetation or anthropogenic features, sediment or drift deposits, and algal crusts. Quantitative. Measurements of hydrological indicators include water depth and depth to saturation (the depth at which soil pores are saturated), and, if applicable, pH and electrical conductivity (EC) of the water present;

- Vegetation communities larger than 0.01 ha (100 m2) were sampled within the wetland using 1 m by 1 m plots for herbaceous vegetation. Woody vegetation, when present, was assessed using 10 x 10 m plots where there was enough woody vegetation for that size; if woody vegetation was smaller than 10 x 10 m, the percentage and size of the woody vegetation in the overall wetland were recorded. Discontinuous communities were sampled by placing subplots in different patches of the same community. Each subplot was assessed for percent cover of dominant vascular species and percent cover of total vascular species, non-vascular species, litter, bare ground, and open water. Outside of the subplots, a random meander was conducted to document uncommon species.
- Wetland boundaries were verified in the field using vegetation community changes where applicable. In areas where vegetation communities were not indicative due to the presence of weeds, the presence/absence of hydric soil indicators was used to confirm boundaries. Global positioning system (GPS) tracks were collected and used to assist with mapping refinement.
- Wetland plant dominance classification is from the United States Army Corps of Engineers' National Wetland Plant List using the Great Plains Region (USACE 2020)." (Stantec Consulting Ltd., pers. comm., November 2025)

Results

The Project area and TAA assessment areas are shown on Figure 14.7.2, including wetlands. Land use is presented in Table 14.7.1 and mapped on Figure 14.7.2. Wetlands are described in Table 14.7.2.

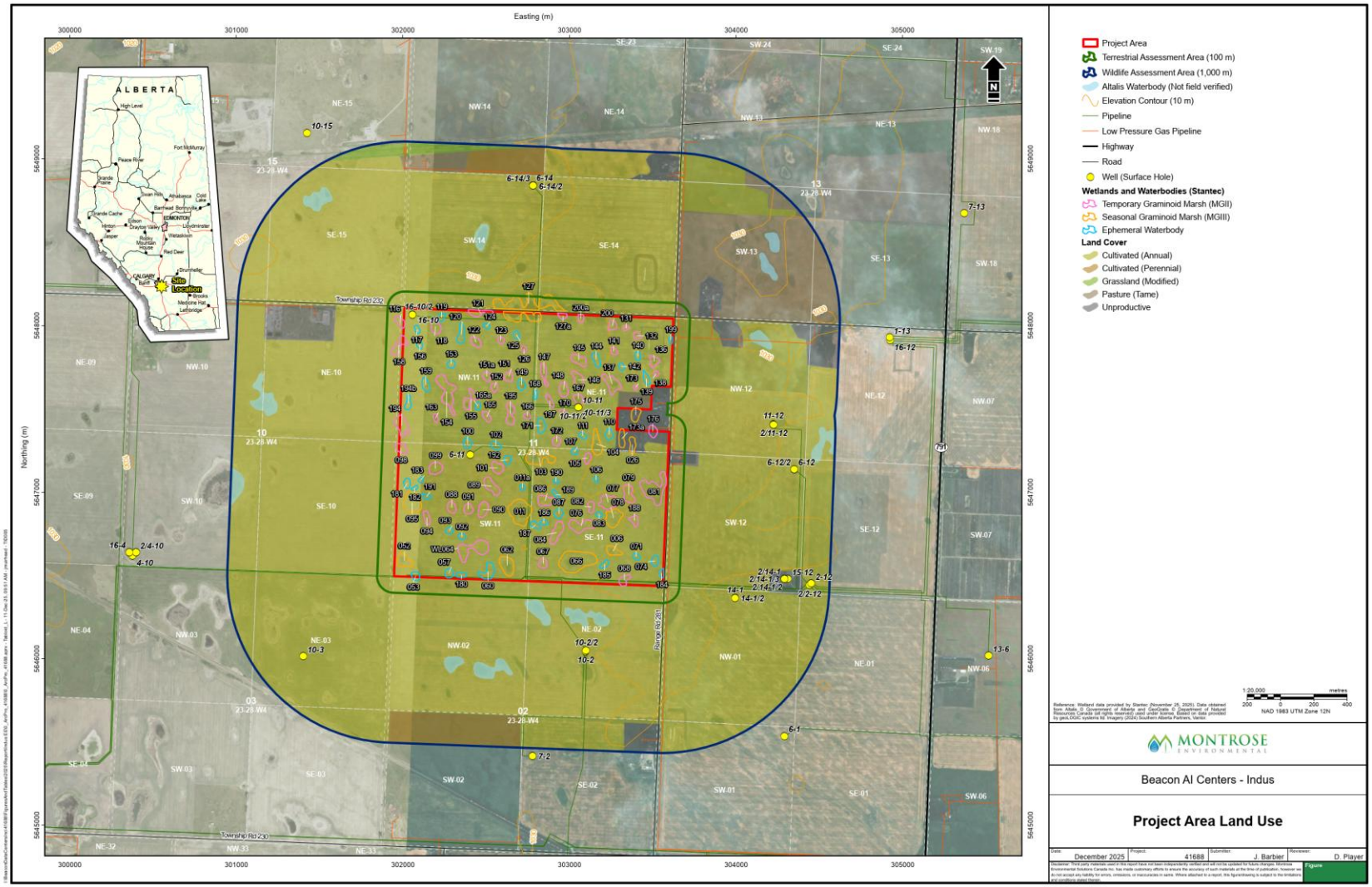

Figure 14.7.1 Projected Area Land Use

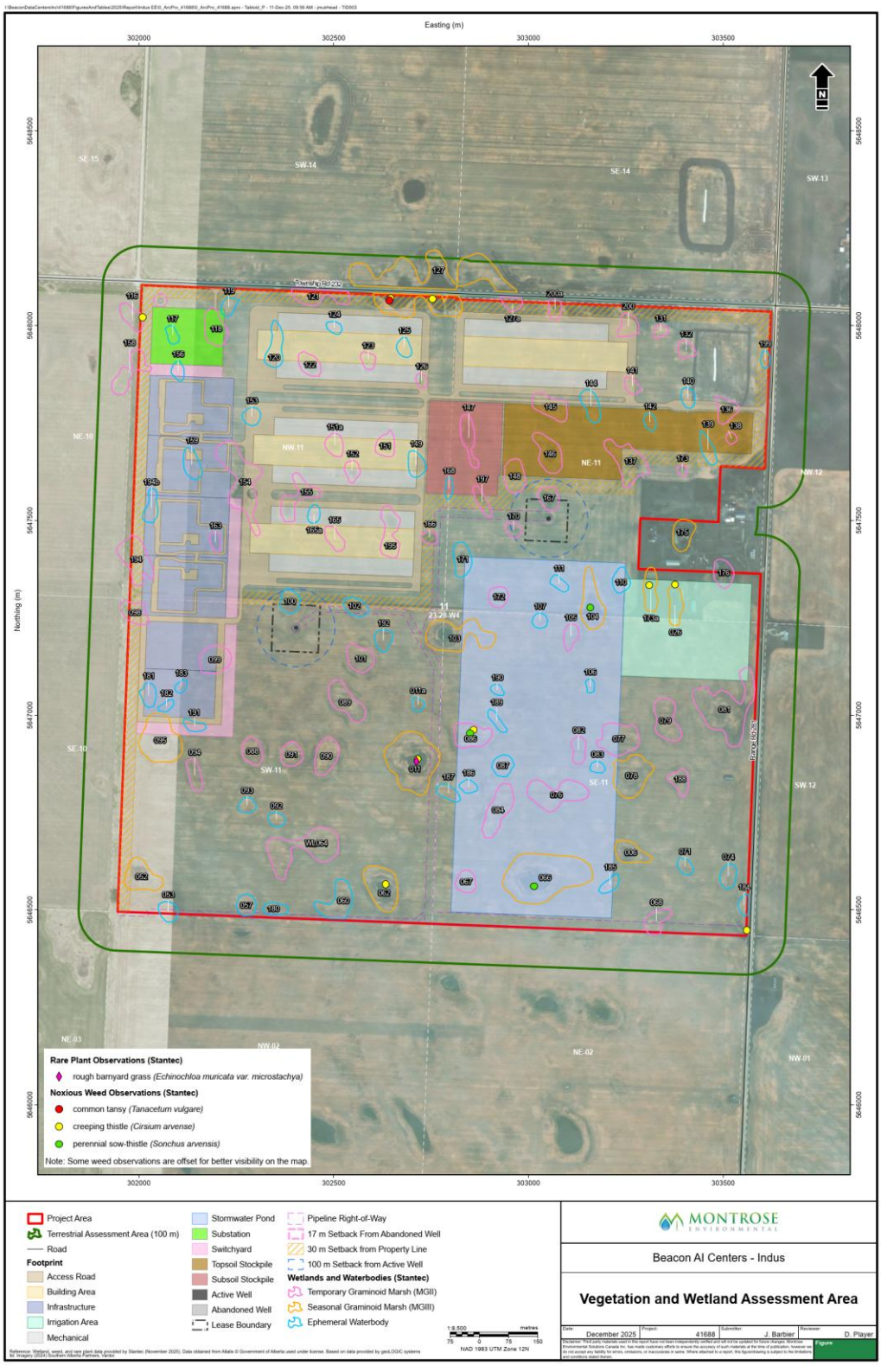

Figure 14.7.2 Vegetation and Wetland Assessment Area

Terrestrial Vegetation

The TAA is located in the Foothills Fescue Natural Subregion of the Grassland Natural Region and is characterized by nearly level cultivated plains in the north and grassy uplands at high elevations in the south along the flanks of the Rocky Mountains (Natural Regions Committee 2006). The Foothills Fescue Natural Subregion has the shortest growing season, the warmest winters, and the highest precipitation of any of the grassland Natural Subregions (Natural Regions Committee 2006). The primary land use for the region is cultivation, occurring in approximately 50% of the area. This description is consistent with the land use types mapped within the WAA (Figure 14.1.4).

Land use within the project area is predominantly cultivated annual (212.0 ha; 84%). Other land use within the Project Area includes tame pasture (2.0 ha; 1%), unproductive (e.g., roads, farmyard; 2.5 ha; 1%), wetlands (29.5 ha; 12%), and ephemeral water bodies (7.7 ha; 3%). Wetlands are further detailed below.

Land use in the TAA is predominantly cultivated annual (273.8 ha; 84%), with tame pasture (2.6 ha; 1%), unproductive (8.4 ha; 3%), wetlands (33.2 ha; 10%), and ephemeral water bodies (7.8 ha; 2%).

The predominant land use for the WAA is cultivation, which occupies 88% of the WAA with most being annual crops (1,045.6 ha; 86%). The remaining land uses are 2% (21.8 ha) perennial cultivation, 5% (64.4 ha) tame pasture, 1% (6.2 ha) modified grassland, 3% (38.5 ha) unproductive, 3% (33.4 ha) wetlands, and 1% (7.8 ha) ephemeral water bodies. Modified grassland is grassland communities that have been modified to greater than 70% cover of non-native species due to human and/or naturally caused disturbances (AEP 2018). Tame pasture is cultivated areas that have been seeded with agronomic species for livestock forage. Wetland areas were only delineated for the TAA and do not represent wetlands across the WAA.

Table 14.7.1 Summary of Land Use in the Project Area, TAA, and WAA

Land Use	Project Area		TAA		WAA	
	ha	%	ha	%	ha	%
Cultivated Annual	212.0	84	273.8	84	1,045.6	86
Cultivated Perennial	0	0	0	0	21.8	2
Tame Pasture	2.0	1	2.6	1	64.4	5
Modified Grassland	0	0	0	0	6.2	1
Unproductive	2.5	1	8.4	3	38.5	3
Wetland[1]	29.5	12	33.2	10	33.4	3
Ephemeral Water Body[1]	7.7	3	7.8	2	7.8	1
Total[2]	**253.8**	**100**	**325.8**	**100**	**1,217.7**	**100**

Notes:

(1) Only wetlands and water bodies that intersected the TAA were mapped into the WAA, with the exception of one seasonal graminoid marsh wetland mapped that overlapped with the WAA by 0.2 ha. Wetlands within the WAA were not field verified and were not considered within land use area calculations.

(2) The total may not equal the sum of individual values due to rounding.

Wetlands and Water Bodies

The wetland desktop and field surveys were conducted within the TAA only and data was provided for this report by Stantec (Figure 14.1.4). Sixty-nine wetlands and 46 ephemeral water bodies were identified in the Project Area and TAA. Wetlands in the TAA include temporary and seasonal graminoid marshes (Figure 14.1.4). The Project Area is comprised of 29.5 ha (12%) of wetland area and 7.7 ha (3%) of ephemeral waterbodies, and the TAA is comprised of 33.2 ha (10%) of wetland area and 7.8 ha (3%) of ephemeral water bodies (Tables 14.1.11).

Standing water due to recent heavy rain was observed in three seasonal graminoid marshes, WL066, WL095, and WL104. All seasonal graminoid marshes did not have distinct inflows or outflows and were predominantly previously cultivated.

Standing water due to recent heavy rain was observed in two temporary graminoid marshes, WL077 and WL08. All temporary graminoid marshes did not have distinct inflows or outflows and were predominantly previously cultivated.

The ephemeral water bodies in the Project Area and TAA have been cultivated in their entirety, they did not have distinct inflows or outflows, and they did not have any open, standing water at the time of the assessment.

Table 14.7.2 Summary of Wetlands and Water Bodies in the TAA

Classification		Area (ha)	
		Project area	TAA
Graminoid Marsh	Temporary	19.3	20.5
	Seasonal	10.3	12.8
Wetland Total		**29.5**	**33.2**
Ephemeral Water Body*		7.7	7.8
Wetland and Water Body Total		**37.3**	**41.1**

Notes:

1. All wetlands present within the TAA overlap with the Project Area.
2. The total may not equal the sum of individual values due to rounding.

TAA – terrestrial assessment area

*Not a wetland as per the Alberta Wetland Classification System (ESRD 2015) but is a water body that is subject to the Water Act

Rare Species

A search of the ACIMS database did not return any listed rare element occurrences within the TAA or WAA (AEP 2022). Given the low rare plant potential associated with cultivation in the Project area, a rare species survey was not conducted as part of the assessment; however, the S1 tracked rare plant rough barnyard grass (Echinochloa muricata var. microstachya) was observed incidentally in WL011 (AEP 2022; Figure 14.1.4).

Weeds

Common tansy (Tanacetum vulgare), creeping thistle (Cirsium arvense), and perennial sow-thistle (Sonchus arvensis) were identified within the TAA and Project Area during wetland field surveys (Figure 14.1.4). These three species are noxious weed species, according to the Alberta Weed Control Act (Province of Alberta 2023) and Alberta Weed Control Regulation (Province of Alberta 2016).

Wildlife and Wildlife Habitat

The purpose of the wildlife assessment is to provide a description of the presence and distribution of wildlife resources within and adjacent to the Project area. A WAA was delineated as the Project area and a surrounding 1,000 m buffer. The objective of the desktop assessment and field surveys is to collect information to develop site-specific mitigation measures, such as setbacks and timing restrictions, for observed wildlife and wildlife features. Where wildlife features cannot be avoided, site- and project-specific mitigation, including construction scheduling outside key activity periods, will be implemented to reduce potential impacts. Wildlife sweeps and nest sweeps will be conducted prior to construction to provide updated information on wildlife features that may require mitigation. The WAA is presented in Figure 14.7.3.

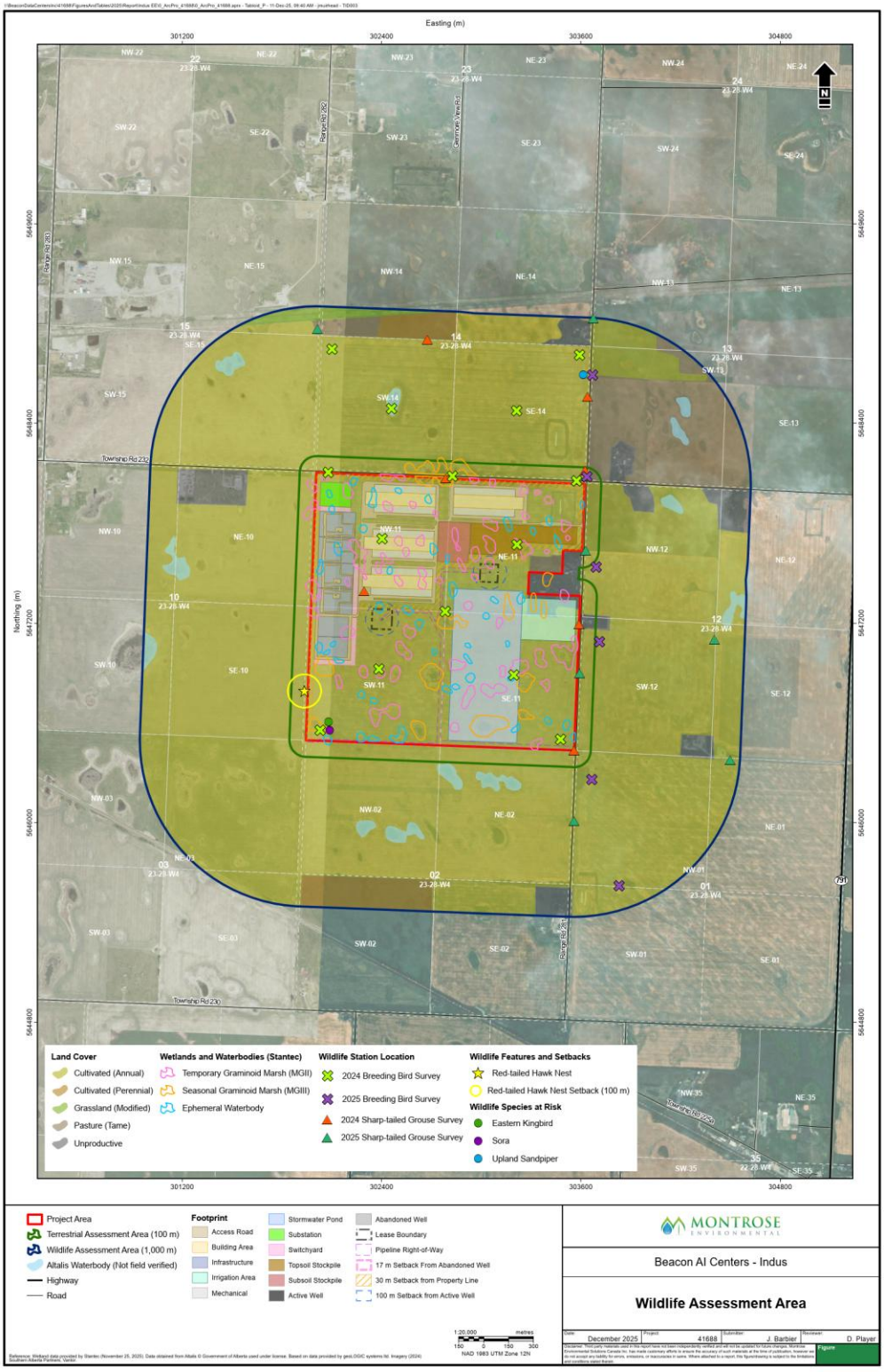

Figure 14.7.3 Wildlife Assessment Area

Methods

Desktop

A desktop wildlife assessment was completed, including site-specific information available within five (5) km of the Project and general information for the region, to account for wildlife movements and setback distances for wildlife species at risk. Fish and Wildlife Internet Mapping Tool (FWIMT; EPA 2025a) data were reviewed to determine whether there are historical observations of wildlife species at risk within 1 and 5 km of the Project, to understand past occurrences of species at risk. A previous Biophysical Impact Assessment completed in 2025 for a slightly larger area that entirely encompasses the current project area was reviewed for wildlife survey methods and results, potential impacts, and mitigations (Montrose 2025b). Species range maps (Federation of Alberta Naturalists [FAN 2007], Smith [1993], Naughton [2012], Russell and Bauer [2000], Alberta Conservation Association [ACA 2024], and Cornell University [eBird 2021, Cornell University 2023] and provincial wildlife sensitivity data layers (EPA 2023) were also reviewed to identify potential species at risk presence and provincially designated sensitive wildlife ranges and zones.

Field surveys

The majority of the WAA is cultivated, with areas of tame pasture, modified grassland, and disturbed areas (Figure 14.1-5). Suitable habitat for amphibians, raptors, and other birds was found within 1 km of the Project area. Data was collected within the WAA in 2024 and 2025 (Figure 14.1.5):

- 2024 Surveys
  - Sharp-tailed grouse surveys were conducted on April 10 and April 25, 2024; and
  - Breeding bird and raptor surveys were conducted concurrently on May 24 and June 21, 2024.
- 2025 Surveys
  - Sharp-tailed grouse surveys were conducted on April 24, April 28 and May 6, 2025; and
  - Breeding bird and raptor surveys were conducted concurrently on May 20-21 and June 19-20, 2025.

Sharp-tailed grouse surveys focused on identifying any potential leks sites (i.e. dancing/breeding grounds) within or near the Project. Surveys were conducted in accordance with the Sensitive Species Inventory Guidelines (SSIG; ESRD 2013a).

Breeding bird and raptor surveys were conducted to inform species presence and identify species of concern that may have setbacks associated with the Master Schedule of Standards and Conditions (MSSC; Government of Alberta 2024). The MSSC does not apply to developments on private land; however, it was used as a reference for identifying best management practices and informing survey design and mitigation planning for wildlife. The surveys focused on identifying:

- Presence and habitat use of breeding bird species within the WAA; and
- Nesting raptors and raptor habitat up to 1 km from the Project area. Raptor and breeding bird surveys were conducted in accordance with the SSIG.

Acoustic amphibian surveys were not conducted as the Project is not located within the sensitive amphibian range (EPA 2025b).

Results

Desktop

The WAA is within the sharp-tailed grouse survey area and sensitive raptor range (prairie falcon range, bald eagle, ferruginous hawk [partial], and golden eagle). The following species were historically detected within 1 km of the Project: bald eagle, barred owl, black swift, black tern, black-necked-stilt, eastern kingbird,

grasshopper sparrow, sora, trumpeter swan, and white-faced ibis (FWIMT data; Fish and Wildlife Internet Mapping Tool [EPA 2025a]). Additional wildlife SAR historically detected within 5 km of the Project include American badger, barn swallow, Canadian toad, common yellowthroat, eared grebe, Forster's tern, great blue heron, horned grebe, pied-billed grebe, purple martin, short-eared owl, upland sandpiper, western grebe, and western painted turtle (Table 14.7.3, FWIMT data; EPA 2025a). There are several wildlife species at risk with ranges that overlap the WAA, and that could be found where suitable habitat is present (e.g., modified grassland, tame pasture; Table 14.7.3).

Table 14.7.3 Wildlife Species at Risk Potentially Occurring in the Region Including Provincial and Federal Species at Risk Status and FWIMT Observations up to 5 km From Project Area

Common Name	Scientific Name	EPA1	Wildlife Act and ESCC	COSEWIC	SARA	Observed Historically Within 5 km (FWIMT)
Amphibians and Reptiles						
Western/Barred tiger salamander	Ambystoma mavortium	Secure	-	Special Concern	Schedule 1 – Special Concern	-
Western toad	Anaxyrus boreas	Sensitive	-	Special Concern	Schedule 1 – Special Concern	-
Northern Leopard Frog	Lithobates pipiens	At Risk	Threatened	Special Concern	Schedule 1 - Special Concern	
Canadian Toad	Anaxyrus hemiophrys	May be at Risk	Data Deficient	Not at Risk	-	yes
Wandering/Terrestrial garter snake	Thamnophis elegans	Sensitive	-	-	-	-
Red-sided/common gartersnake	*Thamnophis radix*	Sensitive				
Plains gartersnake	*Thamnophis radix*	Sensitive	-	-	-	
Bullsnake	*Pituophis catenifer*	Sensitive		Special Concern	Schedule 1 – Special Concern	
Western painted turtle	*Chrysemys picta*	Sensitive	-	Not at risk-	-	yes
Birds						
Trumpeter swan	Cygnus buccinator	Sensitive	Special Concern	-	-	yes
White-winged scoter	Melanitta deglandi	Sensitive	Special Concern	-	-	-
Pied-billed grebe	Podilymbus podiceps	Sensitive	-	-	-	yes

Common Name	Scientific Name	EPA1	Wildlife Act and ESCC	COSEWIC	SARA	Observed Historically Within 5 km (FWIMT)
Horned grebe	Podiceps auritus	Sensitive	-	Special Concern	Schedule 1 – Special Concern	yes
Eared grebe	Podiceps nigricollis	Sensitive	-	-		yes
Western grebe	Aechmophorus occidentalis	At Risk	Threatened	Special Concern	Schedule 1 – Special Concern	yes
American white pelican	Pelecanus erythrorhynch	Sensitive	-	Not at Risk	-	-
American bittern	Botaurus lentiginosus	Sensitive	-	-	-	
Great blue heron	Ardea herodias	Sensitive	-	-	-	yes
Black-crowned night-heron	Nycticorax nycticorax	Sensitive	-	-	-	-
White-faced ibis	*Plegadis chihi*	Sensitive	-	-	-	yes
Yellow rail	Coturnicops noveboracensis	Undetermined	-	Special Concern	Schedule 1 - Special Concern	-
Sora	Porzana Carolina	Sensitive	-	-	-	yes
Sandhill crane	Grus canadensis	Sensitive	-	-	-	-
Black-necked stilt	Himantopus mexicanus	Sensitive	-	-	-	yes
Lesser yellowlegs	Tringa flavipes	Secure	-	Threatened	No Schedule - No Status	-
Upland sandpiper	Bartramia longicauda	Sensitive	-	-	-	yes
Long-billed curlew	Numenius americanus	May Be At Risk	Special Concern	Threatened	Schedule 1 - Special Concern	
Caspian tern	Hydroprogne caspia/Sterna cas pia	Sensitive	-	Not at Risk	-	-
Black tern	Chlidonias niger	Sensitive	-	Not at Risk	-	yes
Forster's tern	Sterna Forsteri	Sensitive	-	Data Deficient	-	yes

Common Name	Scientific Name	EPA1	Wildlife Act and ESCC	COSEWIC	SARA	Observed Historically Within 5 km (FWIMT)
Sharp-tailed grouse	Tympanuchus phasianellus	Sensitive	-	-	-	-
Bald eagle	Haliaeetus leucocephalus	Sensitive	-	Not At Risk	-	yes
Northern goshawk	Accipiter gentilis	Sensitive	-	Not at Risk	-	-
Broad-winged hawk	Buteo platypterus	Sensitive	-	-	-	
Ferruginous hawk	*Buteo regalis*	At Risk	Endangered	Special Concern	Schedule 1 - Threatened; Schedule 3 - Special Concern	
Golden eagle	Aquila chrysaetos	Sensitive	-	Not at Risk	-	-
Snowy owl	Bubo scandiacus	Secure	–	Threatened	-	-
Northern pygmy-owl	Glaucidium gnoma	Sensitive	–	-	-	-
Burrowing owl	Athene cunicularia	At Risk	Endangered	Endangered	Schedule 1 - Endangered	
Barred owl	Strix varia	Sensitive	Special Concern	-	-	- yes
Great grey owl	Strix nebulosa	Sensitive	-	Not At Risk	-	
Short-eared owl	Asio flammeus	May be at Risk	-	Threatened	Schedule 1 – Special Concern	yes
American kestrel	Falco sparverius	Sensitive	-	-	-	
Peregrine falcon anatum subspecies	Falco peregrinus anatum	At Risk	Threatened	Not at Risk	–	
Prairie falcon	Falco mexicanus	Sensitive	Special Concern	Not at Risk	–	
Common nighthawk	Chordeiles minor	Sensitive	-	Special Concern	Schedule 1 – Special Concern	

Common Name	Scientific Name	EPA1	Wildlife Act and ESCC	COSEWIC	SARA	Observed Historically Within 5 km (FWIMT)
Pileated woodpecker	Dryocopus pileatus	Sensitive	-	-	-	
Olive-sided flycatcher	Contopus cooperi	May be at Risk	-	Special Concern	Schedule 1 – Special Concern	-
Western wood-pewee	Contopus sordidulus	May be at Risk	-	-	-	
Eastern phoebe	Sayornis phoebe	Sensitive	-	-	-	
Eastern kingbird	Tyrannus tyrannus	Sensitive	-	-	-	yes
Loggerhead shrike	Lanius ludovicinus excubitorides	Sensitive	Special Concern	Threatened	Schedule 1 – Threatened	-
Purple martin	Progne subis	Sensitive	-	-	-	- yes
Black swift	*Cypseloides niger*	May Be At Risk		Endangered	Schedule 1 - Endangered	yes
Bank Swallow	Riparia riparia	Sensitive	-	Threatened	Schedule 1 – Threatened	
Barn swallow	Hirundo rustica	May be at Risk	-	Special Concern	Schedule 1 – Threatened	
Brown creeper	Certhia americana	Sensitive	-	-	-	-
Sprague's pipit	Anthus spragueii	Sensitive	Special Concern	Threatened	Schedule 1 – Threatened	-
Chestnut-collared longspur	*Calcarius ornatus*	May be at Risk		Endangered	Schedule 1 – Endangered	
McCown's longspur/Thick-billed longspur	*Rhynchophanes mccownii*	May Be At Risk		Threatened	Schedule 1 - Threatened	
Common yellowthroat	Geothlypis trichas	Sensitive	-	-	-	yes
Brewer's sparrow	*Spizella breweri*	Sensitive				

Common Name	Scientific Name	EPA1	Wildlife Act and ESCC	COSEWIC	SARA	Observed Historically Within 5 km (FWIMT)
Baird's sparrow	Ammodramus bairdii	Sensitive	-	Special Concern	Schedule 1 - Special Concern	-
Grasshopper sparrow	Ammodramus savannarum	Sensitive	-	-	-	yes
Western tanager	Piranga ludoviciana	Sensitive	-	-	-	
Evening grosbeak	Coccothraustes vespertinus	Secure	-	Special Concern	Schedule 1 - Special Concern	-
Bobolink	Dolichonyx oryzivorus	Sensitive	-	Special Concern	Schedule 1 – Threatened	-
Rusty blackbird	Euphagus carolinus	Sensitive	-	Special Concern	Schedule 1 – Special Concern	-
Mammals						
Little brown myotis	*Myotis lucifugus*	May be at Risk	Endangered	Endangered	Schedule 1 – Endangered	
Long eared bat	*Myotis evotis*	Sensitive				
Silver-haired bat	*Lasionycteris noctivagans*	Sensitive	-	Endangered	-	
Eastern red bat	*Lasiurus borealis*	Sensitive		Endangered		
Hoary bat	*Lasiurus cinereus*	Sensitive	-	Endangered	-	
Long-tailed weasel	*Mustela fruneta*	May be at Risk	-	Not at Risk	-	
American badger -*taxus* subspecies	*Taxidea taxus taxus*	Sensitive	Data Deficient	Special Concern	Schedule 1 – Special Concern	yes
Bobcat	*Lynx rufus*	Sensitive				
Canada lynx	*Lynx canadensis*	Sensitive	-	Not At Risk	-	

Notes: 1. Alberta Wild Species General Status Listing (GoA 2022), 2. Wildlife Act (Province of Alberta 2022), and 3. Endangered Species Conservation Committee and Scientific Subcommittee (EPA 2024a)

Field surveys

During the sharp-tailed grouse, breeding bird and raptor surveys, information was collected to verify vegetation communities in the WAA. Potential habitat for amphibians, sharp-tailed grouse, raptors, and other birds was noted within the WAA during the surveys (Figure 14.1.5). As discussed in Section 4.4, cultivation (annual or perennial) occupies 88% of the WAA, 5% is occupied by tame pasture, 1% is modified grassland, and 3% is unproductive. Wetlands were field verified within the TAA, with wetlands and ephemeral waterbodies comprising 3% and 1% of the TAA, respectively.

Sharp-tailed Grouse Survey Results

During the sharp-tailed grouse surveys in 2024 and 2025, no sharp-tailed grouse or leks were observed. No other Species at Risk (SAR) or important wildlife features (e.g., dens, hibernacula) were detected during the surveys.

Raptor Survey Results

During the raptor surveys, the following observations were made:

- One active red-tailed hawk nest was observed within the WAA in 2024 (Figure 14.1.5). The 100 m setback required on the nest overlaps with the project area but does not overlap the planned disturbance area. The project area is not anticipated to impact the nest or buffer; and
- No other raptor species or raptor species at risk were detected on the raptor surveys or incidentally on any other survey.

Breeding Bird Survey Results

Breeding bird SAR detected during the 2024 breeding bird surveys includes common yellowthroat (one individual; listed as Sensitive in Alberta [GOA 2022]), eastern kingbird (two individuals; listed as Sensitive in Alberta [GOA 2022]), and sora (one individual; listed as Sensitive in Alberta [GoA 2022]). Breeding bird SAR detected in 2025 includes upland sandpiper (one individual outside the 100m survey point; listed as Sensitive in Alberta [GOA 2022]). Results of the breeding bird survey are presented in Table 14.7.4. A total of 534 birds, consisting of 42 species, across two years were observed during the breeding bird surveys.

Table 14.7.4 Bird Species Observations by Survey Station Location and Grouped by Guild.

Species	Scientific Name	Provincial Status	Number Observed	
			2024	2025
Passerines (Perching Birds/Songbirds)				
American Robin	*Turdus migratorius*	Secure	7	7
Cedar Waxwing	*Bombycilla cedrorum*	Secure	3	-
Clay-coloured Sparrow	*Spizella pallida*	Secure	6	2
Common Yellowthroat	*Geothlypis trichas*	Sensitive	1	-
Eastern Kingbird	*Tyrannus tyrannus*	Sensitive	2	-
Horned Lark	*Eremophila alpestris*	Secure	8	1
House Sparrow	*Passer domesticus*	Exotic	4	6
House Wren	*Troglodytes aedon*	Secure	3	-
Northern Flicker	*Colaptes auratus*	Secure	1	-
Savannah Sparrow	*Passerculus sandwichensis*	Secure	74	19
Vesper Sparrow	*Pooecetes gramineus*	Secure	35	10
Western Meadowlark	*Sturnella neglecta*	Secure	16	2
Waterfowl and Shorebird/Waterbirds				
American Avocet	*Recurvirostra americana*	Secure	3	-

Species	Scientific Name	Provincial Status	Number Observed	
			2024	2025
California Gull	*Larus californicus*	Secure	1	-
Canada Goose	*Branta canadensis*	Secure	7	-
Common Tern	*Sterna hirundo*	Secure	1	-
Double-crested Cormorant	*Phalacrocorax auritus*	Secure	1	-
Franklin's Gull	*Larus pipixcan*	Secure	55	8
Killdeer	*Charadrius vociferus*	Secure	2	-
Mallard	*Anas platyrhynchos*	Secure	18	-
Marbled Godwit	*Limosa fedoa*	Secure	14	-
Northern Pintail	*Anas acuta*	Secure	2	-
Northern Shoveler	*Anas clypeata*	Secure	1	-
Ring-billed Gull	*Larus delawarensis*	Secure	3	-
Sora	*Porzana carolina*	Sensitive	1	-
Unknown Duck	-	-	3	2
Unknown Gull	-	-	34	-
Willet	*Tringa semipalmata*	Secure	12	-
Wilson's Snipe	*Gallinago delicata*	Secure	2	-
Other Birds				

Species	Scientific Name	Provincial Status	Number Observed	
			2024	2025
American Crow	*Corvus brachyrhynchos*	Secure	16	5
Black-billed Magpie	*Pica hudsonia*	Secure	20	6
Brewer's Blackbird	*Euphagus cyanocephalus*	Secure	14	15
Brown-headed Cowbird	*Molothrus ater*	Secure	1	1
Common Grackle	*Quiscalus quiscula*	Secure	2	-
Common Raven	*Corvus corax*	Secure	3	-
European Starling	*Sturnus vulgaris*	Exotic	11	6
Mourning Dove	*Zenaida macroura*	Secure	2	2
Red-tailed Hawk	*Buteo jamaicensis*	Secure	7	-
Red-winged Blackbird	*Agelaius phoeniceus*	Secure	17	1
Rock Dove	*Columba livia*	Exotic	15	1
Swainson's Hawk	*Buteo swainsoni*	Secure	-	1
Total			**439**	**95**

When observed, incidental wildlife was recorded during surveys completed for the Project. In addition to the wildlife noted previously, incidental wildlife that were observed include: boreal chorus frog, American wigeon, black-capped chickadee, gray partridge, ring-necked pheasant, coyote, mule deer and white- tailed deer.

Historical Resources

Heritage resources are regulated by the Historical Resources Act and administered by the Archaeological, Archives and Collections Services of Alberta (AACSW).

Historical Resources Act (HRA) approval (HRA number 4835-25-0121-001) has been granted on December 02, 2025. Any chance discovery of historical resources must be reported to AACSW.

15. Health, Social and Economic Context in the Region

This section describes the existing health, social, and economic setting in the Project region to provide baseline context.

Regional and Community Context

The Project is located in Rocky View County, a municipal district in southern Alberta that surrounds much of the City of Calgary and supports a mix of agricultural, residential, logistics, and industrial land uses. Rocky View County functions as part of the broader Calgary regional economy, providing land and infrastructure for rural living and industrial development.

Rocky View County has experienced steady population growth in recent census periods. It continues to attract industrial and logistics development, particularly in the eastern portion of the County where agricultural operations coexist with expanding industrial parks. The hamlets of Indus and Langdon are the closest population centres to the Project and are expected to support residential needs associated with ongoing regional development.

The Project is located on privately owned agricultural land in an area transitioning toward logistics and industrial uses, adjacent to the Prairie Economic Gateway planning area, a joint initiative of Rocky View County and the City of Calgary intended to support large-scale logistics, manufacturing, and distribution activities within the Calgary region (Beacon AI Centers Inc. 2025a).

Indigenous Context

The Project is located within Treaty 7 territory, the traditional lands of the Blackfoot Confederacy (Siksika, Kainai, and Piikani), the Tsuut'ina First Nation, and the Stoney Nakoda Nations (Bearspaw, Chiniki, and Goodstoney). Rocky View County is also part of the Rocky View Métis District within the Otipemisiwak Métis Government.

According to the 2021 Census, approximately 1,250 Indigenous people reside in Rocky View County, representing about 3.1% of the County's population. The Indigenous population includes individuals who identify as Métis, First Nations, Inuit, and with multiple or other Indigenous identities, as summarized in Table 15.1.1 (Indigenous Identification of Rocky View County Residence) (Statistics Canada 2021, as cited in Beacon AI Centers Inc. 2025a).

Table 15.1.1 Indigenous Identification of Rock View County Residence

Identity Group	Population Count
Métis	805
First Nations	375
Inuit	15
Multiple/Other Indigenous Identities	50

Total Indigenous Population	1,250

Proximity of the Project to nearby First Nations reserves and Métis organizations was assessed using the Landscape Analysis Indigenous Relations Tool (LAIRT) and the IAAC directory. Distances to Indigenous communities within approximately 150 km of the Project are summarized in Table 15.1.2 (First Nation Reserves and Métis Settlements Distance from the Project) (Beacon AI Centers Inc. 2025b).

Table 15.1.2 First Nation Reserves and Métis Settlements Distance from the Project

Peoples	Distance (km)
Tsuut'ina Nation	23
Piikani Nation	138
Siksika Nation	36
Blood Tribe	142
Stoney Nakoda Nation – Bearspaw Eden Valley 216	55 58
Stoney Nakoda Nation – Chiniki	55
Stoney Nakoda Nation – Goodstoney	55
Stoney Nakoda Nation - Bighorn 144A	230
Metis Nation of Alberta Region 3	N/A
Métis Nation of Alberta - Otipemisiwak Métis Government	N/A
Metis Nation of Alberta - Otipemisiwak Métis Government - Battle River Territory - Rocky View Metis District	N/A

As the Project is located on private land, the Project footprint itself is not used for Indigenous harvesting or other traditional practices. This observation is limited to the Project area and does not preclude traditional land use activities occurring elsewhere within Treaty 7 territory.

Population and Demographics

Population trends in Rocky View County and surrounding municipalities provide context for understanding regional growth and service demand. Between the 2016 and 2021 Census periods, Rocky View County experienced population growth consistent with trends across the Calgary region. Nearby municipalities and Indigenous reserves also exhibited varying population changes, as summarized in Table 15.1.3 (Rocky View County Municipal District - Neighbouring Census Divisions) (Statistics Canada 2016; Statistics Canada 2021, as compiled in Beacon AI Centers Inc. 2025a)

Table 15.1.3 Rocky View County Municipal District — Neighbouring Census Divisions

Geography	2021	2016	Percent Change (%)
Rocky View County	41,028	39,407	4.1
Chestermere, City	22,163	19,887	11.4
Calgary, City	1,306,784	1,239,220	5.5
Foothills County	23,199	22,616	2.6
Wheatland County	8,738	8,788	-0.6
Kananaskis ID	156	221	-29.4
Tsuut'ina Nation 145 Reserve	2,271	1,643	38.2
Stoney 142, 143, 144 Reserves	4,053	3,713	9.2
Eden Valley 216	621	596	13.7
Siksika 146 Reserve	3,579	3,479	2.8

The closest population centres to the Project are the hamlets of Indus and Langdon, both located within Rocky View County. Indus is a small rural hamlet with a limited residential population, while Langdon is a larger, growing unincorporated community that serves as a residential area for the Calgary workforce.

Economic Context

Rocky View County's economy has evolved from a primarily agricultural base to a diversified industrial and logistics-oriented economy. Major employment sectors include logistics and warehousing, agriculture, manufacturing, construction, and retail and tourism, as summarized in Table 15.1.4 (Top Industries by Employment) (Beacon AI Centers Inc. 2025a).

Table 15.1.4 Top Industries by Employment

Industry Sector	Primary Activities
Logistics & Warehousing	Balzac and Conrich host distribution centers for Amazon, Walmart, and Sobeys.
Agriculture	Even amid its industrial expansion, RVC remains a leading agricultural region, home to over 1,100 active farms specializing in crops such as wheat and barley, as well as cattle ranching, livestock, grain production, and a growing "value-added" agri-food processing sector.
Manufacturing	Fabricated metal, machinery for the oil and gas sector, and aerospace components.
Construction	Driven by demand for continuous residential development and industrial park expansions.
Retail & Tourism	Anchored by CrossIron Mills and tourism in the Bragg Creek area.

Industrial development in areas such as Balzac and Conrich has driven substantial employment in the distribution and supply chain sectors. Many Rocky View County residents commute to Calgary for work, while a significant number of workers from Calgary are employed within Rocky View County's industrial hubs.

Rocky View County has positioned itself as a business-friendly jurisdiction by offering comparatively lower non-residential property tax rates and a large land base suitable for industrial development. A comparison

of municipal tax rates between Rocky View County and the City of Calgary is provided in Table 15.1.5 (Tax Comparisons: Rocky View County and City of Calgary) (Beacon AI Centers Inc. 2025a).

Table15.1.5 Tax Comparisons Rocky View County to City of Calgary

Metric (2025 Est.)	Rocky View County	City of Calgary
Non-Residential Tax Rate	~0.01756	~0.02450 (Varies by class)
Tax Rate Ratio (Non-Res to Res)	**3.50**	**4.37**
Municipal Tax Change	**0% increase**	**3.6% increase**
Business Tax	**None**	**None** (Folded into property tax)

Health and Healthcare Context

Residents of Rocky View County access healthcare services through a combination of local facilities and regional hospitals in Calgary. Primary and urgent care services are available in nearby centres such as Airdrie, Cochrane, and Chestermere, while specialized and tertiary healthcare services are typically accessed in Calgary.

Healthcare infrastructure within Rocky View County and surrounding communities is summarized in Table 15.1.6 (Health Care Facilities in Rocky View County) (Beacon AI Centers Inc. 2025a).

Table 15.1.6 Health Care Facilities in Rocky View County

Facility Type	Location(s)	Services Provided
Urgent Care Centres	Airdrie & Cochrane	24/7 care for non-life-threatening but urgent concerns.
Community Health Centres	Airdrie, Cochrane, Chestermere	Public health, home care, and mental health services.
Primary Care Clinics	Langdon, Bragg Creek, Beiseker	Family medicine and localized primary care.
Major Hospitals	Calgary (Foothills, Peter Lougheed, South Health)	Tertiary care, trauma, and specialized surgery.

Regional health and demographic indicators for Alberta and the Calgary Zone are presented in Table 15.1.7 (Health and Demographic Indicators: Alberta vs. Calgary Zone) to provide contextual information on population health conditions. These indicators are presented for regional context only and are not intended to represent Project-specific health effects (Beacon AI Centers Inc. 2025a).

Table 15.1.7. Health & Demographic Indicators: Alberta vs. Calgary Zone (2021/2022)

Indicator	Alberta Males (%)	Alberta Females (%)	Calgary Zone Males (5)	Calgary Zone Females (%)
Perceived health, very good or excellent	60.2	57.7	65.5	61.5
Perceived health, fair or poor	11.5	12.8	9.8	11.1
Perceived mental health, very good or excellent	61.2	50.4	64.6	51.9

Indicator	Alberta Males (%)	Alberta Females (%)	Calgary Zone Males (5)	Calgary Zone Females (%)
Perceived mental health, fair or poor	12.0	16.4	10.8	15.2
Perceived life stress, most days quite a bit or extremely stressful	19.4	23.4	19.9	23.0
Body Weight				
BMI (adult, overweight)	40.7	29.2	41.2	28.7
BMI (adult, obese)	30.5	30.3	23.7	25.4
BMI (youth, overweight or obese)	37.2	27.2	25.3	23.9E
Rates of Chronic Disease				
Arthritis (15+ years)	16.7	23.0	14.6	20.7
Diabetes	7.9	5.3	5.9	5.6
High blood pressure	18.2	15.0	16.0	13.7
Mood disorder	8.2	14.8	6.8	11.8
Rates of Substance Abuse				
Current smoker (daily or occasional)	13.2	9.7	10.9	7.6
Current smoker (daily)	9.5	7.8	7.4	6.1
Heavy drinking	22.5	14.1	22.6	13.1
Well Being and Care				
Sense of belonging to local community (strong/very strong)	66.2	66.7	66.8	66.2
Life satisfaction (satisfied/very satisfied)	90.3	89.0	91.2	89.8
Has a regular healthcare provider	84.2	92.5	87.9	94.6

Note: Some indicators (e.g., asthma, COPD, physical activity, fruit/vegetable consumption, medical contact, influenza immunization, breastfeeding initiation/exclusivity) were not available or suppressed in the data for privacy or statistical reasons.

PART D: Federal, Provincial, Territorial, Indigenous and Municipal Involvement

16. Financial Support from Federal Authorities

No federal financial support is required for the Project. Indus Power may explore federal grants or funding programs in the future, if available.

17. Use of Federal Lands for Project

The Project will not be constructed or operated on federal lands.

18. Jurisdictions That Have Powers, Duties or Functions in Relation to an Assessment of the Project's Environmental Effects

18.1 Federal Regulatory Requirements

The Project must comply with several federal statutes that govern environmental protection, wildlife, species conservation, and infrastructure safety in addition to the Impact Assessment Act, as applicable.

Fisheries Act

The Fisheries Act protects fish and fish habitat in Canadian waters. Given the limited potential for the Project to interact with fish-bearing streams and the use of municipal water sources, the Fisheries Act is not expected to apply. If work results in any watercourse disturbance, appropriate permits and mitigation measures would be required to avoid harmful alteration, disruption, or destruction of fish habitat (DFO 2024).

Migratory Birds Convention Act

Section 6.1 of the Migratory Birds Regulations prohibits disturbing, destroying, or removing migratory bird nests, eggs, or shelters without authorization. Construction activities occurring during the nesting period (typically April–August) must follow federal Guidelines to Avoid Harm to Migratory Birds (GOC 2023). Mitigation measures may include pre-construction nest sweeps and buffer zones around active nests.

Species at Risk Act

The Species at Risk Act (SARA) protects listed extirpated, endangered, and threatened species and their critical habitat. Current information suggests Project activities are unlikely to contravene SARA. Ongoing wildlife surveys will confirm compliance. If SARA-listed species or habitats are identified, avoidance or site-specific mitigation will be implemented (Government of Canada 2025b).

Other Relevant Federal Acts

- *Canadian Navigable Waters Act – No authorization is required as the design does not involve navigable waters.*
- *Aeronautics Act – The site is near aerodromes (Indus/Winters Aire Park ~4 km, South Calgary Airport ~13 km, Highwood Airport ~16 km, Calgary International Airport ~50 km). An application to Transport*

Canada regarding Obstruction Marking and Lighting and to Nav Canada relating to land use submission is being prepared.

18.2 Provincial Regulatory Requirements

Several provincial acts and regulations apply to the Project's construction and operation, these include:

Hydro and Electric Energy Act

Approval under AUC Rule 007 is required to construct and operate the power plant (AUC 2024a). AltaLink will submit the associated transmission line application.

Electric Utilities Act

The Alberta Electric System Operator (AESO) oversees all provincial grid connections. A system access service application is required to ensure the Project meets Alberta's competitive market and reliability requirements (AESO 2024).

Environmental Protection and Enhancement Act

As a power plant with more than 1 MW of electricity generation capacity, the Project requires an approval under the Environmental Protection and Enhancement Act (Government of Alberta 2000). A Pre-Disturbance Site Assessment and a Topsoil Conservation and Use Plan will accompany the application ((Alberta Environment and Sustainable Resource Development 2013b; Alberta Agriculture, Food and Rural Development 2004).

Water Act

Municipal water use means no surface water diversion license is anticipated. Wetlands within the project area will be directly impacted by the Project, resulting in loss of wetland area. A Wetland Assessment Impact Report and Water Act Application will be submitted for proposed impacts to wetlands. To address impacts to the ephemeral water bodies in the Project area, Indus Power/Beacon will seek approval under the Water Act before construction commences (Government of Alberta 2025).

Historical Resources Act

Heritage resources are regulated by the Historical Resources Act and administered by the Archaeological, Archives and Collections Services of Alberta (AACSW) (AACSW 2023).

Historical Resources Act approval (HRA number 4835-25-0121-001) has been granted on December 02, 2025. Any chance discovery of historical resources must be reported to AACSW.

Pipeline Act

The Pipeline Act establishes the regulatory framework for pipelines in Alberta. Indus Power/Beacon is working with ATCO Gas and TC Energy on pipeline options that could potentially serve the Project by connecting natural gas to the existing integrated NGTL/ATCO pipeline system. The pipeline company (NGTL or TC Energy) will be responsible for obtaining the applicable regulatory approvals for any lateral pipeline under provincial pipeline legislation.

Public Lands Act

The Public Lands Act applies mainly to Crown land and water bodies. The Project is on private land, except for Crown-claimable wetlands.

18.3 Municipal Regulatory Requirements

Several municipal bylaws inform land use and planning in the Project area. These are summarized in Table 18.3.1.

Table 18.3.1 Municipal Regulatory Requirements

Bylaw or Policy	Description
Rocky View County Municipal Development Plan (Rocky View County 2025)	Provides long-range planning direction for future growth, including land use, environmental stewardship, infrastructure, social, cultural, and economic considerations.
Rocky View County Land Use Bylaw C-8000-2020 (Rocky View County 2025)	Regulates and controls the use and development of land and buildings within the County.
Rocky View County Area Structure Plan – Beacon AI Hub Bylaw C-8638-2025 (Rocky View County 2025)	Delineates the future development blueprint for a specific area, encompassing aspects such as land use, transportation, environmental protection, emergency services, general design, and utility service needs.

18.4 Regional Plans and Management Frameworks

Regional Plans

The Government of Alberta (GOA) provides direction and leadership for economic, environmental, and social objectives with respect to land use planning through the Alberta Land Stewardship Act (ALSA) (GOA, 2009) and Land Use Framework (GOA, 2008). ALSA provides the framework to create Regional Plans which address the vision, objectives, and policies for development in a particular region. The Project is located within the South Saskatchewan Regional Plan (SSRP) area of Alberta. The SSRP applies to both privately-owned and Crown-owned lands in the region (GOA, 2018). On privately-owned land, the SSRP guides decision making, though decision making authority is generally governed by municipalities under the Municipal Government Act (GOA, 2000).

The environmental priorities of the SSRP include air quality management, landscapes, biodiversity and ecosystems, water and watersheds, and efficient land use (GOA, 2018). To that end, GOA has implemented the South Saskatchewan Region Air Quality Management Framework for Nitrogen Dioxide (NO_2), Ozone (O_3), and Fine Particulate Matter ($PM_{2.5}$) (GOA, 2014a) and the South Saskatchewan Region Surface Water Quality Management Framework for the Mainstem Bow, Milk, Oldman and South Saskatchewan Rivers (Alberta) (GOA 2014b) to support the overall goals of the SSRP and to adopt cumulative effects management at the regional level.

Water management in Alberta is governed by multiple nested planning documents. The Water for Life: Alberta's Strategy for Sustainability provides the overarching vision for water management within the province. The key outcomes of the strategy are to maintain a healthy and sustainable water supply for our environment, communities, and for our economic wellbeing (GOA, 2003). To support this overall strategy, Provincial Water Advisory Councils, Watershed Planning and Advisory Councils, and Watershed Stewardship Groups work in partnership with the GOA to achieve the outcomes of the Strategy.

The Project is located within the Bow River subbasin of the South Saskatchewan River Basin. The Approved Water Management Plan for the South Saskatchewan River Basin outlines the goals of water limits and conservation in the South Saskatchewan River Basin. The Project has been designed to minimize the amount of water inputs required, and to re-use water on site where possible to reduce the overall consumption of water, in alignment with this plan.

The Bow River Basin Council has prepared a State of the Watershed Report, which outlines the relative health of the overall watershed and sub basins within in. The Project footprint is located within the Western Irrigation District to Highwood subbasin. This subbasin is one of the most populated regions of the Bow River basin, and the has been heavily impacted from urban and human sources. Wastewater effluent and stormwater management have been identified as the two most critical issues in this subbasin (Bow River Basin Council, 2010).

PART E: Potential Effects of the Project

The Project consists of a natural-gas-fired power generation facility. Related infrastructure to the Project includes a new power transmission line (to be developed by AltaLink), a natural gas lateral pipeline (to be developed by NGTL or TC Energy), and ancillary infrastructure regulated under provincial legislation.

The Project is co-located with four (4) data halls as part of an on-site data center capable of supporting Tier IV data-centre operations.

As noted above, although the data center is not a Project component, Indus Power has included consideration of the data center in its assessment where relevant to provide the IAAC with a fulsome representation of the data centre campus based on most accurate information and assumptions known at this time.

19. Potential Changes under Federal Legislative Authority

19.1.1 Fish and Fish Habitat

The Project is not expected to cause adverse effects on fish or fish habitat as defined under subsection 2(1) of the *Fisheries Act* (Government of Canada 1985).

No impacts to aquatic species at risk are anticipated.

The representations in this section apply to the entire data center campus (i.e., Project and data center).

Effect Pathways

Construction

The Project site is located approximately 12 km east of the Bow River.

Because the Project will not involve work below the ordinary high-water mark and will not require new permanent or temporary waterbody crossings, construction activities are unlikely to affect surface water, fish, or fish habitat.

All water required for construction will be sourced municipally; therefore, no withdrawals from the Bow River or its tributaries are anticipated.

If a temporary crossing is required unexpectedly, it will be installed using best practices such as clear-span structures or ice/snow fills during frozen conditions.

Operation

No operational effects on fish, fish habitat, or aquatic species at risk are expected.

The only potential interaction relates to stormwater management:

- *The site will be regraded and runoff will be directed to a stormwater pond via berms, swales, and ditches.*
- *No uncontrolled flows will reach watercourses due to distance, existing development, and vegetated buffers.*
- *Any stormwater discharge will comply with Environmental Protection and Enhancement Act (EPEA) water quality requirements and maintain existing drainage patterns (Government of Alberta 2000).*

Decommissioning and Abandonment

No adverse effects on fish or fish habitat are anticipated during decommissioning. Work will occur away from any waterbodies, and no disturbance below the ordinary high-water mark is expected.

Mitigation

Construction

No additional mitigation measures are required, as construction is not expected to affect surface water, fish, or fish habitat.

Operation

No further mitigation measures are necessary for operations, given the absence of anticipated effects.

Decommissioning and Abandonment

Mitigation measures similar to those applied during construction will be implemented during decommissioning and abandonment to minimize potential impacts.

19.1.2 Aquatic Species at Risk

The Project is not expected to affect aquatic species at risk as defined under subsection 2(1) of the Species at Risk Act (Government of Canada 2025b). No watercourse disturbance is proposed, no surface water withdrawals will occur, and no suitable aquatic SARA habitat exists within or adjacent to the Project footprint.

The representations in this section apply to the entire data center campus (i.e., Project and data center).

19.1.3 Migratory Birds

The Project is anticipated to have negligible effects on migratory birds as defined under subsection 2(1) of the Migratory Birds Convention Act (MBCA), 1994 (Government of Canada 1994).

Potential effects relate primarily to habitat alteration, sensory disturbance, and nest disturbance during construction (Government of Canada 2023).

The representations in this section apply to the entire data center campus (i.e., Project and data center).

Effect Pathways

Construction

Vegetation and wetland clearing will result in direct habitat loss, including removal of trees, shrubs, grasslands, wetlands, and cultivated areas used for nesting and foraging.

Indirect effects may occur outside the construction footprint through sensory disturbance from vehicle and equipment noise. While the Project will not create physical barriers to bird movement, removal of habitat patches may alter local movement patterns.

Ground disturbance during the migratory bird breeding season increases the risk of inadvertent nest destruction, which is prohibited under the MBCA.

Table 19.1.3.1 summarizes the potential effects and effect pathways on wildlife and wildlife habitat (including for species at risk and migratory birds) that may occur.

Table 19.1.3.1 Potential Construction Phase Effects on Wildlife and Wildlife Habitat

Potential Effect	Activity Description	Pathway
Habitat Loss	Clearing of vegetation and wetlands reduces nesting and foraging areas.	Vegetation removal and site grading.
Sensory Disturbance	Noise and activity from equipment may displace birds from adjacent habitats.	Construction equipment and vehicle movement.
Movement Disruption	Loss of habitat patches may alter local movement patterns.	Clearing and grading within Indus Power lands.
Mortality Risk	Accidental nest destruction and collisions during breeding season.	Ground preparation and vegetation removal.

Operation

Potential operational effects are limited compared to construction.

Sensory disturbance from noise and lighting may reduce habitat suitability in nearby areas, and occasional vehicle traffic could pose mortality risks.

Table 19.1.3.2 summarizes the potential effects and pathways that may occur.

Table 19.1.3.2 Potential Operations Phase Effects on Wildlife and Wildlife Habitat

Potential Effect	Activity Description	Pathway
Sensory Disturbance	Ongoing noise and lighting may reduce habitat suitability.	Operation of equipment and facility lighting.
Movement Disruption	Infrastructure may alter local wildlife movement patterns.	Presence of facility structures.
Mortality Risk	Vehicle traffic during maintenance may increase collision risk.	Routine operational activities.

Decommissioning and Abandonment

Typical decommissioning activities (e.g., equipment removal, ground disturbance, increased vehicle traffic) may temporarily affect wildlife habitat and increase mortality risk. Effects are expected to be short term and reversible.

Mitigation

Construction

Mitigation measures for wildlife and wildlife habitat, including migratory birds and species at risk, are provided in Table 19.1.3.3. Additional site-specific measures will be developed as Project planning progresses.

Table 19.1.3.3 Potential Construction Phase Mitigation Measures for Wildlife and Wildlife Habitat.

Mitigation Measure	Description	Objective
Nest Searches	Conduct pre-construction nest surveys during breeding season.	Avoid destruction of active nests.
Exclusion Fencing	Install fencing around sensitive habitats.	Prevent wildlife entry into active work areas.
Lighting Control	Limit floodlighting during migration periods.	Reduce sensory disturbance.
Speed Restrictions	Implement speed limits for vehicles in construction zones.	Reduce collision risk for wildlife.

With mitigation, construction will result in long-term direct habitat loss, but indirect effects (disturbance, movement disruption, mortality risk) will be short term, low magnitude, and reversible.

Operation

Operational mitigation measures are summarized in Table 19.1.3.4.

Table 19.1.3.4 Potential Operation Phase Mitigation Measures for Wildlife and Wildlife Habitat

Mitigation Measure	Description	Objective
Efficient Lighting	Use directional lighting to minimize light trespass.	Reduce disturbance to wildlife.
Noise Management	Maintain equipment to minimize noise emissions.	Limit sensory disturbance during operations.
Traffic Control	Restrict unnecessary vehicle movement and enforce speed limits.	Reduce collision risk and disturbance.

Residual effects during operations are expected to be low magnitude, long term, and reversible, with minimal sensory disturbance and low mortality risk.

Decommissioning and Abandonment

Mitigation similar to construction (e.g., nest sweeps, traffic control, lighting management, erosion/sediment controls) will be implemented to limit potential effects on migratory birds and wildlife during decommissioning.

19.2 Overview of Other Environmental Effects

19.2.1 Other changes to the environment

Air Quality

The entire data center campus (i.e., Project and data center) has been considered in the Air Quality Assessment (Stantec 2025a).[1]

[1] The condensing boilers to supply heat to the data center halls have been included.

Effect Pathways

Construction

During construction, air quality effects will mainly arise from exhaust emissions produced by construction equipment and from fugitive dust generated by ground disturbance. These effects are typical for large construction projects and are temporary in nature. Table 19.2.1.1 summarizes potential effects and associated pathways.

Table 19.2.1.1 Potential Construction Phase Effects on Air Quality

Potential Effect	Effect Pathways
Change in air quality	Dust generated during soil stripping and grading and through equipment and vehicle movement on the construction site and unpaved roads
	Air contaminant emissions from equipment and vehicles combusting hydrocarbon fuel during construction activities

Fugitive dust from surface disturbance contains particles across several size ranges (e.g., $PM_{2.5}$, PM_{10}, and total suspended particulate (TSP)). These can deposit on off-site surfaces (dustfall). Larger particles are removed near the disturbance area via gravitational settling and are the main contributor to dustfall, while PM_{10} and $PM_{2.5}$ can be transported further downwind.

Typical exhaust-emitting equipment includes excavators, rock movers, graders, packers, dozers, haul trucks, zoom-booms, concrete trucks, and tunnel-casing pullers. Most of this equipment uses diesel, with combustion products released to the atmosphere. Diesel-powered generators, light plants, and in-line heaters may also be used. Major combustion products are nitrogen (N_2), CO_2, and water vapour, with trace contaminants such as NOx, CO, particulate matter (PM), including diesel PM, and volatile organic compounds (VOCs). These gases and particles are typical by-products of fossil-fuel combustion.

Detailed construction planning is not yet complete; therefore, estimates of equipment types, quantities, and material moved are unavailable, preventing reasonable quantification of construction emissions. Construction emissions will be limited to the construction phase and are typically less than operational emissions for most pollutants.

Operation

During operation, air contaminants will be emitted primarily from natural-gas combustion in the proposed lean-burn engines. Key pollutants include NOx, $PM_{2.5}$, and CO. Emissions are minimized by using clean-burning natural gas and applying advanced controls such as selective catalytic reduction (SCR). Emissions of metals and polycyclic aromatic hydrocarbons (PAHs) are expected to be negligible. Minor sources such as fuel-gas heaters may also contribute. Table 19.2.1.2 outlines the typical operational effects and pathways.

Operational emissions have been conservatively estimated assuming a power generation facility without carbon capture. If a carbon-capture unit is constructed and operating, it may introduce trace VOC emissions from the solvent and could incidentally reduce other pollutants.

Table 19.2.1.2 Potential Operation Phase Effects on Air Quality

Potential Effect	Effect Pathways
Change in air quality	Air contaminant emissions from natural gas-fired equipment (e.g., gas-fired engines and gas turbines) during operation

The maximum estimated emissions from the Project were calculated based upon the type and size of the natural gas fired engines for the Project. The maximum potential air emissions associated with the Project,

based on 8,760 hours per year of operation are summarized in Table 19.2.1.3. While expected to be very small, as detailed engineering and equipment selection has not yet started, it is not possible to provide quantification of trace level VOC emissions. Emissions of PAHs and metals are expected to be negligible.

Table 19.2.1.3 Project Operations Phase Air Contaminant Emissions

Pollutant	Potential Annual Emissions (tonne/year)
NO_X	1128
CO	781
$PM_{2.5}$	180

Decommissioning and Abandonment

Atmospheric emissions during the decommissioning and abandonment phase would be similar or less than those associated with construction.

Mitigation

Construction

Potential construction-phase air-quality mitigation measures typical for power-generation projects are listed in Table 19.2.1.4. Transportation and major component construction will drive the highest short-term emissions; other activities (e.g., site preparation) contribute smaller amounts. Although construction may span over two years, emission rates will vary substantially. Given the short duration and limited magnitude, substantial ambient-air-quality changes are unlikely.

Table 19.2.1.4 Potential Construction Phase Mitigation Measures for Air Quality

Potential Effect	Effect Pathways	Mitigation Measures
Change in air quality	Dust generated during soil stripping and grading, and through vehicle/equipment movement on the construction footprint and unpaved roads	• Conduct work in ways that minimize dust generation. • Apply dust suppression (e.g., water) and pause activities during high winds. • Promptly revegetate disturbed surfaces to prevent wind erosion. • Stabilize temporary stockpiles (e.g., cover or vegetate).
	Air-contaminant emissions from equipment and vehicles burning hydrocarbon fuel during construction activities	• Require vehicles/equipment to meet applicable emission standards (On-Road Vehicle and Engine Emission Regulations (Government of Canada 2003); Off-road Compression- and Large Spark-Ignition Engine Emission Regulations (Government of Canada 2020). • Ensure sulphur concentration in diesel does not exceed 15 mg/kg (Sulphur in Diesel Fuel Regulations) (Government of Canada 2002). *Reduce idling as a best practice.*

Operation

Operational air-quality mitigation measures typical for power-generation facilities are shown in Table 19.2.1.5. Additional facility-specific measures may be developed as engineering advances. Project NOx emissions will meet applicable provincial (AEPA 2005, AEPA 2025) and federal requirements (ECCC 2016, ECCC 2017).

Table 19.2.1.5 Potential Operations Phase Mitigation Measures for Air Quality

Potential Effect	Effect Pathways	Mitigation Measures
Change in air quality	Air contaminant emissions from hydrocarbon-fueled equipment (e.g., gas turbines and engines) during operation	• Design to meet ambient-air-quality objectives and best-available control technology (BACT). • Use clean-burning natural gas to lower $PM_{2.5}$ and SO_2 emissions. • Install advanced controls (e.g., SCR) to limit NOx to regulated levels; SCR may cause negligible ammonia slip (NH_3). • Ensure NOx emissions are below the Multi-Sector Air Pollutants Regulations (ECCC 2016) and Guidance for managing nitrogen oxide (NOx) emissions from reciprocating engines used for electricity generation: staff directive (AEPA 2025) • Ensure NOx emissions are below the Alberta Air Emission Standards for Electricity Generation (AEPA 2005) and Guidelines for the Reduction of Nitrogen Oxide Emissions from Natural Gas-fuelled Stationary Combustion Turbines (ECCC 2017)

Decommissioning and Abandonment

Mitigation measures similar to those implemented during construction would be employed during decommissioning and/or abandonment activities to reduce potential effects on air quality.

Acoustic Environment

The entire data center campus (i.e., Project and data center) has been considered in the Noise Impact Assessment.

Effect Pathways

Construction

Construction-phase noise will originate from equipment and vehicles. Table 19.2.1.6 summarizes typical effects and pathways for the construction of a power-generation facility.

Table 19.2.1.6 Potential Construction Phase Effects on the Acoustic Environment

Potential Effect	Effect Pathways
Change in existing sound levels that may cause noise annoyance	Noise emissions from stationary and mobile equipment used to construct the facility

Construction activities may include site clearing, surface preparation, excavation, access-road construction, foundation work, and installation of major equipment. Mobile sources include excavators, rock movers, graders, packers, dozers, haul trucks, zoom-booms, concrete trucks, and worker vehicles; stationary sources include generators and light plants. Earth-moving and concrete work are short-term and seasonal. Construction noise is expected to be comparable to other local construction and traffic. Provincial and local requirements typically address construction noise qualitatively (nuisance-based). Site preparation generally produces the highest noise levels; daytime worker traffic may marginally increase noise during arrivals and departures.

Operation

Operational noise primarily arises from engines and generator units, exhausts, ventilation openings, coolers, compressors, pumps, and transformers. Table 19.2.1.7 summarizes typical operational effects and pathways.

Table 19.2.1.7 Potential Operations Phase Effects on the Acoustic Environment

Potential Effect	Effect Pathways
Change in existing sound levels that may cause noise annoyance	Noise emissions from operation of the facility

As described in Section 14.1.2, A Noise Impact Assessment (NIA) has been completed for the Project, comparing Baseline, Project, and cumulative ("Application Case") sound levels at nearby receptors against permissible sound level (PSL) thresholds. The modeling results indicate that the predicted cumulative sound levels for the Application Case meet the daytime and nighttime PSLs at all receptors. Also, based on AUC Rule 012 prescribed approach, low frequency noise effect is not expected at any receptors. The NIA concluded that the Project complies with the AUC Rule 012 requirements (Stantec, 2025).

Mitigation

Construction

Construction noise can be reduced through administrative and engineering controls. Typical measures are listed in Table 19.2.1.8. A Construction Noise Management Plan may be used to guide scheduling, mitigation, communications (including complaint response), and monitoring, as required.

Table 19.2.1.8 Potential Construction Phase Mitigation Measures for Noise

Potential Effect	Effect Pathways	Mitigation Measures
Change in existing sound levels that may cause noise annoyance	Noise emissions from stationary and mobile equipment used to construct the facility	• Limit construction activities to daytime. • Maintain noise-abatement equipment in good working order. • Minimize idling. • Site staging/laydown areas to reduce impact on sensitive receptors. • Install enclosures for generators/compressors. • Avoid simultaneous operation of high-noise equipment where practicable. • Reroute construction and truck traffic when feasible. • Notify nearby residents prior to high-noise activities (e.g., pile driving). • Implement a complaint-response procedure.

Operation

The NIA indicates compliance with all applicable requirements. Examples of mitigation measures that may be implemented during operation are listed in Table 19.2.1.9 and are typical to the operation of power

generation projects. As detailed design information become available, specific mitigation measures can be developed if required.

Table 19.2.1.9 Potential Operations Phase Mitigation Measures for Noise

Potential Effect	Effect Pathways	Mitigation Measures
Change in existing sound levels that may cause noise annoyance	Noise emissions from operation of the facility	• Use enclosures on dominant sources. • Procure equipment with low-noise ratings. • Apply attenuation on air-cooled condensers (ACC) (e.g., lower fan speed, low-noise blades, acoustic materials). • Apply attenuation on HRSGs, intake filter, etc. • Incorporate attenuation on engine exhausts, equipment, and building ventilation (e.g., insulation, inline silencers) as required.

Geology and Hydrogeology

The assessment includes the entire data center campus (i.e., Project and data center).

Effect Pathways

Construction

The Project lies within the Bow River Basin and is underlain by the Paskapoo Formation with interbedded sandstone, siltstone and mudstone lithologies (Prior et al. 2013). Groundwater levels are relatively high, so interaction during excavation is possible.

Construction activities (e.g., excavation and potential dewatering) could alter groundwater quantity and quality, and accidental spills in shallow groundwater areas could have effects. Table 19.2.1.10 summarizes potential construction-phase effects and pathways.

Table 19.2.1.10 Potential Construction Phase Effects on Groundwater

Potential Effect	Effect Pathways
Change in groundwater quality or quantity	Accidental spills
	Disturbance of pre-existing contamination (if discovered)
	Disturbance to soil and parent material above or below the water table may change physical hydraulic properties
	Alteration of shallow groundwater levels or flow rates through drilling of extraction wells or dewatering

Operation

Table 19.2.1.11 summarizes the potential effects and pathways that may occur, and which are typical of facility operations.

Table 19.2.1.11 Potential Operation Phase Effects on Groundwater

Potential Effect	Effect Pathways
Change in groundwater quality or quantity	Accidental spills
	Alteration of shallow groundwater levels through water diversions

Construction dewatering will follow standard practices, directing discharge away from drainage courses, water bodies, and wetlands. Drawdown is expected to be low due to shallow excavations and short dewatering durations. Spills will be contained, removed, and remediated as needed.

Liquid discharges will primarily be stormwater routed to a lined on-site pond to prevent leaching to groundwater. Rarely, spilled contaminants (e.g., diesel, gasoline, industrial oil) may reach the pond via runoff; a Project-specific spill response and reporting plan will be implemented before operations begin. Operational surface runoff will not interact with groundwater.

Mitigation

Construction

Standard construction practices and best-management plans for dewatering effectively limit disturbances to local groundwater. Representative measures are listed in Table 19.2.1.12. With these measures, construction-related effects on groundwater are not anticipated.

Table 19.2.1.12 Potential Construction Phase Mitigation Measures for Groundwater

Potential Effect	Effect Pathways	Mitigation Measures
Change in groundwater quality or quantity	Accidental spills	• Develop and implement spill-risk procedures. • Contain, remove, and remediate contaminants if a spill occurs. • Meet federal/provincial spill-response and reporting requirements. • Use secondary containment for refueling; place spill trays under stationary equipment near shallow groundwater.
	Disturbance of pre-existing contamination (if discovered)	• Implement contamination management and contingency plans if potentially contaminated soil or water is encountered.
	Disturbance to soil and parent material above or below the water table may change physical hydraulic properties Alteration of shallow groundwater levels or flow rates through dewatering	• Monitor water levels in open excavations; limit trench-open times. • Discharge water away from drainage courses, water bodies, and wetlands (locations identified by a qualified environmental monitor). • Monitor discharge sites for erosion/saturation or off-site flow; suspend or adjust dewatering and apply erosion control if needed.

Operation

Mitigation measures during the operations phase include monitoring of the groundwater network for potential contaminants related to operation of the Project. Once the hydrogeological investigation for the Project is completed, the potential residual effects on groundwater quantity will be evaluated and included in the DPD (if required).

Decommissioning and Abandonment

Mitigation measures similar to those implemented during construction would be employed during decommissioning and/or abandonment activities to reduce potential effects on groundwater due to dewatering and potential spills.

Soils

The assessment includes the entire data center campus (i.e., Project and data center).

Effect Pathways

The Project lies on land under annual cultivation and is within Soil Correlation Area 6. Potential effects on soil quality and quantity could occur during construction, operation, and decommissioning/ abandonment.

Construction

During construction of the power generation facility, topsoil will be stripped in areas undergoing ground clearance, trenching, and grading. Topsoil stockpiles will be stored on site long-term until reclamation activities commence during the decommissioning and abandonment phase. Wind and water erosion of exposed soils may occur during soil stripping, prior to trench backfill, and exposed areas prior to vegetation establishment.

Topsoil will be stripped where clearing, trenching, and grading are required; stockpiles will be stored on-site until reclamation during decommissioning/abandonment. Exposed soils may be susceptible to wind and water erosion. Vehicle/equipment traffic—especially under wet conditions—can cause compaction, rutting, and loss of soil structure. Admixing of horizons may occur during salvage/storage/trenching where colour contrasts are subtle. Terrain grading may alter surface drainage, affecting soil moisture and erosion risk. Although the area is previously cultivated (and contamination is unlikely), historical spills are possible. Table 19.2.1.13 summarizes construction-phase effects and pathways.

Table 19.2.1.13 Potential Construction Phase Effects on Soils

Potential Effect	Effect Pathways
Change in soil quality or quantity	Soil contamination through disturbance of pre-existing contamination (if discovered), contaminated dust accumulation, or accidental spills
	Compaction, rutting, or loss of soil structure during vehicle and equipment movement and hauling
	Loss or alteration of soil through admixing during grading and soil handling activities
	Soil volume loss through wind and water erosion during clearing, grading, and soil handling
	Alteration of terrain contours including soil subsidence through grading or trenching

Operation

No new soil disturbance is anticipated to occur within the operation phase. However, exposed soils following the construction of the power generation facility are susceptible to soil volume loss through wind and water erosion. In addition to wind and water erosion, soil compaction, rutting, loss of soil structure, and accidental spills may occur from equipment or vehicle traffic during operation within the power generation facility. Alteration of soil structure, tilth, and soil porosity due to compaction, rutting, or pulverization may occur are particularly at risk where there are wet soil conditions. Traffic during operation

may include equipment use associated with operation of the power generation facility. Table 19.2.1.14 summarizes the potential effects and pathways that may occur, and which are typical of power generation facility construction projects.

Table 19.2.1.14 Potential Operation Phase Effects on Soils

Potential Effect	Effect Pathways
Change in soil quality or quantity	Soil contamination through accidental spills
	Compaction, rutting, or loss of soil structure during vehicle or equipment movement
	Soil volume loss through wind and water erosion in exposed soils following clearing, grading, and soil handling and during storage

Decommissioning and Abandonment

During decommissioning and abandonment phases, project infrastructure is typically removed and discarded followed by re-grading, topsoil replacement, and seeding. Soil water erosion, wind erosion, compaction, rutting, admixing, and accidental spills could occur through soil handling and vehicle traffic during re-grading, topsoil replacement, and other potential reclamation activities. Table 19.2.1.15 provides the potential effects and pathways that may occur during decommissioning and/or abandonment of the Project.

Table 19.2.1.15 Potential Decommissioning and Abandonment Phase Effects on Soils

Potential Effect	Effect Pathways [1]
Change in soil quality or quantity	Soil volume loss through wind and water erosion during re- grading and replacement of topsoil
	Compaction, rutting, or loss of soil structure during vehicle or equipment movement or hauling
	Loss or alteration of soil through admixing during re-grading, top-soil replacement and other soil handling activities
	Soil contamination through accidental spills

Note:

[1] Effect pathways presented are under the assumption that soil disturbance will occur during infrastructure removal and topsoil replacement during the decommissioning and abandonment phase

Mitigation

Construction

Mitigation measures to be implemented as appropriate during construction to address potential effects on soil quality and quantity are listed in Table 19.2.1.16 and are typical for similar facility construction projects. As Project planning progresses, further mitigation measures, including Project-specific mitigation measures for sensitive resources, will be developed.

Table 19.2.1.16 Potential Construction Phase Mitigation Measures for Soils

Potential Effect	Effect Pathways	Mitigation Measures
Change in soil quality and quantity	• Soil volume loss through wind and water erosion • Compaction/rutting/loss of structure	• Maintain intact ground where grading is unnecessary. • Suspend topsoil stripping during excessively wet or high-wind conditions. • Limit motorized traffic in wet conditions and confine movement to suitable surfaces to minimize compaction and rutting.

Potential Effect	Effect Pathways	Mitigation Measures
	• Admixing during grading/handling • Contamination from pre-existing sources, dust, or spills • Altered terrain contours including subsidence through grading or trenching	• Salvage soil per the Topsoil Conservation Use Plan (separate topsoil/subsoil; alternative handling for problem soils). • Ensure a qualified soil environmental professional (or designate) oversees salvage to minimize admixing of contrasting horizons (e.g., suitable topsoil over unsuitable saline-sodic subsoil such as Camrose series). • Avoid storing salvaged soils in low areas susceptible to spring breakup. • Backfill/compact trenches in lifts when not frozen; prevent trench crowning. • Regrade rutted/eroded areas and settled trenches; scarify seedbeds as needed. • After adverse weather, verify erosion and sediment control (ESC) effectiveness and correct if required. • Restore grades and drainage to pre-construction contours or stable grade, unless directed otherwise by regulators. • Develop a Soils Contingency Plan for any suspected contamination encountered.

Operation

Mitigation measures like those implemented during construction will be employed operation activities to reduce potential temporary residual effects to soil quality and quantity. Additional mitigation measures to be implemented as appropriate during operation to address potential effects on soil quality and quantity are listed in Table 19.2.1.17 and are typical for similar facility construction projects. As Project planning progresses, further mitigation measures, including Project-specific mitigation measures for sensitive resources, will be developed.

Table 19.2.1.17 Potential Operation Phase Mitigation Measures for Soils

Potential Effect	Effect Pathways	Mitigation Measures
Change in soil quality and quantity	• Soil contamination through accidental spills • Soil volume loss through wind and water erosion in exposed soils following clearing, grading and soil handling and during storage • Compaction, rutting, or loss of soil structure during vehicle or equipment movement	• Monitor disturbance areas and stockpiles for weeds, sedimentation, and erosion during operations and address per the ESC Plan

Decommissioning and Abandonment

Mitigation measures like those implemented during construction will be employed during decommissioning and/or abandonment activities to reduce potential temporary residual effects to soil quality and quantity. Additional mitigation measures to be implemented as appropriate during operation to address potential effects on soil quality and quantity are listed in Table 19.2.1.18 and are typical for power generation facility construction projects. As Project planning progresses, further mitigation measures, including site-specific mitigation measures for sensitive resources, will be developed.

Table 19.2.1.18 Potential Decommissioning and Abandonment Phase Mitigation Measures for Soils

Potential Effect	Effect Pathways	Mitigation Measures
Change in soil quality and quantity	• Soil volume loss through wind/water erosion during re-grading and topsoil replacement • Compaction/rutting/loss of structure during vehicle/equipment movement or hauling • Admixing during re-grading/topsoil replacement and handling • Contamination through spills	• Store soil on-site until reclamation during decommissioning/abandonment. • Where topsoil segregation occurred, replace subsoil first, then uniformly spread topsoil over areas of removal. If multiple lifts were salvaged, restore them in original order to limit admixing.

Vegetation and Wetlands

The assessment includes the entire data center campus (i.e., Project and data center.

Effect Pathways

Construction

The site is predominantly cultivated, surrounded by cultivation and industrial land. Construction will clear natural vegetation and disturb wetlands; areas within the facility fence line will be graded. Table 19.2.1.19 summarizes effects and pathways.

Table 19.2.1.19 Potential Construction Phase Effects on Vegetation and Wetlands

Potential Effect	Effect Pathways
Change in vegetation communities and species	Direct loss/alteration of native communities or species of conservation concern due to clearing and ground disturbance
	Indirect changes via introduction and spread of weeds from materials and equipment/vehicle movement
Change in wetlands	Direct loss/alteration of wetland vegetation from clearing and disturbance
	Change in hydrological regime, storage capacity or overall function

Operation

Following completion of the facility construction, operations phase effects on native vegetation and wetlands are anticipated and will include vegetation management (i.e. weed control). Table 19.2.1.20

summarizes the potential effects and pathways that may occur. No additional further direct operation phase effects are anticipated for vegetation communities or wetlands from the power generation facility. However, introduction and spread of weeds will continue to be a potential effect pathway for the facility and ancillary infrastructure.

Table 19.2.1.20 Potential Operation Phase Effects on Vegetation and Wetlands

Potential Effect	Effect Pathways
Change in vegetation communities and species	Indirect changes through weed introduction and spread from vehicle/equipment movement

Decommissioning and Abandonment

A net positive effect on vegetation and wetlands may occur if the power generation facility is removed, and the site is restored. There are no plans to reclaim removed wetland area; however new wetland area could potentially develop following decommissioning and abandonment if suitable topography and hydrology is present in the reclaimed landscape.

Table 19.2.1.21 summarizes the potential effects and pathways that may occur.

Table 19.2.1.21 Potential Decommissioning and Abandonment Phase Effects on Vegetation and Wetlands

Potential Effect	Effect Pathways
Change in vegetation communities and species	Indirect changes via weed introduction and spread from vehicle/equipment movement
	Increase in native vegetation area or species of conservation concern (including species at risk) through reclamation
Change in wetlands	Increase in wetland area arising from reclamation
	Change in hydrological regime, storage capacity or overall function (where tree growth is not suppressed)

Mitigation

Construction

Mitigation measures to be implemented as appropriate during construction to address potential effects on native vegetation and wetlands are listed in Table 19.2.1.22 and are typical for power generation facility construction projects. As Project planning progresses, further mitigation measures, including Project-specific mitigation measures for sensitive resources, will be developed.

Table 19.2.1.22 Potential Construction Phase Mitigation Measures for Vegetation and Wetlands

Potential Effect	Effect Pathways	Mitigation Measures
Change in vegetation communities and species	Indirect changes via weed introduction and spread from materials and equipment/vehicle movement	• Ensure all equipment/materials arrive clean and leak-free to reduce risk of weeds, pathogens, or contaminants. • Flag areas with known noxious/invasive weeds prior to site preparation. • Monitor topsoil windrows for weeds during non-frozen periods and implement corrective measures if needed. • Conduct weed monitoring, soil-pathogen testing, and control during construction/operation as required by the inspector.

Potential Effect	Effect Pathways	Mitigation Measures
		• Implement clean-up upon construction completion.
	Direct loss/alteration of native communities or species of conservation concern from clearing and disturbance	• Do not clear or grub beyond marked boundaries. • Use minimum-disturbance techniques where grading is unnecessary. • Reclaim temporarily disturbed areas per land-manager requirements (natural revegetation and/or seeding). • Cover exposed surfaces of permanently disturbed areas with mulch/stone or revegetate post-construction to limit invasive proliferation.
Change in wetlands	Direct loss and/or alteration of wetland vegetation arising from vegetation clearing and ground disturbance	• Minimize vegetation removal and disturbance in wetlands. • Direct any necessary dewatering to locations that avoid wetland effects. • Obtain Water Act approvals for wetlands to be graded/removed and any permanently impacted wetlands, including catchment changes; provide compensation per the Alberta Wetland Policy (GoA 2013). • Mark boundaries of surrounding wetlands before clearing • Limit tree clearing to what is required • Retain stumps on slopes/around wetlands for stability (where possible) • Avoid laydowns within wetland boundaries unless required • Grade away from retained wetlands • Prefer natural recovery in temporarily disturbed wetlands.
Change in wetlands	Change in hydrological regime, storage capacity or overall function	• Prohibit refueling/washing within 100 m of wetlands. • Where rutting/admixing/compaction risk exists, apply protective layers (e.g., snow/ice, geotextile and fill, rig/swamp/access mats). • Use berms, cross-ditches, sediment fencing, or other measures to prevent erosion/siltation into adjacent wetlands. • Replace trench material promptly to restore cross-ROW drainage and pre-construction contours within wetland boundaries. • Maintain cross-drainage at temporary roads and pathways.

Following implementation of mitigation, construction will result in temporary to long-term residual adverse effects on native vegetation and wetlands where cleared or altered. Residual effects are reversible to irreversible (wetland loss) post-reclamation; permanent wetland impacts will be compensated under the Alberta Wetland Policy (GoA 2013).

Operation

Mitigation measures similar to those implemented during construction will be employed during operation activities to reduce potential temporary residual effects on native vegetation and wetlands (i.e., to prevent rutting, and to prevent introduction and spread of weeds).

With implementation of mitigation measures, potential residual effects from operation are considered reversible.

Decommissioning and Abandonment

Mitigation measures similar to those implemented during construction will be employed during decommissioning and/or abandonment activities to reduce potential temporary residual effects on native vegetation and wetlands (i.e., to prevent introduction and spread of weeds and soil pathogens)

With implementation of mitigation measures, potential residual effects from decommissioning and abandonment are considered reversible following reclamation.

19.3 Marine Environment

No adverse effects to the marine environment are anticipated as a result of Project activities. The Project is located entirely within inland Alberta and has no interaction with marine ecosystems.

19.4 Interprovincial Waters

No adverse effects to interprovincial waters, boundary waters, or international waters are anticipated. The Project will rely on municipal water supply and does not involve water withdrawals, diversions, or discharges that would affect interjurisdictional water bodies.

20. Summary of Federal Jurisdiction Considerations

The Project is not expected to have effects on lands outside of Alberta or Canada. The Project is not located on federal lands, although there are Indigenous reserve lands in the vicinity of the Project (see Section 20.1). As such, no changes to the environment are expected to result on federal lands or in a province other than Alberta from the Project.

20.1 Extra-Provincial Lands

The Project is not anticipated to affect lands or interprovincial watercourses beyond Alberta or Canada. It is not situated on federal lands; however, Indigenous reserve lands are located nearby. Indigenous reserves within 50 km of the Project and their straight-line distances from the reserve boundary to the Project area are listed in Table 20.1.1, while reserves within are detailed in Section 3.1.5. The Project is not expected to have effects on lands or interprovincial watercourses outside of Alberta or Canada.

Table 20.1.1 Distance from the Project Footprint to Nearby Indigenous Reserves

Peoples	Distance (km)
Tsuut'ina Nation	23
Siksika Nation	36

Given the distance to nearby reserves, and based on the environmental effects analysis in Section 19.2, no changes to federal lands are expected. The closest reserves— Tsuut'ina Nation and Siksika Nation —are

located more than 20 km from the Project, and no Project-related pathways are anticipated that could result in adverse effects to federal lands.

Considering the Project's size and the localized nature of its potential effects on air quality, noise, geology, hydrogeology, surface water, fish and fish habitat, soils, vegetation, wetlands, and wildlife, no adverse environmental changes beyond Alberta are anticipated.

20.2 Federal Lands

The Project will not be carried out on federal lands and does not constitute a federal work or undertaking as defined in subsection 3(1) of the Canadian Environmental Protection Act, 1999. No effects on federal lands are anticipated.

21. Potential Impacts on Traditional Land Use, Physical and Cultural Heritage, and Historical, Archaeological and Paleontological Resources

21.1 Indigenous Land Use

The Project lies within Treaty 7 territory, in a region where several Indigenous groups may exercise Treaty and traditional rights. Indus Power/Beacon identified the following groups as potentially interested in the Project:

> Tsuut'ina Nation; Piikani Nation; Siksika Nation; Blood Tribe; Stoney Nakoda Nation – Bearspaw; Eden Valley 216; Stoney Nakoda Nation – Chiniki; Stoney Nakoda Nation – Goodstoney; Stoney Nakoda Nation - Bighorn 144A; Metis Nation of Alberta Region 3; Métis Nation of Alberta - Otipemisiwak Métis Government; Metis Nation of Alberta - Otipemisiwak Métis Government - Battle River Territory - Rocky View Metis District.

The Project is located on privately owned land zoned for Data Centre Campus, with extensive historical cultivation and limited natural vegetation. As a result, the potential for current traditional land use, such as hunting, plant harvesting, or cultural practices, within the Project area is low.

While Indigenous land use may occur regionally, direct overlap with the Project area is expected to be limited and primarily restricted to temporary construction-related access constraints. Indus Power/Beacon will continue engagement with Indigenous communities (IAAC 2024) to identify interests, gather input, and address concerns. Communication will continue during construction to avoid conflicts with land users where feasible.

Given land status, zoning, and existing industrial disturbance, no significant adverse effects to current use of lands and resources for Indigenous purposes are anticipated.

21.2 Historical Resources

The Project received a Historical Resources Act (HRA) approval on December 2, 2025 (HRA No. 4835-25-0121-001) from Alberta Arts, Culture and the Status of Women (AACSW). Therefore, no residual effects on historical resources are anticipated. As with all projects regulated under the HRA, accidental or chance

discoveries during construction or operation must be reported in accordance with Section 31 of the HRA (AACSW 2023).

22. Potential Effects on Indigenous Health, Social, and Economic Conditions

The Project is located on private agricultural land within Rocky View County. As it does not affect constitutionally protected rights or traditional harvesting, no direct impact to Indigenous Peoples is expected. Recognizing Indigenous concerns about such effects, Indus Power/Beacon is actively engaging with Stakeholders to minimise environmental impacts while promoting opportunities for both Alberta and Indigenous communities.

Indus Power/Beacon has engaged with 10 First Nations, Indigenous communities, Métis Associations, and local representatives, with plans to continue engagement with the intent of collaboration throughout the project's lifecycle. The organization is committed to building respectful, inclusive, long-term relationships, guided by the Truth and Reconciliation Commission's Call to Action #92. Indus Power/Beacon aims to create employment, contracts, and economic participation opportunities for Indigenous peoples, actively identifying barriers and procurement options to ensure equitable access. The Indigenous participation program is central to Indus Power/Beacon's social license within these traditional territories, emphasizing strategic cooperation for sustainable socio-economic outcomes. Where direct project related benefits may not exist for representative Indigenous peoples, we will look for other socio-economic opportunities that can provide positive indirect benefit to Indigenous peoples.

The environmental impacts of Project construction and operation on lands outside the Project area are anticipated to be negligible; therefore, effects on Indigenous peoples are also expected to be negligible. Environmental changes, including those affecting soil, vegetation, wildlife, and heritage resources, are expected to remain largely confined to the Project area, and the Project is not anticipated to affect the aquatic environment.

While impacts on air quality, noise, and human health may extend beyond the Project area, they are not expected to exceed regulatory standards once appropriate mitigation measures are applied. Socio-economic effects will also extend beyond the Project area but are expected to be positive due to the Project's economic benefits, and any impacts on social services can be managed through existing infrastructure. Effects on Indigenous peoples—including health and socio-economic conditions, physical and cultural heritage, historically or archaeologically significant sites, and current traditional land use—are expected to be negligible.

Indus Power/Beacon acknowledge that the Project is within an area where Indigenous groups may exercise rights. Indus Power/Beacon will continue engagement and, if potential effects are identified, will assess the need for additional mitigation. Effects on Indigenous peoples, including land use, socio-economic conditions, health, and cultural heritage, are expected to be negligible, given the Project's industrial zoning, private-land status, and low traditional-use potential.

Indus Power/Beacon will continue Indigenous engagement and support long-term opportunities for economic participation.

23. Estimate Of Any Greenhouse Gas Emissions Associated with The Project

During Project construction and operation, greenhouse gas (GHG) emissions expressed as CO_{2e} are associated with CO_2, methane (CH_4), and nitrous oxide (N_2O) emissions. The estimates of the number, type or size of construction equipment and quantities of material that will be moved are not available to allow for the quantification of construction emissions. Construction emissions will be limited to the construction phase and are typically less than operational emissions for most pollutants.

The CO_2 emissions are based upon engine manufacturer performance estimates conservatively assuming power output (1200 MW_e), and a 100% utilization factor (365 days of operation per year). Emissions of CH_4 and N_2O are based upon ECCC emission factors and conservatively assume no removal. The Global Warming Potential of CH_4 and N_2O are 28 and 265 based upon the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Project operation GHG emissions are summarized in Table 23.1.1. Net Project GHG emissions are calculated consistent with equation 1 of the Strategic Assessment of Climate Change.

Table 23.1.1 Estimated Maximum Project GHG Emissions Associated with Operation

Pollutant	GHG Emissions (kilotonne/year)	GHG Emission Intensity (t/GWh)
CO_2	4067	
CH_4	17.2	
N_2O	0.886	
CO_2e	4,784	455

Notes:

CO_2e calculated upon GWP as $CO_2e = CO_2 + 28 \times CH_4 + 265 \times N_2O$

kg/MWh – kilogram per megawatt hour

Construction and decommissioning and abandonment emissions will be limited to the construction and decommissioning and abandonment phases of the Project, and are expected to be less than Project operations, and occur for a limited duration. Construction emissions are small compared to Project operations. GHG emissions during the decommissioning and abandonment phase would be similar or less than those associated with construction phase.

The Strategic Assessment of Climate Change requires projects with a lifetime beyond 2050 to detail how the Project will achieve net-zero emissions by 2050. There are several potential pathways for the Project to achieve net-zero emissions by 2050, including the incorporation of a small amount of renewable (carbon-negative) natural gas or hydrogen into the Project fuel mix, or through offsets. Additionally, the Project has been designed with flexibility to allow for the integration of carbon capture and storage infrastructure in the future, including consideration of space allocation that could support future CCS (Carbon capture and storage). Indus Power will monitor technological advancements to assess implementation of mitigation measures based on market conditions as well as regulatory frameworks to ensure operational compliance.

24. Types of Waste and Emissions Generated

The Project will generate air emissions (during construction, operation, and decommissioning/abandonment), noise emissions, surface runoff discharges, domestic wastewater, and general operational wastes.

24.1 Air

Air emissions associated with construction and operation of the Project will result from several sources (see Section 19.2.1 – Air Quality and Section 23 – GHG Emissions).

Particulate matter (PM) consists of solid particles and liquid droplets suspended in air. PM is characterized by particle size:

- *PM_{10} includes coarse dust particles between 2.5 and 10 microns in diameter, commonly generated through crushing, grinding, and vehicle movement on unpaved roads.*
- *$PM_{2.5}$ includes fine particles with diameters of 2.5 microns or smaller, often originating from combustion and certain industrial processes.*

During construction, fugitive dust and fine particulate emissions will be generated through land clearing, site preparation, grading, excavation, earth moving, and vehicle travel on unpaved areas. Off-road construction equipment (e.g., dozers, loaders, compressors) will emit combustion by-products such as NO_x, CO, and VOCs.

Fugitive dust emissions ($PM/PM_{10}/PM_{2.5}$) will be highest during early construction activities (clearing, stripping) and during peak periods of vehicle and equipment movement.

During operations, air contaminants will be generated primarily from natural gas combustion at the facility. Greenhouse gas emissions associated with the Project are provided in Section 23.

24.2 Noise

Noise emissions during construction will originate from stationary and mobile construction equipment. During operations, noise sources will include lean-burn natural gas engines and generator units, genset exhaust outlets, genset ventilation outlets, coolers, compressors, transformers, gas turbines, steam turbines, HRSGs, and other auxiliary equipment.

For a detailed description of potential noise pathways and mitigation, refer to Section 19.2.1 – Acoustic Environment.

A Noise Impact Assessment (NIA) was completed for the Project. The NIA determined that:

- *Predicted cumulative sound levels for the Application Case comply with AUC Rule 012 daytime and nighttime permissible sound levels (PSLs) at all receptors.*
- *Low-frequency noise effects are not expected at any receptors.*
- *The Project meets all requirements under AUC Rule 012.*

In the event of a noise complaint, Indus Power will follow the AUC Rule 012 complaint resolution process (AUC 2024b), which includes timely investigation and may include completing a comprehensive sound survey under representative conditions.

Refer to Appendix C for the Noise Impact Assessment.

24.3 Liquid Discharges

Liquid discharges from the Project will include, surface water runoff, dewatering during excavation, and domestic wastewater during construction and operations.

Optimization of process water generation and disposal will continue through project development and further described in the DPD (if required).

Indus Power will be connected to the East Rocky View County Regional Waste Water System (RVCRWWS). The RVCRWWS has capacity to accommodate all process waste water and waste water effluent from the Project, however, should it be determined that elements of the process wastewater cannot be processed by the RVCCRWWS the impacted waste water will be collected into above ground tanks and disposed of in accordance with regulatory codes and practices.

No new water diversion infrastructure is required.

24.4 Other Wastes

Other types of waste that are anticipated to be generated during the construction, operation, and decommissioning and abandonment phases are included below. This list is preliminary and will be further refined.

- Domestic waste and industrial garbage
- Recyclables (wood, paper, metal, plastics)
- Waste Oil
- Hazardous Waste (paint, solvents, batteries, fluorescent light bulbs, herbicides, etc.)
- Relief valve discharges

All wastes will be stored in appropriate, labelled receptacles or containment areas and removed from site for disposal at licensed facilities in accordance with applicable regulations.

[1] This assessment includes the entire data center campus (i.e., Project and data center).

PART F - Summary

25. Plain-Language Summary

A plain-language summary of the information that is required under items 1 to 24 in English and in French.

26. References

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Appendices

Appendices attached as a separate document.