Canada Kuwait Petrochemical Corporation

Sturgeon Petrochemical Rail Yard Project - Project Description

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CANADA KUWAIT PETROCHEMICAL CORPORATION

Contents

Tables within Text

Figures

Appendices

List of Acronyms

Acronym	Definition
AAAQO	Alberta Ambient Air Quality Objectives
ABMI	Alberta Biodiversity Monitoring Institute
ABWRET-A	Alberta Wetland Rapid Evaluation Tool – Actual
ACIMS	Alberta Conservation Information Management System
ACT	Alberta Culture and Tourism
AEP	Alberta Environment and Parks
AER	Alberta Energy Regulator
AIH	Alberta's Industrial Heartland
AIHA	Alberta's Industrial Heartland Association
ATRIS	Aboriginal and Treaty Rights Information System
CAAQS	Canadian Ambient Air Quality Standards
CAC	Criteria Air Contaminants
CASA	Clean Air Strategic Alliance
CEAA	Canadian Environmental Assessment Agency
CKPC	Canada Kuwait Petrochemical Corporation
CNR	Canadian National Railway
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CUB	Central Utilities Block
ECCC	Environment and Climate Change Canada
ECFR	Electronic Code of Federal Regulations
EIA	Environmental Impact Assessment
EPEA	*Environmental Protection and Enhancement Act*
ESRD	Alberta Environment and Sustainable Resource Development
FAP	Fort Air Partnership

Acronym	Definition
FWMIS	Fish and Wildlife Management Information System
GHG	Greenhouse Gas
HC	Hydrocarbon
HCl	Hydrochloric Acid
HDPE	High Density Polyethylene
IAA	Industrial Approval Application
IH	Heavy Industrial (zoning)
MW	Megawatts
NAAQO	National Ambient Air Quality Objectives
NCIA	Northeast Capital Industry Association
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NRTA	Natural Resources Transfer Act
NSR	North Saskatchewan River
NSRP	North Saskatchewan Regional Plan
O_3	Ozone
PDH/PP	Propane Dehydrogenation/Polypropylene
PDH/PP Facility	Propane Dehydrogenation/Polypropylene Facility
Pembina	Pembina Pipeline Corporation
PIC	Petrochemical Industries Company K.S.C.
$PM_{2.5}$	Particulate Matter Less Than 2.5 Microns (μ) in Diameter
RAC	Railway Association of Canada
RDL	Reliable Detection Limit
RFS	Redwater Fractionation and Storage
RNMP	Regional Noise Management Plan
RWDI	Rowan Williams Davies & Irwin Inc.
SARA	*Species at Risk Act*
SIT	Storage in Transit

Acronym	Definition
SIF	Strategic Innovation Fund
SO_2	Sulfur Dioxide
SoJ	Statement of Justification
US EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WAIR	Wetland Assessment and Impact Report

1. General Information and Contacts

This Project Description document has been prepared in accordance with the Canadian Environmental Assessment Agency (CEAA) Guidance (CEAA 2015) with the objective of conforming to the requirements set out in the *Prescribed Information for a Description of a Designated Project Regulations* (CEAA 2012a) under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012b). This Project Description has been prepared for the purpose of determining whether a federal environmental assessment is required for a designated project pursuant to the *Canadian Environmental Assessment Act, 2012* (CEAA 2012b).

1.1 Nature and Location of the Designated Project

The Proponent, Canada Kuwait Petrochemical Corporation (CKPC), plans to build, own and operate the Sturgeon Petrochemical Rail Yard (the Project) in support of a propane dehydrogenation/polypropylene (PDH/PP) Facility (the PDH/PP Facility). The PDH/PP Facility will be designed to convert propane to polypropylene plastic pellets. The pellets will be loaded into rail cars for transport to international and local markets, either through rail cars or transferred to bags at an on-site bagging facility for transport by container trucks. The Project also includes a Pembina Pipeline Corporation (Pembina) Rail Line, which will connect the rail yard to an existing Canadian National Railway (CNR) rail line.

CKPC is an equal partnership joint venture between Calgary's Pembina Pipeline Corporation (Pembina) and Kuwait's Petrochemical Industries Company K.S.C. (PIC).

The Project and the PDH/PP Facility are co-located on the same property within Alberta's Industrial Heartland (AIH). The Project will be located on land currently owned by Pembina within the northwest (NW), northeast (NE) and southeast (SE) quarters of Section 11 and the East half of Section 2, Township 56, Range 22, West of the Fourth Meridian, with latitude and longitude coordinates of 53° 49′ 24.6′′ N and 113° 9′ 35.1′′ W. The portion of land that includes the Project and the PDH/PP Facility will be transferred to CKPC from Pembina prior to the start of construction. The Pembina Rail Line will remain on Pembina-owned land.

The Project will be located in the AIH, near multiple industrial facilities (Figure 1). A map of the Project relative to other industrial developments within the AIH is included in Appendix 1 (Figure A1-1). The map helps to put the Project into context within the overall plans for development of the area as largely industrial with a strong local industrial base of oil refineries, chemical manufacturing, and power generation facilities.

The Project will comprise 42 yard tracks with approximately 25 kilometres (km) total length of track and includes tracks for rail car loading, rail car storage for both empty and full rail cars, a building for rail car loading with associated rail car washing, and a transloading/bagging facility. The Project also includes the construction of a Pembina Rail Line, which will connect the CKPC rail yard at the southwest PDH/PP Facility boundary to the existing CNR rail line located within Section 36, Township 55, Range 22, West of the Fourth Meridian. Once constructed, the Project will occupy an area of approximately 40 hectares (ha).

The Project location in relation to provincial and international boundaries is provided in Figure 2. Key regional features are indicated on Figure 3.

1.2 Proponent Information

Name of the Designated Project:

Sturgeon Petrochemical Rail Yard Project

Name of the Proponent:

Canada Kuwait Petrochemical Corporation (CKPC)

CKPC is an equal partnership joint venture between Pembina and PIC.

Address of the Proponent:

Canada Kuwait Petrochemical Corporation

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Calgary, Alberta, T2P 1G1

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Regulatory and Environment Manager, Canada Kuwait Petrochemical Corporation

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1.3 Summary of Parties Engaged to Date

Below is a summary of the key stakeholders and groups engaged to date:

Engagement with members of the public has been ongoing since 2017 through presentations on the Project and the PDH/PP Facility at several public events. Each event listed below provided opportunities for questions and comments following.

- Alberta's Industrial Heartland Association (AIHA) Board Meeting, November 2017;
- Redwater Mixer, November 2017; and
- Heartland Stakeholder Event, January 2018.

The following government and local authorities have been engaged though the regulatory process.

- Alberta Environment and Parks (AEP);
- Alberta Culture and Tourism (ACT);
- Alberta Transportation;
- Innovation, Science and Economic Development Canada;
- Natural Resources Canada;
- Infrastructure Canada;
- AIH Association; and
- Sturgeon County.

The Indigenous Groups that were engaged for the Project are presented in the Table A.

Table A Indigenous Groups Engaged as Related to the Project

First Nations – Treaty 6	
Alexander First Nation	Montana First Nation
Alexis Nakota Sioux Nation	Paul First Nation
Beaver Lake Cree Nation	Saddle Lake Cree Nation
Enoch Cree Nation	Samson Cree Nation
Ermineskin Cree Nation	Whitefish Lake #128 First Nation
Louis Bull Tribe	
First Nations – Treaty 7	
Blood Tribe	Stoney (Chiniki) Band
Piikani Nation	Stoney (Wesley) Band
Siksika Nation	Tsuut'ina Nation
Stoney (Bearspaw) Band	
First Nations – Treaty 8	
Chipewyan Prairie Dene First Nation	Fort McMurray #468 First Nation
Métis	
Métis Nation of Alberta – Region 1	Buffalo Lake Métis Settlement
Métis Nation of Alberta – Region 2	Kikino Métis Settlement
Métis Nation of Alberta – Region 4	Gunn Métis Local #55
Other First Nations	
Foothills Ojibway First Nation	

1.4 Requirements Under Other Jurisdictions

1.4.1 Federal Jurisdiction

- *Fisheries Act* (Government of Canada 1985b)
  - The *Fisheries Act* focuses on conservation and protection of fish habitat essential to sustaining freshwater and marine fish species. The construction, operation and decommissioning of the Project must not harm fish that are part of a commercial, recreational or Indigenous Peoples fishery. A *Fisheries Act* permit is not required for the Project.
- *Migratory Birds Convention Act, 1994* (MBCA; Government of Canada 1994)
  - The construction, operation and decommissioning of the Project must not harm migratory birds and must not cause disturbance or destruction of their nests and eggs.
- *Species at Risk Act (SARA;* Government of Canada 2002*)*
  - SARA-listed species must not be harmed by the construction, operation, or decommissioning of Project works. It is illegal to kill, harm, harass, capture, or take in any way any species listed under SARA.

Each of these Acts and how they apply to the Project are discussed in detail in Section 5.2 below.

1.4.2 Provincial Jurisdiction

- *Environmental Protection and Enhancement Act* (EPEA) – Environmental Impact Assessment (EIA)
  - Pursuant to Schedule 1 of the Alberta EPEA *Environmental Assessment (Mandatory and Exempted Activities) Regulation* (Government of Alberta 1993), the development of an industrial rail yard is not considered an activity for which an EIA must be conducted prior to receiving approval from AEP. However, the Project was included in the scope of the PDH/PP Facility Project Summary submission to AEP to confirm the exemption of an EIA under the EPEA. On April 21, 2017, AEP provided the decision that no further assessment of the activity was required for the full PDH/PP Facility, including the Project.
- EPEA – Industrial Approval
  - The Project is not included as an activity identified in Schedule 1 (Divisions 1, 2, and 3) of the EPEA *Activities Designation Regulation*; therefore, no industrial approval is required. However, the Project has been included in the scope of the EPEA Application for the PDH/PP Facility.
  - The PDH/PP Facility will consist of a Propane Dehydrogenation (PDH) Facility, a Polypropylene Facility, a Central Utilities Block (CUB), the Project and associated infrastructure (Figure 4). The CUB includes a cogeneration unit with a maximum production capacity of 123 megawatts (MW). The PDH/PP Facility requires an operating Industrial Approval under EPEA and all segments,

including the Project, are described in the Industrial Approval Application (IAA) that was submitted to AEP on June 8, 2018.

- *Water Act / Public Lands Act* - Wetlands
  - Multiple wetlands have been identified within the Project footprint. An application package was submitted on August 20, 2018 and was prepared to fulfill all requirements to obtain *Water Act* approvals for all wetlands anticipated to be disturbed. The application includes a Wetland Assessment and Impact Report (WAIR), *Water Act* approval application package (e.g. cover letter with details of the Project, Avoidance and Minimization Plan, Reclamation Plan, and Wetland Replacement Plan). The Alberta Wetland Rapid Evaluation Tool – Actual (ABWRET-A) values were used to determine wetland replacement (compensation ratios) for anticipated wetland losses, as outlined by the Alberta Wetland Policy. Mitigation measures will incorporate applicable compensation measures, if possible, for potentially affected wetlands and will follow, as appropriate, the Alberta Wetland Policy and the Alberta Wetland Mitigation Directive. A *Water Act* application was completed for each wetland requiring an approval.
  - A Crown Ownership Assessment including all wetlands of reasonable permanence (i.e. wetlands belonging to Class 4, Class 5 and Class 6) was submitted on November 7, 2017 to the Provincial Wetlands and Water Boundaries Unit within AEP for processing. The Water Boundaries Unit determined that none of the wetlands contain a permanent and naturally occurring body of water with a Crown claimable bed and shore under Section 3 of the *Public Lands Act*. As such, no *Public Lands Act* dispositions are required and none of these wetlands need to be protected from disturbance from the Crown perspective.
- *Historical Resources Act*
  - A Statement of Justification (SoJ) was submitted to ACT on November 3, 2017. Approval for the activities described in the SoJ was received on December 7, 2017 with no requirements other than those for chance discoveries under the *Historical Resources Act*.
- *Alberta Transportation*
  - Since the proposed development is within the development control zone (300 metres [m]) from provincial right-of-way or within 800 m of the centerline of a highway and public road intersection), a permit from Alberta Transportation is required for roadside developments. CKPC has consulted Alberta Transportation with the support of Sturgeon County to determine the requirements for roadside development within the Province and County.
- *Railway (Alberta) Act – Railway Regulation* (Government of Alberta 2009).
  - Prior to construction, a "Notice to Construct New Railway Works", which includes preliminary design information, will be submitted to the Alberta Transportation Railway Administrator in accordance with the *Railway (Alberta) Act – Revised Statutes of Alberta* (Government of Alberta 2010a). After a letter accepting the proposed new works is received, CKPC will proceed with an "Operating Approval Application". This application will include information on Project design, the safety management system, and the security management program. An Operating Approval is granted for a renewable three-year term.

- The *Railway (Alberta) Act* also includes the federal requirements as contained within the *Rail Safety Act* (Government of Canada 1985a) and Canada's *Transportation of Dangerous Goods Act* (Government of Canada 1992).

1.4.3 Municipal Jurisdiction

The Project will be located in Sturgeon County, where the following regional initiatives apply:

- Alberta Environment and Sustainable Resource Development (ESRD) Cumulative Effects Management System (ESRD 2015a);
  - Water Management Framework for the Industrial Heartland and Capital Region (ESRD 2015b); and
  - Capital Region Air Quality Management Framework (ESRD 2012a).
- Sturgeon County Management Plans:
  - AIH Area Structure Plan Bylaw (Sturgeon County 2007);
  - Municipal Addressing System;
  - Capital Region Land Use Plan (Capital Region Board 2009); and
  - Land Use Bylaw 1385/17 (Sturgeon County 2017).
- Northeast Capital Industrial Association (NCIA):
  - Regional Noise Management Plan (RNMP) (NCIA 2014); and
  - Regional Groundwater Monitoring Framework (NCIA 2015).

Each of these initiatives and how they apply to the Project are discussed in detail in Section 3.2 below.

Project Development Permit

Municipal requirements for industrial rail yards are addressed as part of the Development Permit Application process and included within the scope of the PDH/PP Facility Development Permit Application package, currently under preparation.

CKPC will comply with the requirements of the Sturgeon County Development Authority.

1.5 Regional Environmental Studies

The *Canadian Environmental Assessment Act, 2012* (CEAA 2012b) Section 73 states the following regarding regional studies:

- 73 (1) The Minister may establish a committee to conduct a study of the effects of existing or future physical activities carried out in a region that is entirely on federal lands.

- 73 (2) If the Minister establishes a committee, he or she must establish its terms of reference and appoint as a member of the committee one or more persons.

There are no Regional Environmental Studies as defined under the *Canadian Environmental Assessment Act, 2012* that apply to the region in which the Project is located (S. Tiege, personal communication, February 7, 2018).

In 2007, the Government of Alberta adopted the Cumulative Effects Management System (ESRD 2015a). The Cumulative Effects Management System provides a comprehensive integrated and legislated system to protect water, air, land and biodiversity in Alberta (ESRD 2015a). While the Cumulative Effects Management System applies to all of Alberta, the AIH is identified as a key area for managing cumulative environmental effects because of the concentrated industrial and municipal development.

Since the adoption of the Cumulative Effects Management System, two frameworks were developed for the AIH that are applicable to the Project:

- the Water Management Framework for the Industrial Heartland (ESRD 2015b); and
- the Capital Region Air Quality Management Framework (ESRD 2012a).

These frameworks are described in Section 3.2.3.

Under the *Alberta Land Stewardship Act*, the North Saskatchewan Regional Plan (NSRP) is under development for the North Saskatchewan Region. The first phase of consultation for the plan has been completed, and the Regional Advisory Council is preparing its recommendations. The Phase 2 online survey was scheduled for May 4, 2018. The NSRP has not yet been finalized and implemented.

2. Project Information

2.1 General Project Description

The Project includes the construction of a rail yard and rail line to support the PDH/PP Facility. The objective of the Project is to facilitate a product shipment service from the PDH/PP Facility, also owned and operated by CKPC. The PDH/PP Facility is not listed in the *Regulations Designating Physical Activities* (CEAA 2012c), however is subject to the provincial EPEA IAA process, as a petrochemical plant.

The PDH/PP Facility will produce polypropylene pellets, a commercial non-hazardous material that will be gravity-loaded into rail cars. Up to 40% of loaded rail cars will be sent to an on-site transloading/bagging facility whereas the remaining 60% will be sent to on-site rail car storage.

The Project includes the construction of 42 yard tracks and a rail line with approximately 25 km total length of track (Figure 4A). Rail car storage, rail car loading and product bagging will be completed in Areas 1 (Figure 4A), 2 (Figure 4B) and 3 (Figure 4C), respectively. All products will be put into rail cars through hoppers in the pellet loader building. The product transferred (by rail car) to the transloading/bagging facility (Area 3, Figure 4C) will be loaded into trucks containing sea can containers. The Pembina Rail Line (Figure 4D) will connect the rail yard to the CNR rail line.

The Project location (Figure 1) will be on land currently owned by Pembina, that will be transferred to CKPC prior to the beginning of any construction activities. The Project will be owned and operated by CKPC, with the exception of the Pembina Rail Line (Figure 4), that will be owned by Pembina and under Pembina's care and control.

The Project will accommodate rail storage of up to two weeks of production, with expected loading of approximately 20 to 30 rail cars per day. The Project will predominately receive empty rail cars, and only manufactured polypropylene in pellet form will be shipped out by rail and road. The Project will occasionally receive raw materials to support the start-up and normal operations of the PDH/PP Facility. These raw materials could include propylene, polypropylene resin, solvent, and trimethylaluminum.

Once constructed, the Project will occupy an area of approximately 40 ha.

The Project operations will be undertaken by a suitably qualified third party under the control of CKPC management. Removal of full rail cars from the site and delivery of empty rail cars to the site will be completed by Pembina. Connection to the existing CNR rail line is currently being negotiated. The likely point of rail car entry/exit is indicated on Figure 4D.

2.2 Designated Physical Activities

Physical activities which are required to undergo a screening under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012a) are defined in the *Regulations Designating Physical Activities* (the Regulations). Pursuant to item 25(b) of the Regulations, the following defines a designated physical activity which is required to undergo a screening under CEAA 2012:

The "construction, operation, decommissioning and abandonment of a new railway yard with seven or more yard tracks or a total track length of 20 km or more".

Consequently, the proposed Project is considered to be a designated activity as it will be comprised of 42 yard tracks and a rail line with approximately 25 km total length of track, which exceeds the thresholds set out in item 25(b) of the *Regulations Designating Physical Activities* (CEAA 2012c) of more than seven yard tracks or a total track length of 20 km or more.

The PDH/PP Facility is not listed in the *Regulations Designating Physical Activities* (CEAA 2012c).

2.3 Components and Activities

2.3.1 Physical Works

The Project comprises 42 yard tracks and a rail line with approximately 25 km total length of track, on an occupied area of 40 ha. The rail loading capacity will be 600 kt/a, based on 8,000 hours per year (hr/year) of operation of the PDH/PP facility. The daily load will be between 20 and 30 rail cars and 20 to 40 trucks. The empty and loaded storage rail car facilities will have target capacities of 200 and 472 rail cars, respectively. The storage area of the bagging facility will have six loading bays to accommodate truck loading and unloading components.

The main components of the Project are provided below in Table B.

Table B Project Components and Associated Tracks

Area	Project Component	Figure Reference	Number of Tracks	Approximate Length of Tracks (m)
Area 1	Storage, Maintenance and Fueling	Figure 4A	34	20,400
Area 2	Loading and Washing	Figure 4B	5	1,300
Area 3	Transloading/Bagging	Figure 4C	2	300
Area 4	Pembina Rail Line	Figure 4D	1	3,000
			42	**25,000**

A brief description of the Project's major components is included below. The site layout is shown on Figure 4. Other minor components of the Project include:

- connection to PDH/PP on-site firewater piping;
    - The Project will be protected with fire hydrants connected to the PDH/PP firewater system. Approximately 400 m of 12" piping will be required. Firewater water will be sourced from a 3rd

party to supply water to the existing fire water pond. The firewater system will be constructed by CKPC and under their care and control. The water volumes requirements are minimal as the firewater system is only used in the event of an emergency.

- connection to PDH/PP on-site power lines;
    - Power will be distributed at a 34.5kV voltage level throughout the Project. Infrastructure will include overhead distribution wiring, poles and typical wiring. CKPC will maintain care and control of this system and be responsible for its construction and operation.
- connection to off-site CNR rail line;
    - The Pembina Rail Line will connect directly to the existing CNR rail spur. No additional track or switching equipment is required. Pembina will be responsible for the construction and operation of the Pembina Rail Line, to the point of connection at the existing CNR rail spur.
- surface water runoff control.
    - The surface water runoff will be collected and managed through the PDH/PP Facility stormwater management system. Additional details are provided in Section 2.3.1.5.

The Project facilities will be sized to accommodate approximately 20 people. Staff will work in two 12-hour shifts. The Pellet Loader Building, located within Area 2: Loading and Washing (Figure 4B), will include a management office, a break room and washroom facilities. Potable water will be supplied by the PDH/PP facility through a 3" diameter pipeline approximately 400 m long.

The raw water for rail car washing will be supplied to the Project from the PDH/PP Facility. This pipeline is approximately 400 m long and expected to be 6" in diameter. The Project will require approximately 20 cubic metres per hour (m^3/hr) of potable and raw water once in full operation.

Sanitary waste will be sent to the PDH/PP Facility through a 3" line. The PDH/PP Facility will have a connection to the Sturgeon County sewer system.

All piping and infrastructure will be constructed on-site and will be under the care and control of CKPC.

Electricity will be supplied via the cogeneration unit in the PDH/PP Facility. The cogeneration unit will have a maximum production capacity of 123 MW; the Project is expected to consume approximately 6 MW.

There is not expected to be any natural gas consumption.

2.3.1.1 Area 1: Storage, Maintenance and Fueling

This area covers approximately 31 ha and includes rail tracks, rail car and locomotive storage, a rail car repair building and a locomotive fueling pad (Figure 4A).

The rail car storage tracks will be between 20 and 30 rail cars in length. All storage tracks will be double ended. To the extent practical, storage tracks will be arranged in groups of four to six tracks with an access

road/utility corridor in between to accommodate necessary system equipment such as utility duct banks, underdrains, and high mast yard lighting. The filled rail car storage and rail car storage in transit (SIT) have capacities of 475 and 150 rail cars, respectively (Figure 4A). Filled rail car storage is used for filled cars that are not yet assigned to a customer. SIT is used for filled cars assigned to a customer that are held until shipment is required. The empty rail car storage can accommodate 200 rail cars to ensure 10 days of loading capacity is available.

A maintenance track, with ten rail car spots for storing and repairing rail cars will be provided. This track will include an enclosed maintenance shed to handle liner repairs, replacement of air hoses, brakes and roof hatches. A track with four rail car spots will be provided for unloading solvents and other process fluids, located across from the rail wash area (Figure 4A).

The locomotive fueling area is located to the north. Locomotive fueling will be undertaken by a fuel truck that will come to site. No fuels will be stored on-site.

2.3.1.2 Area 2: Loading and Washing

Area 2 occupies approximately 1 ha and includes rail car product loading and rail car washing (Figure 4B). The rail loading capacity will be 600 kt/a (based on 8,000 hr/year of operation of the PDH/PP Facility). Up to 40% of loaded rail cars will be sent to the bagging facility whereas the remaining 60% will be sent to rail car storage. There will be two loading tracks with capacity for nine to ten rail cars per track staged for simultaneous loading. The pellet loading facility will be an enclosed building over both tracks, covering two rail cars on each track ready for loading. The daily load out will be approximately 20 rail cars (based on a 24 hour period).

The rail car washing facility is located north of the Pellet Loader Building (Figure 4B). The rail car wash rate will be up to 30 rail cars per day. The rail car washer will be an enclosed building, located between the interchange tracks and empty rail car storage, with three rail car spots and will be able to process 21 rail cars in a 12 hour period. All rail cars will be washed upon arriving at the Project site. Pneumatic washing will be predominately used for removal of pellets and large particles. If required, wash water will be used for washing of contaminants that cannot be removed pneumatically. Hot air blowers will be used to help dry the rail cars.

2.3.1.3 Area 3: Transloading/Bagging

The transload of product will be handled in the transloading/bagging area located north of the loading and washing operations and occupies approximately 2 ha (Area 3, Figure 4C).

The bagging facility will accommodate 40% of the total polypropylene produced at the PDH/PP Facility. Pellets will be transferred by two combination vacuum/pressure pneumatic conveying systems. A pellet cleaning system (deduster) will be located above the bagging system to remove fines and enhance product quality. The storage area of the bagging facility will have six loading bays to accommodate truck loading and unloading components.

See additional details on transloading/bagging operations in Section 2.3.4.

2.3.1.4 Area 4: Pembina Rail Line

The Pembina Rail Line will be located south of the Project (Figure 4D) and will connect the Project rail facility with the existing CNR system. The Pembina Rail Line covers approximately 6 ha. The Pembina Rail Line will operate as an outbound, inbound and swing track with a capacity of 50 rail cars each.

2.3.1.5 Stormwater Management

Stormwater from the Project footprint will be managed by CKPC through the stormwater management ponds located at the PDH/PP Facility. A permanent storm drainage water retention system has been designed to collect and retain the stormwater flows during the construction and operation phases based on the most conservative 1:100 year, 24 hour storm event (Figure 4; CKPC 2018). Approximate dimensions of the stormwater ponds are provided below in Table C.

Key features of the surface/stormwater management system for the Project will include:

- grading to ensure effective collection and control of stormwater runoff;
- construction of a surface drainage system consisting of swales, ditches, open trenches, and culverts, which will discharge at the stormwater ponds;
- construction of berms and/or perimeter ditches constructed along the boundary of the PDH/PP Facility's footprint to prevent run-on from the adjacent properties;
- installation of a geotextile and high-density polyethylene (HDPE) geomembrane liner to line the stormwater ponds to prevent the runoff from entering the groundwater system;
- assessing stormwater prior to release in accordance with the operating conditions noted in the PDH/PP Facility EPEA Approval (not yet issued by AEP); and
- surface-release of stormwater to the Sturgeon County ditching network via pumping to (an) approved discharge location(s) at an allowable discharge rate as per Sturgeon County requirements. The detailed engineering will be conducted as part of the development permit application to Sturgeon County. No upgrades will be required to the Sturgeon County ditching network. Discharge of the stormwater ponds will be managed by CKPC.

Table C Approximate Stormwater Pond Dimensions

Stormwater Pond	Length (m)	Width (m)	Depth (m)	Storage Volume (m^3)
North	192.4	130.3	3.5	67,000
South	192.4	130.3	2.9	55,000

2.3.2 Anticipated Size and Production Capacity

There will not be any production undertaken in the Project footprint. The Project itself consists of 42 yard tracks and a rail line with approximately 25 km of track, which exceeds the thresholds of item 25(b) of the *Regulations Designating Physical Activities* (CEAA 2012c) of more than seven yard tracks or a total track length of 20 km or more.

As described in Section 2.3.1 and shown on Figures 4A, 4B, 4C and 4D, permanent structures will include a rail car repair building, rail car and locomotive storage, a pellet loader building, rail car washing, locomotive fueling and a polypropylene pellet transloading/bagging facility. The total Project footprint is expected to be approximately 40 ha.

Temporary structures will be required during construction, including office space, equipment storage, workforce muster points and for various other functions. The temporary structures will be similar to those typically used on large construction sites, such as integrated workforce trailer systems. All temporary structures will be removed from the site once construction is complete. The construction laydown areas will be located within the PDH/PP Facility footprint.

2.3.3 Percentage Increase in Capacity

The Project is not an expansion of an existing facility. The Project is a part of the development of the proposed PDH/PP Facility.

2.3.4 Description of Physical Activities Incidental to the Designated Project

As previously indicated by CEAA, the PDH/PP Facility is not an incidental activity to the Project. Physical activities that are incidental to the Project include:

- Pellet Loader Building:
  - convey the polypropylene product from the pellet screen to blenders and silos by a set of blowers at a transfer rate of 76 mt/hour for a distance of 135 m horizontally and 35 m vertically. The conveying system components will be installed in an enclosed building with the exception of heated and insulated diverter valves;
  - convey the polypropylene product from the blenders to the rail car load out by two sets of blowers, in two separate conveying lines, at a rate of 90 mt/hour at a distance of 120 m horizontally and 42 m vertically. The conveying line will be shot peened to reduce streamers and fines;
  - sample pellets prior to transfer to rail car to assure product quality;
  - load off spec material into rail cars for further disposition; and
  - install all conveying system components in an enclosed building, or winterize, with the exception of diverter valves which will be heat traced and insulated. CKPC will utilize electrical heat tracing and insulation for winterization of the diverter valves.

There will be four rail car loadout stations designed to load out four rail cars simultaneously. Rail car loading will take approximately one hour during each loadout cycle. Each loadout station will include one elutriator with auxiliary equipment, 400 rail car capacity rail loadouts silo, mass flow meters to weight product while filling the rail cars and rail car load out spill filters (four per station). All system components will be installed in an enclosed building. Removal of full rail cars from the Project and delivery of empty rail cars will be facilitated by Pembina.

- Transloading/Bagging Facility:
  - the bagging facility will be able to accommodate 40% of the total production rate of 600 kt/a, or 240 kt/a (based on 8,000 hr/ year of operation of the PDH/PP Facility). Any excess amount of production will be sent via rail to a third party for bagging;
  - two combination vacuum/pressure pneumatic conveying systems, operating simultaneously, will be used to support the bagging system requirements. Each will be designed to transfer pellets at a rate of 20 mt/hour (40 mt/hour total) to a common 400 mt (four rail car capacity) silo located above the bagging system;
  - the conveying vacuum system distance will be 50 m horizontally and 4.5 m vertically. The pressure system distance will be 60 m horizontally and 30 m vertically;
  - the conveying line will be shot peened to reduce streamers and fines;
  - a pellet cleaning system or deduster will be located above the bagging system to remove fines and enhance product quality;
  - the weight of the bags will be approximately 25 kg and each pallet will contain approximately 55 bags. Stretch straps will be used to secure the pallet load. Loaded pallets will be stacked on pallet racks and transported to the warehouse by forklifts. From there, the pallets will be loaded in containers and transported out by truck;
  - containers will be arriving empty and leaving full – no container storage is expected on Project footprint; and
  - the storage area of the bagging facility will have six loading bays that will also be used for unloading purposes. The warehouse building will have a receiving office, breakroom, mechanical room, electrical room and restrooms.
- Stormwater management system:
  - two stormwater ponds with capacity for a 1:100 year, 24 hour storm event located in the NE and SE corners of the PDH/PP Facility's footprint (Figure 4);
  - grading to ensure effective collection and control of stormwater runoff;
  - construction of a surface drainage system consisting of swales, ditches, open trenches, and culverts, which will discharge at the stormwater ponds;
  - construction of berms and/or perimeter ditches constructed along the boundary of the PDH/PP Facility's footprint to prevent run-on from the adjacent properties;

- installation of a geotextile and HDPE geomembrane liner into the stormwater ponds to prevent the runoff from entering the groundwater system;
- assessing stormwater prior to release in accordance with the operating conditions noted in the PDH/PP Facility EPEA Approval (not yet issued by AEP); and
- surface-release of stormwater to the Sturgeon County ditching network via pumping to an approved discharge location(s) at an allowable discharge rate as per Sturgeon County requirements. No upgrades will be required to the Sturgeon County ditching network. Discharge of the stormwater ponds will be managed by CKPC.

- Connection between the Pembina Rail Line and the CNR rail line:
  - Pembina will be responsible for building the connection to the CNR rail line consisting of one inbound/outbound track;
  - Direct connection to existing CNR rail line – no additional track, interchange or switching required; and
  - Pembina will be responsible for the ongoing care, control and maintenance of the Pembina Rail Line to the junction with the existing CNR rail line.

2.4 Emissions, Discharges and Waste

2.4.1 Atmospheric Emissions

AEP has developed an ambient air quality framework for the Capital Region (including the AIH). The Capital Region Air Quality Framework sets ambient air quality levels for four contaminants of concern: nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particulates with a diameter less than 2.5 microns ($PM_{2.5}$) and ozone (O_3). These limits are based on the Alberta Ambient Air Quality Objectives (AAAQO) for NO_2 and SO_2, and the Canadian Ambient Air Quality Standards (CAAQS) for $PM_{2.5}$ and O_3. Each level includes various management actions that can range from baseline monitoring and data gathering to a mandatory plan to reduce the ambient levels below the applicable air quality standard (ESRD 2012a).

During the life of the Project, emissions of criteria air contaminants (CACs) and greenhouse gases (GHGs) are expected. The CACs include hydrocarbon (HC), nitrogen oxides (NO_X), SO_2, carbon monoxide (CO) and suspended particulates in various sizes such as total suspended particulates, particulates with a diameter less than 10 microns (PM_{10}) and $PM_{2.5}$. GHG emissions are typically reported as carbon dioxide equivalent (CO_2e).

Results of the 2018 Air Quality Assessment (Rowan Williams Davies & Irwin Inc. [RWDI] 2018a) for the PDH/PP Facility, which includes the Project, reported predicted ground level maximum concentrations for all CACs evaluated (SO_2, NO_2 as NO_x, NO_2, CO, $PM_{2.5}$, Cl_2, HCl, ethylene, n-hexane, acetic acid and acetone) as well below the AAAQO.

CKPC will ensure compliance with this management framework through existing ambient air quality monitoring. Air quality in the region is monitored by the Fort Air Partnership (FAP), which currently operates nine continuous and 63 passive air monitoring stations. CKPC will work with the FAP to ensure appropriate air monitoring is conducted in the vicinity of the Project and the proposed PDH/PP Facility.

2.4.1.1 Project Construction

During the construction phase of the Project, air emissions could include dust and emissions associated with construction equipment. Dust control will be completed using water trucks and vehicle emissions will be limited by reducing idling time for equipment.

GHG emissions from construction equipment are estimated using activity-based fuel consumption rates for the following construction activities: land clearing, grading track work, and building structures such as office trailers and security fences. Diesel equipment such as graders, trackers, and bulldozers are expected during the construction phase. Various types of trucks are also expected to be used. The equipment required and the emissions estimated using emission factors from Canada's National Inventory Report 1990-2016 (Electronic Code of Federal Regulations [ECFR] 2018a), presented in CO_2e are shown in Table D below. The total amount of GHG emissions during the construction phase is estimated to be approximately 19,267 t/a of CO_2e, which accounts for 0.0073% of the 2016 Alberta GHG emissions (ECFR 2018b).

In addition to dust and GHG emissions during construction, fuel combustion from construction equipment will result in emissions of CACs such as NO_X, CO and $PM_{2.5}$. Construction CAC emissions could result in small detectable quantities of these contaminants relative to background levels. Any occurrences of elevated CAC emissions resulting from Project-related construction activities will be immaterial and short-lived due to the temporal and spatial characteristics of the Project-related construction activities.

Table D Estimated GHG Emissions: Construction Phase

Equipment[1]	Model[1]	Power Output[2]	Fuel Consumption		No of Units[1]	Hrs/day[1]	Days/year[1]	CO_2e[5]	Total Fuel	CO_2e
		horsepower (hp)	Pounds per horsepower-hour [lb/(hp-hr)][3]	Litres per hour (l/hr)[4]				Kilograms per litre (kg/l)[l]	Litre (L)	t/a
Excavators	CAT 330	270	0.367	54	10	12	60	2.80	385,255	1,080
Articulated Truck	CAT 740C	511	0.367	101	25	12	60	2.80	1,822,827	5,109
Dozers	D9	469	0.367	93	8	12	90	2.80	803,043	2,251
Graders	CAT14	274	0.367	54	8	12	60	2.80	312,770	877
Tractors	CAT450F	142	0.367	28	10	12	90	2.80	303,923	852
Packers	CAT815F	254	0.367	50	6	12	60	2.80	217,027	608
Skid Steers	CAT297D	110	0.367	22	2	12	60	2.80	31,391	88
Wheel Loaders	CAT966 M	315	0.367	62	8	12	60	2.80	359,571	1,008
Service Trucks	CAT CT660	475	0.367	94	6	12	90	2.80	609,987	1,710

Equipment[1]	Model[1]	Power Output[2]	Fuel Consumption		No of Units[1]	Hrs/day[1]	Days/year[1]	CO_2e[5]	Total Fuel	CO_2e
		horsepower (hp)	Pounds per horsepower-hour [lb/(hp-hr)][3]	Litres per hour (l/hr)[4]				Kilograms per litre (kg/l)[l]	Litre (L)	t/a
Highway Low Bed Trucks	CAT CT660	475	0.367	94	15	12	90	2.80	1,524,968	4,275
Gravel Trucks	CAT CT660	475	0.367	94	4	12	60	2.80	271,105	760
Hydrovac Truck	CAT CT660	475	0.367	94	1	12	20	2.80	22,592	63
Generators	CATC15	488	0.367	97	2	12	90	2.80	208,950	586
									6,873,409	**19,267**

Notes:

1. Based on information provided by CKPC.
2. Based on manufacturer information available online.
3. Average Emission Test Results for 1988 to 1995 Model Year Engines (United States Environmental Protection Agency [US EPA] 1998).
4. Conversion performed using diesel density at 15 degrees Celsius (°C) = 840 kilograms per cubic metre (kg/m^3).
5. Canada's National Inventory Report 1990–2016: Greenhouse Gas Sources and Sinks in Canada; Table A6–4 Emission Factors for Refined Petroleum Products (ECFR 2018b).

2.4.1.2 Project Operations

During operation, emission sources will include emissions from locomotives and particulate matter associated with loading or washing of rail cars. Each rail car loading station will be equipped with a dedicated vacuum system to remove streamers and fines that may be produced during polypropylene pellet blending/transfer and is housed within the rail loading building.

To provide an estimate of CAC and GHG emissions during operation, the following operational assumptions were made:

- one locomotive per five rail segments;
- continuous operation of three locomotives at a time;
- each locomotive will have ten daily trips over two 12 hour shifts;
- total idling time of 4 hours/day/locomotive (24 minutes of idling time per trip);
- transit time on-site based on average distance of 0.95 km/trip and 10 km/h velocity (this corresponds to notch 1 setting);
- up to five locomotives (900 hp each) operate an average of 344 days/year and with an average of 688 trips/year; and
- expected fuel consumption of 7.5 litres/hour (2 US gallons/hour) of diesel.

The emissions were estimated using 1% and 4.5% of the total power output for idling and transit, respectively, based on Code of Federal Regulations for Control of Emissions from Locomotives (ECFR 2018a)[1]. Emissions were estimated using emission factors for freight yard switching locomotives from the Railway Association of Canada's (RAC's) Locomotive Emission Monitoring Program (RAC 2015). To be conservative, Tier 0 emission standards, which refer to the least stringent emission standards established by the US EPA for locomotives manufactured between 1973 and 2001, were assumed.

Emissions of SO_2 were estimated based on the requirements of a sulphur content of not more than 15 parts per million (ppm) in locomotive diesel that came into effect June 1, 2012 (Environment and Climate Change Canada [ECCC] 2014). Emissions of GHG were estimated using emission factors for diesel trains from Environment and Climate Change Canada (ECCC 2014).

The total amount of GHG emissions during the operation phase is estimated to be approximately 20.6 t/a of CO_2e, which accounts for 0.00001% of the 2016 Alberta GHG emissions (ECFR 2018b). The estimated GHG emissions are very low and not expected to exceed the provincial and federal reporting threshold of 10,000 t per year of CO_2e (Table E).

[1] 1% was used as a conservative assumption for idling; the reference document suggests 0%.

Table E Estimated Atmospheric Emissions from Train Idling and Transit

Source	Emission Rates (t/year)							
	HC	NO_x	SO_2	CO	TSP	PM_{10}	$PM_{2.5}$	CO_2e
Train Idling	0.028	0.173	5.97E-05	0.099	0.009	0.009	0.009	20.6
Train Transit Onsite	0.061	0.377	1.27E-04	0.215	0.019	0.019	0.019	
Total	**0.088**	**0.550**	**1.87E-04**	**0.315**	**0.028**	**0.028**	**0.028**	

2.4.2 Liquid Discharges

The liquid discharges associated with the Project will primarily consist of surface water runoff, which will be contained in the PDH/PP Facility North and South stormwater ponds. This runoff will consist of primarily clean stormwater with little contact with any industrial areas. The stormwater ponds will be operated by CKPC in accordance with their EPEA Approval (pending) and are designed as test and release ponds. If the stormwater contents do not meet the EPEA Approval limits, then the water will be retested and if not suitable for release, will be removed from site by a licensed disposal contractor. There is no on-site water treatment planned for stormwater runoff.

Once discharge criteria are met, water will be released to the Sturgeon County ditch network at no greater than the allowable discharge rate of 1 litre per second per hectare (l/s/ha) of land (as per Sturgeon County requirements) (CKPC 2018). This rate of discharge is low and is considered by Sturgeon County to be consistent with natural drainage from a site. There is little or no direct connection from the stormwater pond release points and the North Saskatchewan River (NSR). Additional details are provided in Sections 5.1.5 and 5.1.7.

The EPEA Application (pending) was submitted in June of 2018, therefore discharge limits have not yet been established for the PDH/PP Facility stormwater ponds. However, CKPC anticipates that the discharge and testing requirements will be similar to those found in EPEA Approval No. 341558-00-00 held by Williams Canada Propylene ULC as it is a similar facility utilizing comparable PDH/PP technologies. The location of the Williams Canada Propylene ULC facility is denoted as the IPL parcel located SE of the proposed Project in Appendix 1, Figure A1-1. Table F lists the Industrial Runoff Control System Limits for the Williams Canada Propylene ULC facility in accordance with EPEA Approval No. 341558-00-00. It is anticipated that monitoring for each parameter will be required prior to discharge of the stormwater ponds and daily throughout the release period as is consistent with the Williams Canada Propylene ULC Approval conditions.

Table F Industrial Runoff Control System Limits (Williams Canada Propylene ULC Facility, EPEA Approval No. 341558-00-00)

Parameter	Parameter or Concentration Limits
pH	≥6.0 and ≤9.5 pH units
Oil and grease	No visible sheen
Total suspended solids (TSS)	≤25 milligrams per litre (mg/l)
Chemical oxygen demand	≤50 mg/l
Ammonia nitrogen	≤5 mg/l
Chloride	≤250 mg/l

Other liquid discharges generated by the Project are detailed in Table G.

Table G Project Liquid Discharges

Liquid Waste	Description	Containment	Disposal Method	Potential Residual Effects on the Environment
Surface water runoff	Surface water runoff from the Project will be collected and routed to the stormwater ponds.	Stormwater ponds	Approved discharge location(s) in accordance with conditions of the EPEA Approval.	None
Used oil and other solvents (hazardous waste)	Used lube and seal oil, from locomotive maintenance.	Barrels located in designated area	Removal by a qualified carrier for disposal or recycling at an approved facility, on an as-needed basis.	None
Rail car wash water	Backwash from rail car washing system and	Rail car washing system and sump	Residual solids will be removed from site for disposal by a third party.	None

Liquid Waste	Description	Containment	Disposal Method	Potential Residual Effects on the Environment
	rail car wash building system expected to contain polypropylene fines, suspended solids, oil and grease.		Used rail car wash water will be collected via the sump and directed to the CUB. The water will be recycled back into the process or disposed through the Sturgeon County sewer system. The rail car wash water will not be discharged to the environment.	
Domestic sewage	As generated by site staff.	direct 3" pipeline to PDH/PP approximately 400 m long	Connected to the PDH/PP Facility on-site containment. No wastewater or sewage lagoon will be required for domestic sewage. The effluent will be discharged into the Sturgeon County sanitary sewer running north/south along Range Road 221. Sturgeon County will be responsible for the engineering and construction of the sewer connection from the PDH/PP Facility to the existing County sewage line that will remain under Sturgeon County's care and control.	None

2.4.3 Wastes

The Project will generate both recyclable and non-recyclable solid waste. Recyclable material will be separated into containers and removed from the Project site for recycling by a qualified carrier. Non-recyclable waste will be collected on-site and then sent off-site for disposal through a qualified carrier. Table H describes the types of solid waste expected to be generated by the Project and plans for disposing of the waste.

Table H Project Solid Waste

Waste Stream	Containment	Disposal Method	Potential Residual Effects on the Environment
Polypropylene pellets	Vacuumed and contained within rail car loading building and transloading facility.	Recycled, sold to third party, and/or third party to remove.	None
Domestic waste	Containers	Removal for disposal at an approved facility.	None
Metal and recyclables (cardboard, air filters)	Containers	Recycled at an approved recycling facility.	None
Oil filters (hazardous waste)	Oil containment area with surrounding berm.	Removal for disposal or recycling at an approved facility, on an as-needed basis.	None
Dust	Filters and containers	Sent to an approved facility for recycling or disposal.	None
Batteries	Plastic containers	Will be sent to an approved facility for recycling or disposal.	None
Scrap Material	Bins	Will be sent to an approved facility for recycling or disposal.	None

2.5 Project Phases and Scheduling

2.5.1 Anticipated Key Project Phases

The high-level Project schedule is provided in Table I.

Table I Project Schedule

Project Task	Planned Start Date	Status
Indigenous, Stakeholder and Public Engagement	Late 2017	Ongoing
Environmental Work	Late 2017	Ongoing
Construction	Early 2019 – Late 2022	Pending
Commissioning	Late 2022	Pending
Operation	Early 2023	Pending
Decommissioning	Approximately 2053	Pending

Project activities will include consultation and engagement activities, baseline studies, construction, commissioning, operation and decommissioning of the Project and ancillary facilities. Site preparation activities are included in the construction phase of the Project. The Project will have a design life of approximately 30 years, after which the Project could be decommissioned. Decommissioning of the Project will be based on market conditions and the life cycle of the PDH/PP Facility infrastructure.

2.5.2 Main Activities

2.5.2.1 Indigenous, Stakeholder and Public Engagement

The consultation and engagement program commenced in late 2017 and is ongoing. The progress to date is discussed further in Sections 6 and 7.

2.5.2.2 Environmental Work

In support of the provincial permitting process, environmental baseline studies began in 2017 and include soil, groundwater, vegetation, wildlife, wetland, air and noise assessments.

2.5.2.3 Construction

Topsoil and subsoil will be stripped, salvaged and stockpiled prior to site grading, placement of fill, and site development. Soil will be stockpiled in designated topsoil and subsoil stockpiles located within the PDH/PP Facility footprint.

The Project footprint and the PDH/PP Facility will be fenced off. Roadways and railways into the site will be constructed to connect to existing transportation infrastructure. Site construction infrastructure (e.g., trailers, electricity, natural gas services) will be installed. Construction laydown, storage and fabrication areas will be established.

Access to the Project will occur from the internal roadways constructed for the PDH/PP Facility. The PDH/PP Facility will have permanent access roads from Range Road (RR) 221 and RR 222. There are four access roads proposed to service the PDH/PP Facility from RR 221; three access roads are 30 m in width, while the fourth access road is 22 m in width. The single permanent access road from RR 222 is proposed to be 22 m in width. There are five temporary construction access roads proposed for the PDH/PP Facility from RR 221 to the construction laydown areas, each expected to be 30 m in width.

Grading activities within the Project footprint will include collecting/placing fill with earth-moving equipment to build the subgrade, followed by compacting the subgrade. Once the subgrade has been constructed, the ties and steel rails will be laid by a qualified contractor. Ballast will then be dumped in place. Specialized rail construction equipment will tamp the ties and steel rails so that the ballast settles into place. Final grading will include contouring drainage ditches such that outlets channel water into the stormwater ponds. The foundations for Project buildings will be excavated, and concrete poured.

Structural steel will then be erected on the foundations. Some modularization and preassembly work will occur where practical to speed building erection. Roof cladding and wall cladding will then be installed to enclose the building while equipment installation continues indoors. Once the building is enclosed, the building can be heated to facilitate construction in cold weather.

2.5.2.4 Commissioning

Prior to Project operation, testing and commissioning of various pieces of equipment and systems will occur. It is expected that the testing and commissioning phase of the Project will span the final three to six months of construction. The Project will then be ready for commercial operation.

2.5.2.5 Operation

The Project loading area is expected to operate continuously, with new rail cars being positioned once or twice daily. It is anticipated that full rail cars will be stored on-site and taken off-site as required, with replacement (empty) rail cars brought on-site daily to replace them.

Polypropylene pellets will be pneumatically conveyed to the rail car loading area from the PDH/PP Facility by a set of blowers from the pellet screen to blenders and silos and from the blenders to the rail car load out at a rate of 76 mt/hour and 90 mt/hour, respectively. All conveying system components will be installed in an enclosed building, or winterized.

The rail loading capacity will be 600 kt/a (based on 8,000 hr/year of operation of the PDH/PP Facility). There will be two loading tracks with capacity for nine to ten empty clean rail cars per track staged for loading. The loading facility will be an enclosed building over both tracks. The daily load out will be between 20 and 30 rail cars. After use, the rail cars will be cleaned with a pneumatic system to remove the polypropylene pellets and large particles. If required, wash water will be used for washing contaminants that cannot be removed pneumatically. The rail cars will be stored in the rail yard storage area, which has capacity for 200 empty rail cars (equivalent to a 10 day supply) and 472 loaded rail cars (equivalent to 28 days of production).

The maintenance of equipment will be handled in the rail car repair building located on the north side of the Project footprint (Area 1, Figure 4A). A maintenance track, with ten rail car spots for storing and repairing rail cars will be provided. This track will include an enclosed maintenance shed to handle liner repairs,

replacement of air hoses, brakes and roof hatches. A track with four rail car spots will be provided for unloading solvents and other process fluids.

The Project will include a segregated area to undertake the interchange with the existing CNR line. The outbound track and inbound track will each have a capacity of 50 rail cars.

2.5.2.6 Decommissioning

The proposed reclamation activities for the entire PDH/PP Facility site are outlined in the IAA, which was submitted to AEP on June 8, 2018. During site development, topsoil and subsoil from the project footprint will be salvaged and stockpiled for future site reclamation. Prior to the end of life of the Project, CKPC will submit a detailed decommissioning and reclamation plan to AEP for review and approval. The CKPC EPEA Approval will then be amended to include the conditions of the proposed and approved program.

Project decommissioning will include removing all major equipment and the associated tracks, buildings, piping and electrical systems from the site. Depending on the condition at the time of decommissioning, the track materials will be sold for reuse or recycling. Following Project decommissioning, the Project footprint (i.e. the area occupied by buildings and infrastructure during Project operation) will be regraded to promote positive drainage. The reclamation program will include the replacement of the salvaged topsoil and subsoil and re-vegetation to re-establish the pre-disturbance agricultural land use capability.

3. Project Location

3.1 Designated Project Location

The Project is located approximately 6 km north of the City of Fort Saskatchewan, Alberta on freehold Industrial land currently used for agriculture. The Project will be situated in the AIH and it is adjacent to the Pembina Redwater Fractionation and Storage (RFS) complex. The NSR is located approximately 3.0 km from the south end of Area 1. A location map is provided on Figures 1 and 2 and the Regional Features and Local Infrastructure are shown on Figures 3 and 5, respectively.

3.1.1 Project Coordinates

The Project will be located on land currently owned by Pembina within the NW, NE and SE quarters of Section 11 and East half of Section 2, Township 56, Range 22, West of the Fourth Meridian, with latitude and longitude coordinates of 53° 49′ 24.6′′ N and 113° 9′ 35.1′′ W.

3.1.2 Site Location Plan and Map

The location of the Project in relation to provincial and international boundaries is shown in Figure 2. The distance to the boundaries are as follows:

- Alberta-Saskatchewan border: 207 km
- Alberta-British Columbia border: 325 km
- Alberta-Northwest Territories border: 686 km
- Canada-USA border: 534 km

The location of the Project relative to other key features such as residences, environmentally sensitive areas, watercourses, waterbodies and transportation infrastructure is shown on Figure 3.

Figure 5 shows the Project location relative to local infrastructure. Figure 6 shows the Project location relative to select Indigenous communities.

Figure 7 denotes the vegetation and wetlands in the Project footprint, as well as the location of the nearby waterbody of Unnamed Creek 25433.

3.1.3 Location of Designated Project Components and Activities Map

A Project layout plan is provided on Figure 4. Project components are presented on Figures 4A, 4B, 4C and 4D.

3.1.4 Photographs of Work Locations

Photographs of the Project footprint are provided in Appendix 2 along with a photo location map (Figure A2-1).

3.1.5 Proximity to Other Land Uses and Other Aspects

3.1.5.1 Proximity to Permanent, Temporary or Seasonal Residences

There are three permanent residences located approximately 1.2 km, 1.5 km, and 1.7 km from the Project footprint and are shown on Figure 3.

3.1.5.2 Proximity to Traditional Territories

The nearest First Nation Reserves are the Alexander First Nation (Treaty 6) on Indian Reserves 134, 134A and 134B (located west of Morinville, Alberta, approximately 47 km west of the Project), and the Enoch Cree Nation (Treaty 6) located approximately 49 km southwest (SW) of the Project (Figure 6). The Buffalo Lake Métis Settlement, Kikino Métis Settlement and Saddle Lake 125 Reserve are located approximately 77, 81 and 86 km NE of the Project, respectively (Figure 6).

The Project is located within Treaty 6. CKPC recognizes that First Nation signatories to Treaty 6, as well as Métis communities and First Nations from Treaties 7 and 8 may have traditional territories that overlap the Project footprint and may practice Treaty rights, Aboriginal rights and traditional uses in proximity to or within the Project site on unoccupied Crown land, as per the *Natural Resources Transfer Act* (NRTA). As the Project is located on freehold land that has been privately owned and farmed since 1950 (Integrated Environments Ltd. 2016), and the Project location is within the AIH on industrial-zoned (heavy industrial [IH]) land, it is not anticipated that the Project will impact lands where Treaty rights, Aboriginal rights or traditional land use is currently exercised. However, CKPC recognizes that Indigenous communities may have practiced their Treaty and Aboriginal rights in the area overlapping with the Project footprint prior to 1950. The Indigenous community engagement process currently underway will provide opportunity for concerns regarding traditional land use to be brought forward.

3.1.5.3 Federal Lands

The Project will not be located on federal land, including federal First Nation Reserve lands, and there is no federal land within approximately 20 km of the Project site. The closest Federal lands are Elk Island National Park, located 21 km SE of the Project and Canadian Forces Base Edmonton, located 24 km west of the Project (Figure 3). The closest First Nation reserve is that of Alexander First Nation located approximately 47 km west of the Project. Distances to additional First Nation Reserves are provided in Section 3.1.5.

3.2 Land and Water Use

3.2.1 Zoning Designations

The Project will be located on 40 ha of land currently owned by Pembina. The land will be transferred to CKPC's prior to the start of construction of the Project, with the exception of the Pembina Rail Line land,

which will remain in Pembina's care and control. The Project site is within Sturgeon County: Alberta's Industrial Heartland Area Structure Plan Bylaw 1118/07 (Sturgeon County 2007).

The Project will be located on industrially-zoned (IH) land that is currently being used for agricultural purposes. The areas surrounding the Project site are zoned AR (Agriculture: River Valley), IM (Medium Industrial), and IH.

3.2.2 Legal Description of Land to be Used

The Project is located within the NW, NE and SE quarters of Section 11, Township 56, Range 22, West of the Fourth Meridian. The Pembina Rail Line will be located within Section 2, Township 55, Range 22, West of the Fourth Meridian. The land parcel is owned by Pembina. The land titles showing Pembina's ownership are included in Appendix 3. A letter from Pembina providing permission to CKPC to use their land for the Project is included as Appendix 4.

Sub-surface rights to the salt in the Project footprint are owned by Fort Hills and Crown. No other sub-surface ownership was noted for the Project footprint.

3.2.3 Resource Management and Conservation Plans

The Project site is located within the Capital Region and the AIH, where several regional plans and initiatives apply. A description of each of these plans or initiatives and how they apply to the Project are provided in the following subsections. All of the plans and initiatives described below were subject to public engagement.

3.2.3.1 Water Management Framework for the Industrial Heartland and Capital Region

As part of the Cumulative Effects Management System, ESRD developed a Water Management Framework for the AIH and Capital Region (ESRD 2015a) to protect water quantity and quality within the Devon to Pakan reach of the NSR and to address the cumulative effects of various individually regulated projects. Framework goals include improving water quality from fair to good, minimizing load discharge, and minimizing the impacts on the NSR.

The framework also endeavors to ensure that sufficient water remains in the river to maintain aquatic life and support current and proposed industrial development (ESRD 2015a). Specific targets and requirements are currently under development, including a maximum allowable load for certain pollutants. Based on water withdrawal and returns data for *Water Act* licenses in the Devon to Pakan reach of the NSR, there is sufficient flow within the NSR to support current and future use (ESRD 2015b). Water use within this reach of the NSR continues to be tracked and considered by decision makers in new license applications and amendments (ESRD 2015b).

3.2.3.2 Capital Region Air Quality Management Framework

ESRD has developed an ambient air quality framework for the Capital Region (including the AIH). The Capital Region Air Quality Framework sets ambient air quality levels for four contaminants of concern: NO_2, SO_2, $PM_{2.5}$ and O_3. These limits are based on the AAAQO for NO_2 and SO_2 (ESRD 2012a) and CAAQS for $PM_{2.5}$ and O_3 (CCME 2012a). Each level includes various management actions that can range from baseline monitoring

and data gathering to a mandatory plan to reduce the ambient levels below the applicable air quality standard (ESRD 2012a).

CKPC will ensure compliance with the Capital Region Air Quality Framework through existing ambient air quality monitoring. Air quality in the region is monitored by the FAP, which currently operates nine continuous and 63 passive air monitoring stations. CKPC will work with the FAP to ensure appropriate air monitoring is conducted in the vicinity of the Project.

3.2.3.3 Capital Region Land Use Plan

The Capital Region Land Use Plan was developed by the Capital Region Board in 2009 to provide an integrated approach to managing the region's footprint and land use while ensuring sustainable economic growth and environmental health (Capital Region Board 2009). An important component of this plan is the establishment of a Land Use Committee, which consists of 12 Mayors from the Capital Region. The Land Use Committee, with advice from leading academics and professionals, assisted in the development of this plan and will contribute to future work in the region. The following core principles form the basis of the plan's guidelines:

- protect the environment and resources;
- minimize regional footprint;
- strengthen communities;
- increase transportation choices;
- ensure efficient provision of services; and
- support regional economic development (Capital Region Board 2009).

Each of these principles consists of numerous policies that must be considered during Project development in the Capital Region. The Capital Region Land Use Plan will be enforced through a collaborative effort between the Capital Region Board, various Capital Region municipalities, and the Government of Alberta.

3.2.3.4 Northeast Capital Industrial Association – Regional Groundwater Management

Both the NCIA and AEP (formerly ESRD) recognize the importance and environmental sensitivity of the Beverly Channel aquifer to the province and to the AIH. In 2006, a regional groundwater monitoring project was initiated by the NCIA in association with ESRD and the public. The goal of the project was to identify ways to improve and streamline groundwater management through a cooperative approach for monitoring and reporting to the public. The project was known as the "Regional Assessment of the Groundwater Quality in the Beverly Channel in the Fort Saskatchewan Area". The project included the Counties of both Sturgeon and Strathcona, and consisted of several phases, including data collection, database development, monitoring, and groundwater modelling (NCIA 2015).

The results of this study have allowed the NCIA to provide input into the Province's Water Management Framework (discussed above). The NCIA is currently developing the Regional Groundwater Monitoring Framework in conjunction with ESRD, which will be part of the North Saskatchewan Regional Planning process (NCIA 2015). In addition, the NCIA has been working with the provincial government to finalize a Groundwater Monitoring Directive for the AIH. The NCIA is currently proceeding with an annual groundwater quality monitoring program.

3.2.3.5 Sturgeon County Management Plans

Zoning for the Project is specified by the Sturgeon County Land Use Bylaw. The Project site is zoned as "Heavy Industrial" (Sturgeon County 2017).

Sturgeon County has prepared a Municipal Development Plan according to the legislative framework in the *Municipal Government Act* (Government of Alberta 2016). The Municipal Development Plan functions as the long-range Planning Document for Sturgeon County by providing a 30 year vision which highlights the community's needs and directs subsequent growth. Sturgeon County's Municipal Development Plan also provides general guidance on social, cultural, environmental, economic and infrastructure considerations (Sturgeon County 2014).

3.2.4 Indigenous Lands/Resource Involvement

The potentially affected Indigenous communities have been identified in Section 6.1 with the nearest Indigenous Peoples land area being approximately 50 km from the Project site (Figure 6). A review of the federal Aboriginal and Treaty Rights Information System (ATRIS) indicated that the Project is within Treaty 6 lands and within an area where there is currently asserted rights by Métis Groups and the Métis Nation of Alberta (Government of Canada 2018). While the ATRIS only identifies Treaty 6, Métis Groups and the Métis Nation of Alberta, CKPC has taken an inclusive approach to engagement, recognizing that members of Treaty 7 or Treaty 8 may have an interest in lands near the Project site.

The Project will be constructed and operated on an industrial-zoned site that is privately owned by Pembina, and located entirely within the AIH. Considering the private ownership and existing levels of industrial development immediately surrounding the Project, it is not anticipated that the Project will impact traditional land, or water and/or lands where traditional land use is exercised. The Project will be constructed on lands that were homesteaded since at least the 1950s and have been privately owned/farmed since that time (Integrated Environments Ltd. 2016).

The Project is located 3.0 km from the NSR and access to the river will not be impeded by the Project any more than the existing infrastructure and heavy industrial development located between the Project site and the NSR.

CKPC notified Indigenous groups identified by CEAA as those who may have an interest in the Project footprint. To date, through ongoing engagement, CKPC has not yet received any claim to traditional land or impacts to traditional land use. The Indigenous Peoples engagement program is further discussed in Section 6 of this document.

4. Federal Involvement – Financial Support, Lands and Legislative Requirements

4.1 Federal Financial Support

No federal authority is currently providing financial support for the Project. CKPC has submitted a Statement of Interest for the Strategic Innovation Fund (SIF). The SIF, which is administered by Innovation, Science, and Economic Development, allocates repayable and non-repayable contributions to firms of all sizes across all of Canada's industrial and technology sectors. Specifically, the SIF supports industrial research and innovation, economic growth opportunities, and foreign investment in Canada. CKPC's requested contribution from the SIF represents less than 2% of the expected total capital cost of the PDH/PP Facility, which includes the Project.

4.2 Federal Lands

No federal lands will be required for the Project.

4.3 Federal Permit, License, or Other Authorization Requirements

There are no federal legislative or regulatory requirements (including any federal license or permit) that are applicable to the Project. The only purported Federal Regulatory Requirement is in relation to the *Canadian Environmental Assessment Act, 2012* which requires the Project to undergo screening through the submission of a project description. Depending on the results of the screening, the Project may be required to undergo a federal environmental assessment under *CEAA 2012*.

5. Environmental Effects

Section 5.1 summarizes available information on the existing physical, biological and human environment at the Project footprint and surrounding area. This section also describes the potential interactions between the Project and the environment, and assesses changes that might occur as a result of Project activities or infrastructure.

Section 5.2 provides a more detailed description of the potential environmental effects on fish and fish habitat as defined under the *Fisheries Act* (Government of Canada 1985b), species, including aquatic species, as defined under the SARA (Government of Canada 2002), and migratory birds as defined in the *Migratory Birds Convention Act, 1994* (Government of Canada 1994).

5.1 Site Conditions

The Project is located within the AIH and Sturgeon County on land that is zoned for heavy industrial use. Adjacent land uses include a mix of heavy industry and agriculture. The NSR is located approximately 3.0 km to the east of the Project.

5.1.1 Local and Regional Vegetation Types

A baseline vegetation assessment was completed for the Project footprint. The baseline vegetation assessment was designed to demonstrate pre-construction vegetation conditions of the Project footprint through a desktop review and field assessment. Figure 7 denotes the vegetation within the Project footprint.

The Project footprint is located within the Dry Mixedwood Natural Subregion. A desktop search of the Alberta Conservation Information Management System (ACIMS) for potential provincially listed rare plants within the Dry Mixedwood Natural Subregion resulted in a total of 42 rare vascular (e.g. grasses, forbs, trees, shrubs), and 101 rare non-vascular plant species (e.g. mosses, lichens, liverworts) with habitat ranges that overlap the Project footprint. The results from the desktop ACIMS search for Township 56, Range 22, West of the Fourth Meridian returned historical observations of long-leaved bluets (*Houstonia lonifolia*), which is a provincially tracked rare plant species with S3 conservation rank. Typical habitat for long-leaved bluets is sandy soil in open woods and on dunes, and in grasslands. The Project footprint is predominantly agricultural land (95% of the footprint), and the majority of these rare species and communities have low potential of occurring within the Project footprint.

The field assessment confirmed that the overall Project footprint includes two vegetation communities as shown on Figure 7: Cultivated (approximately 95% of the Project footprint) and Deciduous Forest – Disturbed (approximately 5% of the Project footprint).

The Cultivated vegetation community type represented approximately 95% of the Project footprint. This community was comprised of tilled annual crops seeded in 2018, which include Bird's rape (*Brassica rapa* L.) and cultivated barley (*Hordeum vulgare* L.). In addition to the seeded crop species, the cultivated vegetation community also had agronomic and noxious weeds throughout, with highest concentrations along field and wetland edges where cultivation was not present, and therefore there was no suppression from crop species and herbicide treatments. Dominant weeds included annual hawk's-beard (*Crepis tectorum* L.), shepherd's-

purse (*Capsella bursa-pastoris* (L.) Medik.), lamb's-quarters (*Chenopodium album* L.), and provincially listed noxious species creeping thistle, (*Cirsium arvense* (L.) Scop.).

The Deciduous Forest – Disturbed vegetation community was mainly present along the quarter section boundaries (approximately 5% of Project footprint) where cultivation avoidance occurs due to property boundaries, wind breaks and/or wetland presence. Signs of disturbance within this community type were frequent, including fence lines, overgrown road beds, and drainage ditches. Vegetation species were dominated by balsam poplar, aspen (*Populus tremuloides* Michx.), and Manitoba maple forest with a shrubby understory of red-osier dogwood (*Cornus stolonifera* L.) and willow species (*Salix* spp.). Herbaceous species were dominated by agronomic grasses (i.e. smooth brome) and a variety of native forbs and grasses.

Three noxious weed species, perennial sow-thistle (*Sonchus arvensis* L.), creeping thistle (*Cirsium arvense* (L.) Scop.), and field bindweed (*Convolvulus arvensis* L.) as defined by the *Weed Control Act and Regulations* (Government of Alberta 2008; 2010b) were observed. No prohibited noxious species were observed.

One provincially listed rare plant species was observed during wetland assessments. Clammy hedge-hyssop (*Gratiola neglecta* Torr.) was observed in six wetlands, and is a provincially tracked rare plant species with S3 conservation rank. This species was found within the Project footprint primarily in temporary and seasonal wetlands, which have been cultivated. The Alberta Biodiversity Monitoring Institute (ABMI) indicates that this species is known to occur in cultivated lands, and is typically found within wetlands in the Northern Fescue Grassland, Foothills Fescue Grassland, and Mixedgrass Natural Subregions. The identification of this rare plant species has a low potential to require avoidance during construction as the species is not listed under the *Wildlife Act* or the SARA.

The requirement to strip the majority of the existing vegetation within the Project footprint will have a low impact on the natural vegetation/suitable habitat as there is limited natural vegetation remaining at the Project footprint as a result of agricultural activities. The majority of the Project footprint is cultivated resulting in a low habitat potential for all plant species, including species at risk. The Deciduous Forest – Disturbed has higher habitat potential, however, is common within the region and only 5% of the Project footprint and therefore removal will overall have a low impact.

Through the desktop study and field assessment, no listed species of concern under SARA were found to be present or have the potential to be present within the Project footprint.

5.1.2 Wetlands

A wetland assessment was conducted for the Project footprint. Wetlands were delineated through a combination of desktop aerial photograph assessment, a Geographical Information System boundary delineated from the aerial photograph assessment, and site visits on July 17-31, 2017 and additional areas field verified from May 15-20, 2018.

A total of 45 wetlands were identified within the Project footprint. Four different wetland classifications were observed, as summarized in Table J. The wetlands identified were all classified as mineral wetlands, with the dominant permanency being temporary in nature. Wetland disturbance was observed in all wetlands, with ongoing agricultural disturbance observed in 2017 and 2018 in the majority of the wetland areas for lower permanence wetlands (i.e. ephemeral and temporary), and throughout the drier fringes in the higher permanence wetlands (i.e. seasonal and semi-permanent). Wetland vegetation communities, as a result, showed high presence of invasive vegetation species. Where cultivation avoidance was more frequent, the

wetlands showed more intact wetland vegetation communities. Ephemeral and temporary wetlands may be used as resting habitat for migrating waterfowl. Moreover, unimpacted seasonal and semi-permanent wetlands may be used as breeding habitat for amphibians and birds (e.g. songbirds and marshbirds). Although, cultivation and the presence of invasive species lowers the habitat quality of these wetlands.

A summary of wetland classifications found in the Project footprint and typical vegetation communities within the wetlands is provided in Table K.

As detailed in the Section 5.1.1, one provincially listed rare plant species was observed during wetland assessments. Clammy hedge-hyssop (*Gratiola neglecta* Torr.) was observed in six wetlands, and is a provincially tracked rare plant species with S3 conservation rank. This species was found within the Project footprint primarily in temporary and seasonal wetlands, which have been cultivated. Clammy hedge-hyssop is not a federally listed Species at Risk under the *Species at Risk Act*, nor listed under the Alberta *Wildlife Act*.

A search of the potential tracked and watched vegetation elements within the Dry Mixedwood Natural Subregion (ACIMS 2017) resulted in a total of 42 rare vascular (e.g. grasses, forbs, trees, shrubs), and 101 rare non-vascular plant species (e.g. mosses, lichens, liverworts) with habitat ranges that overlap the Project footprint. A total of 9 rare vegetation communities have habitat ranges within the Project footprint. None of the potential rare plants or communities are federally listed Species at Risk under the *Species at Risk Act*, or listed under the Alberta *Wildlife Act*.

A *Water Act* application package was submitted on August 20, 2018 and prepared to fulfill all requirements to obtain *Water Act* approvals for all wetlands anticipated to be disturbed. The application includes a WAIR, Water Act approval application package (e.g. cover letter with details of the Project, Avoidance and Minimization Plan, Reclamation Plan, and Wetland Replacement Plan). The ABWRET-A values was used to determine wetland replacement (compensation ratios) for anticipated wetland losses, as outlined by the Alberta Wetland Policy. Mitigation measures will incorporate applicable compensation measures for potentially affected wetlands and will follow, as appropriate, the Alberta Wetland Policy and the Alberta Wetland Mitigation Directive.

Table J Wetland Assessment Results for Project Footprint

Wetland Classification	Number of Wetlands	Wetland Area within Project Footprint (ha)	Typical Wetland Characteristics[1]
Ephemeral Marsh	1	N/A	Saturated conditions are not present long enough to have wetland soil or vegetation established. Typical vegetation observed within the Project footprint were dominated by agronomic weeds and annual crop vegetation.
Temporary Marsh	30	2.62	Temporary marsh wetlands found within the Project footprint have frequent historical cultivation through the majority or all of the wetland area, as observed during the historical aerial photograph assessment, resulting in vegetation and soil disturbance. Wetland soil characteristics were frequently absent within 30 cm of soil surface due to a thick plowed soil horizon (Ap). Prominent redox mottles were commonly observed in the B horizon, beginning at a depth of 19 cm to 30+ cm. Typical vegetation observed included foxtail barley (*Hordeum jubatum* L.), slough grass (Beckmannia syzigachne (Steud.) Fern.), lamb's-quarters (*Chenopodium album* L.), golden dock (*Rumex maritima* L.). Actively cultivated areas of the wetlands were dominated by agronomic weeds and annual crop vegetation. Surface water was generally absent from temporary marsh wetlands during field assessments. Surface water salinity (where present) ranged from 372 to 822 µS/cm. Surface water pH ranged from 6.39 to 9.48.
Seasonal Marsh	13	2.26	Seasonal marsh wetlands found within the Project footprint have periodic historical cultivation through the majority or all of the wetland area, as observed during the historical aerial photograph assessment, resulting in vegetation and soil disturbance. Wetter years evaluated had

Wetland Classification	Number of Wetlands	Wetland Area within Project Footprint (ha)	Typical Wetland Characteristics[1]
			cultivation avoidance in the wetter central areas of seasonal wetlands. Wetland soil characteristics were frequently absent within 30 cm of soil surface due to a thick plowed soil horizon (Ap). Prominent redox mottles were commonly observed in the B horizon, beginning at a depth of 15 cm to 30+ cm. Typical vegetation observed included common cattail (*Typha latifolia* L.), slough grass, wire rush (*Juncus balticus* Willd.), water smartweed (*Persicaria amphibia* (L.) Gray p.p)., lamb's-quarters (*Chenopodium album* L.), creeping spike-rush (*Eleocharis palustris* (L.) Roemer & J.A. Schultes), and golden dock. Actively cultivated areas of the wetlands were dominated by agronomic weeds and annual crop vegetation. Surface water was found in about half of the seasonal marsh wetlands during field assessments. Surface water salinity (where present) ranged from 136 to 1576 µS/cm. Surface water pH ranged from 5.66 to 9.88.
Shallow Open Water Semi-Permanent	1	0.89	Semi-permanent shallow open water wetlands found within the Project footprint have frequent cultivation around the drier wetland edges, and periodic historical cultivation through the majority or all of the wetland area, as observed during the historical aerial photograph assessment, resulting in vegetation and soil disturbance. Wetter years evaluated had cultivation avoidance in the wetter central areas of semi-permanent wetlands. Wetland soil characteristics were frequently absent within 30 cm of soil surface due to a thick plowed soil horizon (Ap). Prominent redox mottles were commonly observed in the B horizon, beginning at a depth of 15 cm to 30+ cm. Typical vegetation observed included awned sedge, common cattail, water smartweed along wetland edges, with central submergent

Wetland Classification	Number of Wetlands	Wetland Area within Project Footprint (ha)	Typical Wetland Characteristics[1]
			vegetation zone with limited vegetation establishment including turion duckweed (*Lemna turion* Landolt), and green algae. Surface water was found in all of the semi-permanent shallow open water wetlands during field assessments. Surface water salinity (where present) ranged from 575 to 806 µS/cm. Surface water pH ranged from 7.16 to 7.37.
Total within Project Description Footprint	**45**	**5.77**	

1 - Typical vegetation will often not be present in disturbed wetlands (i.e. tilled for agricultural use or has been otherwise disturbed), and a variety of invasive species may be present.

5.1.3 Habitat and Wildlife

The Project is located within the AIH where native habitat has been fragmented due to agriculture, urbanization, industrial development and transportation infrastructure. The Project footprint is situated on land currently developed for agriculture and is approximately 3.0 km from the NSR.

According to data retrieved from the Fish and Wildlife Management Information System (FWMIS), a total of 20 species of management concern (one amphibian, 18 bird, and one mammal species) have historical occurrence records within 6 km of the Project (Table A5-1, Appendix 5; AEP 2018b). The northern leopard frog (*Lithobates pipiens*) and peregrine falcon (*Falco peregrinus*) are provincially-listed as "At Risk" and federally-listed as "Special Concern" (AEP 2018a; Government of Canada 2017). The horned grebe (*Podiceps auritus*) and North American badger (*Taxidea taxus*) are provincially-listed as "Sensitive" and federally-listed as "Special Concern" (AEP 2018a; Government of Canada 2017). The barn swallow (*Hirundo rustica*) is provincially-listed as "Sensitive" and federally-listed as "Threatened" (AEP 2018a; Government of Canada 2017). An additional 15 species are provincially-listed as "Sensitive" (Table A5-1, Appendix 5). A search of the FWMIS revealed that the Project footprint is approximately 1 km from a Key Wildlife Biodiversity Zone (along the NSR) and 4 km from a sharp-tailed grouse (*Tympanuchus phasianellus*) survey zone. Sharp-tailed grouse are provincially-listed as "Sensitive" and have not been assessed federally (AEP 2018a; Government of Canada 2017).

In addition to data from FWMIS, data collected as part of several citizen science initiatives (ABMI, eBird, North American Breeding Bird Survey, and Christmas Bird Count) were surveyed to obtain additional data on potential wildlife (i.e. birds) that may inhabit the Project footprint (ABMI 2017; Audubon and Cornell Lab of Ornithology 2017; Bird Studies Canada 2017; United States Geological Survey [USGS] and ECCC 2017). Survey locations were between 7 and 40 km away from the Project footprint.

Data from citizen science indicated the presence of an additional four at-risk bird species. Two are provincially-listed as "May be at Risk" (short-eared owl [*Asio flammeus*] and western wood-pewee [*Contopus sordidulus*]), and one as "Undetermined" [yellow rail (*Coturnicops noveboracensis*)]. Federally, two are listed as "Threatened" (common nighthawk [*Chordeiles minor]* and short-eared owl) and one as "Special Concern" (yellow rail).

According to the ABMI (2017), the region is low to moderately intact[2]: 20 to 50% intact for all species, 50 to 80% intact for birds, and 40 to 60% intact for mammals (Table K; ABMI 2017). The Project location has a relatively higher species richness[3] and is considered to be moderately rich for mammals (50-70%) and birds (60-80%), and low to moderate richness for all species (30-50%) within the Dry Mixedwood Natural Subregion (Table K; ABMI 2017). The Project location has low uniqueness[4]: 0-10% unique for all species (Table K; ABMI 2017).

[2] **Intactness**: a reflection of how modifications to habitat as a result of human activities have resulted in changes to species abundance.
[3] **Richness**: a relative measure of the number of common native species within 1 km^2 grid across the province.
[4] **Uniqueness**: a relative measure that identifies the degree to which a species composition in a 1 km^2 grid is distinct compared to other grid cells within a Natural Region.

Table K Biodiversity Index Measurements for the Site according to the ABMI (2017)

	Intactness (%)	Richness (%)	Uniqueness (%)
All species	20 to 50	30 to 50	0 to 10
Birds	50 to 80	60 to 80	0 to 10
Mammals	40 to 60	50 to 70	0 to 10

On July 13, 2006 a reconnaissance and an amphibian survey were completed as part of the Fort Hills Sturgeon Upgrader Project EIA (Petro-Canada Oil Sands Inc. 2006). Subsequently, in 2007, a number of targeted wildlife surveys were conducted, including winter track count, owl call-playback, breeding bird point counts, amphibian call and visual surveys, and a peregrine falcon nest reconnaissance survey. The surveys for this EIA included portions of the present Project footprint (Sections 10-15 and 22-24, Township 56, Range 22, West of the Fourth Meridian as well as Sections 7 and 18, Township 56, Range 24, West of the Fourth Meridian). Although the surveys were conducted over 10 years ago, and some uncertainty exists given the natural variability in wildlife occupancy and abundance, the data is likely still considered to be relevant as little has changed in the Project Footprint. As such, the wildlife community is likely similar to what has been previously reported. The Project is located adjacent to several large industrial facilities, which have been undergoing long term expansions or development. The noise from these developments would likely result in less wildlife occurrences within this area. Additionally, on May 18, 2018, Inter Pipeline Propylene Ltd conducted a wildlife survey with no reported occurrences of species listed under SARA. The IPL project site is also located within the AIH, however is closer to the NSR.

During the reconnaissance and amphibian surveys completed as part of the Fort Hills Sturgeon Upgrader Project EIA, two amphibian, 46 avian, and 11 mammal species were observed or detected (Petro-Canada Oil Sands Inc. 2006 and 2007). Most of the species observed or detected are common to the area and are provincially-listed as "Secure" (Table A5-2, Appendix 5). Six species observed during the survey are provincially-listed as "Sensitive" (Baltimore oriole [*Icterus galbula*], common yellowthroat [*Geothlypis trichas*], eastern kingbird [*Tyrannus tyrannus]*, least flycatcher [*Empidonax minimus*], pileated woodpecker [*Dryocopus pileatus]*, and sora [*Porzana Carolina]*) and one species (western wood-pewee) is provincially-listed as "May be at Risk". No species observed or detected are federally-listed.

Most mammals observed or detected are common in agricultural environments including coyote (*Canis latrans*), deer (*Odocoileus* sp.), ground squirrels (*Spermophilus* sp.), moose (*Alces americanus*), and weasels (*Mustela* spp.). Other species such as porcupine (*Erethizon dorsatum*), red squirrel (*Tamiasciurus hudsonicus*) and snowshoe hare (*Lepus americanus*) are commonly encountered in wooded environments. Other than a few limited windrows, wooded environments are absent from the Project footprint. The highest number of bird species occurred in deciduous forest; however, most of the point count locations were at a distance from the Project footprint, including near the NSR. The most common species observed were yellow warbler (*Dendroica petechia*), red-eyed vireo (*Vireo olivaceus*), yellow-rumped warbler (*Dendroica coronata*), and clay-colored sparrow (*Spizella pallida*). Again, deciduous forests in the Project footprint are limited to windrows between agricultural fields and were identified as disturbed.

Some federally-listed species with historical observations within 3 km of the Project location are unlikely to be present. For example, peregrine falcons typically nest on cliffs close to riparian or wetland habitats, especially near major river systems such as the NSR. Buildings and other man-made structures are also often chosen as nesting sites (Rowell and Stepnisky 1997). Given the lack of cliffs and buildings within the Project footprint, it is unlikely that this species utilizes the Project location for nesting, though individuals could nest along the NSR (3.0 km away). There is the potential for species to utilize Project footprint for feeding and other uses, but it is unlikely. Birds are frequently preyed upon by peregrine falcons, and pigeons (e.g. rock doves [*Columba livia*]) are arguably the most important biomass (White et al. 2002). Peregrine falcons generally search for prey in a perched position with high vantage point (e.g. cliffs on the NSR) before capturing prey in the air (White et al. 2002). In fall and winter, peregrine falcons may hunt from lower perches such as trees but these are uncommon in the Project footprint (White et al. 2002). Given that cliffs are absent and trees are limited, there is low likelihood of peregrine falcons foraging in the Project footprint. Similarly, barn swallows are known to inhabit agricultural environments and presently, largely nest on artificial structures such as buildings and bridges (Brown and Brown 1999); however, nesting structures are largely absent from the Project footprint. Yellow rail breed in sedge meadows (Leston and Bookhout 2015) and this type of habitat is not available at the Project footprint. Moreover, northern leopard frogs are now generally thought to be extirpated from central and western portions of their historical range (such as Fort Saskatchewan) and now appear to be restricted to the Grassland Natural Region in the Oldman, lower Red Deer, Milk, South Saskatchewan, and lower Bow Rivers (ESRD 2012b).

Horned grebes breed in small to moderate sized, shallow wetlands that have emergent vegetation. This type of habitat may be present within the Project footprint. Similarly, North American badgers are most often found in treeless habitats with an available food source such as Richardson's ground squirrels (Scobie 2002). They have been found to roam in a variety of habitats in Alberta, including pastures, in search for prey (Scobie 2002). Badger occurrence in the Project footprint, if any, is likely to be transitory in nature and dependent on food availability. Badgers are nomadic (Messick and Hornocker 1981) and their occurrence is largely driven by prey availability (Hoodicoff 2006). Though the North American badger is provincially-listed as "Sensitive" and federally-listed as "Special Concern", the setback requirement of 200 m relates to natal dens, only. Any risk to badgers can be avoided by completing wildlife sweeps and selective timing for construction. Wildlife sweeps will be conducted prior to initiating any site clearing or construction. Site clearing and wetland removal are to be completed outside of the migratory bird nesting season.

In addition to the species with historical occurrences, three federally-listed species have potential to occur at the Project footprint. Common nighthawks nest and forage in open, cleared areas such as pastures and roads; similarly, short-eared owls use a wide variety of open habitats, including old pastures and agricultural fields for nesting and foraging [Committee on the Status of Endangered Wildlife in Canada (Committee on the Status of Endangered Wildlife in Canada [COSEWIC] 2007; 2011)]. Given their requirements and the available habitat, it is possible common nighthawks could nest and forage within the current Project footprint. The likelihood of short-eared owls nesting is low given the lack of abundant vegetation cover; however, it is possible this species could use the Project location for foraging. The little brown bat (*Myotis lucifugus*) is provincially-listed as "Secure" but is federally-listed as "Endangered" (AEP 2018a; Government of Canada 2017) and could potentially roost in windrows between agricultural fields (COSEWIC 2017). However, the Project footprint contains minimal windrows between agricultural fields and, more suitable roosting habitat is likely to be located near the NSR.

Wildlife sweeps will be conducted prior to construction startup to identify wildlife features (e.g. dens, mineral licks, roosts, nests) that require setbacks or other mitigation measures in order to prevent negative impacts.

Construction activities will not be initiated during critical timing periods (mid-April to late-August), however, any construction started prior to the timing period will be ongoing. A wildlife specialist will be onsite site during all site clearing activities. The Project is not anticipated to significantly contribute to local wildlife mortality.

5.1.4 Soils

A baseline soil assessment covering the extent of the Project footprint, was conducted in 2017. The baseline soil assessment included a desktop review and field soil survey (Advisian 2018a).

The field soil survey was conducted from October 24-26, 2017. A total of 16 soil inspection locations were advanced within the Project footprint. Soil surveys have previously been completed in the region and in the Project footprint (Shell Canada Ltd. 2005; North West Upgrading Inc. 2006; Petro-Canada Oil Sands Inc. 2006).

The baseline soil assessment found that Chernozems with deep Ah-horizons dominated the Project footprint. Accumulation of organic matter from the root decomposition of grassland communities dominated the soil genesis and created the diagnostic dark coloured Ah horizons. Many small sloughs and depressions were observed where periodic saturated soil conditions have influenced the soil genesis as evidenced by diagnostic gley features and the established vegetation communities. The saturated soil conditions likely resulted from the presence of clayey till restricting drainage through the profile (Advisian 2018a).

Generally, the mineral soils in the Project footprint do not require any special handling during salvage activities. During site construction, all topsoil and a portion of the subsoil will be salvaged and stockpiled separately for use in final footprint reclamation.

5.1.5 Hydrology

The Project is located approximately 3.0 km west of the NSR. The closest surface water features are two Unnamed creeks (21989 and 25433), located approximately 0.5 km north/NE and 1.3 km east/SE, respectively. Both of these Unnamed creeks have been deemed to be non-fish bearing.

Stormwater from the Project footprint will be collected in two stormwater ponds located on the PDH/PP Facility (North and South pond). Water will be tested prior to release and, if compliant with allowable discharge requirements to be provided by AEP in the EPEA Approval (pending), will be released to the Sturgeon County ditching system along RR 221. The ponds will be designed for a 1 in 100 year, 24 hour rainfall event. The Project footprint straddles two watershed basins, water released from the North pond flows north within the RR 221 ditch. Stormwater released from the South pond flows south within the RR 221 ditch.

In this area, unnamed creek 21989 is located on the North side of Highway 643 and is not directly connected to the ditching network along RR 221, as the stormwater will flow into the ditch along the south side of Highway 643. All stormwater from this watershed basin eventually flows to the NSR, however by using Sturgeon County's allowable discharge rate of no greater than of 1 litre per second per hectare (l/s/ha) of land (as per Sturgeon County requirements) (CKPC 2018) basin flows are consistent with undeveloped runoff. This rate of discharge is low and has been developed by Sturgeon County to allow for their ditching network and release points to NSR to receive and convey flows that are consistent with undeveloped basin flow and do not require upgrades to their stormwater management network or outfall construction. The stormwater runoff must meet AEP criteria before it is released to Sturgeon County's ditch network and will not be

impacted. If the stormwater contents do not meet the EPEA Approval limits, then the water will be tested again if there is sufficient capacity to warrant a settling period. If immediate discharge is required, the water will be removed from site by a licensed disposal contractor.

Unnamed creek 25433 is east of the site and unlikely to be connected to the RR221 ditching network. However similar with the stormwater released from the North pond, the stormwater released from the South Pond could potentially reach the NSR through Sturgeon County's stormwater management system. The release rate of 1 l/s/ha of land will maintain basin flows consistent with undeveloped runoff. This rate of discharge is low and has been developed by Sturgeon County to allow for their ditching network and release points to NSR to receive and convey flows that are consistent with undeveloped basin flow and do not require upgrades to their stormwater management network or outfall construction.

5.1.6 Groundwater

A groundwater baseline study was completed for the Project in 2017 (Advisian 2018b).

The surficial geology underlying the majority of the Project footprint is mapped as Pleistocene stagnation moraine with undulating topography consisting of till of uneven thickness, and local water-sorted material. The southeastern corner of the site is mapped as Pleistocene and Holocene lacustrine deposits consisting of silt and clay, with a flat or gently undulating topography (Shetsen 1990).

More recent mapping describes the surficial geology from ground surface as topsoil, aeolian sand, clay and clayey deposits, and till (Petro-Canada Oil Sands Inc. 2006). The till is described as continuous and includes rafted bedrock, sand lenses, and sand and gravel lenses (Advisian 2018b).

According to Prior et al. (2013), the Project footprint is underlain by bedrock of the Upper Cretaceous Belly River Group. This group is described as fine- to coarse-grained sandstone, grey to brown carbonaceous siltstone, and coal deposited in a marginal marine to non-marine environment. The Belly River Group is underlain by the Upper Cretaceous Lea Park Formation, which is described as medium to dark grey mudstone with thin stringers of fine-grained, tan siltstone to fine-grained sandstone (Prior et al. 2013).

The bedrock surface in the vicinity of the Project is mapped as approximately 610 metres above sea level (masl), (MacCormack et al. 2015) and is characterized by pre-glacial fluvial channels, with linear bedrock lows (Petro-Canada Oil Sands Inc. 2006). More recent mapping indicates the bedrock surface elevation is approximately 630 to 640 masl and slopes towards the east (Petro-Canada Oil Sands Inc. 2006). Regionally, the Beverly Channel is a significant subsurface drainage feature and is roughly aligned with the NSR (Petro-Canada Oil Sands Inc. 2006).

The Beverly Channel represents a pre-glacial valley which geographically parallels the present day NSR valley, and has been infilled with sands and gravels overlying bedrock. These pre-glacial sand and gravel deposits are regional aquifers which affect both groundwater availability and flow distribution (Stantec Consulting Ltd. 2004).

The Beverly Channel deposits are known to be in direct hydraulic connection with the NSR, and the water levels in the channel vary with river water levels. The regional direction of groundwater flow is toward both the Beverly Channel and the NSR. The sand and gravel deposits of the Beverly Channel form an important regional aquifer (Stantec Consulting Ltd. 2004).

Groundwater testing was undertaken in 2017 (Advisian 2018b). Samples were collected and analyzed for routine chemistry, dissolved metals and hydrocarbons. All parameters were reported below the reliable detection limit (RDL) with the exception of toluene, ethylbenzene and xylenes at the majority of the monitoring wells with generally low concentrations, close to the RDL. Such hydrocarbon detections were previously reported and documented to have originated from bituminous siltstone/sandstone (Slaine and Barker 1990). Another possible reason for the presence of these hydrocarbon detections was reported as the minimal development of the newly installed monitoring wells after drilling due to the tight nature of the till (Advisian 2018b).

In addition, CKPC has committed to developing a groundwater monitoring program for the Project, the PDH/PP Facility and surrounding lands. CKPC will submit the proposed groundwater monitoring program to AEP once the EPEA Approval is issued.

5.1.7 Aquatics

An aquatics assessment of the NSR was completed in September of 2016 that included a study area approximately within a 5 km radius from the Project footprint (Advisian 2016). A search of the FWMIS for the Unnamed Creeks 21989 and 25433 showed that neither water body is fish bearing (FWMIS; AEP 2016). Unnamed Creek 21989 was assessed several times between 2001 and 2016 by various consultants, and where water was present, electrofishing yielded no fish, and the channel was characterized as having little or no habitat for fish. Unnamed Creek 25433 was sampled in 2008 and was characterized as having no connectivity with the NSR and poor habitat quality (FWMIS; AEP 2016). A thorough list of the fish community in the NSR from the 2016 assessment is provided below in Table L.

Table L Fish Species Reported In the North Saskatchewan River (AEP 2016)

Species			Local Presence (5 km radius)	Special Listing
Common Name	**Scientific Name**	**Code**		
Sport Fish				
Brook trout	*Salvelinus fontinalis*	BKTR	N	
Brown trout	*Salmo trutta*	BNTR	N	
Bull trout	*Salvelinus confluentus*	BLTR	N	Threatened (AB), Threatened (COSEWIC)
Burbot	*Lota*	BURB	Y	
Cutthroat trout	*Oncorhynchus clarkii*	CTTR	N	
Goldeye	*Hiodon alosoides*	GOLD	Y	
Lake sturgeon	*Acipenser fulvescens*	LKST	Y	Threatened (AB), Endangered (COSEWIC)
Lake trout	*Salvelinus namaycush*	LKTR	N	Sensitive (AB)
Mooneye	*Hiodon tergisus*	MOON	Y	
Mountain whitefish	*Prosopium williamsoni*	MNWH	Y	
Northern pike	*Esox Lucius*	NRPK	Y	
Rainbow trout	*Oncorhynchus mykiss*	RNTR	N	
Sauger	*Sander canadensis*	SAUG	Y	Sensitive (AB)
Walleye	*Sander vitreus*	WALL	Y	
Yellow perch	*Perca flavescens*	YLPR	N	
Coarse Fish				
Longnose sucker	*Catostomus*	LNSC	Y	
Mountain sucker	*Catostomus platyrhynchus*	MNSC	N	
Quillback	*Carpoides cyprinus*	QUIL	Y	
Shorthead redhorse	*Moxostoma macrolepidotum*	SHRD	Y	

Species			Local Presence (5 km radius)	Special Listing
Common Name	**Scientific Name**	**Code**		
Silver Redhorse	*Moxostoma anisurum*	SLRD	Y	
White sucker	*Catostomus commersonii*	WHSC	Y	
Forage Fish				
Brook stickleback	*Culaea inconstans*	BRST	Y	
Emerald shiner	*Notropis atherinoides*	EMSH	Y	
Fathead minnow	*Pimephales promelas*	FTMN	Y	
Finescale dace	*Phoxinus neogaeus*	FNDC	N	
Flathead chub	*Platygobio gracilis*	FLCH	N	
Iowa darter	*Etheostoma exile*	IWDR	N	
Lake chub	*Couesius plumbeus*	LKCH	N	
Longnose dace	*Rhinichthys cataractae*	LNDC	Y	
Northern redbelly dace	*Phoxinus eos*	NRDC	N	Sensitive (AB)
Pearl dace	*Margariscus margarita*	PRDC	N	
River shiner	*Notropis blennius*	RVSH	Y	
Slimy sculpin	*Cottus cognatus*	SLSC	N	
Spoonhead scuplin	*Cottus ricei*	SPSC	N	
Spottail shiner	*Notropis hudsonius*	SPSH	Y	
Trout-perch	*Percopsis omiscomaycus*	TRPR	Y	

Species reported from FWMIS data (AEP 2016).

AB – Alberta Species at Risk.

5.1.8 Air Quality

The Project is located within the boundaries of the North Saskatchewan Air Zone, which includes both the Capital Region Airshed Zone and the FAP Airshed Zone. The North Saskatchewan Air Zone is characterized by a strong industrial base of oil refineries, chemical manufacturing, and power generation. Future industrial activity in the region is expected to include bitumen upgrading. Industrial activity, in combination with fuel

combustion from vehicle use, home heating and urban activity contribute to the generation of NO_2, SO_2, $PM_{2.5}$ and O_3.

The Capital Region Air Quality Management Framework (ESRD 2012a) describes the principles and approach to managing these four compounds, from a cumulative effects perspective. The management framework focuses on ambient air quality pressures from point and non-point sources within the region, and is consistent with national and provincial policies. The need for air quality management action within the Capital Region was triggered by current ozone levels. Within the Capital Region, O_3 exceeds the Planning Trigger under the Clean Air Strategic Alliance Particulate Matter and Ozone Management Framework (Clean Air Strategic Alliance [CASA] 2003).

The management of air quality across Canada is the collaboration between federal, provincial, and municipal governments. The *Canadian Environmental Protection Act* (Government of Canada 1999) came into force in 2000 which aims at preventing pollution and protecting the environment and human health. The federal government has set the National Ambient Air Quality Objectives (NAAQO; CCME 2012a) and CAAQS (CCME 2012b) where NAAQOs are benchmark levels and CAAQS are achievable targets. New CAAQS for $PM_{2.5}$ were adopted in 2013 and will become even more stringent in 2020.

AAAQOs and guidelines are developed under the Alberta's EPEA (AEP 2013). Relevant ambient air quality criteria are summarized in Table M.

Table M Ambient Air Quality Criteria

Pollutant	Average Time	Concentration (microgram per cubic metre, µg/m³)	
		AAAQO	CAAQS
SO_2	1-hour	450	-
	24-hour	125	-
	30-day	30	-
	Annual	20	-
NO_2	1-hour	300	-
	Annual	45	-
CO	1-hour	15,000	-
	8-hour	6,000	-
$PM_{2.5}$	24-hour	30	28 and 27[a]
	Annual	-	10 and 8.8[a]
Ethylene	1-hour	1,200	-
	3-day	45	-
	Annual	30	-
n-hexane	1-hour	21,000	
	24-hour	7,000	

Note:
Dash (-) indicates information not applicable.
[a] Will become effective in 2020.

Air quality within the Capital Region is monitored by a number of different organizations, including ESRD and the FAP. CKPC will ensure compliance with the Capital Region Air Quality Framework through existing ambient air quality monitoring. Air quality in the region is monitored by the FAP, which currently operates nine continuous and 63 passive air monitoring stations. CKPC will work with the FAP to ensure appropriate air monitoring is conducted in the vicinity of the Project. Data from the FAP (FAP 2009; 2010; 2011; 2014) can be evaluated to determine compliance with the AAAQOs (ESRD 2012a). CKPC will ensure compliance with the Capital Region Air Quality Framework through existing ambient air quality monitoring. Air quality in the

region is monitored by the FAP, which currently operates nine continuous and 63 passive air monitoring stations. CKPC will work with the FAP to ensure appropriate air monitoring is conducted in the vicinity of the Project.

An Air Quality Assessment (RWDI 2018a) was conducted for the PDH/PP Facility and included the emissions from the Project footprint. Results reported predicted ground level maximum concentrations well below AAAQO for the all CAC evaluated. These include SO_2, NO_2 as NO_x, NO_2, CO, $PM_{2.5}$, Cl_2, HCl, ethylene, n-hexane, acetic acid and acetone.

The assessment results indicate that the Project is a negligible contributor to the modelled maximum concentrations in the study area (RWDI 2018a).

5.1.9 Noise

The Project falls under the guidelines set out by two agencies: NCIA and Alberta Energy Regulator (AER).

The Project is situated on lands north of Fort Saskatchewan residing within the boundary of NCIA. The NCIA is a group of collective businesses and developments that work together to manage the environmental and economic footprint for the region. The NCIA has created, implemented and maintained a RNMP which is approved by the AER and reviewed annually. This RNMP sets out guidance for acceptable noise contributions from facilities and provides yearly monitoring results to verify the modelling. Additionally, it maintains a regional noise model which can be used to estimate noise contributions from facilities at points within the noise model. The NCIA regional noise model generates a noise grid database of all the existing and approved facilities. The last iteration of this model was completed in 2015.

A qualitative noise assessment has been conducted for the Project (RWDI 2018b). The assessment identified four dwelling receptor locations in close proximity to the 1.5 km noise assessment boundary, as defined by AER Directive 038 (AER 2007), of the Project which includes three permanent residences located approximately 1.2 km, 1.5 km, and 1.7 km from the Project footprint. The assessment found that the Project will comply with the noise goals set out by the NCIA according to the RNMP and approved by the AER. The Project is expected to be in operation throughout the day and night; therefore, the noise sources included were modelled as operating continuously throughout the daytime and nighttime hours. As per Section 4.1.1 of *Alberta Energy Regulator Directive* 038: Noise Control (AER 2007), there is no potential for Low Frequency Noise (LFN) because the Noise Impact Assessment shows that the difference between C-weighted decibels (dBC) and A-weighted decibels (dBA) levels is less than 20 decibels (dB) at the receptors assessed (RWDI 2018b).

5.1.10 Historical Resources

ACT granted a *Historical Resources Act* Approval for the PDH/PP Facility, including the Project footprint, on December 7, 2017.

Prior to certain types of development in Alberta, ACT must provide a *Historic Resources Act* Approval, which reviews the relationship of proposed developments to known historical resources or areas of potential historical resources. Under the *Historic Resources Act* a historic resource is defined as "any work of nature or of humans that is primarily of value for its palaeontological, archaeological, prehistoric, historic, cultural,

natural, scientific or esthetic interest including, but not limited to, a palaeontological, archaeological, prehistoric, historic or natural site, structure or object" (Government of Alberta 2000).

A SoJ was prepared by a professional archeologist, Lifeways of Canada Ltd., and submitted along with a *Historic Resources Act* Clearance application form for the Project on November 3, 2017. The SoJ stated that "all historic resource concerns within the Project lands have been previously addressed. All lands have been previously investigated and there are no recorded Historic Resource sites that have outstanding requirements. No Historic structures remain. As a result, *Historical Resources Act* Approval is recommended for the Canada Kuwait Petrochemical Corporation Propane Dehydrogenation-Polypropylene Production Facility Project" (Lifeways of Canada Ltd. 2017).

In the event that a historical resource is found during the construction, operation or decommissioning of the Project, CKPC will complete the following as per Section 31 of the *Historical Resources Act*:

- Stop work
- Notify ACT
- Wait for ACT permission to restart work

The Approval includes consideration and assessment of the presence of structures, sites or things that are of historical, archeological, paleontological, or architectural significance to Indigenous peoples.

5.2 Potential Changes to the Environment

5.2.1 Fish and Fish Habitat (*Fisheries Act*)

The Project footprint does not constitute suitable habitat for aquatic species and no works associated with the Project will be constructed in an area containing fish habitat. There were no aquatic species or habitat, as defined under SARA or the *Fisheries Act*, observed during previous wildlife surveys conducted at the Project site.

The Project has no direct discharge to the NSR or any fish bearing waterbody. Surface runoff from the Project site will be routed to the PDH/PP Facility stormwater ponds. After water testing and ensuring compliance with the EPEA Approval discharge conditions, the water will be released to the Sturgeon County stormwater ditch network at a release rate calculated to maintain baseline basin flows. The drainage from the Sturgeon County stormwater ditch along RR221 could potentially flow towards Unnamed Creeks 21989 and 25433. Neither Unnamed Creek 21989 or 25433 are fish bearing and have limited to no connectivity to the NSR (FWMIS; AEP 2016). While some species reported in the NSR are of special conservation or management concern (Table L), these would be limited by the lack of habitat availability in the Unnamed Creeks 21989 or 25433. Any possible Project influences on these unproductive (dry) channels will have no effect on the fish community in the NSR.

As a result, no adverse effects are expected from the Project on fish in the NSR or fish in the NSR that are part of a commercial, recreational or Indigenous Peoples fishery, or their habitat.

The Project will maintain the natural topography of the area and stormwater discharge consisting of unimpacted rainfall runoff will be managed through the existing Sturgeon County stormwater ditch network at a release rate that is consistent with predevelopment runoff. The Project is therefore not expected to adversely affect surface hydrology or the patterns of flow in the unnamed creeks, which currently have minimal fish habitat value. As such, the Project is not anticipated to impact fish or fish habitat.

5.2.2 Marine Plants (Fisheries Act)

The Project is not located in an area where marine plants occur and therefore there will be no effect on marine plants as a result of this Project.

5.2.3 Migratory Birds (Migratory Birds Convention Act, 1994)

Due to limited historical evidence of use of the Project footprint by migratory birds, preference for more suitable habitat outside of the Project footprint and habituation of migratory birds to long-term sensory disturbances in the AIH area, adverse effects on migratory birds are unlikely to occur as a result of the Project. Any wetland habitat lost during the construction of the Project will be replaced type-for-type (same size and value of wetland), ideally in the same area, according to Alberta's Wetland Policy (Government of Alberta 2013).

During bird surveys as part of the Fort Hills Sturgeon Upgrader Project EIA, a total of 46 bird species in the vicinity of the Project footprint was detected or observed (Table A5-2; Appendix 5). Further details including information on the likelihood of species at risk occurring in the Project footprint can be found in Section 5.1.3. The most common species observed in the EIA included yellow warbler, red-eyed vireo, yellow-rumped warbler and clay-colored sparrow (Petro-Canada Oil Sands Inc. 2007). However, these were found in deciduous forests at point count locations outside the Project footprint (including along the NSR). Point counts located in pasture type habitats had the lowest abundance and diversity of species (Petro-Canada Oil Sands Inc. 2007). Given that deciduous forest is limited to windrows between fields and that the majority of the Project Footprint is cultivated, bird abundance and diversity is expected to be low compared to surrounding communities. Species typical or this area that are common in cultivated fields include American crow (*Corvus brachyrhynchos*), black-billed magpie (*Pica hudsonia*), Brewer's blackbird (*Euphagus cyanocephalus*), brown-headed cowbird (*Molothrus ater*), savannah sparrow (*Passerculus sandwhichensis*) and vesper sparrow (*Pooecetes gramineus*) (Table A5-2; Appendix 5). These birds and others, will occupy and use the area to complete their life history (e.g. breeding, foraging, resting). As such, the Project has the potential to impact birds through sensory disturbances, direct and indirect mortality, and habitat loss or modification. Despite potential affects, and given anticipated low abundance and diversity of bird species, adverse impacts as a result of the Project are anticipated to be minor and can be mitigated. Although the surveys were conducted over 10 years ago, and some uncertainty exists given the natural variability in wildlife occupancy and abundance, the data is likely still considered to be relevant as little has changed in the Project Footprint. As such, the bird community is likely similar to what has been previously reported.

5.2.3.1 Noise and Vibrations

Sensory disturbances such as noise and vibrations will increase as a result of Project construction and operation. Noise can mask or lead to modification of signals used for communication, mating, and hunting (Siemers and Schaub 2010, Mason et al. 2016) altering foraging or mating success or impacting physiology (e.g. stress or hearing loss; Shannon et al. 2016). These impacts can ultimately change bird communities

(Bayne et al. 2008, Francis et al. 2009). That said, birds can become tolerant to long-term, continuous noise (Shannon et al. 2016) such as contributed by industrial facilities. The Project is expected to be in operation throughout the day and night; therefore, the noise sources included were modelled as operating continuously throughout the daytime and nighttime hours. The Project is located within the AIH and is industrial; thus, is can be expected that birds inhabiting the wider region are tolerant of current noise levels. The noise assessment completed by RWDI found that the Project will comply with the noise goals set out by the NCIA according to the RNMP and approved by the AER. Only one trip per day is anticipated by CNR to the rail yard. Similarly, the Project footprint is already subjected to vibrations from adjacent CNR traffic at the RFS complex, which see trail traffic of three trips daily from CNR. Although, there will be a brief increase in noise and vibration during construction, it is likely to have minimal to no impact on migratory birds.

5.2.3.2 Light

Light can also lead to sensory disruption for migratory birds: light can attract and disorient birds disrupting flight paths or inducing behaviours such as territorial singing, thereby increasing energy expenditure leading to reduced survivability, health and fecundity (Longcore and Rich 2004). Lighting is not anticipated to be required on the Pembina Rail Line. For the remainder of the Project footprint, the number and intensity of outdoor light fixtures will be minimized to provide only what is required for safety and security. Low intensity LED lighting will be used with limited use of wide area flood lighting. In all, there will be negligible increase to light, particularly considering the adjacent industrial facilities and the City of Edmonton and the Town of Fort Saskatchewan occur nearby.

5.2.3.3 Vehicle Collisions

Direct and indirect mortality could also affect birds as part of Project construction and operations. For example, vehicle collisions or interactions with construction equipment could lead to mortality (Bishop and Brogan 2013). During the construction of the Project, buses will be used to transport construction workers to the site. This will not only reduce the number of vehicles on the adjacent Highway, but buses travel at a lower rate of speed which could result in a lower incidents of migratory bird fatalities. During operation, there will be minimal vehicle traffic associated with Project employees and CNR will complete only one trip per day along the Pembina rail line. As such, vehicle collisions are not anticipated to have an impact on migratory birds.

5.2.3.4 Air and Water

Contaminated air and water could lead to direct and indirect mortality or health and fitness consequences for birds (*sensu* Cox 1991). For example, stormwater ponds built to manage surface runoff have the potential to attract migratory birds. However, in Pembina's experience, at the adjacent RFS Complex, few migratory birds are observed within the seven ponds (two stormwater and five brine ponds). In the instances where birds may be attracted to the PDH/PP Facility stormwater ponds, the water within these ponds is inert runoff from the PDH/PP Facility. Areas where chemicals will be stored will have sumps and emergency response plans to contain potential spills. The PDH/PP Facility will operate under EPEA Approval that will provide the stormwater release criteria. It is expected that when tested, water quality will meet EPEA discharge limits, as the water is primarily unimpacted rainfall runoff. Moreover, deterrents such as fladry and predator effigies will be installed to prevent waterfowl utilizing these ponds and regular, random inspections will take place to confirm waterfowl use. Few waterfowl species were identified during avian surveys for the Fort Hills Sturgeon Upgrader Project EIA: those that were observed or detected included common species such as Canada geese

(*Branta canadensis*), mallards (*Anas platyrhynchos*), and snow geese (*Chen caerulescens*) (Table A5-2; Appendix 5).

Air pollution could similarly contribute to direct (acute or chronic toxicity) or indirect mortality (e.g. predation or starvation) and sublethal effects (*sensu* Cox 1991); however, an Air Quality Assessment (RWDI 2018a) was conducted for the PDH/PP Facility and included the emissions from the Project footprint. For Project operation results reported predicted ground level maximum concentrations well below AAAQO for the all CAC evaluated. These include SO_2, NO_2 as NO_x, NO_2, CO, $PM_{2.5}$, Cl_2, HCl, ethylene, n-hexane, acetic acid and acetone. The assessment results indicate that the Project is a negligible contributor to the modelled maximum concentrations in the study area. Similarly, dust emission during construction will be suppressed using water trucks and other mitigation measures established through the Environmental Protection Plan and a CKPC environmental representative will be on-site during all site clearing and grading to ensure dust is minimized. Dust, which can damage vegetation (Forman and Alexander 1998) leading to an effective loss of habitat, is not anticipated to be emitted during operation as the Project footprint will be graveled or paved. Finally, the total amount of GHG emissions during the construction phase is estimated to account for 0.0073% of the 2016 Alberta GHG emissions (ECFR 2018b). The total amount of GHG emissions during the operation phase is estimated to be approximately 20.6 t/a of CO_2e, which accounts for 0.00001% of the 2016 Alberta GHG emissions (ECFR 2018b). The air emissions from the Project are negligible and are not anticipated to have an impact on migratory birds.

5.2.3.5 Habitat

Habitat loss or modification can negatively affect biodiversity, including birds (Fischer and Lindenmayer 2007). However, the Project footprint has undergone previous habitat modification: it has been disturbed by cultivation and is surrounded by agriculture and heavily industrialization. Although the ABMI has modeled the intactness and richness for this area (between 50% and 80%), the habitat that is present at the Project footprint is not limiting on the landscape and is considered to have low uniqueness. The habitat available is of low quality and suitable only for those species that regularly use agricultural areas and are tolerant of noise from continuous plant and rail operations. Species previously detected during Fort Hills Sturgeon Upgrader EIA that are typically associated with cultivated fields and are often tolerant of human activities include non-migratory species such as American crow, black-billed magpie, Brewer's blackbird, and brown-headed cowbird in addition to migratory species such as savannah and vesper sparrows (Table A5-2; Appendix 5). As such, while there may be some limited removal of vegetation and soil leading to a reduction in habitat as part of the development of the Project, this habitat is not limited and surrounding areas will continue to provide space for these species.

With respect to loss of wetlands, habitat will be replaced type-for-type (same size and value of wetland), ideally in the same area, according to Alberta's Wetland Policy (Government of Alberta 2013). Most of the 45 wetlands that were identified in the Project footprint have temporary or ephemeral permanence. For most migratory waterfowl (e.g. Canada geese, mallard, and snow geese), there may be minor, short-term loss of stop-over habitat in the spring until compensation habitat is constructed and fully functional. Similarly, most wetlands were disturbed by cultivation and all were situated in agriculture. Little nesting habitat is available; nevertheless, there may be temporary, short-term disruption to nesting habitat for wetlands species (e.g. common yellowthroat, mallard, song sparrow (*Melospiza melodia*), and sora (*Porzana carolina*) until replacement habitat is functional. Wetland clearing will be avoided within the migratory bird breeding season and migratory bird surveys and nests searches will be conducted prior to and during clearing and construction. CKPC is working with AEP to obtain *Water Act* approval prior to the start of the breeding season;

thus, reducing the potential for birds to establish nests in the Project footprint. Additionally, a wildlife monitor will be present during wetland removal and Project construction to monitor potential wildlife occurrences.

5.2.4 Species at Risk (Species *at Risk Act, 2002*)

No adverse effects to species at risk as a result of the Project are anticipated. Using the most current available data (approximately 10 years old) for the Project footprint, no species observed or detected are federally-listed.

There is potential for five federally-listed species (common nighthawk, horned grebe, little brown myotis, North American badger, and short-eared owl) that have historical occurrences within 6 km to inhabit the Project footprint. However, due to the limited suitable habitat present within the Project footprint, the likelihood of occupancy for these species has been assessed as low to moderate.

5.2.5 Wildlife and Habitat

Similar to migratory birds and species at risk, no adverse effects to other wildlife and habitat are anticipated as a result of the Project. Overall, the habitat is not considered unique, and only moderately intact. The amphibians and mammals observed or detected during regional surveys are provincially-listed as "Secure". Moreover, many of these species were detected in riparian woodlands and upland woodlands and these vegetation communities are lacking in the Project footprint (Petro-Canada Oil Sands Inc. 2007).

The agricultural land use lowers the quality of available habitat and habitat is not limited in the region. That said, pre-construction wildlife sweeps will be conducted to identify any sensitive wildlife or protected wildlife features which will subsequently be buffered with an appropriate setback or other mitigation measure.

5.3 Potential Effects Related to Interprovincial/Federal/International Lands

No environmental effects of the Project on federal lands or on other provinces or countries are expected. The Project is not located on federal land and there is no federal land within approximately 20 km of the Project site. The Project is not located near a provincial or international border. The location of the Project in relation to provincial and international boundaries is shown in Figure 2. The distance to the boundaries are as follows:

- Alberta-Saskatchewan border: 207 km
- Alberta-British Columbia border: 325 km
- Alberta-Northwest Territories border: 686 km
- Canada-USA border: 534 km

The closest federal lands are Elk Island National Park, approximately 21 km SE of the Project and Canadian Forces Base Edmonton located 24 km west of the Project (Figure 3). Given the distance of the Project from federal lands, it is not anticipated that the off-site dispersion of noise or air emissions will affect those federal lands. Adverse environmental effects are also not anticipated on lands outside of Alberta or Canada.

5.4 Potential Effects on Indigenous Peoples from Changes to the Environment

The nearest First Nation Reserves are the Alexander First Nation (Treaty 6) on Indian Reserves 134, 134A and 134B (located west of Morinville, Alberta, approximately 47 km west of the Project), and the Enoch Cree Nation (Treaty 6) located approximately 49 km SW of the Project (Figure 6). The Buffalo Lake Métis Settlement, Kikino Métis Settlement and Saddle Lake 125 Reserve are located approximately 77, 81 and 86 km NE of the Project, respectively (Figure 6).

No effects on Indigenous Peoples due to changes in the environment are anticipated. These include effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes or any structure, site or thing that is of historical, archeological, paleontological or architectural significance.

The land is privately owned (currently by Pembina) and located within the AIH on industrial zoned (heavy industrial, IH) lands with extensive long term industrial development occurring and planned immediately surrounding the Project footprint. Therefore, there are likely no current or known traditional uses of the Project footprint by Indigenous Peoples or groups. Further, CKPC likely does not require access to, use of, or the exploration, development, and production of resources or lands currently used for traditional purposes by Indigenous Peoples for the proposed Project.

In addition, the Project footprint and PDH/PP Facility will be fenced to ensure safety of the public. The fencing is not anticipated to impact access to traditional use areas for Indigenous Peoples as the land is privately owned land and there are no current or known traditional uses of the Project site by Indigenous Peoples or groups.

No adverse effects from air and noise emissions are anticipated given that the nearest Indigenous community is 47 km away from the Project. A qualitative noise assessment found that the Project will comply with the noise goals set out by the NCIA according to the RNMP and approved by the AER (RWDI 2018b). The ambient air quality monitoring assessment results indicate that the Project is a negligible contributor to the modelled maximum concentrations in the study area (RWDI 2018a).

Further, as per Section 5.1.5, no adverse effects are expected on the water quality and quantity in the NSR and therefore impacts to water quality and quantity availability within the NSR for Indigenous Peoples are not anticipated. Likewise, as discussed in Section 5.2.1, no adverse effects are expected to result from the Project on fish in the NSR that are part of a commercial, recreational or Indigenous Peoples fishery, or their habitat.

In addition, no adverse effects are anticipated on the availability of wildlife for Indigenous Peoples as no adverse effects to wildlife and habitat are anticipated as a result of the Project. Overall, the habitat is not considered unique, and only moderately intact. The agricultural land use lowers the quality of available habitat and habitat is not limited in the region.

As discussed in Section 5.1.10, ACT granted a *Historical Resources Act* approval for the PDH/PP Facility, including the Project footprint, on December 7, 2017. Prior to certain types of development in Alberta, ACT must provide a *Historic Resources Act* Approval, which reviews the relationship of proposed developments to known historical resources or areas of potential historical resources. Under the *Historic Resources Act* a historic resource is defined as "any work of nature or of humans that is primarily of value for its palaeontological,

archaeological, prehistoric, historic, cultural, natural, scientific or esthetic interest including, but not limited to, a palaeontological, archaeological, prehistoric, historic or natural site, structure or object" (Government of Alberta 2000).

The Project footprint is located within Historic Resource Value listed lands which may have the potential to contain historic resources. However, as stated in the SoJ submitted by Lifeways of Canada Ltd., on November 3, 2017, "all historic resource concerns within the Project lands have been previously addressed. All lands have been previously investigated and there are no recorded Historic Resource sites that have outstanding requirements. No Historic structures remain. As a result, *Historical Resources Act* Approval is recommended for the Canada Kuwait Petrochemical Corporation Propane Dehydrogenation-Polypropylene Production Facility Project" (Lifeways of Canada Ltd. 2017).

In the event that a historical resource is found during the construction, operation or decommissioning of the Project, CKPC will complete the following as per Section 31 of the *Historical Resources Act*:

- Stop work
- Notify ACT
- Wait for ACT permission to restart work

The Approval includes consideration and assessment of the presence of structures, sites or things that are of historical, archeological, paleontological, or architectural significance to Indigenous Peoples.

Any potential effects to Indigenous Peoples not yet considered by CKPC may be identified as an outcome of the Indigenous Peoples Engagement Process (currently underway), at which time CKPC will work to mitigate effects.

6. Proponent Engagement with Indigenous Groups

6.1 Potentially Interested or Affected Groups

Based on discussions with CEAA, CKPC has identified 27 Indigenous Groups (see Figure 6) as potentially interested in the Project based on Indigenous Peoples engagement efforts of other recently proposed projects in the AIH region. The 27 Indigenous Groups are listed in Table N below.

Table N Indigenous Groups with Potential Interest in the Project

First Nations – Treaty 6	
Alexander First Nation	Montana First Nation
Alexis Nakota Sioux Nation	Paul First Nation
Beaver Lake Cree Nation	Saddle Lake Cree Nation
Enoch Cree Nation	Samson Cree Nation
Ermineskin Cree Nation	Whitefish Lake #128 First Nation
Louis Bull Tribe	
First Nations – Treaty 7	
Blood Tribe	Stoney (Chiniki) Band
Piikani Nation	Stoney (Wesley) Band
Siksika Nation	Tsuut'ina Nation
Stoney (Bearspaw) Band	
First Nations – Treaty 8	
Chipewyan Prairie Dene First Nation	Fort McMurray #468 First Nation
Métis	
Métis Nation of Alberta – Region 1	Buffalo Lake Métis Settlement
Métis Nation of Alberta – Region 2	Kikino Métis Settlement
Métis Nation of Alberta – Region 4	Gunn Métis Local #55
Other First Nations	
Foothills Ojibway First Nation	

6.2 Indigenous Peoples Engagement

On May 15, 2018, information packages (cover letter, figure and brochure) were delivered via registered mail to the Indigenous groups noted in Table N (see Appendix 6 for example information package). Section 6.4 describes CKPC's forward plan with regards to Indigenous engagement.

6.3 Indigenous Peoples Concerns

At the time of submission of this Project Description, no concerns regarding impacts to Treaty or Aboriginal Rights or traditional uses have been expressed by the Indigenous groups identified for engagement. In order to understand any potential concerns, all comments or concerns received in response to the notification package will be logged by CKPC and follow-up discussions and engagement will be completed as required to address the concerns.

On April 24, 2018, an Adequacy Assessment was received from the Aboriginal Consultation Office that confirmed that no consultation is required for the proposed PDH/PP Facility lands, including the Project footprint, for the EPEA and *Water Act* applications (wetlands).

6.4 Indigenous Peoples Engagement Program

CKPC has willingly accepted the opportunity to develop and implement an Indigenous Peoples Engagement Program based on CEAA's recommendation. CKPC has provided Project information packages to the 27 Indigenous Groups suggested by CEAA (Table N).

The Project is located within Treaty 6. CKPC recognizes that First Nation signatories to Treaty 6, as well as Métis communities and First Nations from Treaties 7 and 8 may have traditional territories that overlap the Project footprint and may practice Treaty rights, Aboriginal rights and traditional uses in proximity to or within the Project site on unoccupied Crown land, as per the NRTA. As the Project is located on freehold land that has been privately owned and farmed since 1950 (Integrated Environments Ltd. 2016), and the Project location is within the AIH on industrial-zoned (heavy industrial, IH) land, it is not anticipated that the Project will impact lands where Treaty rights, Aboriginal rights or traditional land use is currently exercised. However, CKPC recognizes that Indigenous communities may have practiced their Treaty and Aboriginal rights in the area overlapping with the Project footprint prior to 1950. The Indigenous community engagement process currently underway will provide opportunity for concerns regarding traditional land use to be brought forward.

CKPC has sent by Canada Post registered mail, a cover letter, figure and information package with Project specific details to the 27 identified Indigenous Groups, to inform as well as to provide them with an opportunity to voice their issues or concerns with the proposed Project.

If an Indigenous Group identifies specific issues and concerns with the Project, CKPC will document and respond to these issues, with the potential for in person engagement as required. Additionally, as part of ongoing engagement, CKPC is committed to providing regular project updates to the Indigenous Groups suggested by CEAA.

7. Engagement with the Public and Other Parties

7.1 Key Comments and Concerns

No concerns have been noted at the time of the submission of this document.

7.2 Overview of Ongoing or Proposed Stakeholder Engagement

CKPC has initiated community and stakeholder engagement for the CKPC PDH/PP Facility, which includes the Project. The approach to community and stakeholder engagement implementation was and will be delivered in a manner that enhances the understanding by CKPC of community and stakeholder issues and concerns, identifies options for their resolution, and allows the company to make future choices in the design of the PDH/PP Facility and the Project to mitigate potential adverse effects.

The following points summarize the phased initiatives of the engagement activities:

- engagement with federal, provincial and municipal governments have been ongoing;
- engagement with local communities through industrial open houses within the AIH; and
- the CKPC PDH/PP Facility Information Package including the CKPC PDH/PP Facility description, location, timelines and environmental and safety measures will be sent, by registered mail, to all relevant stakeholders as described below.

Extensive stakeholder mapping was undertaken prior to commencing community and stakeholder engagement. As required by other regulatory bodies, all interested parties within 2,000 m will be engaged by CKPC. This engagement will begin in late 2018 as the provincial regulatory package is currently being prepared for the cogeneration unit. A Project Information Package (Appendix 6) will be sent by postal mail to all landowners, urban residents and businesses located within this radius. Legal land titles for rural properties will be identified using the Alberta Land Titles Spatial Information System.

Engagement with members of the public has been ongoing through presentations on the Project and the proposed PDH/PP Facility at several public events. Each event provided opportunities for questions and comments following.

- AIHA Board Meeting, November 2017;
- Redwater Mixer, November 2017; and
- Heartland Stakeholder Event, January 2018.

CKPC is committed to maintaining and documenting the public consultation and stakeholder engagement process throughout the life of the Project, and recognizes that engagement is an on-going process.

7.3 Engagement with Other Jurisdictions

Discussions with the CEAA began in February 2018. Early discussions focused on introducing CKPC and the Project and obtaining information on the regulatory processes that should be followed.

The following is a list of engagement activities held by CKPC, including the associated PDH/PP Facility, in the planning of the Project:

- August 24, 2016: In-person meeting with Sturgeon County regarding the Project overview and update;
- November 16, 2016: In-person meeting with Sturgeon County to provide Project update;
- June 8, 2017: In-person meeting with Sturgeon County to provide Project update;
- September 11, 2017: Historic Resources Application was submitted to ACT for a *Historical Resources Act* Approval;
- November 30, 2017: In-person meeting with AEP and presentation about the Project;
- February 7, 2018: In-person meeting with CEAA (Anna Kessler and Susan Tiege) to introduce Project;
- March 27, 2018: In-person meeting with Sturgeon County to provide Project update; and
- May 7, 2018: In-person meeting with Alberta Transportation and Sturgeon County to discuss road improvements and closures required for the Project

Sturgeon County is responsible for regulatory decisions pertaining to Sturgeon County Management Plans such as the AIH Area Structure Plan Bylaw, Municipal Addressing System, Capital Region Land Use Plan, and the Land Use Bylaw and for the approval of the Project Development Permit.

AEP is responsible for regulatory decisions pertaining to the EPEA – EIA, EPEA - Industrial Approval, and *Water Act* approvals. ACT is responsible for regulatory decisions pertaining to the *Historical Resources Act*. Alberta Transportation is responsible for issuing permits for roadside developments.

The Canadian Environmental Assessment Agency (CEAA) is responsible for regulatory decisions pertaining to the *Canadian Environmental Assessment Act, 2012*.

8. Summary of the Project Description

A summary of this Project Description has been provided as a separate document. In accordance with the *Official Languages Act*, the summary has been prepared and provided in both English and French. The summary will be posted on the Canadian Environmental Assessment Agency website.

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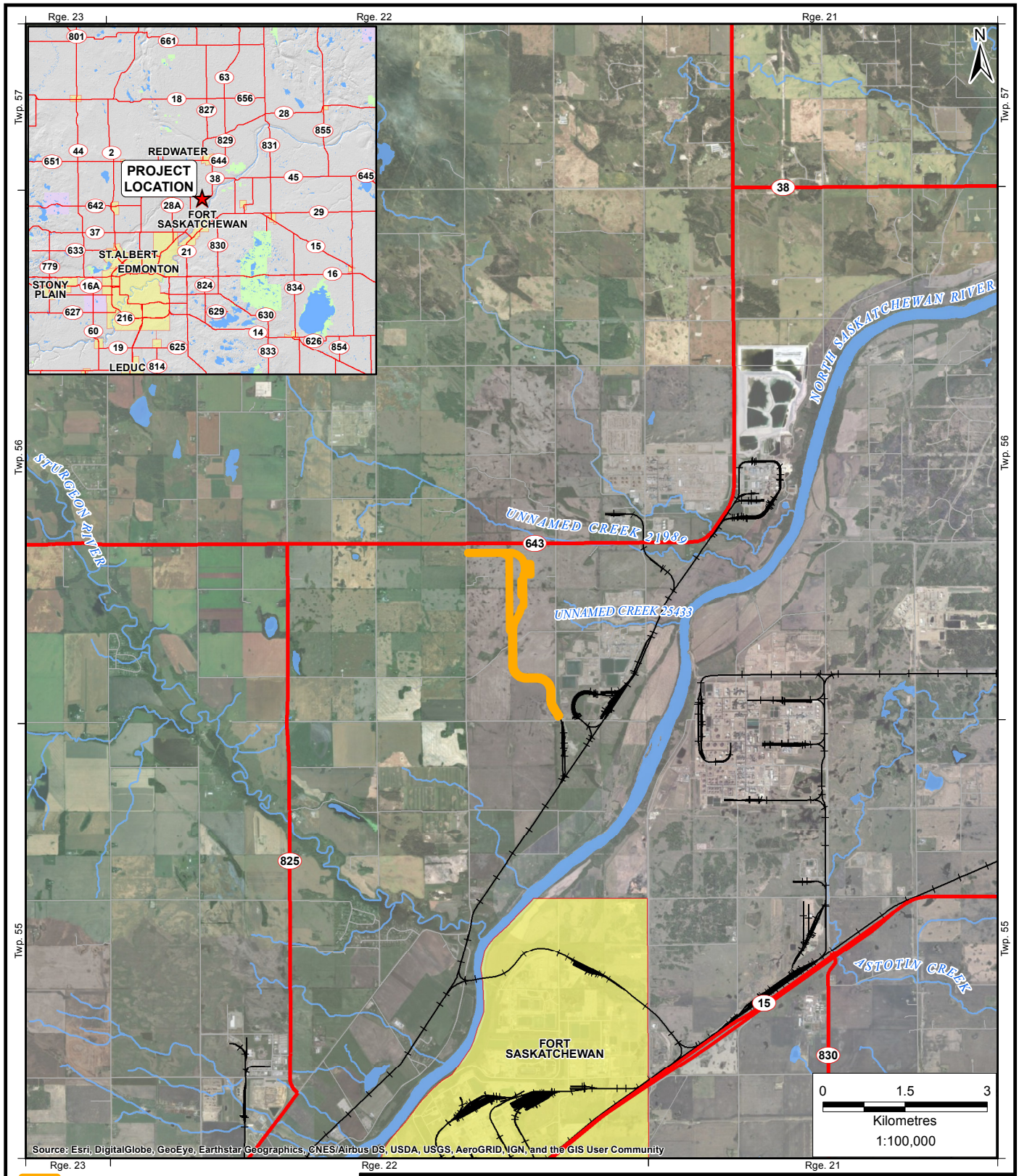
Personal Communication

S.Tiege, Section Team Lead, Canadian Environmental Assessment Agency, personal communication, February 7, 2018.

Figures



Proposed Project Footprint
Community
Waterbody
Watercourse
Major Road
Rail
Road

Basedata Source:
IHS Markit / AltaLIS Ltd.
Alberta Environment and Parks

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

SITE LOCATION MAP

Date:	Drawn by:	Edited by:	App'd by:
27-AUG-18	T.G.	T.G.	J.M.

WorleyParsons Project No.
207011-00007-1500

FIG No 1
REV 5

CKPC

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ISSUING OFFICE: CALGARY GIS

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National Park
Waterbody
Watercourse
Major Highway

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

PROJECT LOCATION IN RELATION TO PROVINCIAL AND INTERNATIONAL BOUNDARIES

Date:	22-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

WorleyParsons Project No.
207011-00007-1500

FIG No: 2
REV: 4

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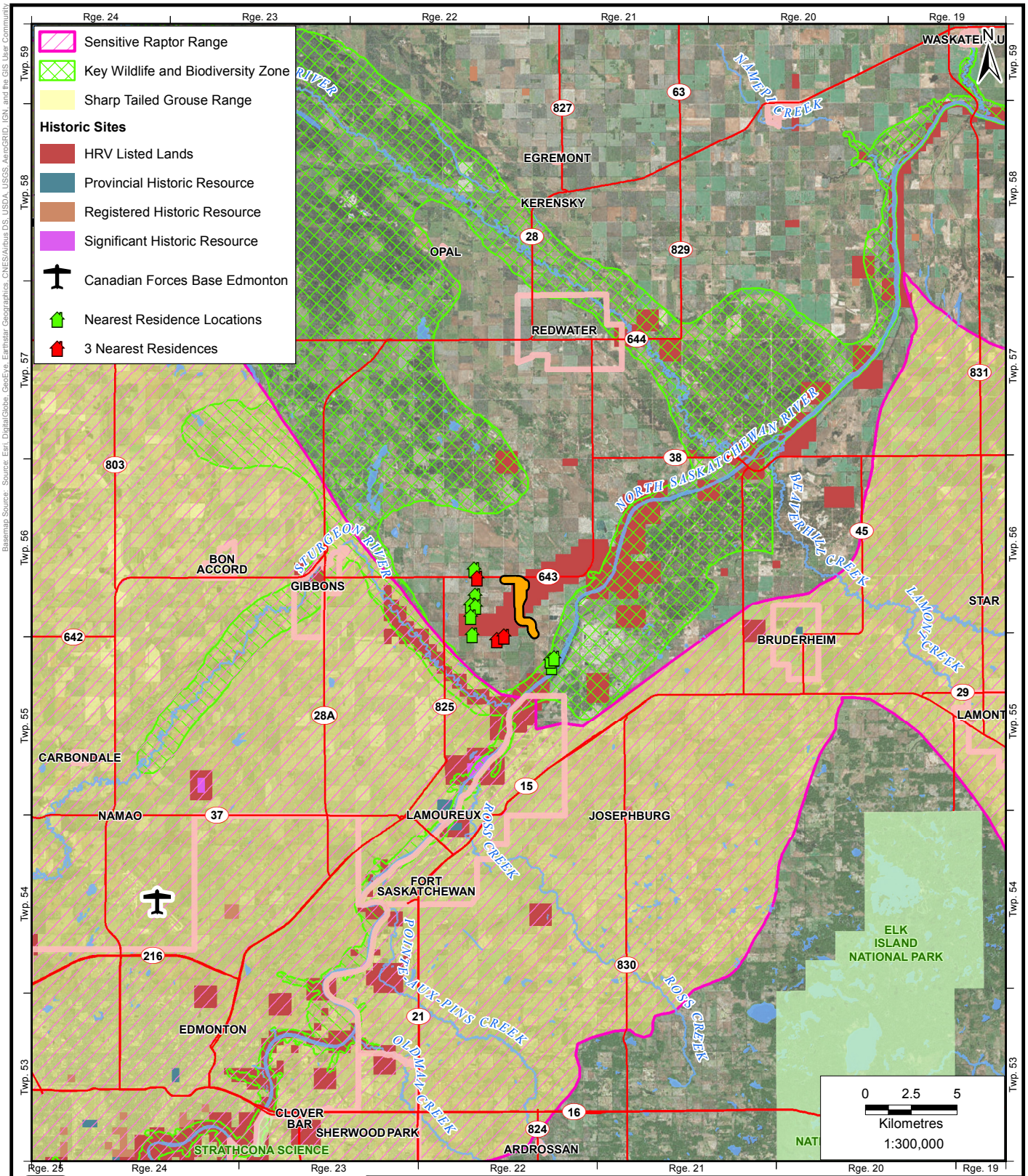

Proposed Project Footprint
Community
National Park
Waterbody
Watercourse
Major Road

Basedata Source:
IHS Markit / AltaLIS Ltd.
Alberta Environment and Parks

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

KEY REGIONAL FEATURES

Date:	Drawn by:	Edited by:	App'd by:
27-AUG-18	T.G.	T.G.	J.M.

CKPC

WorleyParsons Project No.
207011-00007-1500

FIG No 3 | REV 5

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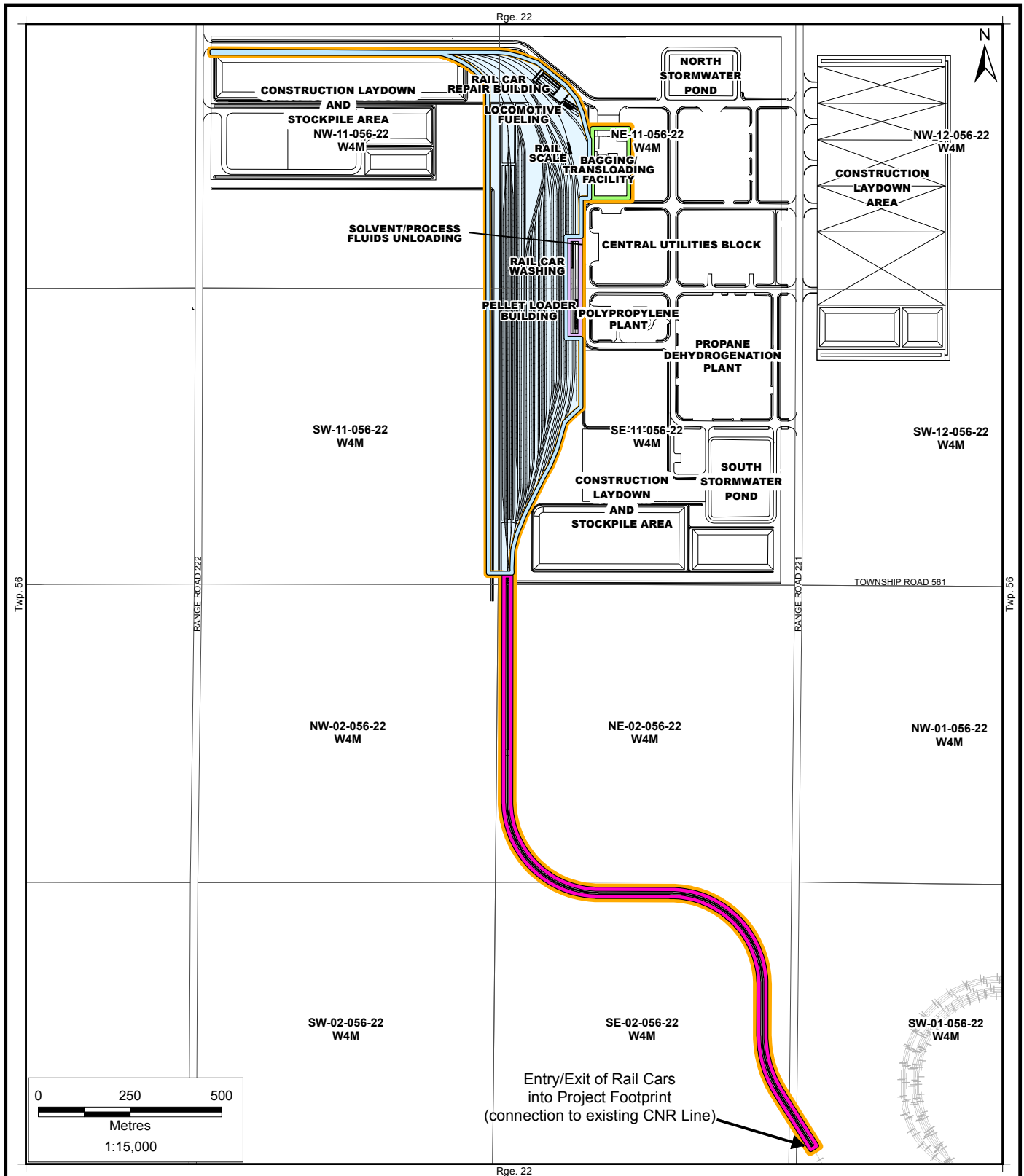


- Proposed Project Footprint
- Proposed Rail Track
- Area 1: Storage, Maintenance and Fueling
- Area 2: Loading and Washing
- Area 3: Transloading / Bagging
- Area 4: Pembina Rail Line

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

PROJECT LAYOUT

Date:	23-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

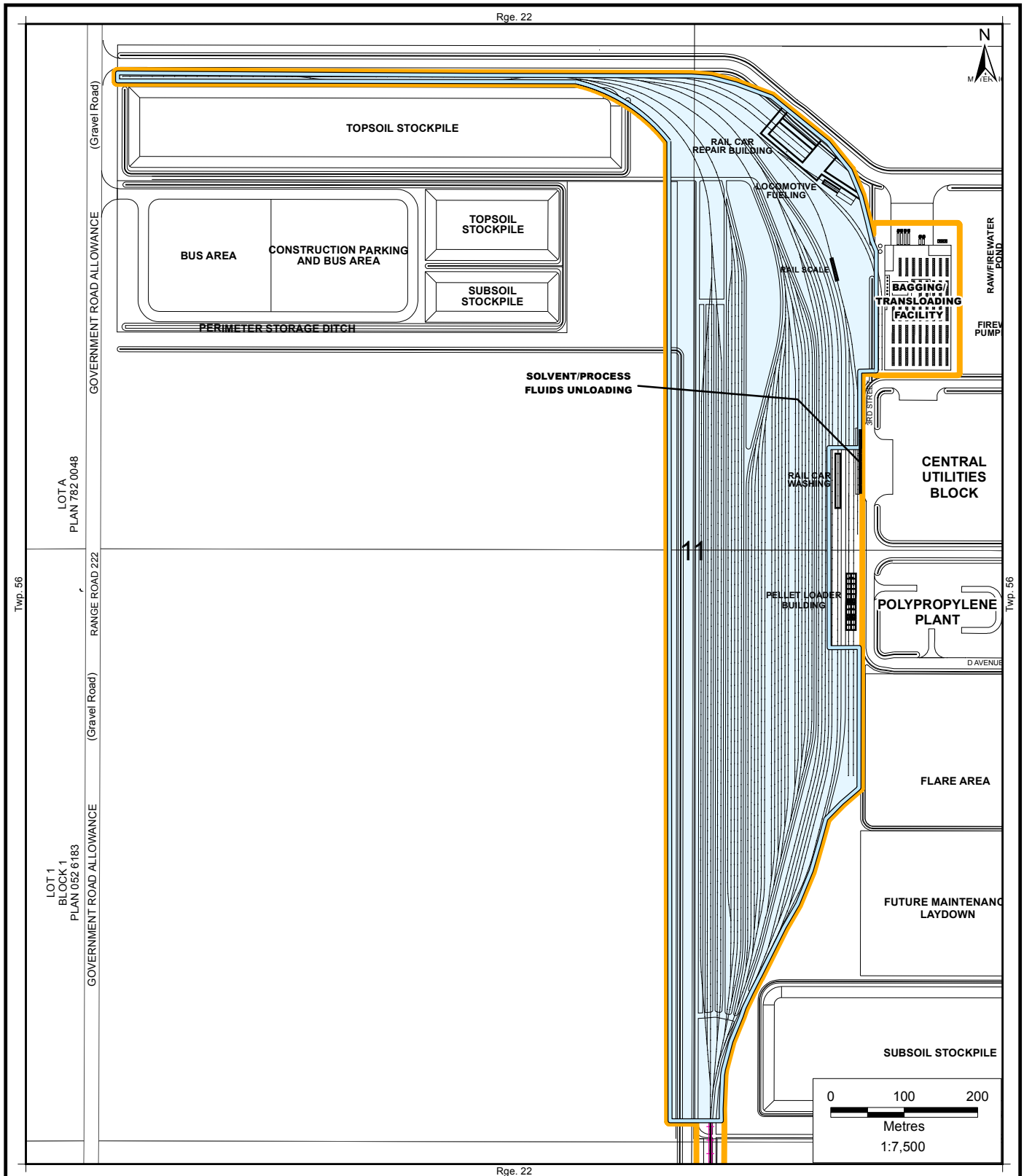
CKPC

WorleyParsons Project No.
207011-00007-1500

FIG No 4 | REV 4

PLOT DATE & TIME: never never
SAVE DATE & TIME: 23/08/2018 8:37:48 AM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\SiteLayout_Rev4.mxd



Proposed Project Footprint

Proposed Rail Track

Area 1: Storage, Maintenance and Fueling

Pembina Rail Line

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

AREA 1: STORAGE, MAINTENANCE AND FUELING

Date:	27-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

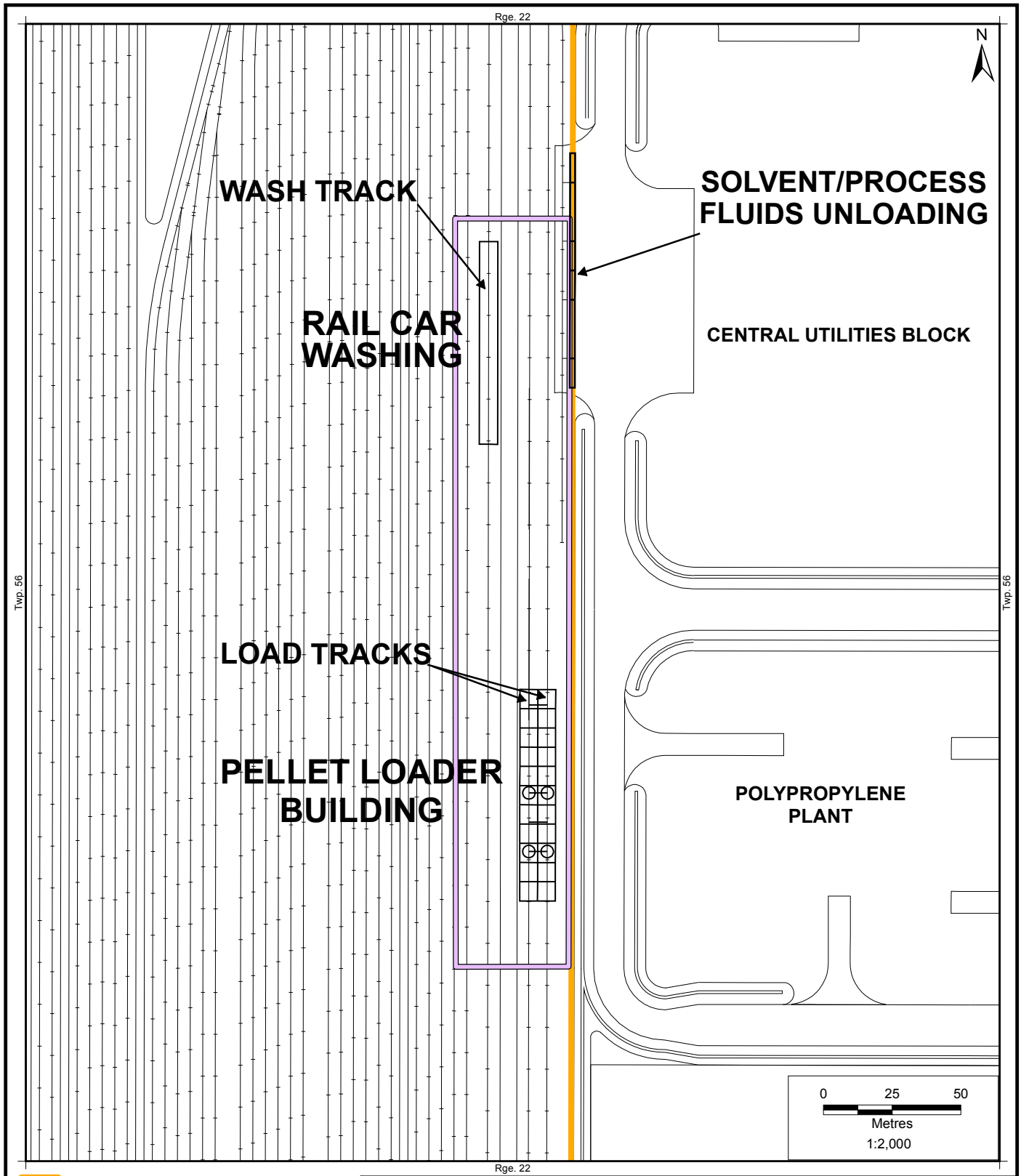
WorleyParsons Project No.
207011-00007-1500

FIG No **4A**

REV 5

PLOT DATE & TIME: never never
SAVE DATE & TIME: 27/08/2018 11:50:19 AM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\Area1_Rev5.mxd



Proposed Project Footprint

Proposed Rail Track

Area 2: Loading and Washing

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

AREA 2: LOADING AND WASHING

Date:	27-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

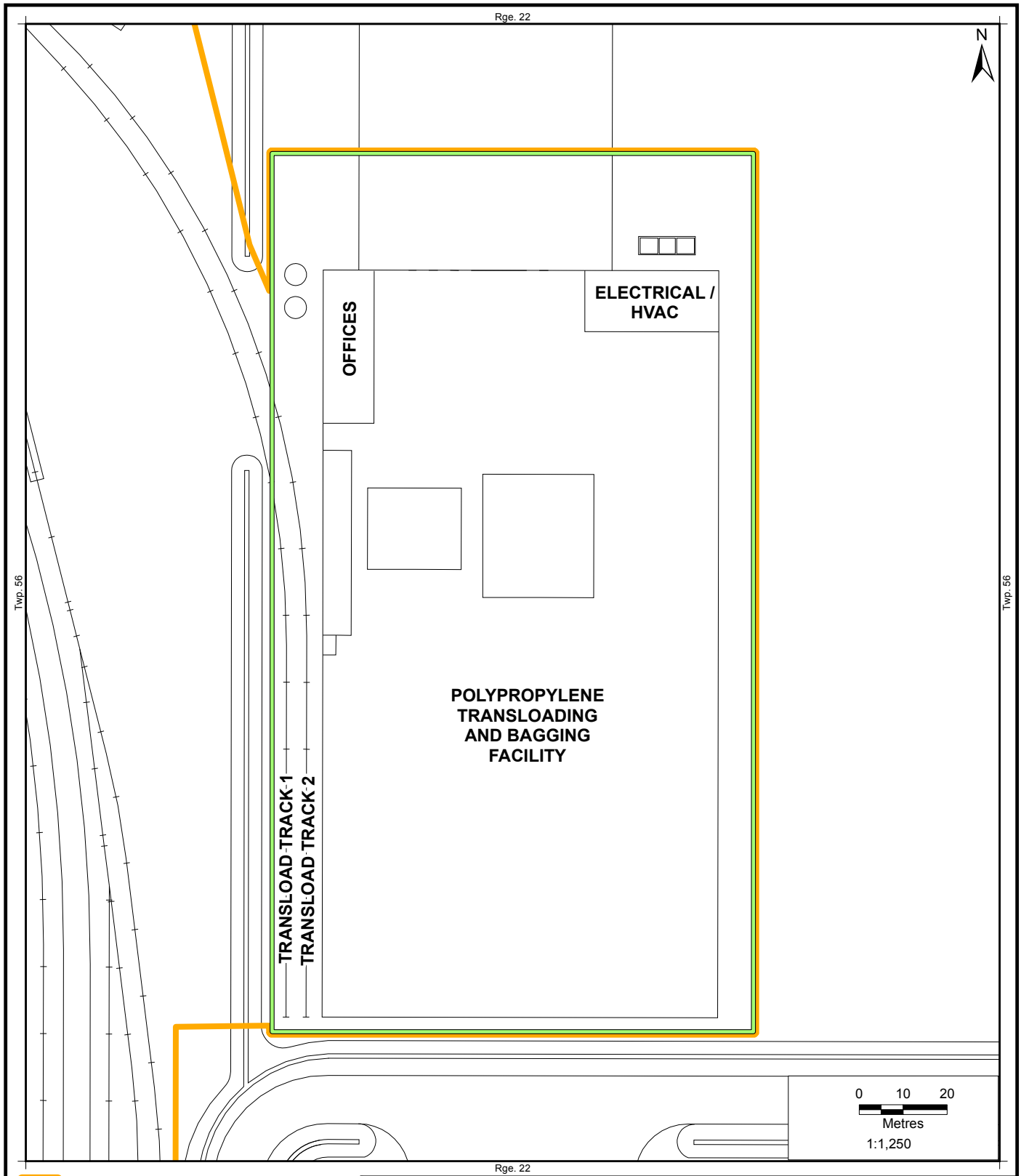
WorleyParsons Project No.
207011-00007-1500

FIG No **4B**

REV 5

PLOT DATE & TIME: never never
SAVE DATE & TIME: 27/08/2018 12:01:13 PM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\Area2_Rev5.mxd



Proposed Project Footprint

Proposed Rail Track

Area 3: Transloading / Bagging

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

AREA 3: TRANSLOADING / BAGGING

Date:	23-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

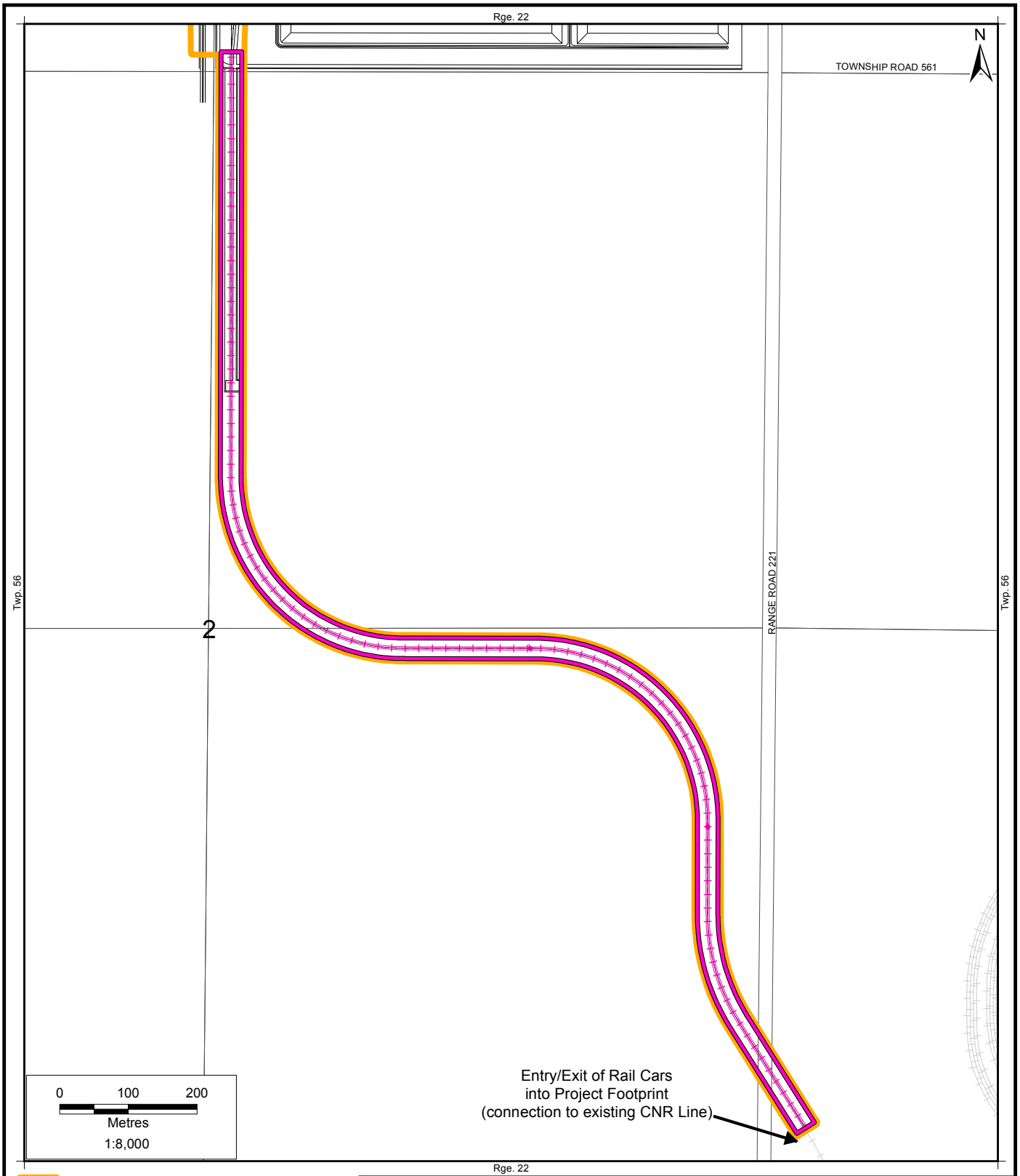
WorleyParsons Project No.
207011-00007-1500

FIG No **4C**

REV 4

PLOT DATE & TIME: never never
SAVE DATE & TIME: 22/08/2018 10:07:12 AM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\Area3_Rev4.mxd



Proposed Project Footprint

Proposed Rail Track

Area 4: Pembina Rail Line

Pembina Rail Line

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

AREA 4: PEMBINA RAIL LINE

Date:	23-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

WorleyParsons Project No.

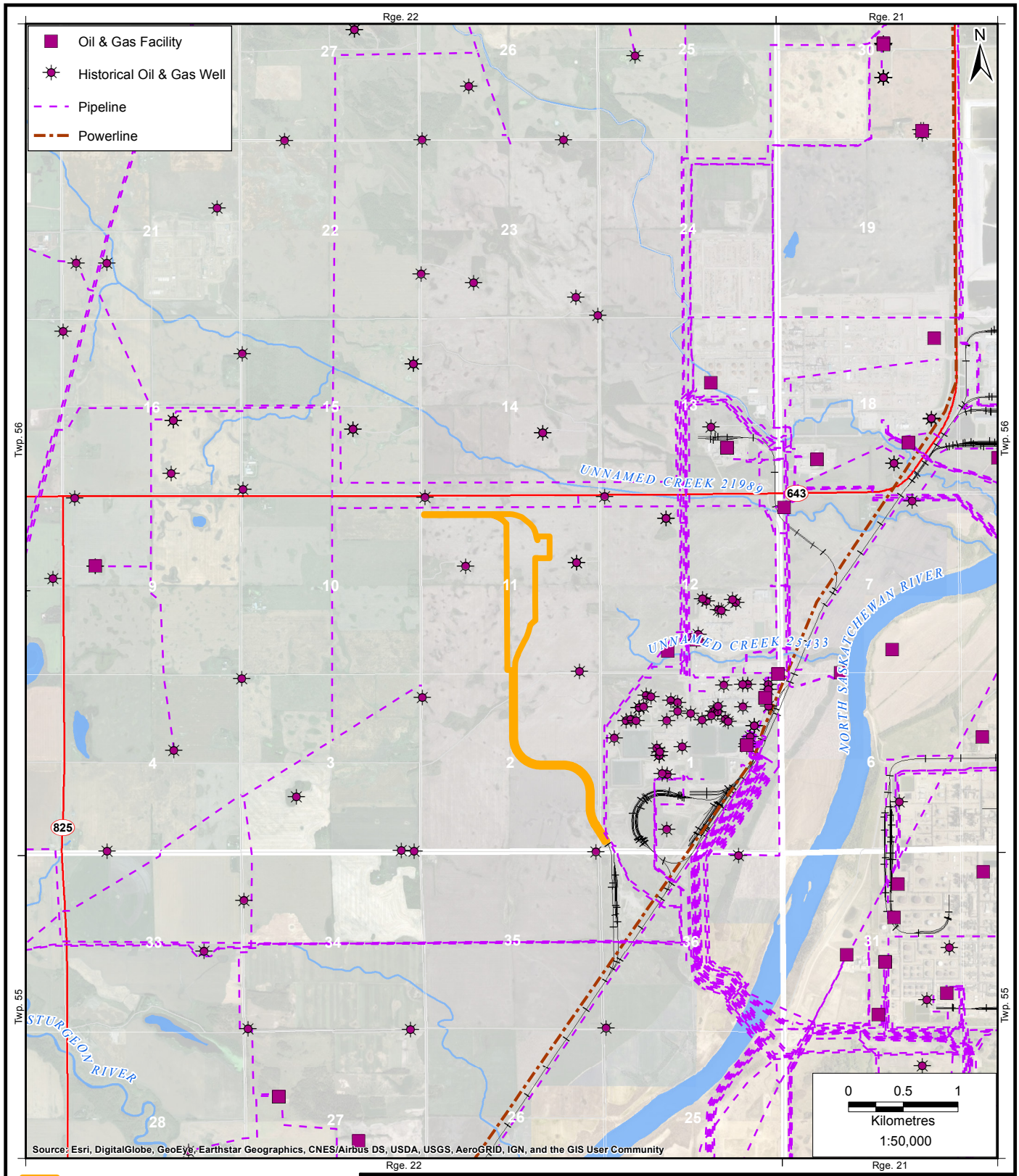
207011-00007-1500

FIG No **4D**

REV 4

PLOT DATE & TIME: never never
SAVE DATE & TIME: 22/08/2018 10:09:59 AM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\Area4_Rev4.mxd



Proposed Project Footprint
Waterbody
Watercourse
Major Road
Rail
Road

Basedata Source:
IHS Markit / AltaLIS Ltd.
Alberta Environment and Parks

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

LOCAL INFRASTRUCTURE

Date:	27-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

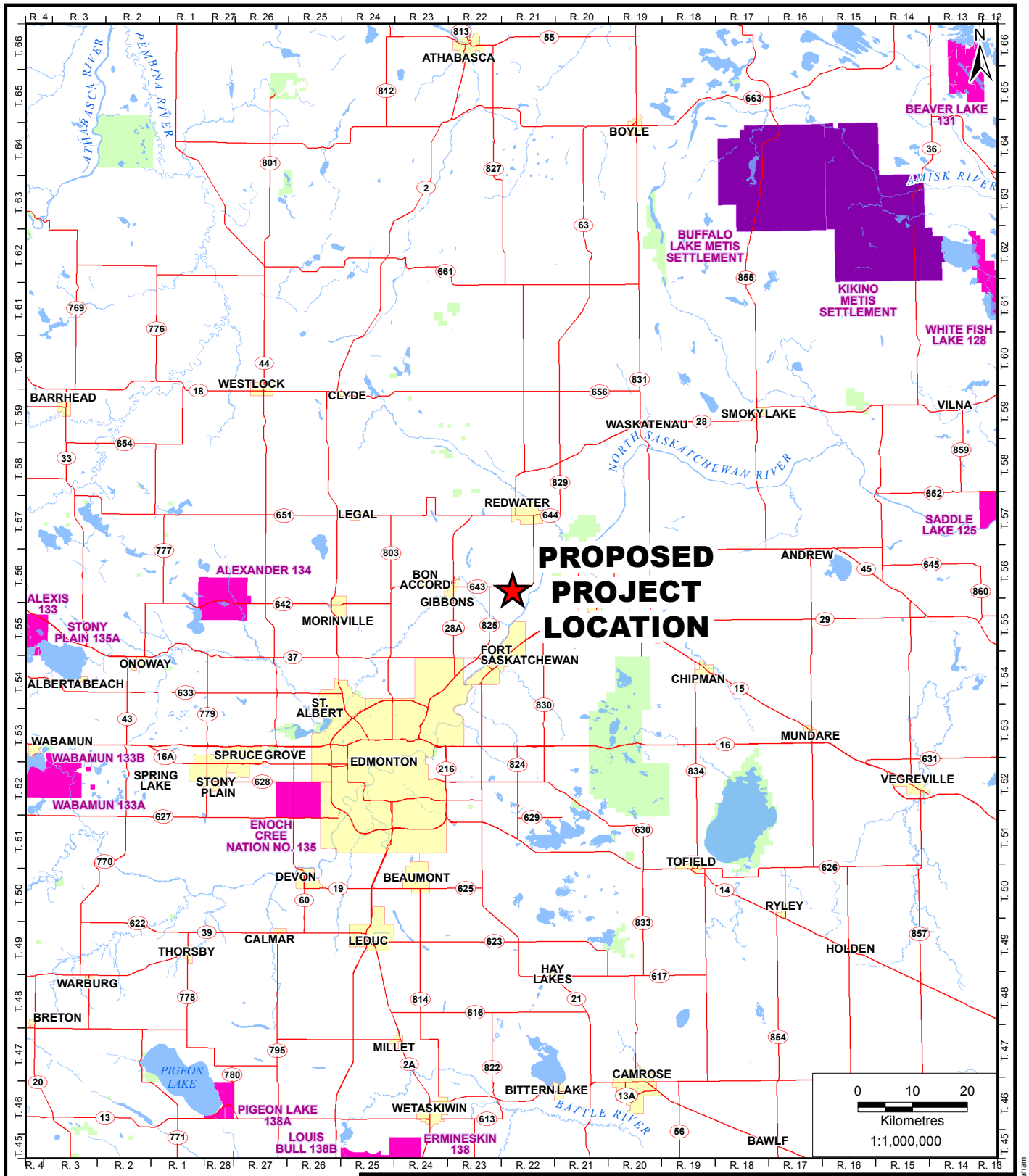
CKPC

WorleyParsons Project No.
207011-00007-1500

FIG No 5 | REV 5

PLOT DATE & TIME: never never
SAVE DATE & TIME: 27/08/2018 12:03:26 PM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\LocalInfrastructure_Rev5.mxd



CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

LOCATION OF INDIGENOUS GROUPS RELATIVE TO THE PROPOSED PROJECT FOOTPRINT

Date:	Drawn by:	Edited by:	App'd by:
27-AUG-18	T.G.	T.G.	J.M.

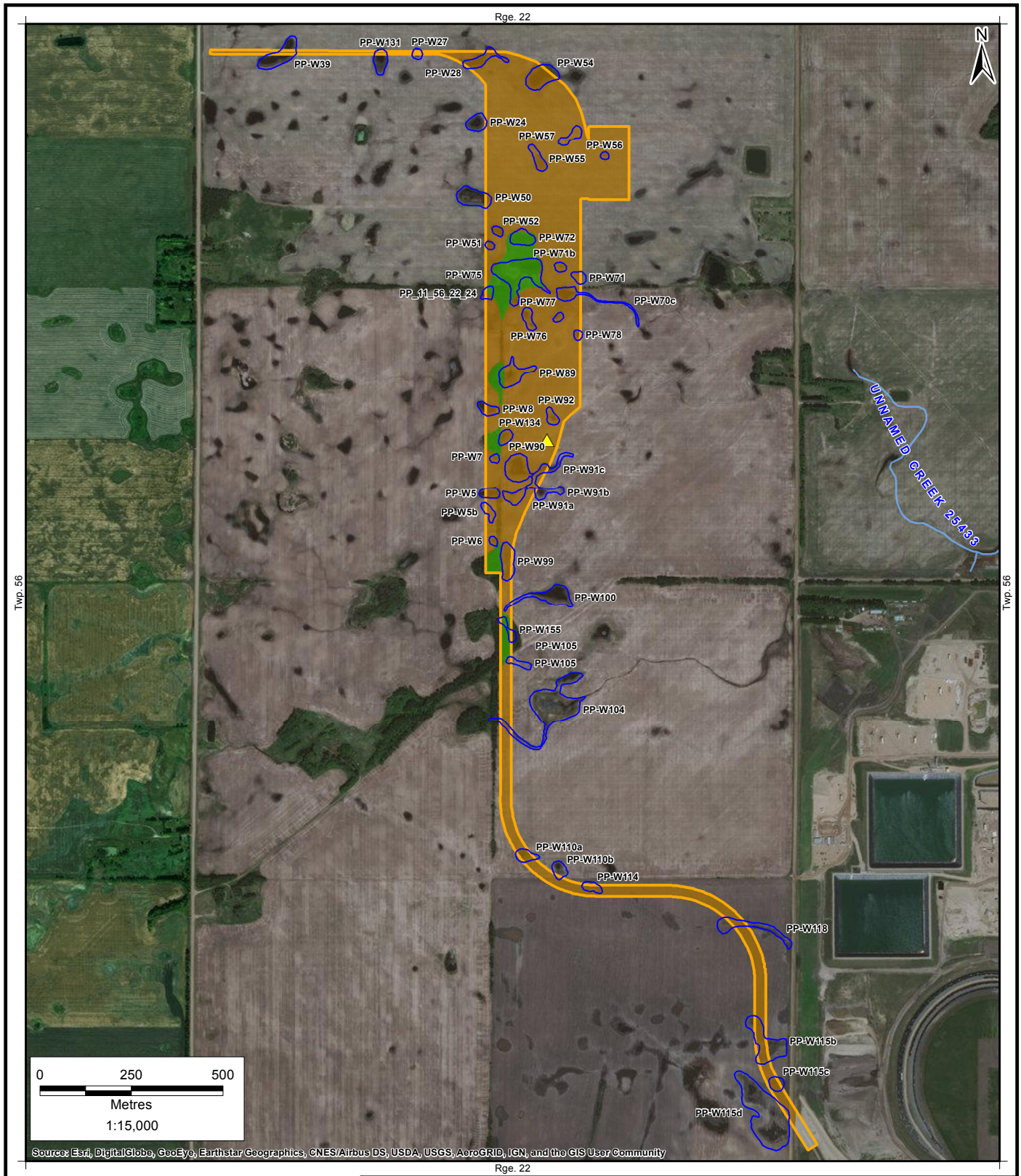
WorleyParsons Project No.
207011-00007-1500

FIG No 6 | REV 5

CKPC

PLOT DATE & TIME: never never
SAVE DATE & TIME: 27/08/2018 11:34:24 AM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\IndigenousGroups_Rev5.mxd



Proposed Project Footprint

Wetland Boundary

Vegetation Community Mapping

Deciduous Forest - disturbed

Cultivated

Industrial

Ephemeral Wetlands

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

VEGETATION AND WETLANDS ASSESSMENT

Date:	27-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

WorleyParsons Project No.
207011-00007-1500

FIG No 7

REV 5

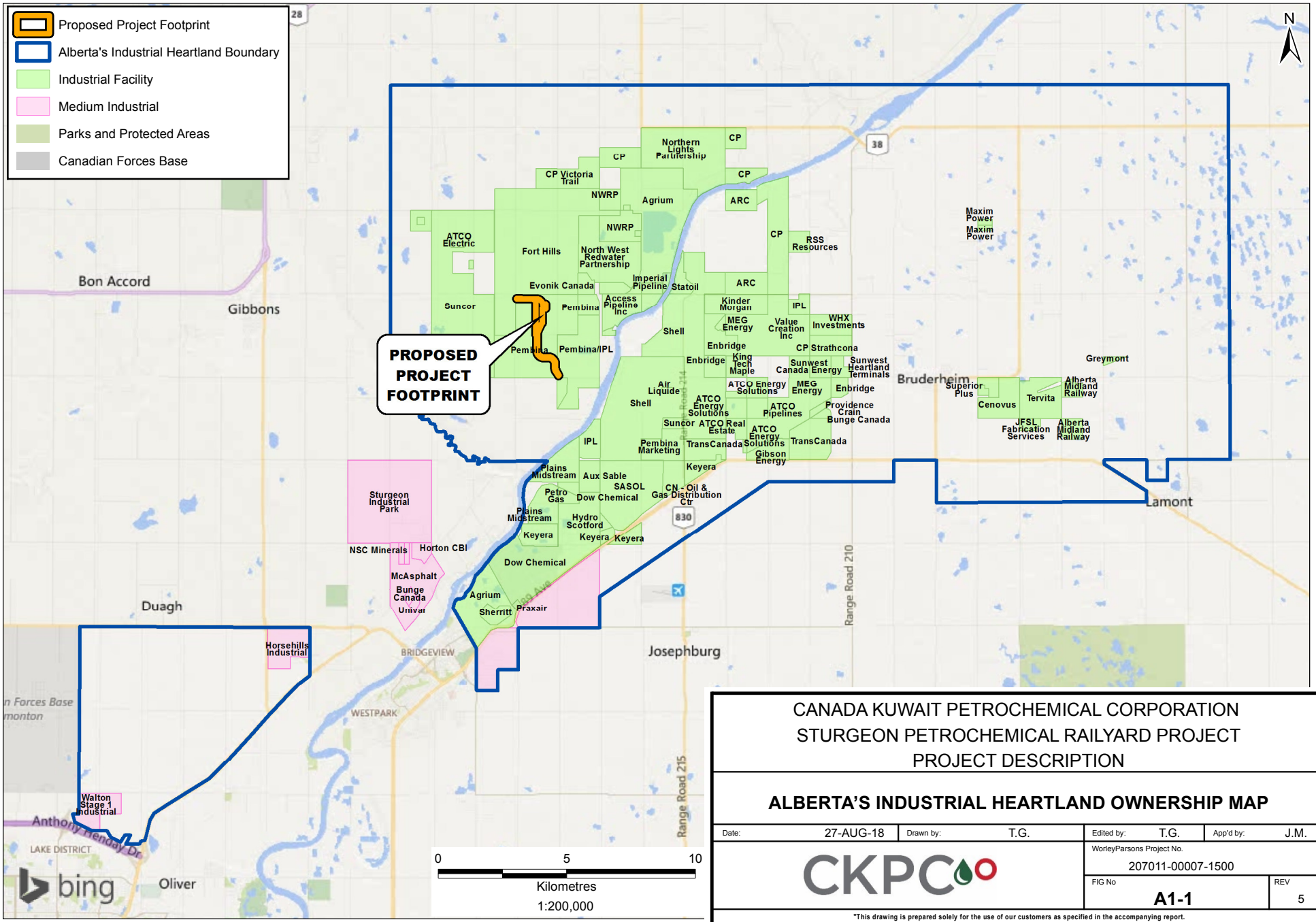
PLOT DATE & TIME: never never
SAVE DATE & TIME: 27/08/2018 12:09:04 PM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\VegetationWetlands_Rev5.mxd

Appendices

Appendix 1 Alberta's Industrial Heartland Ownership Map

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\Appendix 1\IndustrialHeartland_Rev5.mxd



CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

ALBERTA'S INDUSTRIAL HEARTLAND OWNERSHIP MAP

Date:	27-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

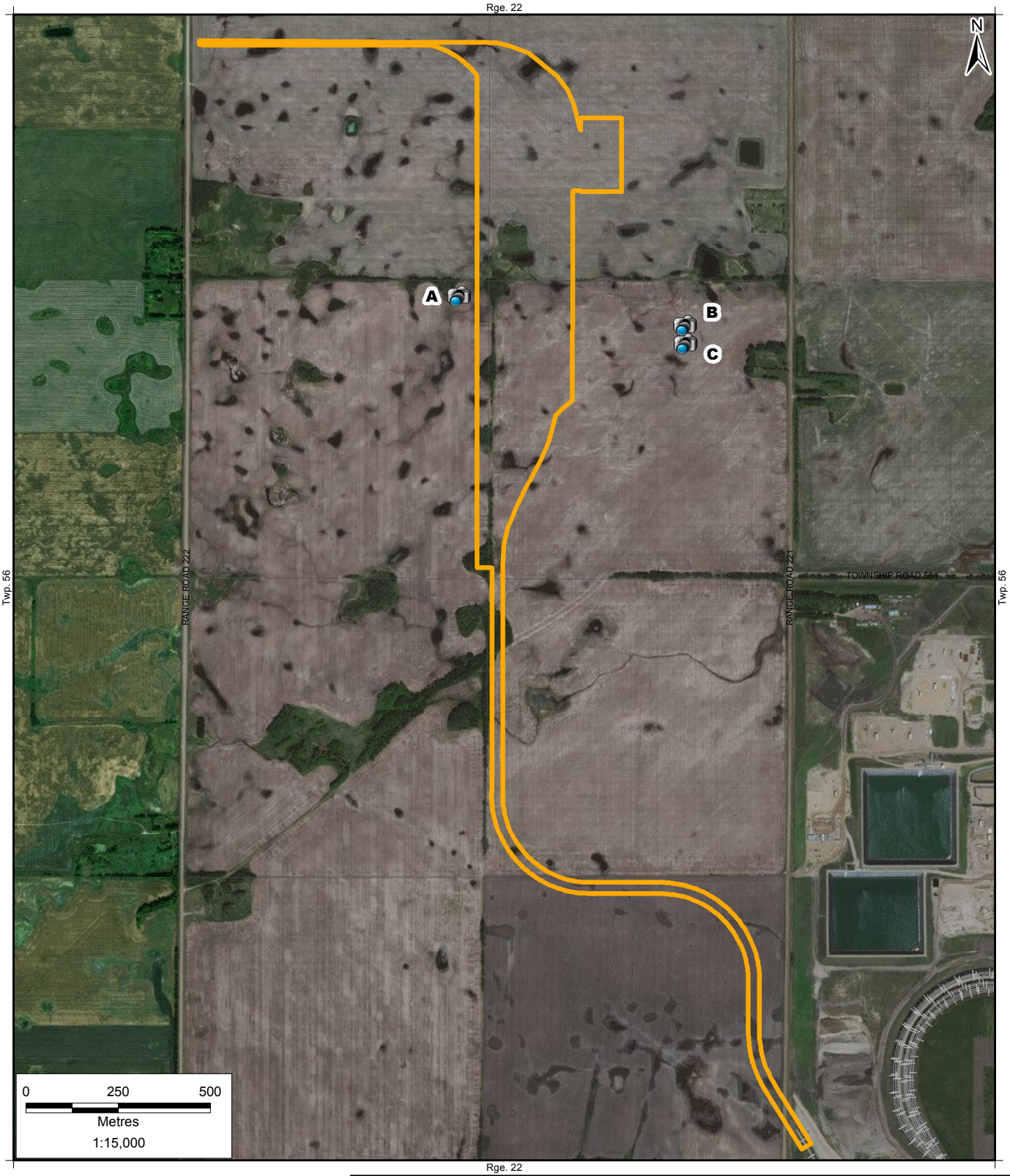
WorleyParsons Project No.
207011-00007-1500

FIG No **A1-1**

REV 5

PLOT DATE & TIME: never never USER NAME: tom.graham
SAVE DATE & TIME: 27/08/2018 12:15:44 PM ISSUING OFFICE: CALGARY GIS

Appendix 2 Photographs



Proposed Project Footprint

Photo Location

CANADA KUWAIT PETROCHEMICAL CORPORATION
STURGEON PETROCHEMICAL RAILYARD PROJECT
PROJECT DESCRIPTION

PHOTO LOCATIONS

Date:	22-AUG-18	Drawn by:	T.G.	Edited by:	T.G.	App'd by:	J.M.

CKPC

WorleyParsons Project No.
207011-00007-1500

FIG No
A2-1

REV
4

PLOT DATE & TIME: never never
SAVE DATE & TIME: 22/08/2018 10:54:37 AM
USER NAME: tom.graham
ISSUING OFFICE: CALGARY GIS

FILE LOCATION: N:\PROJECTS\Canada Kuwait Petrochemical Corporation\PDH-PP\MXDs\207011-00007.1500\Project Description\Appendix 2\PhotoLocations_Rev4.mxd

Appendix 2 Photographs

Photo A Facing east

Photo B Facing northwest

Photo C Facing east

Appendix 3 Land Titles

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0023 351 141	4;22;56;11;SW	162 224 612

LEGAL DESCRIPTION
MERIDIAN 4 RANGE 22 TOWNSHIP 56
SECTION 11
QUARTER SOUTH WEST
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME
AREA: 64.7 HECTARES (160 ACRES) MORE OR LESS

ESTATE: FEE SIMPLE

MUNICIPALITY: STURGEON COUNTY

REFERENCE NUMBER: 062 215 997

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
162 224 612	17/08/2016	TRANSFER OF LAND	$3,209,100	$3,209,100

OWNERS

1598313 ALBERTA LTD.
OF 4000, 585-8 AVENUE SW
CALGARY
ALBERTA T2P 1G1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS

NO REGISTRATIONS

TOTAL INSTRUMENTS: 000

(CONTINUED)

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 28 DAY OF AUGUST, 2017 AT 10:38 A.M.

ORDER NUMBER: 33586951

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0021 117 742	4;22;56;11;NE	162 224 619

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 22 TOWNSHIP 56
SECTION 11
ALL THAT PORTION OF THE NORTH EAST QUARTER
WHICH LIES SOUTH OF A LINE DRAWN THROUGHOUT AND AT RIGHT ANGLES TO THE
EAST BOUNDARY 407.4 METRES SOUTHERLY FROM THE NORTH EAST CORNER THEREOF;
CONTAINING 32.0 HECTARES (79 ACRES) MORE OR LESS.
EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: STURGEON COUNTY

REFERENCE NUMBER: 062 220 464

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
162 224 619	17/08/2016	TRANSFER OF LAND	$3,350,500	$3,350,500

OWNERS

1598313 ALBERTA LTD.
OF 4000, 585-8 AVENUE SW
CALGARY
ALBERTA T2P 1G1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS

NO REGISTRATIONS

TOTAL INSTRUMENTS: 000

(CONTINUED)

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 28 DAY OF AUGUST, 2017 AT 10:38 A.M.

ORDER NUMBER: 33586951

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0030 819 684	4;22;56;11;NE	162 224 620

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 22 TOWNSHIP 56
SECTION 11
ALL THAT PORTION OF THE NORTH EAST QUARTER
WHICH LIES NORTH OF A LINE DRAWN THROUGHOUT AND AT RIGHT ANGLES TO THE
EAST BOUNDARY 407.4 METRES SOUTHERLY FROM THE NORTH EAST CORNER THEREOF;
CONTAINING 32.8 HECTARES (81 ACRES) MORE OR LESS.
EXCEPTING THEREOUT:

	HECTARES	(ACRES)	MORE OR LESS
A) PLAN 5345NY - ROAD	0.809	2.00	
B) PLAN 0426682 - ROAD	0.394	0.97	

EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: STURGEON COUNTY

REFERENCE NUMBER: 062 211 650

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
162 224 620	17/08/2016	TRANSFER OF LAND	$1,565,100	$1,565,100

OWNERS

1598313 ALBERTA LTD.
OF 4000, 585-8 AVENUE SW
CALGARY
ALBERTA T2P 1G1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
092 309 317	01/09/2009	UTILITY RIGHT OF WAY GRANTEE - ATCO GAS AND PIPELINES LTD.

(CONTINUED)

REGISTRATION
NUMBER DATE (D/M/Y) PARTICULARS

AS TO PORTION OR PLAN:0924292

TOTAL INSTRUMENTS: 001

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 28 DAY OF AUGUST, 2017 AT 10:38 A.M.

ORDER NUMBER: 33586951

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0021 570 339	4;22;56;12;SW	162 224 631

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 22 TOWNSHIP 56
SECTION 12
QUARTER SOUTH WEST
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS.
EXCEPTING THEREOUT:
1.64 HECTARES (4.04 ACRES) MORE OR LESS, AS SHOWN ON
ROAD PLAN 7154ET.
EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: STURGEON COUNTY

REFERENCE NUMBER: 062 228 089

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
162 224 631	17/08/2016	TRANSFER OF LAND	$3,128,100	$3,128,100

OWNERS

1598313 ALBERTA LTD.
OF 4000, 585-8 AVENUE SW
CALGARY
ALBERTA T2P 1G1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
872 240 244	06/10/1987	UTILITY RIGHT OF WAY GRANTEE - CORONADO GAS CO-OP LTD. BOX 960, GIBBONS ALBERTA T0A1N0 (DATA UPDATED BY: CHANGE OF NAME 952038161)

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
982 252 833	24/08/1998	UTILITY RIGHT OF WAY GRANTEE - ATCO GAS AND PIPELINES LTD. ATTENTION: LAND DEPARTMENT 10035-105 STREET EDMONTON ALBERTA T5J2V6 (DATA UPDATED BY: TRANSFER OF UTILITY RIGHT OF WAY 012018775)
992 020 156	25/01/1999	DISCHARGE OF UTILITY RIGHT OF WAY 982252833 PARTIAL EXCEPT AS TO PLAN 9825823
092 212 887	26/06/2009	UTILITY RIGHT OF WAY GRANTEE - CORONADO GAS CO-OP LTD. AS TO PORTION OR PLAN:0840153
102 366 717	18/10/2010	CAVEAT RE : UTILITY RIGHT OF WAY CAVEATOR - NORTH WEST REDWATER HOLDINGS CORP. C/O SUN LIFE PLAZA NORTH TOWER 2800, 140-4TH AVENUE SW CALGARY ALBERTA T2P3N3 (DATA UPDATED BY: TRANSFER OF CAVEAT 142056018) (DATA UPDATED BY: TRANSFER OF CAVEAT 152048106)
112 167 224	06/06/2011	UTILITY RIGHT OF WAY GRANTEE - INTER PIPELINE OFFGAS LTD. ATTEN: SURFACE LAND DEPT SUITE 3200 215-2ND ST SW CALGARY ALBERTA T2P1M4 (DATA UPDATED BY: CHANGE OF NAME 142021038) (DATA UPDATED BY: CHANGE OF ADDRESS 162050048) (DATA UPDATED BY: TRANSFER OF UTILITY RIGHT OF WAY 162320584)
142 003 341	06/01/2014	DISCHARGE OF UTILITY RIGHT OF WAY 112167224 PARTIAL EXCEPT PLAN/PORTION: 1323724
152 075 097	06/03/2015	UTILITY RIGHT OF WAY GRANTEE - PEMBINA PIPELINE CORPORATION.
162 146 866	03/06/2016	UTILITY RIGHT OF WAY GRANTEE - NORTH WEST REDWATER HOLDINGS CORP.

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
162 236 227	27/08/2016	DISCHARGE OF UTILITY RIGHT OF WAY 152075097 PARTIAL EXCEPT PLAN/PORTION: 1622426

TOTAL INSTRUMENTS: 010

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 28 DAY OF AUGUST, 2017 AT 10:38 A.M.

ORDER NUMBER: 33586951

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0030 819 635	4;22;56;12;NW	162 224 632
0030 819 643	4;22;56;12;NE	

LEGAL DESCRIPTION

FIRST
MERIDIAN 4 RANGE 22 TOWNSHIP 56
SECTION 12
THE NORTH WEST QUARTER
CONTAINING 64.7 HECTARES (160 ACRE) MORE OR LESS
EXCEPTING THEREOUT:

	HECTARES	(ACRES) MORE OR LESS
A) PLAN 5345NY - ROAD	0.813	2.01
B) PLAN 0426682 - ROAD	0.394	0.97

EXCEPTING THEREOUT ALL MINES AND MINERALS

SECOND
MERIDIAN 4 RANGE 22 TOWNSHIP 56
SECTION 12
THE NORTH EAST QUARTER
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS
EXCEPTING THEREOUT:

	HECTARES	(ACRES) MORE OR LESS
A) PLAN 5345NY - ROAD	0.813	2.01
B) PLAN 9020063 - ROAD	2.01	4.97
C) PLAN 0426682 - ROAD	0.230	0.57

EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: STURGEON COUNTY

REFERENCE NUMBER: 062 237 723

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
162 224 632	17/08/2016	TRANSFER OF LAND	$7,706,600	$7,706,600

OWNERS

1598313 ALBERTA LTD.
OF 4000, 585-8 AVENUE SW
CALGARY

(CONTINUED)

ALBERTA T2P 1G1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
782 288 730	14/12/1978	CAVEAT RE : EASEMENT CAVEATOR - CORONADO GAS CO-OP LTD. BOX 960, GIBBONS ALBERTA T0A1N0 (DATA UPDATED BY: CHANGE OF NAME 952038160)
902 162 250	05/06/1990	UTILITY RIGHT OF WAY GRANTEE - THE MUNICIPAL DISTRICT OF STURGEON NO. 90. MORINVILLE ALBERTA AFFECTED LAND: 4;22;56;12;NE AS TO PORTION OR PLAN:9021567
092 212 887	26/06/2009	UTILITY RIGHT OF WAY GRANTEE - CORONADO GAS CO-OP LTD. AS TO PORTION OR PLAN:0840153
092 309 288	01/09/2009	UTILITY RIGHT OF WAY GRANTEE - ATCO GAS AND PIPELINES LTD. AFFECTED LAND: 4;22;56;12;NE AS TO PORTION OR PLAN:0924404
092 309 317	01/09/2009	UTILITY RIGHT OF WAY GRANTEE - ATCO GAS AND PIPELINES LTD. AS TO PORTION OR PLAN:0924292
102 336 614	23/09/2010	CAVEAT RE : LEASE INTEREST UNDER 20 ACRES CAVEATOR - AIR PRODUCTS CANADA LTD. 12600 NORTHBROUGH DRIVE, SUITE 196 HOUSTON, TEXAS 77067 USA AGENT - PROGRESS LAND SERVICES LTD. AFFECTED LAND: 4;22;56;12;NE
102 337 235	23/09/2010	UTILITY RIGHT OF WAY GRANTEE - AIR PRODUCTS CANADA LTD. AFFECTED LAND: 4;22;56;12;NE
102 366 717	18/10/2010	CAVEAT RE : UTILITY RIGHT OF WAY CAVEATOR - NORTH WEST REDWATER HOLDINGS CORP.

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		C/O SUN LIFE PLAZA NORTH TOWER 2800, 140-4TH AVENUE SW CALGARY ALBERTA T2P3N3 AFFECTED LAND: 4;22;56;12;NW (DATA UPDATED BY: TRANSFER OF CAVEAT 142056018) (DATA UPDATED BY: TRANSFER OF CAVEAT 152048106)
112 167 231	06/06/2011	UTILITY RIGHT OF WAY GRANTEE - INTER PIPELINE OFFGAS LTD. ATTEN: SURFACE LAND DEPT SUITE 3200 215-2ND ST SW CALGARY ALBERTA T2P1M4 AFFECTED LAND: 4;22;56;12;NW (DATA UPDATED BY: CHANGE OF NAME 142021038) (DATA UPDATED BY: CHANGE OF ADDRESS 162050048) (DATA UPDATED BY: TRANSFER OF UTILITY RIGHT OF WAY 162320584)
122 064 654	01/03/2012	DISCHARGE OF UTILITY RIGHT OF WAY 102337235 PARTIAL EXCEPT PLAN/PORTION: 1220497
142 003 340	06/01/2014	DISCHARGE OF UTILITY RIGHT OF WAY 112167231 PARTIAL EXCEPT PLAN/PORTION: 1323724
142 023 111	20/01/2014	CAVEAT RE : UTILITY RIGHT OF WAY CAVEATOR - STURGEON COUNTY. 9613-100 STREET, MORINVILLE ALBERTA T8R1L9 AGENT - KELSEY BECKER BROOKES
142 026 781	23/01/2014	CAVEAT RE : RIGHT OF WAY AGREEMENT CAVEATOR - STURGEON COUNTY. 9613-100 STREET, MORINVILLE ALBERTA T8R1L9 AGENT - KELSEY BECKER BROOKES
162 201 007	26/07/2016	CAVEAT RE : LEASE INTEREST UNDER 20 ACRES CAVEATOR - ATCO GAS AND PIPELINES LTD. 7210 42 STREET EDMONTON

(CONTINUED)

REGISTRATION
NUMBER DATE (D/M/Y) PARTICULARS

ALBERTA T6B3H1

TOTAL INSTRUMENTS: 014

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 28 DAY OF AUGUST, 2017 AT 10:38 A.M.

ORDER NUMBER: 33586951

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0030 819 676	4;22;56;11;NW	162 224 633

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 22 TOWNSHIP 56
SECTION 11
QUARTER NORTH WEST
CONTAINING 64.5 HECTARES (160 ACRES) MORE OR LESS
EXCEPTING THEREOUT:

	HECTARES	(ACRES) MORE OR LESS
A) PLAN 5345NY - ROAD	0.809	2.00
B) PLAN 0426682 - ROAD	0.394	0.97

EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: STURGEON COUNTY

REFERENCE NUMBER: 062 211 685

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
162 224 633	17/08/2016	TRANSFER OF LAND	$7,016,600	$7,016,600

OWNERS

1598313 ALBERTA LTD.
OF 4000, 585-8 AVENUE SW
CALGARY
ALBERTA T2P 1G1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
002 257 754	05/09/2000	CAVEAT RE : SURFACE LEASE UNDER 20 ACRES CAVEATOR - FORT HILLS ENERGY CORPORATION. 3000, 150-6 AVENUE SW CALGARY

(CONTINUED)

REGISTRATION
NUMBER DATE (D/M/Y) PARTICULARS

ALBERTA T2P3Y7
(DATA UPDATED BY: CHANGE OF NAME 052228116)
(DATA UPDATED BY: CHANGE OF NAME 062071425)
(DATA UPDATED BY: TRANSFER OF CAVEAT 072283613)
(DATA UPDATED BY: TRANSFER OF CAVEAT 082042384)

092 309 317 01/09/2009 UTILITY RIGHT OF WAY
GRANTEE - ATCO GAS AND PIPELINES LTD.
AS TO PORTION OR PLAN:0924292

TOTAL INSTRUMENTS: 002

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 28 DAY OF AUGUST, 2017 AT 10:38 A.M.

ORDER NUMBER: 33586951

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

LAND TITLE CERTIFICATE

S

LINC	SHORT LEGAL	TITLE NUMBER
0016 774 705	4;22;56;11;SE	162 224 635

LEGAL DESCRIPTION

THE SOUTH EAST QUARTER OF SECTION ELEVEN (11)
TOWNSHIP FIFTY SIX (56)
RANGE TWENTY TWO (22)
WEST OF THE FOURTH MERIDIAN
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS
EXCEPTING THEREOUT: (A) 0.040 HECTARES (0.10 ACRE) MORE OR LESS
AS SHOWN ON ROAD PLAN 796S
(B) 0.938 HECTARES (2.32 ACRES) MORE OR LESS AS SHOWN ON
ROAD PLAN 3842
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: STURGEON COUNTY

REFERENCE NUMBER: 062 228 162

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
162 224 635	17/08/2016	TRANSFER OF LAND	$4,221,600	$4,221,600

OWNERS

1598313 ALBERTA LTD.
OF 4000, 585-8 AVENUE SW
CALGARY
ALBERTA T2P 1G1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS

NO REGISTRATIONS

(CONTINUED)

TOTAL INSTRUMENTS: 000

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 28 DAY OF AUGUST, 2017 AT 10:38 A.M.

ORDER NUMBER: 33586951

CUSTOMER FILE NUMBER:

END OF CERTIFICATE

Appendix 4 Pembina's Letter of Agreement

May 31, 2018

Canada Kuwait Petrochemical Corporation
4500, 585 – 8th Avenue SW
Calgary, Alberta T2P 1G1

Attention: Sarah Penny, Regulatory and Environment Manager

Re: Canada Kuwait Petrochemical Corporation (CKPC) – Propane Dehydrogenation and Polypropylene Production Facility.

Pembina NGL Corporation, as the sole shareholder of 1598313 Alberta Ltd., will provide long-term access to the land required for the construction and operation of the combined propane dehydrogenation (PDH) and polypropylene (PP) production facility and associated infrastructure. The PDH and PP facilities will be located within 11-56-22W4M, with temporary construction areas located within 12-56-22-W4M.

The intent of the project is for title to the lands on which the PDH and PP facilities will be constructed, being within 11-56-22-W4M, to be transferred to CKPC prior to the operation of the facilities.

I trust this meets your current requirements. If you have any questions or concerns please contact the undersigned.

Sincerely,
<Original Signed By>

Brad Kohlsmith
Vice President, NGL Services

Appendix 5 Historical Wildlife Occurrences

Appendix 5 Historical Wildlife Occurrences

Table A5-1 Occurrence records housed in the Fish and Wildlife Management Information System (FWMIS; Alberta Environment and Parks 2018)

Common Name	Scientific Name	AB Status[1]	COSEWIC Status[2]	SARA Status[3]
Amphibians and Reptiles				
Northern Leopard Frog	*Lithobates pipiens*	At Risk	Special Concern	Schedule 1
Birds				
Alder Flycatcher	*Empidonax alnorum*	Sensitive	Not Assessed	-
American Kestrel	*Falco sparverius*	Sensitive	Not Assessed	-
American White Pelican	*Pelecanus erythrorhynchos*	Sensitive	Not at Risk	-
Bald Eagle	*Haliaeetus leucocephalus*	Sensitive	Not at Risk	-
Baltimore Oriole	*Icterus galbula*	Sensitive	Not Assessed	
Barn Swallow	*Hirundo rustica*	Sensitive	Threatened	No Schedule
Black-throated Green Warbler	*Dendroica virens*	Sensitive	Not Assessed	-
Common Yellowthroat	*Geothlypis trichas*	Sensitive	Not Assessed	-
Eastern Kingbird	*Tyrannus tyrannus*	Sensitive	Not Assessed	-
Eastern Phoebe	*Sayornis phoebe*	Sensitive	Not Assessed	-
Great Gray Owl	*Strix nebulosa*	Sensitive	Not at Risk	No Schedule

Common Name	Scientific Name	AB Status[1]	COSEWIC Status[2]	SARA Status[3]
Horned Grebe	*Podiceps auritus*	Sensitive	Special Concern	Schedule 1
Least Flycatcher	*Empidonax minimus*	Sensitive	Not Assessed	-
Osprey	*Pandion haliaetus*	Sensitive	Not Assessed	-
Peregrine Falcon	*Falco peregrinus*	At Risk	Special Concern	Schedule 1
Pileated Woodpecker	*Dryocopus pileatus*	Sensitive	Not Assessed	-
Prairie Falcon	*Falco mexicanus*	Sensitive	Not at Risk	-
Sora	*Porzana carolina*	Sensitive	Not Assessed	-
Mammals				
Badger	*Taxidea taxus*	Sensitive	Special Concern	No Schedule

Notes:
1. Provincial status according to Alberta Environment and Parks (AEP) General Status of Alberta Wildlife Species (Alberta Environment and Parks 2018).
2. Federal status according to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Wildlife Species Search (Government of Canada 2018).
3. Legal status under the *Species at Risk Act* (SARA), according to the Species at Risk Public Registry (Government of Canada 2018).

Table A5-2 Species Occurrences Collected during Wildlife Surveys for an Environmental Impact Assessment (Petro-Canada Oil Sands Inc. 2006)

Common Name (ACIMS)	Latin Name	AB Status[1]	COSEWIC Status[2]	SARA Status[3]
Amphibians				
Boreal Chorus Frog	*Pseudacris maculata*	Secure	Not evaluated	Not listed
Wood Frog	*Lithobates sylvatica*	Secure	Not evaluated	Not listed
Birds				
American Crow	*Corvus brachyrhynchos*	Secure	Not evaluated	Not listed
American Robin	*Turdus migratorius*	Secure	Not evaluated	Not listed
American Widgeon	*Anas Americana*	Secure	Not evaluated	Not listed
Baltimore Oriole	*Icterus galbula*	Sensitive	Not evaluated	Not listed
Black-billed Magpie	*Pica hudsonia*	Secure	Not evaluated	Not listed
Black-capped Chickadee	*Poecile atricapillus*	Secure	Not evaluated	Not listed
Blue-headed Vireo	*Vireo solitaries*	Secure	Not evaluated	Not listed
Blue-winged Teal	*Anas discors*	Secure	Not evaluated	Not listed
Bohemian Waxwing	*Bombycilla garrulous*	Secure	Not evaluated	Not listed
Brewer's Blackbird	*Euphagus cyanocephalus*	Secure	Not evaluated	Not listed
Brown-headed Cowbird	*Molothrus ater*	Secure	Not evaluated	Not listed
Canada Goose	*Branta canadensis*	Secure	Not evaluated	Not listed

Common Name (ACIMS)	Latin Name	AB Status[1]	COSEWIC Status[2]	SARA Status[3]
Clay-coloured Sparrow	*Spizella pallida*	Secure	Not evaluated	Not listed
Common Yellowthroat	*Geothlypis trichas*	Sensitive	Not evaluated	Not listed
Unidentified Dabbling Ducks	-	-	-	-
Downy Woodpecker	*Picoides pubescens*	Secure	Not evaluated	Not listed
Eastern Kingbird	*Tyrannus tyrannus*	Sensitive	Not evaluated	Not listed
Great Horned Owl	*Bubo virginianus*	Secure	Not evaluated	Not listed
Unidentified Grouse	-	-	-	-
Hairy Woodpecker	*Picoides villosus*	Secure	Not evaluated	Not listed
Hermit Thrush	*Catharus guttatus*	Secure	Not evaluated	Not listed
House Wren	*Troglodytes aedon*	Secure	Not evaluated	Not listed
Killdeer	*Charadrius vociferous*	Secure	Not evaluated	Not listed
Least flycatcher	*Empidonax minimus*	Sensitive	Not evaluated	Not listed
Lincoln's Sparrow	*Melospiza lincolnii*	Secure	Not evaluated	Not listed
Mallard	*Anas platyrhynchos*	Secure	Not evaluated	Not listed
Northern Saw-Whet Owl	*Aegolius acadicus*	Secure	Not evaluated	Not listed
Northern Waterthrush	*Parkesia noveboracensis*	Secure	Not evaluated	Not listed
Pileated Woodpecker	*Dryocopus pileatus*	Sensitive	Not evaluated	Not listed

Common Name (ACIMS)	Latin Name	AB Status[1]	COSEWIC Status[2]	SARA Status[3]
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Secure	Not evaluated	Not listed
Red-eyed Vireo	*Vireo olivaceus*	Secure	Not evaluated	Not listed
Red-tailed Hawk	*Buteo jamaicensis*	Secure	Not at Risk	Not listed
Savannah Sparrow	*Passerculus sandwichensis*	Secure	Not evaluated	Not listed
Song Sparrow	*Melospiza melodia*	Secure	Not evaluated	Not listed
Sora	*Porzana carolina*	Sensitive	Not evaluated	Not listed
Snow Goose	*Chen caerulescens*	Secure	Not evaluated	Not listed
Swainson's Hawk	*Buteo swainsoni*	Secure	Not evaluated	Not listed
Tennessee Warbler	*Oreothlypis peregrine*	Secure	Not evaluated	Not listed
Vesper Sparrow	*Pooecetes gramineus*	Secure	Not evaluated	Not listed
Warbling Vireo	*Vireo gilvus*	Secure	Not evaluated	Not listed
Western Wood-pewee	*Contopus sordidulus*	May be at Risk	Not evaluated	Not listed
Wilson's Snipe	*Gallinago delicate*	Secure	Not evaluated	Not listed
Wilson's Warbler	*Wilsonia pusilla*	Secure	Not evaluated	Not listed
White-breasted Nuthatch	*Sitta carolinensis*	Secure	Not evaluated	Not listed
White-throated Sparrow	*Zonotrichia albicollis*	Secure	Not evaluated	Not listed
Woodpecker species	*Picoides sp.*	-	Not evaluated	Not listed

Common Name (ACIMS)	Latin Name	AB Status[1]	COSEWIC Status[2]	SARA Status[3]
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Secure	Not evaluated	Not listed
Yellow-rumped Warbler	*Setophaga coronate*	Secure	Not evaluated	Not listed
Yellow warbler	*Dendroica petechia*	Secure	Not evaluated	Not listed
Mammals				
Beaver	*Castor canadensis*	Secure	Not evaluated	Not listed
Coyote	*Canis latrans*	Secure	Not evaluated	Not listed
Deer	*Odocoileus spp.*	Secure	Not evaluated	Not listed
Ground squirrel	*Spermophilus* spp.	-	Not evaluated	Not listed
Moose	*Alces americanus*	Secure	Not evaluated	Not listed
Porcupine	*Erethizon dorsatum*	Secure	Not evaluated	Not listed
Red Squirrel	*Tamiasciurus hudsonicus*	Secure	Not evaluated	Not listed
Small Mammals	-	-	-	-
Snowshoe Hare	*Lepus americanus*	Secure	Not evaluated	Not listed
Weasel	*Mustela sp.*	-	-	-
White-tailed Deer	*Odocoileus virginianus*	Secure	Not evaluated	Not listed

Notes:
1. Provincial status according to the General Status of Alberta Wild Species (Alberta Environment and Parks 2018).
2. Federal status assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) according to the Species at Risk Public Registry (Government of Canada 2018).
3. Legal status under the *Species at Risk Act* (SARA), according to the Species at Risk Registry (Government of Canada 2018).

Appendix 6 Project Information Package

CANADA KUWAIT
PETROCHEMICAL CORPORATION

4000, 585 8th Avenue S.W.
Calgary, AB T2P 1G1

May 15, 2018 **Via Registered Mail**

Alexander First Nation
PO Box 3480
Morinville, Alberta T8R 1S3

Attention: Ken Arcand, Executive Director

RE: Canada Kuwait Petrochemical Corporation Rail Yard in support of Propane Dehydrogenation (PDH) and Polypropylene (PP) Production Facility
TWP 56-22 W4M: SE 2 & NE 2, SE 11 & NE 11 & NW 11

The Canada Kuwait Petrochemical Corporation ("CKPC") is proposing to construct an integrated propane dehydrogenation ("PDH") and polypropylene ("PP") Facility, which includes a rail yard in Sturgeon County, Alberta. The Facility and rail yard are to be constructed on land owned by Pembina Pipelines Corporation. The rail component consists of the construction of approximately 18 kilometers of new track with approximately 26 sidings ("Project").

Being a good neighbour starts with understanding the impact of our activities on local communities. CKPC is committed to sharing information related to its planned projects so potentially affected parties or individuals with interests in the area are informed of our proposed activities. We are writing to you because you fall within the Canadian Environmental Assessment Agency ("CEAA") notification criteria of our proposed Project and you will be receiving a notification package directly from CEAA.

CEAA considers any rail project that exceeds seven or more yard tracks or a total track length of 20 kilometres or more as a Designated Project. As part of this regulatory process, CKPC is required to submit a Project Description to CEAA. In turn, CEAA provides Project notification to affected parties and individuals.

Most of the affected lands have been designated for heavy industrial use since the 1970's and all affected lands have been in agricultural use for decades. A Project Map/Plan is attached for your reference.

Please find enclosed the following materials regarding the proposed Project:

- Project Map/Plan
- Project Brochure

If you have any questions or concerns about the information, please contact **David Fowles** at **587.293.5466** or toll free **1.888.428.3222** at your earliest convenience or via email at info@ckpcpolymers.com.

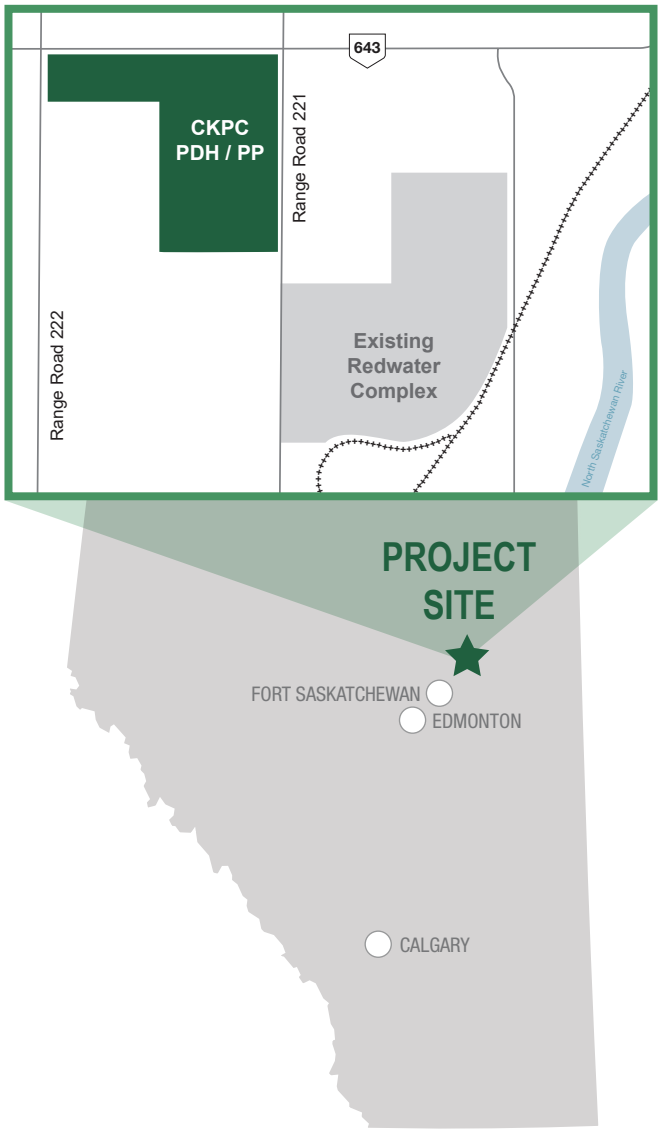
Regards,

David Fowles
Canada Kuwait Petrochemical Corporation
Senior Advisor, Aboriginal Relations

Enclosure

CANADA KUWAIT PETROCHEMICAL CORPORATION

Alberta Integrated Propane Dehydrogenation & Polypropylene Complex

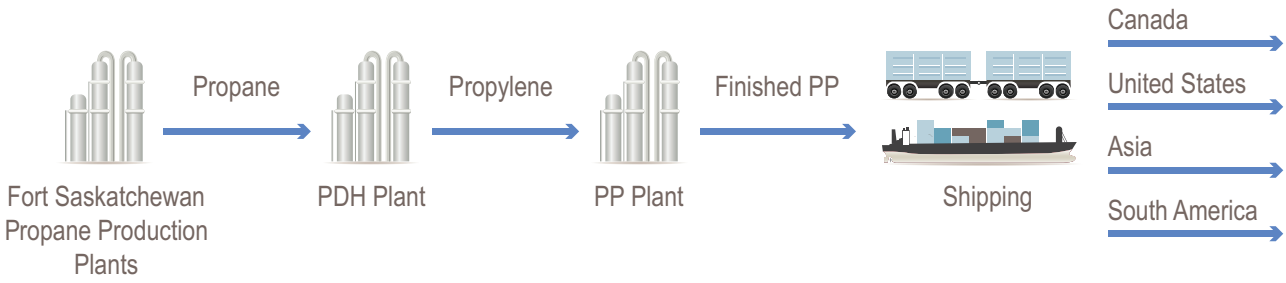


Facility Overview & Proponent

Canada Kuwait Petrochemical Corporation ("CKPC") proposes to construct an integrated propane dehydrogenation ("PDH") and polypropylene ("PP") complex, and associated infastructure including a rail yard in Sturgeon County, Alberta (the "Facility").

Location

The Facility and associated rail yard with be located on 130 hectares of freehold land within the Alberta Industrial Heartland. The Facility will be located south of Highway 643 and Range Road 221, approximately 6 kilometers (km) north of the city of Fort Saskatchewan, Alberta.



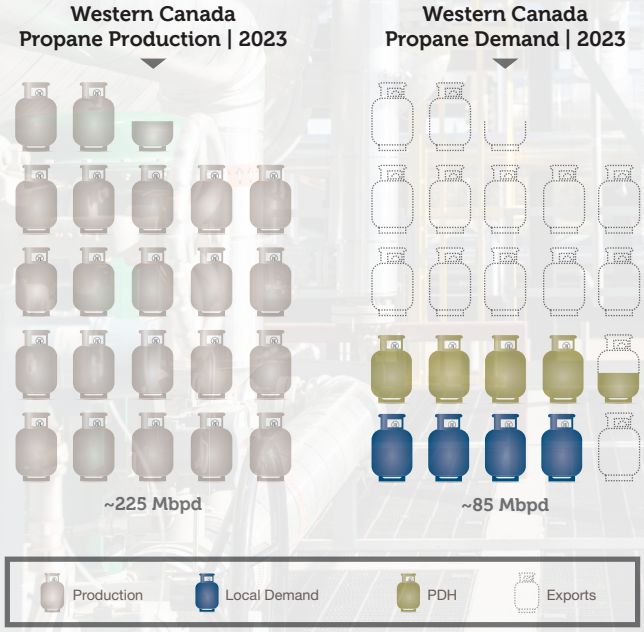
What is PP?

PP is one of the world's most commonly used building blocks in the manufacturing industry and is fully recyclable. PP is light weight, heat and impact resistant, transparent and not reactive. These attributes make PP an ideal foundation for products found in daily life including automobile parts, food storage containers, medical devices, bank notes, among many other uses.

Turning a challenge into an opportunity

Currently, Alberta produces five times more propane than it consumes, and this imbalance results in propane being sold out of Alberta by rail at discounted prices.

On average 85% of the propane produced in Alberta is exported, while central Canada's manufacturing companies import 100% of their PP requirements. If the Facility is approved, CKPC would produce PP in Alberta that could be used in Canada's manufacturing industries. CKPC's project will be a large-scale investment in Sturgeon County, which will make a meaningful contribution to the local and provincial economy.



Source: IHS Markit.

Facility Overview

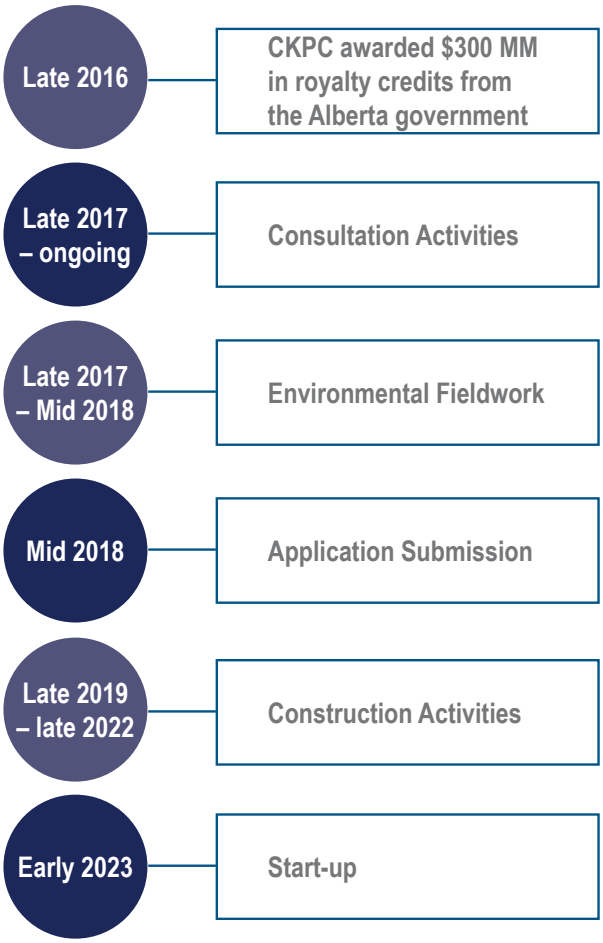
The Facility CKPC is proposing to construct would include:

1. PDH Plant
2. PP Plant
3. Cogeneration Facility
4. Rail Yard

Propane feedstock for the Facility would be supplied via pipeline from regional Propane Production Plants. The Facility will consume on average 23,000 barrels per day of propane to produce 550,000 tonnes of PP per year. Finished PP would then be loaded into rail cars for distribution to North American and global markets. Electricity for the Project would be provided through an on-site cogeneration facility that would fed with natural gas and hydrogen produced on-site.

In addition to rail car loading infrastructure, the rail yard would have storage capacity for 1,100 rail cars.

Project Schedule



Safety

CKPC encourages a workplace that is dedicated to protecting the safety of the public, as well as our employees and contractors. We reinforce our commitment to safety excellence in our daily operations through the development of stringent standards, regular safety meetings, extensive contractor screening and project inspections.

Environment

Before beginning a new project, CKPC conducts environmental studies to better understand the potential impacts a proposed project may have on the soil, land, air, plants, wildlife and watersheds. As a responsible developer, CKPC strives to reduce the impact our projects have on the natural environment.

Traffic and Noise

Due to the movement of equipment and construction personnel to and from the construction site, CKPC does expect an increase in traffic and associated noise during construction. Traffic volumes and related noise will be reduced once construction is complete. A noise impact assessment will be conducted during the design of the Facility to ensure that it will meet current regulations.

Odours and Emission

CKPC does not expect any odours from the operation of the proposed Facility. CKPC will complete an air quality assessment to ensure we remain compliant with current industry regulations.

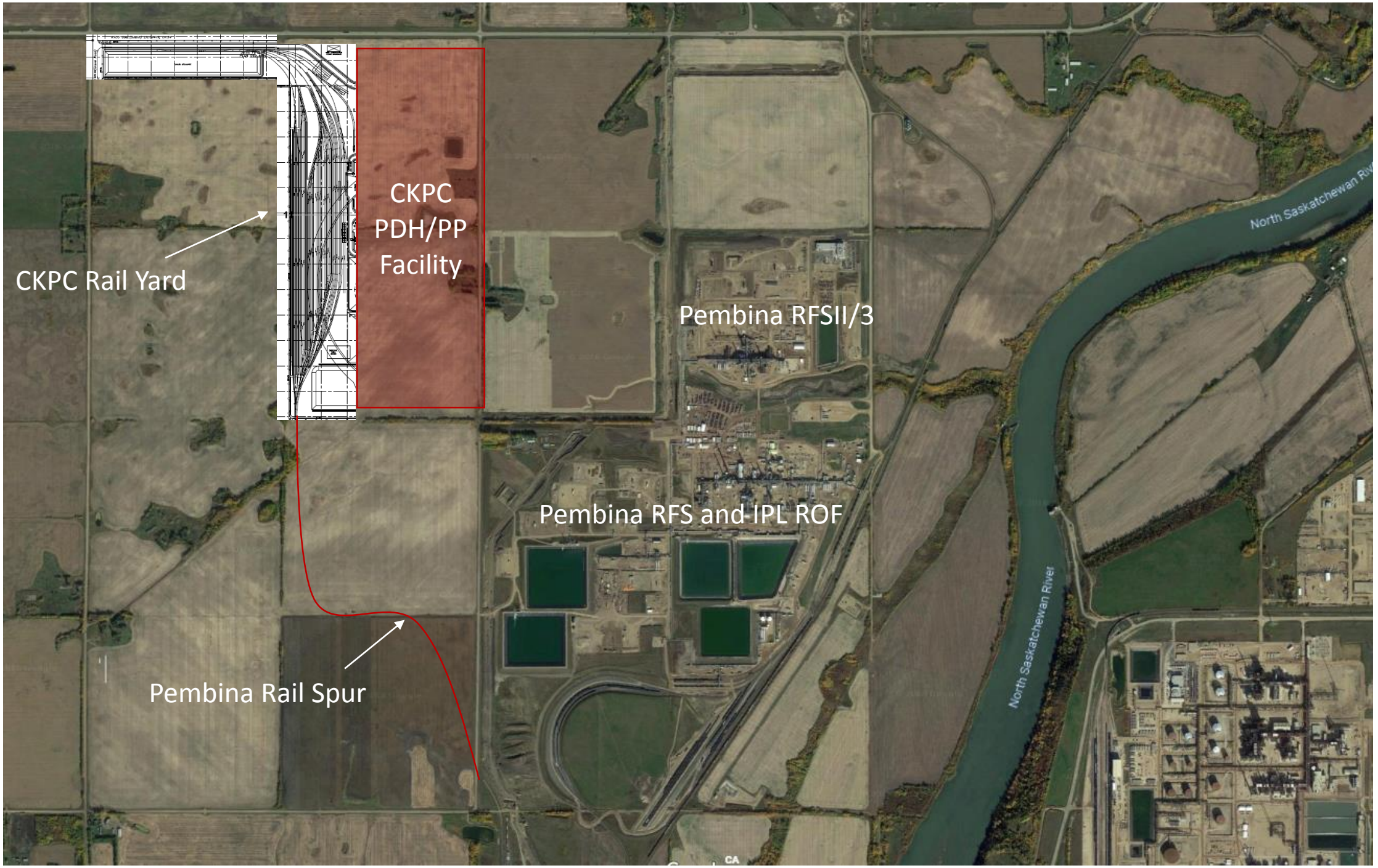
POLYPROPYLENE

CONSUMER PRODUCTS

Contact us

info@ckpcpolymers.com 4000, 585 - 8th Avenue S.W. Calgary, AB T2P 1G1

CANADA KUWAIT
PETROCHEMICAL CORPORATION


CKPC Rail Yard
CKPC PDH/PP Facility
Pembina RFSII/3
Pembina RFS and IPL ROF
Pembina Rail Spur
North Saskatchewan River
North Saskatchewan River