

A photograph of a dark, crystalline rock sample with a lighter, mineral-rich surface, resting on a yellowish-brown surface. The rock is the background for the central text box.

PINE POINT PROJECT
NORTHWEST TERRITORIES

**ENVIRONMENTAL ASSESSMENT INITIATION
PACKAGE INFORMATION SESSION**

12 March 2021

Outline



- Overview of the structure of the EA Initiation Package
 - Where to find information in the submission
- Project Description:
 - Location and past history
 - Engagement
 - Overview of Project
- High-level summary of what is included in the Developer's Assessment Proposal

EA Initiation Package



EA Initiation Package Structure Overview



- The Environmental Assessment (EA) Initiation Package prepared to meet MVEIRB's *Draft Environmental Assessment Initiation Guidelines for the Developer's of Major Projects*
 - Provides early information on the Project for engagement, scoping, and developing the Terms of Reference for the EA
 - Allows for focused/narrowed Developer's Assessment Report (DAR) on priority impact pathways
- PPML submitted the EA Initiation Package to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) on February 2, 2021
- The purpose of this presentation is to describe where to find the information provided within the EA Initiation Package.

EA Initiation Package Structure Overview



- Includes the following:

Volume 1	Project Description
Volume 2	Management and Monitoring Plans (framework versions)
Volume 3	Description of Existing Environment
Volume 4	Identification of Potential Project-Interactions and Proposed Mitigation Measures
Volume 5	Developer's Assessment Proposal
Volume 6	Concordance Table

Volume 1: Project Description

- Project Description (PD) describes the Project based on the Preliminary Economic Assessment (PEA)
 - Project engineering and design will continue to progress
 - Early feedback can be considered where appropriate
 - Project engineering and environmental teams can continue to work together to advance the Project
 - A Plain Language Summary of the PD is included



- Framework Monitoring and Management Plans:
 - Engagement and Collaboration Framework (including Engagement Summary and Record of Engagement)
 - Spill Contingency Plan Framework
 - Erosion and Sediment Plan Framework
 - Mine Water Management Plan Framework
 - Waste Management Plan Framework
 - Tailings and Waste Rock Management Plan Framework
 - Closure and Reclamation Plan Framework
 - Wildlife Protection Plan Framework
 - Aquatic Effects Monitoring Program Framework

Preliminary documents; details to be provided in subsequent versions based on detailed design/engineering and feedback

Volume 3: Existing Environment



- Summarizes existing environment/baseline studies information for:

Biophysical Environment (Section 3.3)	Human Environment (Section 3.4)
<ul style="list-style-type: none">Geological Setting and ResourcesAir Quality, Noise, and ClimateGroundwater Quantity and QualitySurface Water Quantity and QualityFish and Fish HabitatTerrain and SoilsVegetationWildlife	<ul style="list-style-type: none">Heritage ResourcesTraditional Land and Resource UseSocio-economicsNon-Traditional Land and Resource Use

Volume 3: Existing Environment

- Numerous baseline studies conducted by Tamerlane and Darnley Bay
- Publicly available information
- Recent studies completed in 2018 and 2019, including air quality, wildlife, and water quality
- Results of recent field work completed in 2020 will be reported in the DAR

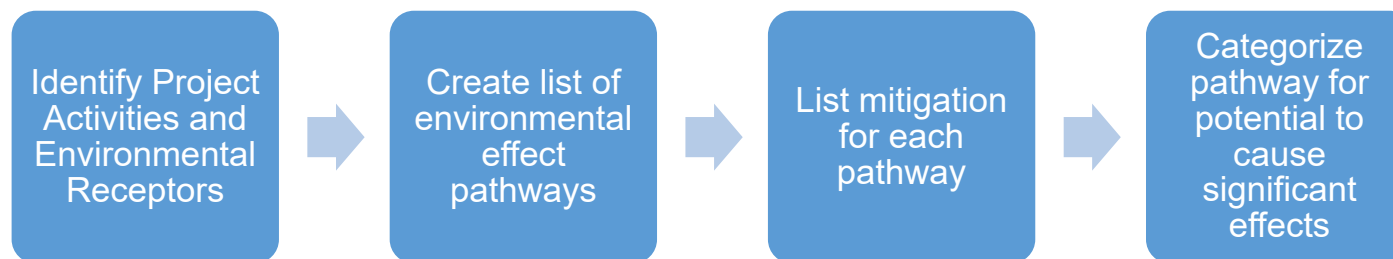


Stanley Louine deploying an ARU



Birch Creek

- Potential Project-environment interactions and proposed mitigation measures were identified in tables **by component** using pathway analysis approach
- Each pathway was evaluated with proposed environmental design features and mitigation to predict whether the pathway had potential to cause residual adverse effects
- Pathways were classified into no pathway, secondary, or primary pathways



- Plain Language Summary
- Section 2.0: Valued Components
- Section 3.0: Issues Prioritization
 - Proposed Key Lines of Inquiry (KLOI) and Subjects of Note (SON)
- Section 4.1: General Environmental Assessment Methods/Approach
- Section 4.2: Proposed Detailed Methods for KLOI and SON
- Section 4.3: Effects of Extreme Events
 - Effects of the Environment on the Project
 - Accidents and Malfunctions
- Proposed Structure for the Developer's Assessment Report
- Appendix A: Additional Screening Information for No Pathways

Questions...



Project Description



Introduction



- Pine Point Mining Limited (PPML) is proposing to develop the Pine Point Project (Project), a proposed zinc and lead mine, in the NWT.
- PPML's Qualified Persons completed a Preliminary Economic Analysis (PEA) in June 2020 which concluded that the Project has technical and financial merit using base case assumptions and is sufficient to initiate a Feasibility Study.
- The PEA level information forms the basis of the Project Description in the EA Initiation Package (Volume 1).

Local Communities

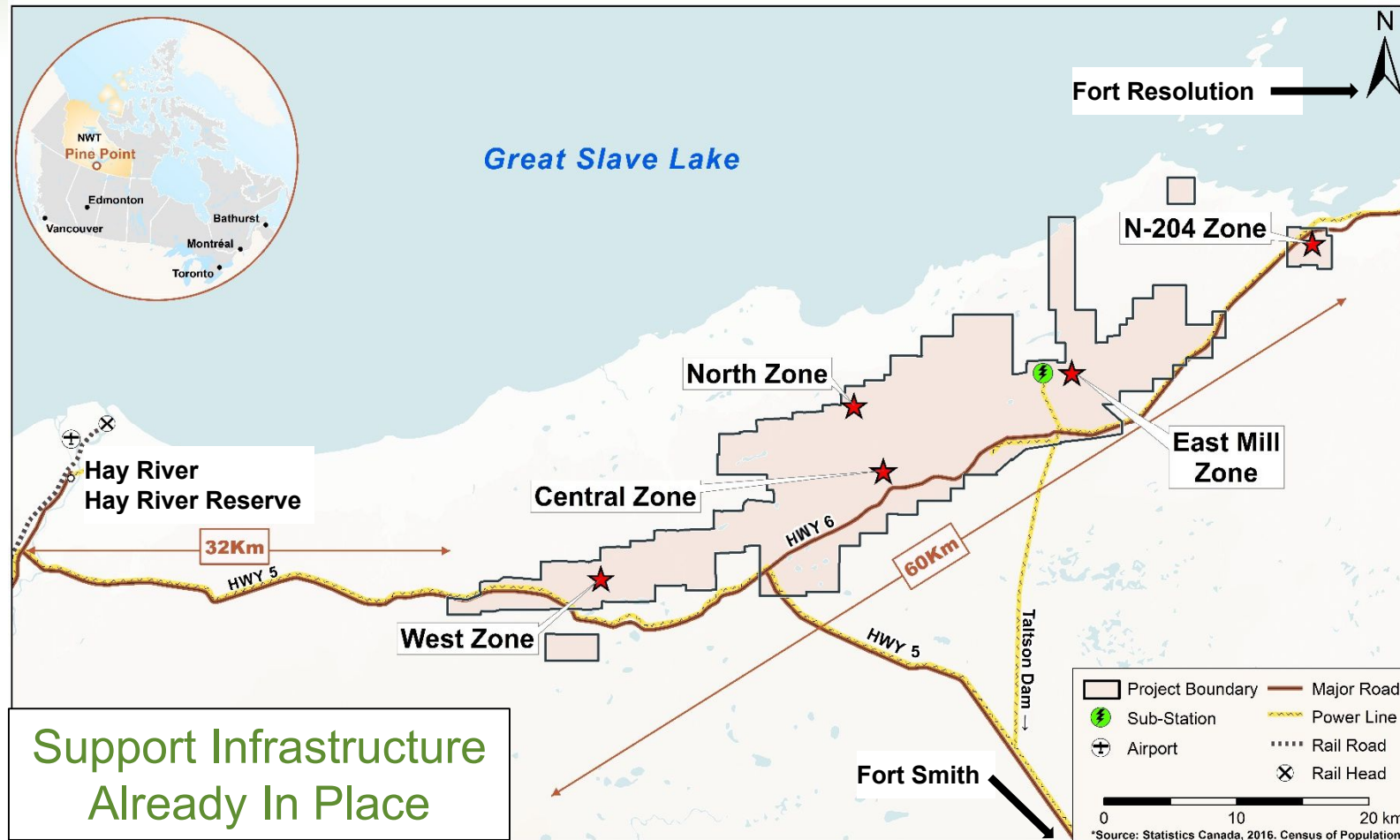


PPML has collaboration agreements with Deninu Kue First Nation and the NWTMN (representing Hay River, Fort Resolution and Fort Smith Métis Governments).

PPML has an exploration agreement with the K'atloodeeche First Nation.

The PPML Community Engagement plan also includes other First Nations, Hunters and Trappers, other companies, and business owners as Potentially Affected Parties that are included in PPML's engagement plan.

Project Location



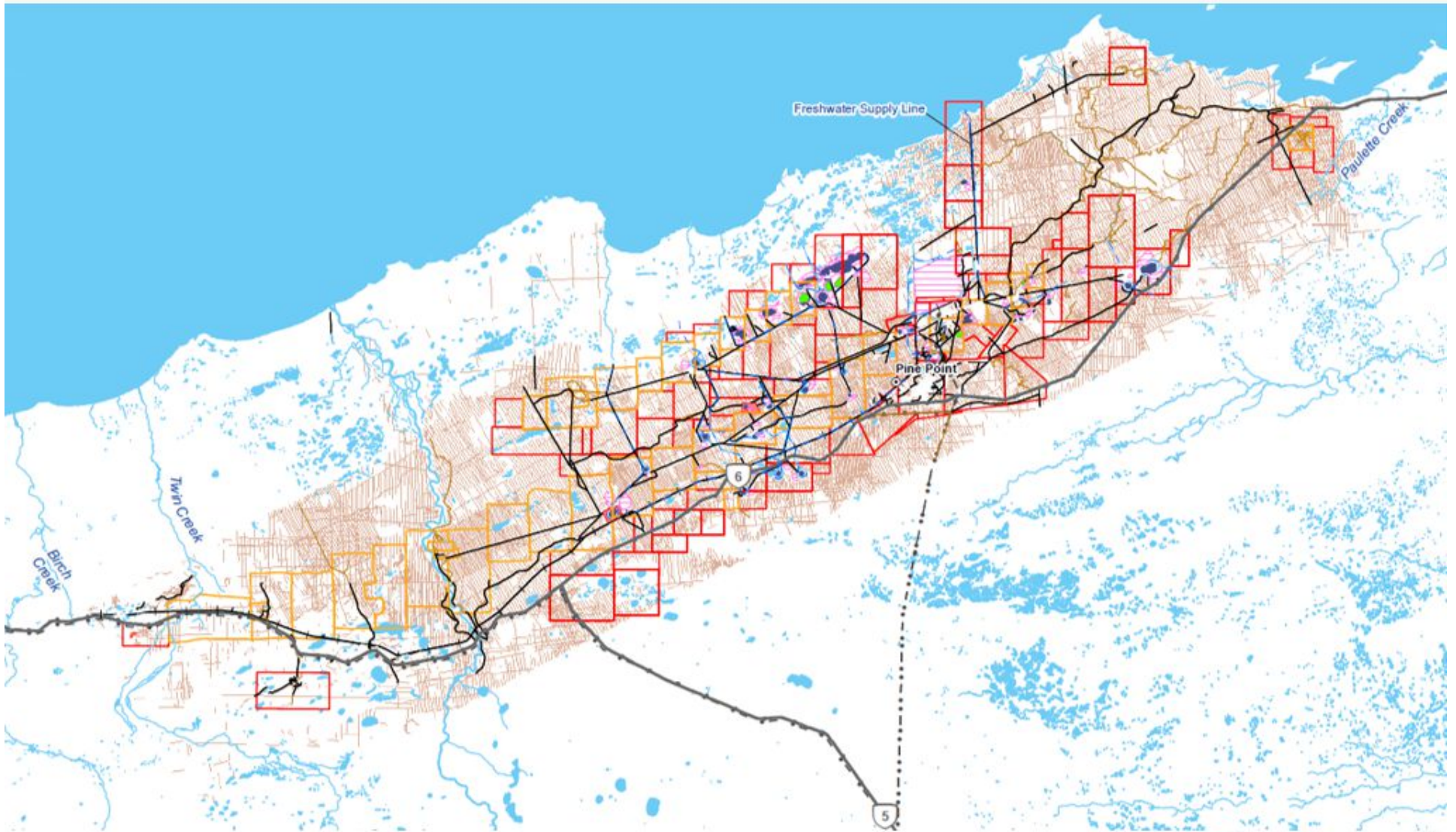
- Within 42 km of Hay River
- Recognized as the “Hub of the North”
- Hay River Airport and CN Rail Head From Edmonton
- Brownfield site
- Paved Highway Access
- Low-Cost Hydroelectric Power Available On Site From Taltson Dam

Project Location



Brownfield Site: Plan is to use the previously disturbed areas as much as possible: roads, pads, waste rock dumps, cut lines.

Project Location



History and Timeline



- **1964 to 1988:** Cominco produced 64 million tonnes from 50 shallow open pit mines and there were two underground mines
- **Nov 2016:** Darnley Bay Resources acquired the Pine Point Project from bankruptcy court... Prior to that, the project was owned by **Tamerlane Ventures**
- **Aug 2017:** Darnley Bay Resources changed its name to Pine Point Mining Ltd.
- **Feb 2018:** **PPML** is acquired 100% by **Osisko Metals Inc.** to obtain PP Project
- **2018-2020:** Exploration and drilling to establish Mineral Resource Estimate
- **June 2020:** Pine Point PEA
- **November 2020:** Application for Confirmation & Exploration Permit (CEP) to Mackenzie Valley Land and Water Board (MVLWB) (separate process)
- **February 2021:** Submission of the EA Initiation Package to MVEIRB

Historical Photos - Cominco

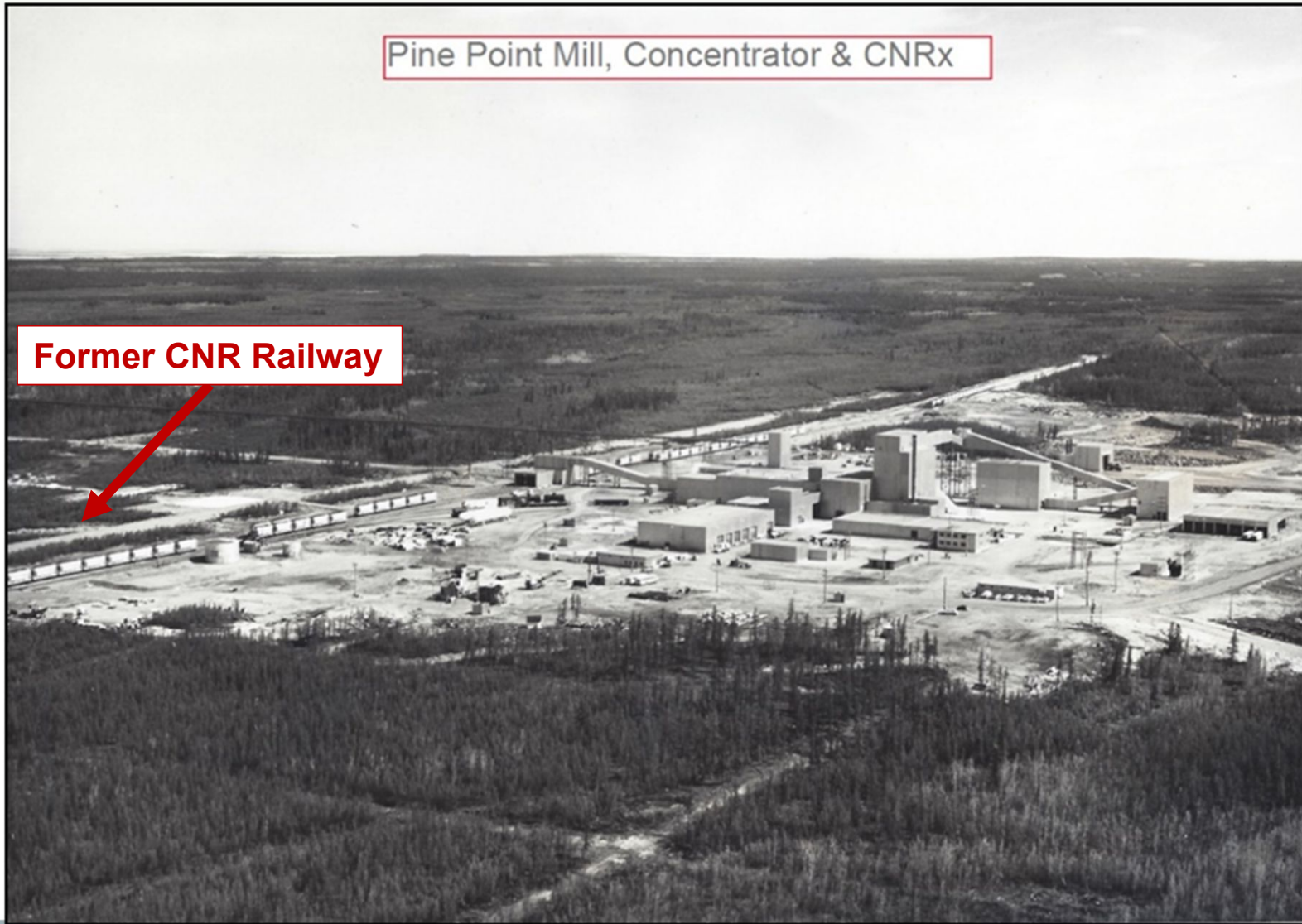


“Twinkle Toes”

Cominco's Open Pit Mines



Cominco's Mill Site Looking West-Southwest



Pine Point Mill, Concentrator & CNRx

Former CNR Railway

Engagement to Date



- Past engagement has been focused on building relationships and communicating Project development through meetings, calls, mail.
- Project engagement transitioned from Darnley Bay (2016-2017) to PPML (2017 onward); PPML is aware of the issues/concerns previously raised and considers them moving forward.
- Most involved to date include Deninu Kue First Nation, K'atl'odeeche First Nation, Fort Resolution Métis, Hay River Métis, and the Town of Hay River and Hamlet of Fort Resolution.
- To date, interested parties have raised concerns and aspirations largely related to exploration activities.

Engagement to Date



- Recent engagement focused on PEA results, Project Description, and next steps for the EA (e.g., engagement regarding socio-economic trends, issues, and priorities; Indigenous Knowledge [IK] studies).
- Meetings held with:
 - K'atl'odeeche First Nation (August 25, 2020)
 - Northwest Territories Métis Nation (August 31, 2020)
 - Deninu Kue First Nation (September 9, 2020)
 - Lutsel K'e Dene First Nation (August 26, 2020)
- Key outcomes/areas of discussion included:
 - Need for local employment, contracting, and training opportunities
 - Status of agreements with communities
 - Worker safety considerations in light of COVID-19
 - Water management and impacts on land and continued Indigenous use
- Engagement re: community-led IK studies underway with K'atl'odeeche First Nation, Deninu Kue First Nation, Hay River Métis Council, and Fort Resolution Métis Council

Engagement to Date



- Early engagement emphasized:
 - Determining who should be engaged, and who represents interested parties
 - Engaging in a way preferred by leadership, especially during COVID-19
 - Communicating exploration activities and Project development
 - Supporting community development opportunities (e.g., events, equipment)
 - Confirming land rights and identifying trappers
 - Establishing collaboration and exploration agreements
 - Identifying economic and employment opportunities (e.g., camps, drilling, trucking/hauling) and providing training (e.g., first aid)
- In the months to come, engagement will include more emphasis on:
 - Project Description for the DAR; requirements for labour, goods, services
 - Environmental baseline studies supporting the EA process
 - Mitigation for potential Project effects on the environment and communities
 - Benefit enhancement measures to maximize local uptake of opportunities
 - Awareness of community priorities and goals (economic, wellbeing, etc.)
 - Differentiating potential socio-economic effects with a GBA+ lens
 - Monitoring the effectiveness of mitigation and benefit enhancement measures

Suggestions from Engagement

- Summarize the previous concerns raised
- ✓ use pits for waste rock storage and disposal
- use sump pumps in pits instead of perimeter wells
- use a liner in the tailings pits
- use an upgradient freeze wall in Cluster Pit area
- use grouting at open pits
- ✓ use the old Cominco system for the supply of freshwater from Lake to Camp (the T-37 Road)
- ✓ use the previous water supply line from the Lake
- ✓ decant water from in-pit tailings storage areas or move water from pit to pit if fines in tailings plug pit wall pores.
- cap and seal all holes
- plug the problematic former Cominco open well at W-85 with H2S
- ✓ avoid surface discharge of groundwater
- ✓ avoid Sulphur Creek as a receiving site for withdrawn groundwater
- avoid development near Buffalo River as caribou overwinter here in the undisturbed lands
- widen the shoulders of the highway

Using grouting instead of freeze wall for underground mines



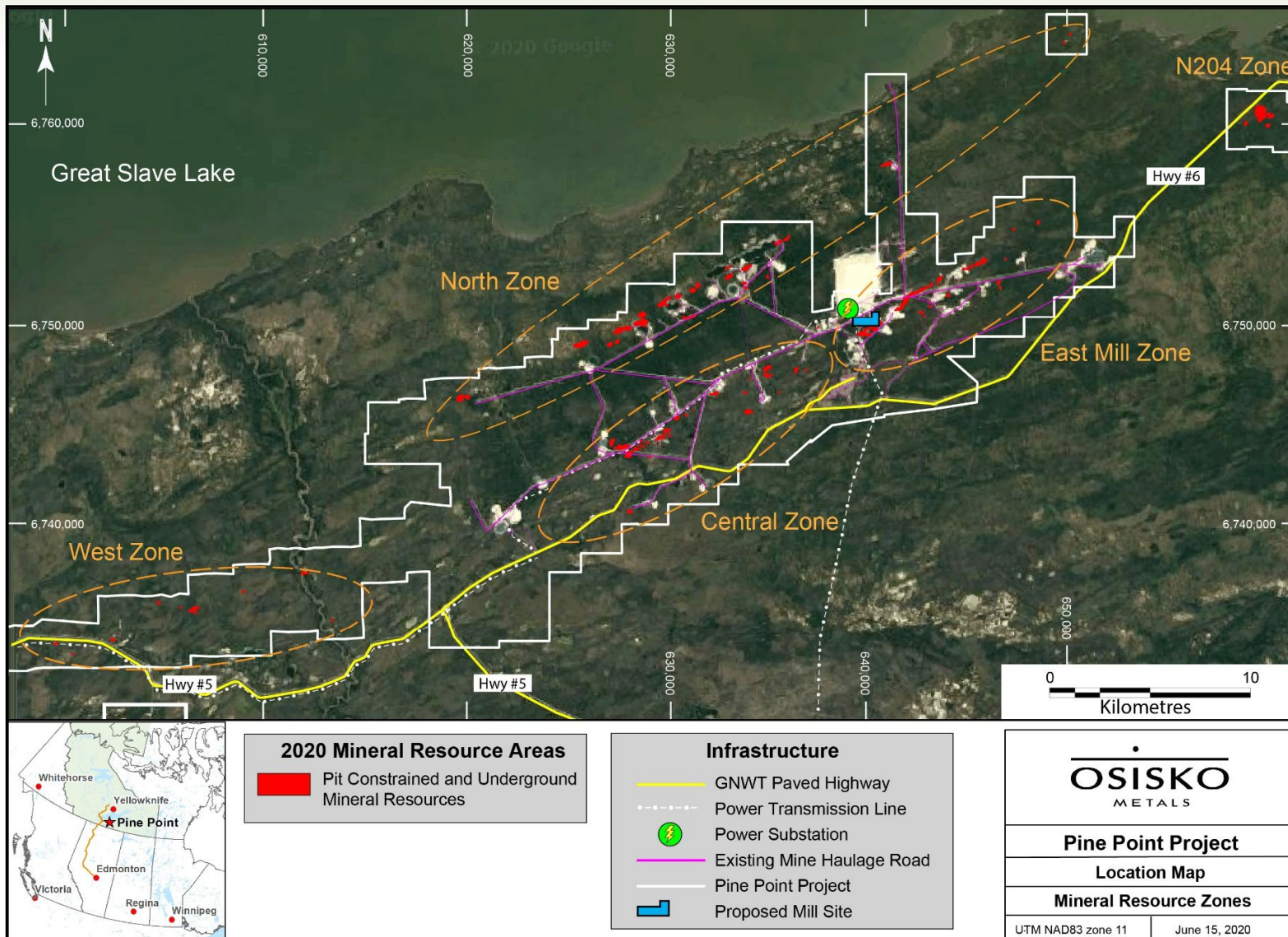
Preliminary Economic Assessment (PEA)



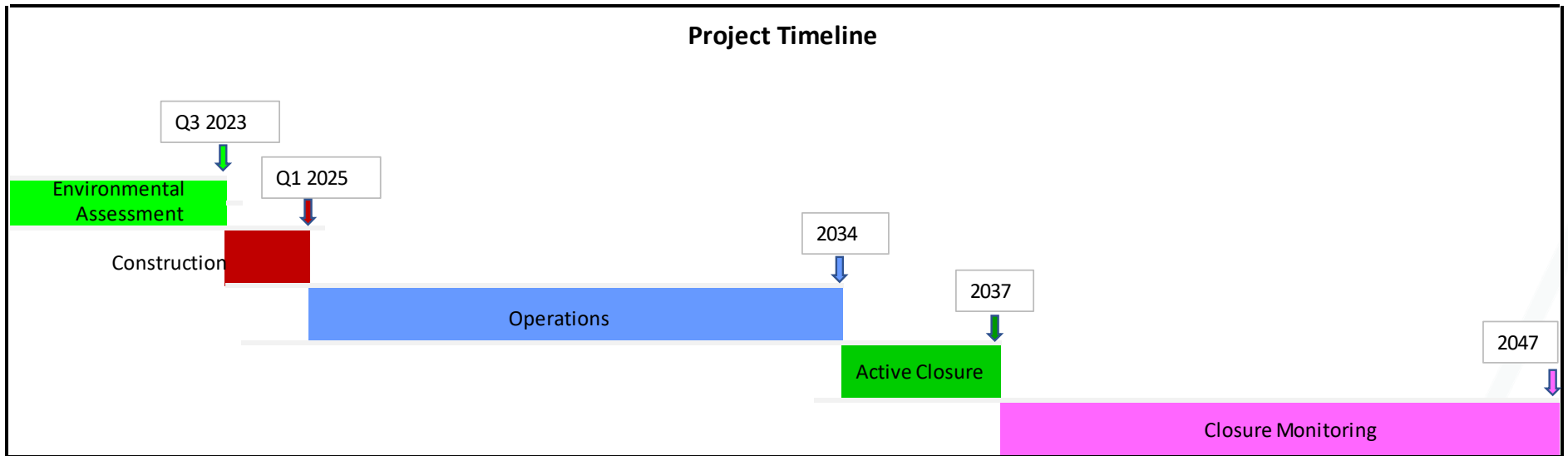
- PEA completed (see News Release: June 15th, 2020):
 - 10 years of production at up to 11,250 tpd treatment rate
 - Exploration and Delineation Drilling targets can extend mine life
 - Build a new plant on the site of the old plant
 - Truck the zinc/lead concentrate to rail siding at Hay River
 - Manage groundwater by putting into old pits or reinjecting back underground
- Pine Point zinc concentrate is one of the cleanest in a world where other concentrates with impurities are forecasted to dominate the future global market.
 - Traders and smelters want Pine Point concentrate to blend down impurities.
- Zinc concentrate supply crunch forecasted for 2023-25, a potential future bonus

- **Life of Mine:** 10 years, mining 39.1 Mt of mineralization from 47 pits, 456 employees during operations and average of 280 during construction.
- **Brownfield Site:** use of previously disturbed areas as much as possible for access and infrastructure.
- **Open Pits (OP)** mainly located East of the Buffalo River will consist of several small pits and/or a series of pits grouped together as in the East Mill Zone.
- **Underground Mines (UG)** located in the West (of the Buffalo River) and Central Zones. West Zone will use grout curtain around the mine to reduce water inflow.
- **Waste Rock:** Pads adjacent to open pits or placed in historical pits where feasible. UG mines will have less waste rock produced. Acid rock drainage from the carbonate rocks is very minimal.
- **Water Influx:** Water from open pits and underground workings will be pumped into historical pits or new pits in which mining has been completed, or re-injected back into the underground aquifer via reinjection wells.

Project Boundary Location



Project Overall Timeline

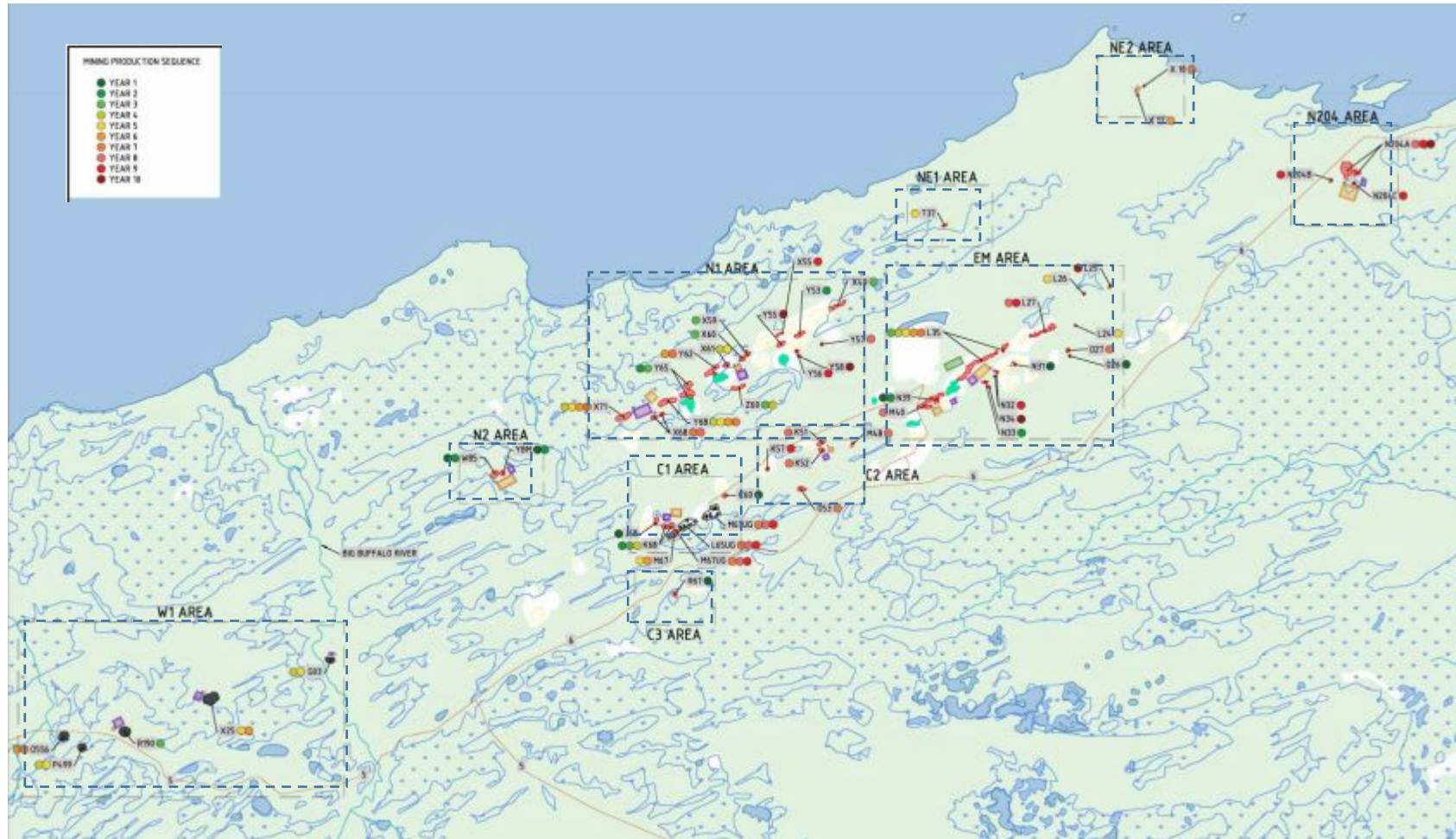


Overview: Open Pit Mining



- **Deposits mined:** 47 deposits will be mined
- **Mineralization Mined:** Total mineralized rock mined 32.6 Mt, between 2.6 to 4.1 Mt per year
- **Overburden:** 66.4 Mt stockpiled
- **Waste Rock:** 100.6 Mt
- **Tailings:** Disposal in selected historical and mined out open pits
- **Mining Fleet:** Trucks will be 100 t class, average of 15 trucks (plus 3-5 extra during peak production), three hydraulic shovels, five hydraulic excavators, front end loaders, etc.
- **Mining:** *Pits are grouped in clusters with pits from multiple clusters to provide consistent feed to plant and to manage water extracted*

Mining Clusters

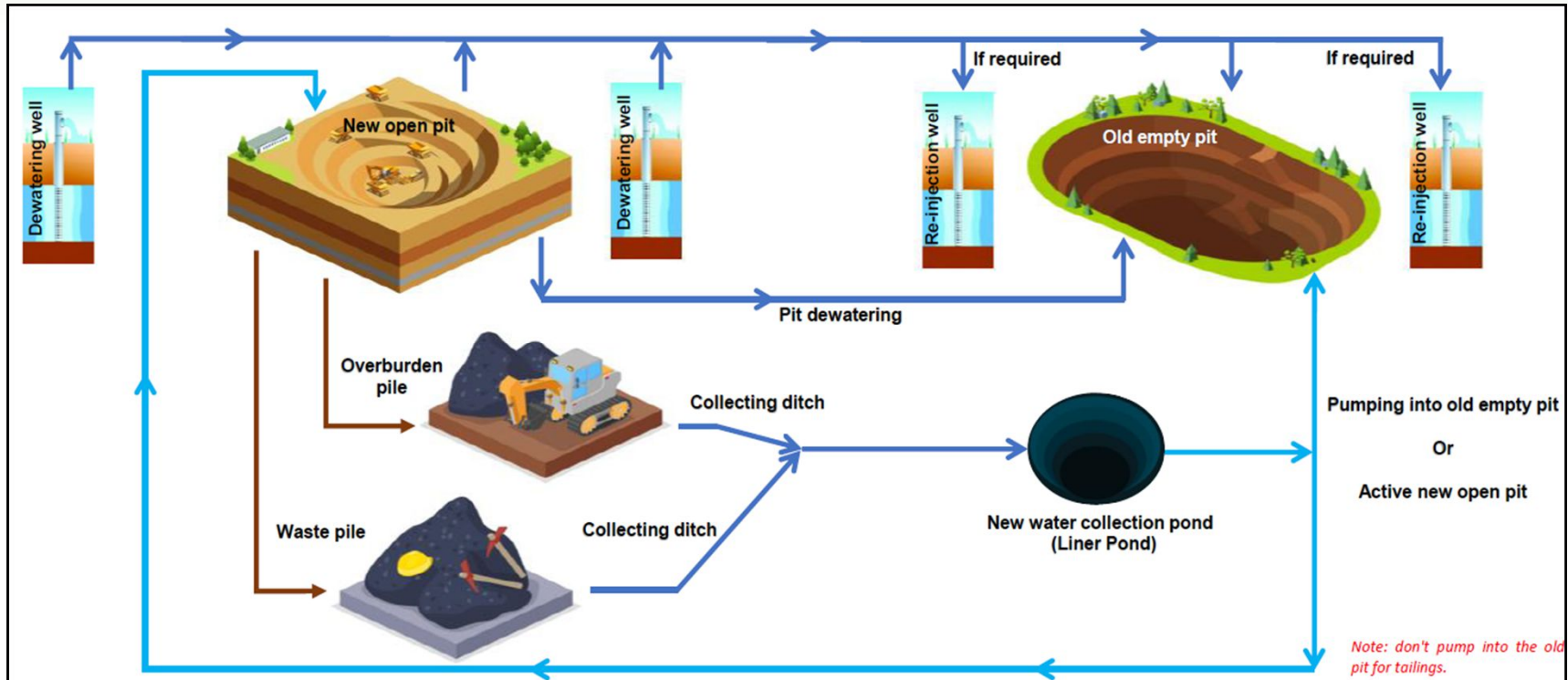


Open Pit Groundwater Management



- A ring of dewatering wells to be installed on the perimeter of each deposit.
- Depending on groundwater flow rates for each deposit, the number of wells will range from 0 (dry locations) to approximately 30.
- The wells will be 20 inches (508 mm) in diameter through overburden and 16 inches in the bedrock and would extend 25 m below the pit bottoms (Avg=175m).
- A submersible pump will be installed and connected to a network of pipes and booster pumps.
- Water will be placed in a nearby pit, far enough away so that the water does not return to the original pit while mining is underway.
- The water will be reinjected back underground using reinjection wells where a pit is too far away.

Pit Dewatering & Waste Rock Stockpile Water Management



Waste Rock Management



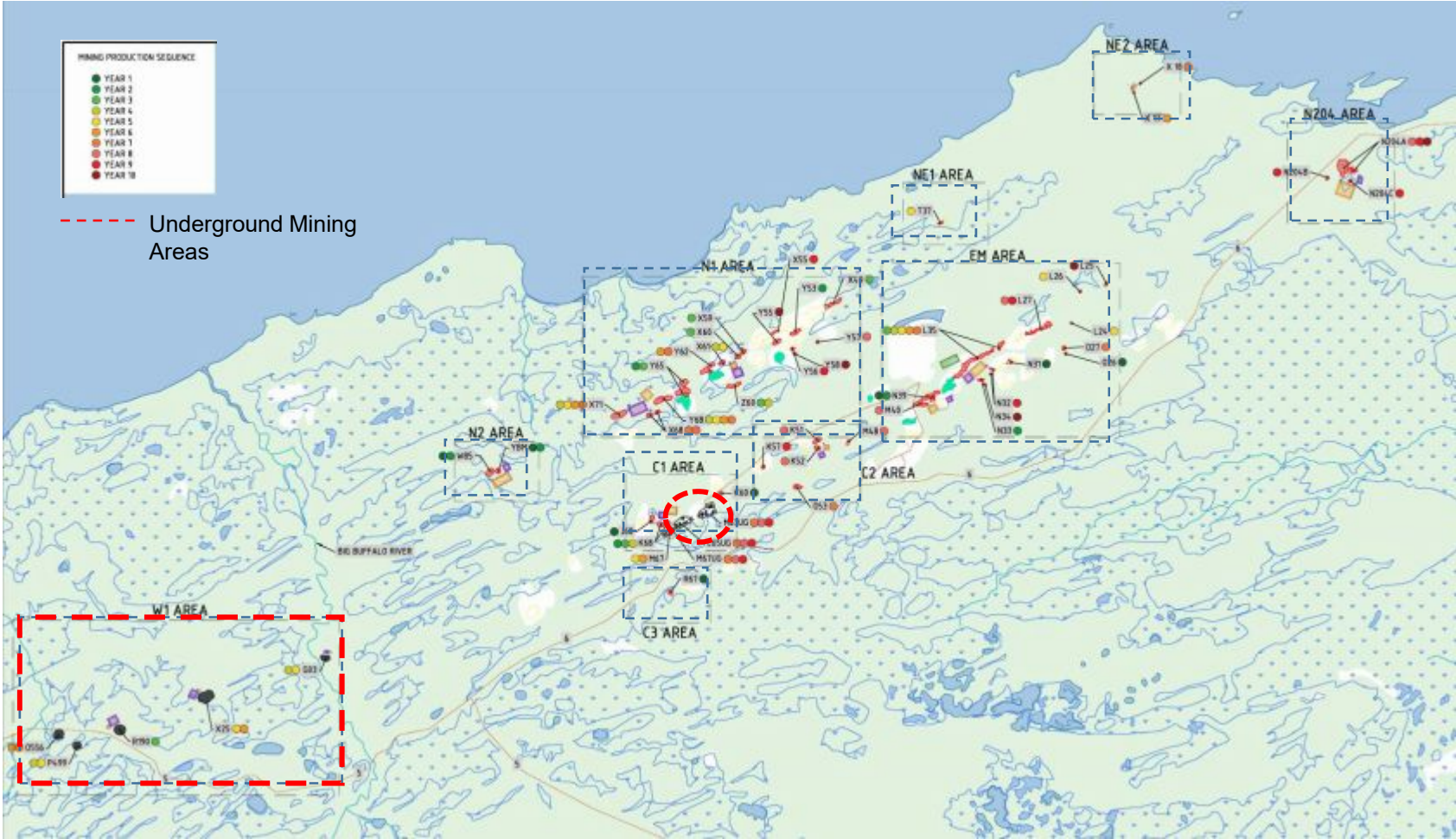
- Waste rock is non-economic rock that will not be processed
 - Because the waste rock is carbonaceous limestone, there is minimal to no Metal Leaching and Acid Rock Drainage
 - Waste rock volume expected to be 100.6 Mt
 - Overburden volume expected to be 66.4 Mt
- Where possible, existing or recently mined open pits will be used to store waste rock and overburden material or in Waste Rock Storage Facilities (WRSFs) above ground
 - New WRSFs to be constructed near pits being mined
- Mineral Sorter rejects will be stored temporarily on 5 Mt stockpile near the process plant and then used to cover tailings deposition areas (TDAs)

Overview: Underground Mining

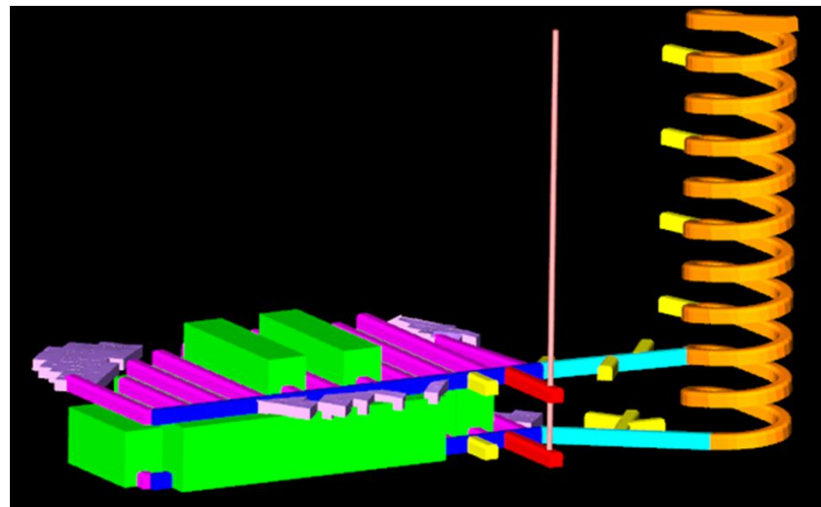
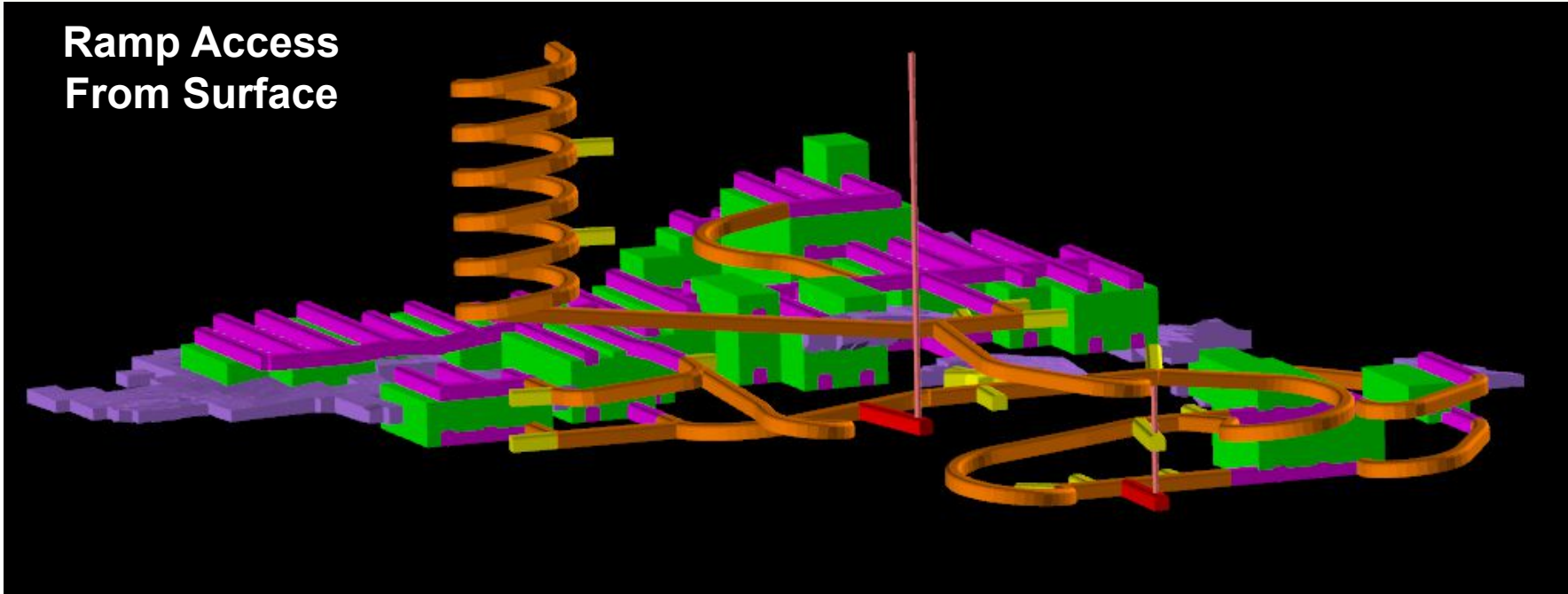


- **Two clusters:** deposits that will be underground mines are located in the West Zone (Cluster W1: 5 deposits) & Central Zone in (Cluster C1: 3 deposits)
- **Schedule:** From years 3 to 9
- **Mineralization mined:** 6.6 Mt; 2.6 to 4.1 Mt per year, trucked to mill
- **Mining:** A ramp from surface down to each deposit will be constructed and mineralized rock will be brought to surface using 45 t trucks. Investigated accessing more than one deposit from a single ramp (e.g., R190 is close to two other deposits); however, this subject to future trade-off studies
- **Waste rock:** Mined and temporarily brought to surface and then used to refill mined out stopes
- **Relocatable infrastructure:** utility buildings, fuels storage tanks, equipment, electrical substation
- **Water:** Grout wall around UG mine site to limit water ingress and ring of dewatering wells extracting ground water and reinjecting it underground again

Underground Mining Clusters



UG Preliminary Designs



R190

Underground Groundwater Management



C1 Zone UG Water Management

- Deposits are shallower
- Access to the deposits is from the bottom of nearby pits
- Dewatering of these nearby pits will help to draw down the groundwater around the C1 Zone underground mines

West Zone UG Water Management

- Deposits are deeper and need to be accessed via portals and ramps
- A grout curtain will be installed around the deposits and dewatering wells will be installed inside the grout curtain
- Water extracted will be reinjected into the aquifer via reinjection wells outside the grout curtain

Proposed Mineral Processing

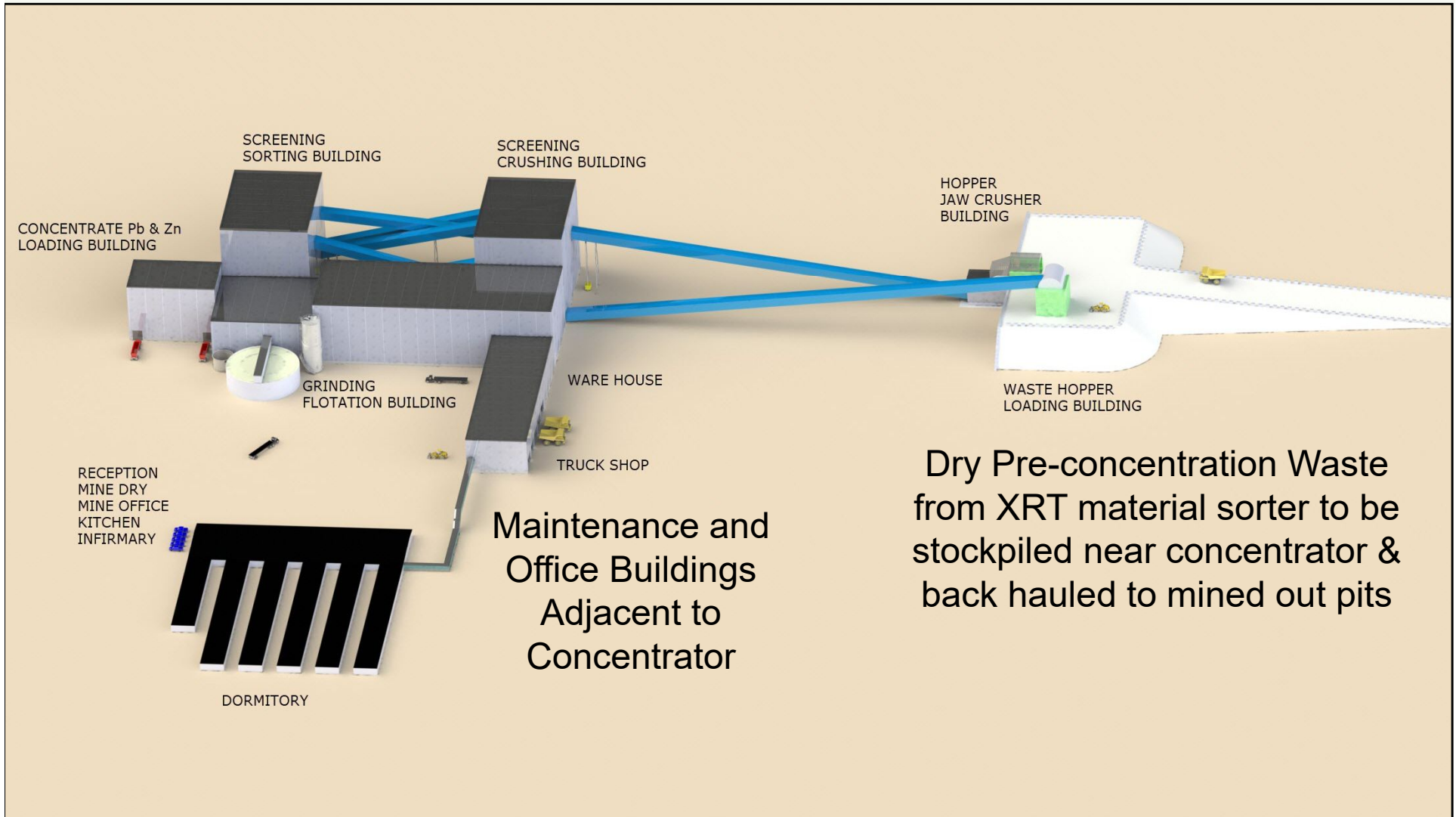


- **Process Plant:** Located on previously disturbed ground in the area of the old Cominco Plant
- **Concentrates:** Transported by road to rail connection at Hay River
- **Tailings:** Disposal in selected historical and mined out open pits
- **Concentrator Water:** Recycled using a nearby pit as a water reservoir
- **Concentrator Processing Capacity:** Planning up to 11,250 tonnes per day (tpd)
- **Auxiliary Infrastructure:** Camp, truck shop, workshops, warehouse and administration offices will be connected to Concentrator building; laydown areas will be located near to the plant and workshops

Google Earth Into Pine Point



Plant Site Layout



Dry Pre-concentration Waste from XRT material sorter to be stockpiled near concentrator & back hauled to mined out pits

Processing Summary



- Pre-concentration is centralized at the mill
 - Preconcentration reduces mineralized material to process by 40%, reduces capacity required for process plant, less tailings, less water and reagent consumption
 - Mineral Sorter will remove non-mineralized rock; rejects stored on small stockpile then moved to unused open pit
- Conventional grinding and flotation circuit; similar to Cominco era
- **Concentrate will be trucked to loadout area to transfer to rail**
- The mill is expected to produce
 - 550-650 tpd of **lead** concentrate
 - 1000-1150 tpd of **zinc** concentrate
- **Hay River transloading site will be a 1.2 km long railway spur with equipment to transfer the concentrates to rail cars**

Process Plant Tailings



- There is no planned “conventional” Tailings Management Facility. Tailings will be deposited in mined-out pits (Tailings Deposition Areas – TDAs). Seven or more old pits will be put to use as TDAs.
- Tailings – thickened to 60% or more solids, pumped to open pit (existing or new).
- Process plant is expected to require 40-45 m³ of freshwater per hour to be sourced from Great Slave Lake.
- Process water removed from tailings will be reused in the process plant to supplement the fresh-water requirement.
- Tailings water content will be reduced to 60% water and pumped via HDPE piping to the TDAs.
- The TDAs (the old pits) will be covered by Mineral Sorter rejects, which will then be covered by waste rock to surface.

Surface Water Management



- In-pit sumps in open pits with pumps to manage surface runoff
- Ditches and collection ponds to manage runoff around WRSFs and stockpiles, to be directed to an open pit
- Rehabilitating existing water collection ponds for storing surface reclaim and process water, to be reused in the plant
- A “once every 2 years”, 6 hour rainfall event has been factored into the storage requirements needed for surface runoff waters

Plant Site Infrastructure



- Camp located near concentrator; capacity: 230 persons
- Mine dry (male and female facilities)
- Sewage septic tank and leaching field
- Warehouse, truckshop
- Water supply from Great Slave Lake pumphouse and water management ponds
- Freshwater to be pumped from Great Slave Lake (same location as Cominco)
- Roads existing and new, as required
- Landfill (inert solid waste disposal) in old pit
- Excess Taltson hydro dam power will be used, with potential to increase by 4MW; to be discussed post PEA
- Fuel and Compressed Natural Gas (CNG) storage tanks mainly for equipment

Workforce



- Local workforce as much as possible
- 456 employees during operations; average of 280 employees during construction, with a peak of 500 employees
- Centralized camp rather than people commuting because of 12 hour shifts
- Opportunities will exist for local employment and entrepreneurial contracting for further development of community capacities
- Typical jobs would be equipment operators, process plant operator, mechanic, mill wrights, general hands, office staff

Closure



- Brownfield areas if used will be returned to current state
- Greenfield areas will be reclaimed and allowed to return to similar productive state as present
- Plan for progressive reclamation will be developed during EA and permitting and will be ongoing during operations
 - Several old pits will be used to store tailings and some waste rock
 - Above ground storage piles for overburden and waste rock will be re-sloped and dust mitigation measures applied
- Closure plan to be developed with regulators and communities



Questions....



Developer's Assessment Proposal



What is included in the document

Developer's Assessment Proposal



- The Developer's Assessment Proposal:
 - Identifies proposed valued components (VCs) and approach for assessing effects
 - Spatial and temporal boundaries, assessment cases, assessment endpoints/measurement indicators
 - Identifies priority issues identified through early planning and engagement
 - Focus the DAR on high priority issues
 - Outlines methods that PPML proposes to use to assess effects on VCs in the DAR
 - e.g., modelling and analytical methods
 - Provides information to inform the development of a Terms of Reference (TOR) for the DAR
 - Provides reviewers with an opportunity for early input before the analysis begins



Disturbed and undisturbed forest at Pine Point

Developer's Assessment Proposal



- Plain Language Summary
- Section 2.0: Valued Components
 - Provides definition and purpose of valued and intermediate components
 - Describes the process for selecting valued and intermediate components for the Project
 - Provides a potential list and rationale for valued and intermediate components to be included to the DAR
- Section 3.0: Issues Prioritization
 - Describes the approach for selecting Key Lines of Inquiry (KLOI) and Subjects of Note (SON)
 - Proposes KLOI and SON for the DAR and rationale



- Section 4.1: General Environmental Assessment Methods/Approach
 - Provides an overview of the general assessment approach that will be used to complete the environmental assessment in the Developer's Assessment Report
 - Valued/intermediate components, assessment endpoints, measurement indicators
 - Spatial and temporal boundaries
 - Assessment cases
 - Input from engagement and incorporation of Indigenous Knowledge
 - Project interactions and mitigations
 - Residual effects analysis
 - Residual effects classification and determination of significance
 - Prediction confidence and uncertainty
 - Monitoring and follow-up
 - Finalized detailed methods will be provided in the Developer's Assessment Report

- Section 4.2: Proposed Detailed Methods for KLOI and SON
 - Tables 4-5 to 4-19 show the methods PPML proposes to use for assessing the biophysical and social components
 - Focus will be on KLOI, high priority issues identified through early planning and engagement, and pathways most likely to cause significant adverse effects
 - Outlines proposed modelling and analytical methods for primary pathways

Assessment Approach for Individual Component		
Information Sources		
Valued Components, Assessment Endpoints, and Measurement Indicators	Valued Components (VCs)	
	Assessment Endpoints and Measurement Indicators	
Environmental Assessment Boundaries	Spatial Boundaries	
	Temporal Boundaries	
	Assessment Cases	
Input from Engagement		
Incorporation of Indigenous Traditional Knowledge (ITK)		
Existing Environment		
Project Interactions and Mitigations		
Residual Effects Analysis		
Residual Effects Classification and Determination of Significance (where applicable)		
Prediction Confidence and Uncertainty		
Monitoring and Follow-up		
Supporting Annexes		

Developer's Assessment Proposal



- Section 4.3: Effects of Extreme Events
 - Effects of the Environment on the Project
 - Accidents and Malfunctions
 - Describes how these subjects will be evaluated in the DAR
 - Provides an initial list of items expected to be considered in the DAR (to be finalized based on the Project Description in the DAR)
- Proposed Structure for the Developer's Assessment Report
 - Provides a proposed document map outlining main sections and associated annexes based on the proposed KLOI and SON

Questions...

