



Keeyask Transmission Project

Construction Environmental Protection Plan

Construction Power, Generation Outlet and Unit Transmission Lines and Stations

Part 2 Mapbook



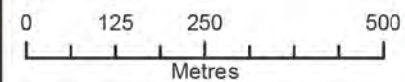
Aboriginal Traditional Knowledge

Manitoba Hydro recognizes the unique relationship Aboriginal communities have with their areas of use and is appreciative to all the communities who took time to share information about their history and culture as well as their valued knowledge and perspectives with regards to the study area and Project. The ATK that has been shared assisted Manitoba Hydro in: developing a greater understanding of the study area; identifying potential Project effects; planning and designing the Project; developing potential mitigation measures, some of which can be found throughout this document.

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Coordinate System: UTM Zone 15N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: April 01, 2014
Version: Final 1.0



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Land Base

- Transmission Line
- Bipole I and II (Existing)
- - - Proposed Roads
- Existing Roads
- + + Active Railway
- - Abandoned Railway

Project Infrastructure

- Generation Outlet
- Transmission Line
- Construction
- Power Line (KN36)
- Construction Power Line (Temporary)
- Project Footprint (ROW)

- Unit Line
- Construction
- Power Station Site
- Switching Station Site

ESS Features

- Archaeological Site
- Water Crossing
- Birds and Habitat
- Birds and Habitat
- Birds and Habitat
- Mammals and Habitat
- Marsh Habitat
- Water and Wetland Habitat
- Permafrost

Keeyask Transmission Project Construction Environmental Protection Plan Environmentally Sensitive Site Locations

Construction Power Line (KN36)

Map 14

SAMPLE MITIGATION TABLE (see adjacent KEY for additional information)

ESS Group: Water Crossing ²

Sec-ID	ESS ID	ESS Name	Easting	Northing	UTM Zone	Channel Width	Wet Width	Fish Habitat Class	Habitat Sensitivity
KN36	KN36-Aqua-102	Unnamed Tributary	369620	6238548	15N	N/A	N/A	N/A	N/A

Potential Effects: ⁴

Habitat loss & contamination from structure foundations & installations; Increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbance & impeded fish movement; Rutting of floodplain

Specific Mitigation: ⁵

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes

ESS Group: Permafrost ²

Sec-ID	ESS ID	ESS Name	Location	Start	Stop	UTM Zone	Distance
KN36	KN36-Soils-105	Permafrost-Extensive Discontinuous	Site: D12A to 12B	E-369424 N-6238924	E-369434 N-6238906	15N	22 m
KN36	KN36-Soils-106	Permafrost-Extensive Discontinuous	Site: D13 to D14	E-369632 N-6238524	E-369662 N-6238468	15N	63 m

Potential Effects: ⁴

Melting or loss of permafrost due to disturbance of the active layer

Specific Mitigation: ⁵

- Carry out construction activities on frozen ground to minimize surface damage and rutting
- Use existing trails, roads or cut lines whenever possible as access routes

ESS Group: Birds and Habitat ²

Sec-ID	ESS ID	ESS Name	Location	Crossing Coordinates	UTM Zone
KN36	KN36-Wild-102	Unnamed Tributary	Site: L-3	E-369621 N-6238546	15N

Potential Effects: ⁴

Potential loss of SAR habitat; Higher risk of wire collision within the ROW

Specific Mitigation: ⁵

- Adhere to reduced risk timing windows for protection of birds (August 1- April 30)
- Maintain applicable setback during nesting and breeding timing window

**ESS and mitigation shown includes only a sample of actual mitigation for the ESS features listed; refer to the Construction Environmental Protection plan for all specific mitigation measures recommended*

KEY to SAMPLE MITIGATION TABLE

1 Map on which ESS listed in the ESS Location Summary tables are illustrated

2 ESS Group classification of ESS shown on the map

3 ESS location summary; includes the following fields:

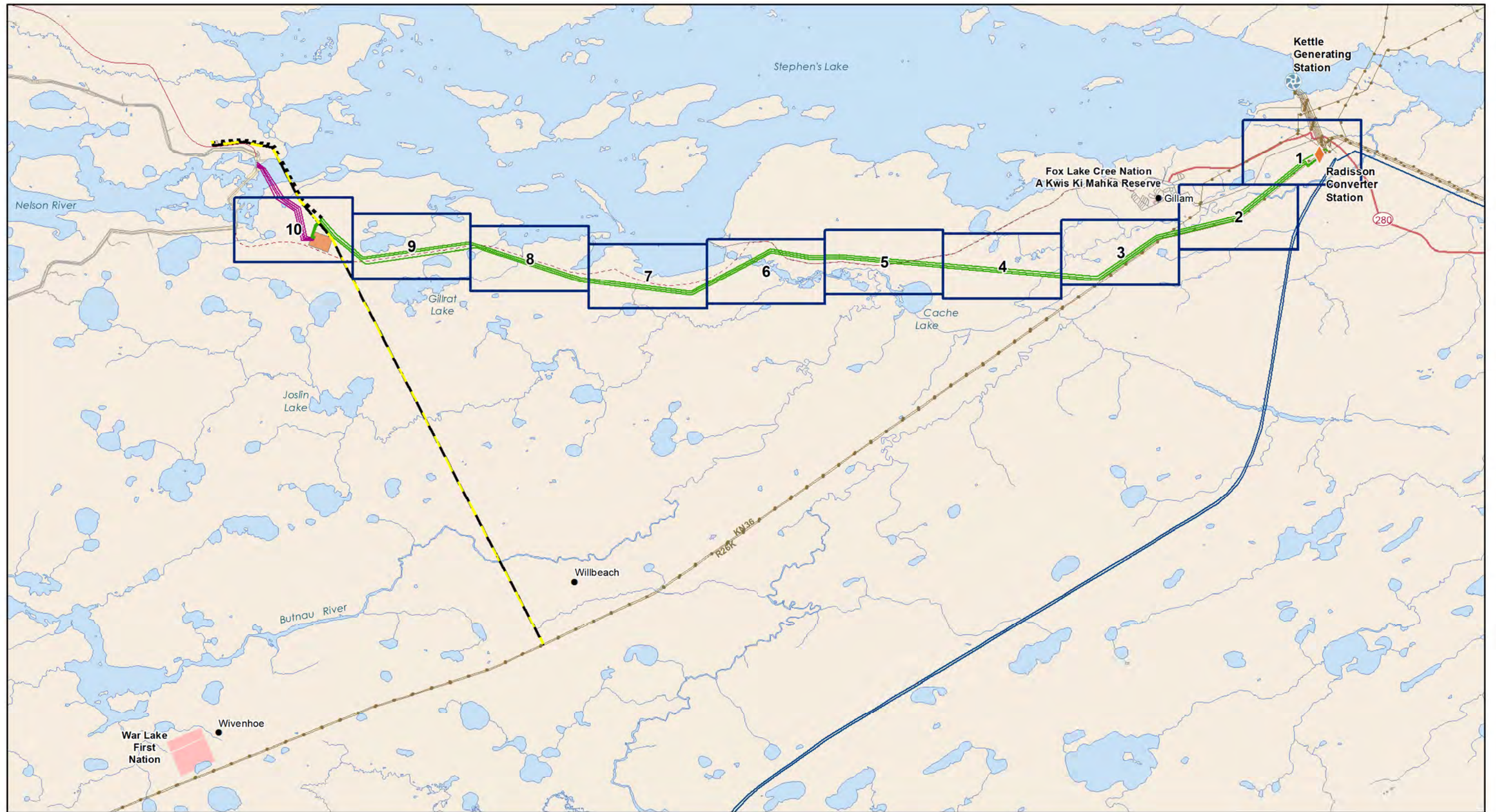
- Sec-ID of the construction section (i.e. KN36, KGOT, KUL) for ESS location
- ESS ID - Site specific ID assigned to each ESS according to **naming convention** listed below
- ESS Name - Brief name/description of ESS
- Easting/Northing - UTM coordinates of ESS location (for points only)
- Location - site identification numbers for the start and stop site points of ESS intersection with the ROW (lines and polygons only)
- Start/Stop - UTM coordinates of the start/stop identification numbers listed in the "Location" field (lines and polygons only)
- Characteristics of stream crossings identified in the ESS Location Summary tables (where applicable and as information is available)

4 Potential effects identified for ESS listed in the ESS Location Summary table

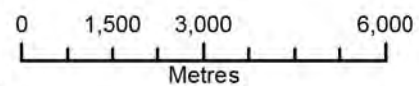
5 Mitigation measures identified for ESS listed in the ESS Location Summary table

ESS NAMING CONVENTION

CATEGORY	GROUP (Number Series Representing Group)	ESS ID (Section ID-Category-Group Number)
Ecosystem	Habitat (100)	KN36-Eco-100
	Research (200)	KN36-Eco-200
	Species of Concern (300)	KN36-Eco-300
Heritage	Archaeological (100)	KN36-Hert-100
	Cultural (200)	KN36-Hert-200
	Historic (300)	KN36-Hert-300
Soils and Terrain	Permafrost (100-200)	KN36-Soils-100
	Erosion (300)	KN36-Soils-300
	Terrain (400)	KN36-Soils-400
Water	Water Crossing (100)	KN36-Aqua-100
	Groundwater (200)	KN36-Aqua-200
	Wetlands (300)	KN36-Aqua-300
Wildlife	Birds and Habitat (100)	KN36-Wild-100
	Mammal and Habitat (200)	KN36-Wild-200
	Reptiles/Amphibians and Habitat (300)	KN36-Wild-300



Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: Aug 17, 2014
Version: FINAL



Legend

- Generation Outlet Transmission Lines
- Construction Power Line (KN36) Preferred Route
- - Construction Power Line (Temporary)
- Unit Lines
- Construction Power Station Site
- Switching Station Site
- Keeyask Generation Infrastructure

- ◆ Converter Station
- ⊙ Generating Station
- Bipole I and II (Existing 500 kV DC Line)
- Transmission Line
- North Access Road
- - South Access Road (Proposed)
- First Nation

Keeyask Transmission Project Construction Environmental Protection Plan Environmentally Sensitive Site Locations Key Map Index

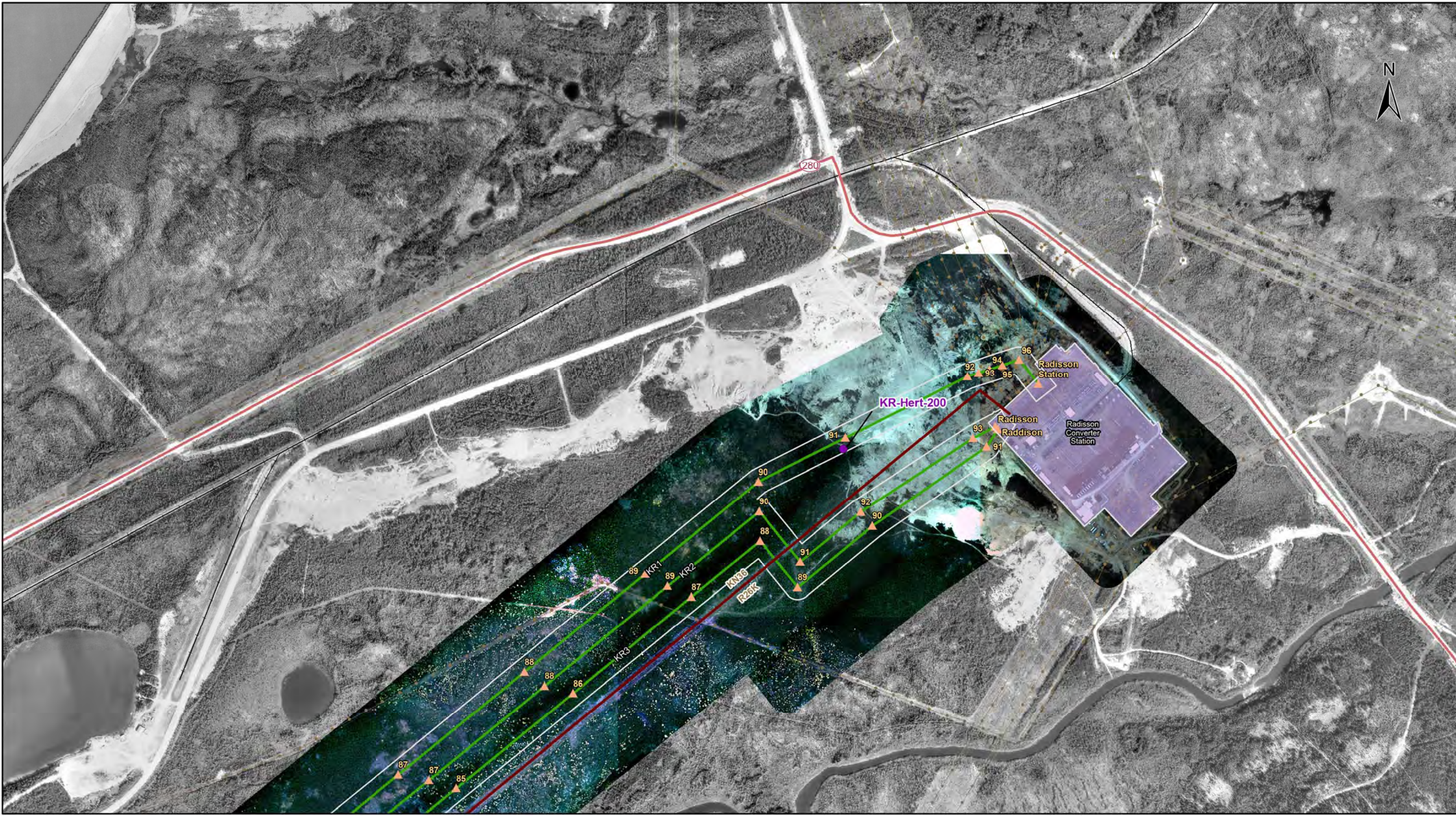
Document Owner:
Licensing and Environmental Assessment Department
Transmission Planning and Design Division
Transmission Business Unit
Manitoba Hydro

Final 4.0

List of Revisions – Keeyask Transmission Project CEnvPP KR section

Number	Nature of Revision	Page/Map #	Revised By	Date
2.01	KGOT alignment change at the Butnau Dam, Switching Station and where paralleling KN36 which had affected each page of the mapbook, requiring an update of each page of the KGOT section.	KGOT- Map#1-10	Kris Watts	2014-12-02
2.01	Due to the KGOT alignment change at the Switching Station, these changes had to be reflected in the map products for KUL and KN36/and Temporary construction power line	KUL- Map #1 KN36/TConPwr- Map G	Kris Watts	2014-12-02
2.02	The initial coordinates of the Memorial Cross were incorrect, this amendment provides the correct location near the South Access road	KGOT- Map #6	Kris Watts	2015-03-05
3.00	Removed Mitigation measure that referred to DFO operational statement as Fisheries and Oceans Canada no longer uses operational statements but rather "Measures to Avoid Causing Harm to Fish and Fish Habitat" These measures are reflected in the text of the CEnvPP	Any mitigation text for stream crossings or water bodies	Kris Watts	2015-03-27
3.01	ESS added at Kettle River Bend: KGOT-Aqua-124b, KGOT-Wild-124b,	KGOT Map #2	Kris Watts	2015-12-10
3.02	Added potential Heritage Resource sites that weren't included in earlier versions at crossing locations for the Butnau and Kettle Rivers KGOT-Hert-114 and KGOT-Hert-115 (Map 2) and KGOT-Hert-103A and 103B (Map 6)	KGOT Map #2, #6	Kris Watts	2015-12-10
3.03	Added Water Crossings KGOT-Aqua-128,129,130	KGOT Map #6	Kris Watts	2015-12-10
3.04	Added Preliminary Towers for on KR1	All KGOT	Kris Watts	2015-12-10
4.0	As directed by Transmission Design have changed the line designations and all of the ESS related it them from "KGOT" to "KR"	All related pages	Kris Watts	20161212
	Added two approved access routes off of the South Access Road to STR 79 and STR 32	Map 2, 7	Kris Watts	20161212

	Added location of trees that adorn ceremonial ties	Map 1	Kris Watts	20161212
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Coordinate System: UTM Zone 15N NAD83
Data Source: MB Hydro, ProvMB, NRCAN
Date Created: December 13, 2016
Version: Final 4.0

0 120 240 480
Metres
1:10,000

Land Base

- Bipole I and II
- Transmission Line
- Proposed Roads
- Active Railway
- Abandoned Railway

Project Infrastructure

- Towers (Preliminary)*
- Generation Outlet Transmission Line
- Project Footprint (ROW)
- Access Route

ESS Features

- Archaeological Site
- Historical
- Water Crossing
- Birds and Habitat

Other Features

- Converter Station
- Mammals and Habitat
- Marsh Habitat
- Water and Wetland Habitat
- Permafrost

*Towers are subject to change, and are only use as a rough guide

Keyask Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations
Unit (KR) Lines

Map 1

ESS Group: Archaeological

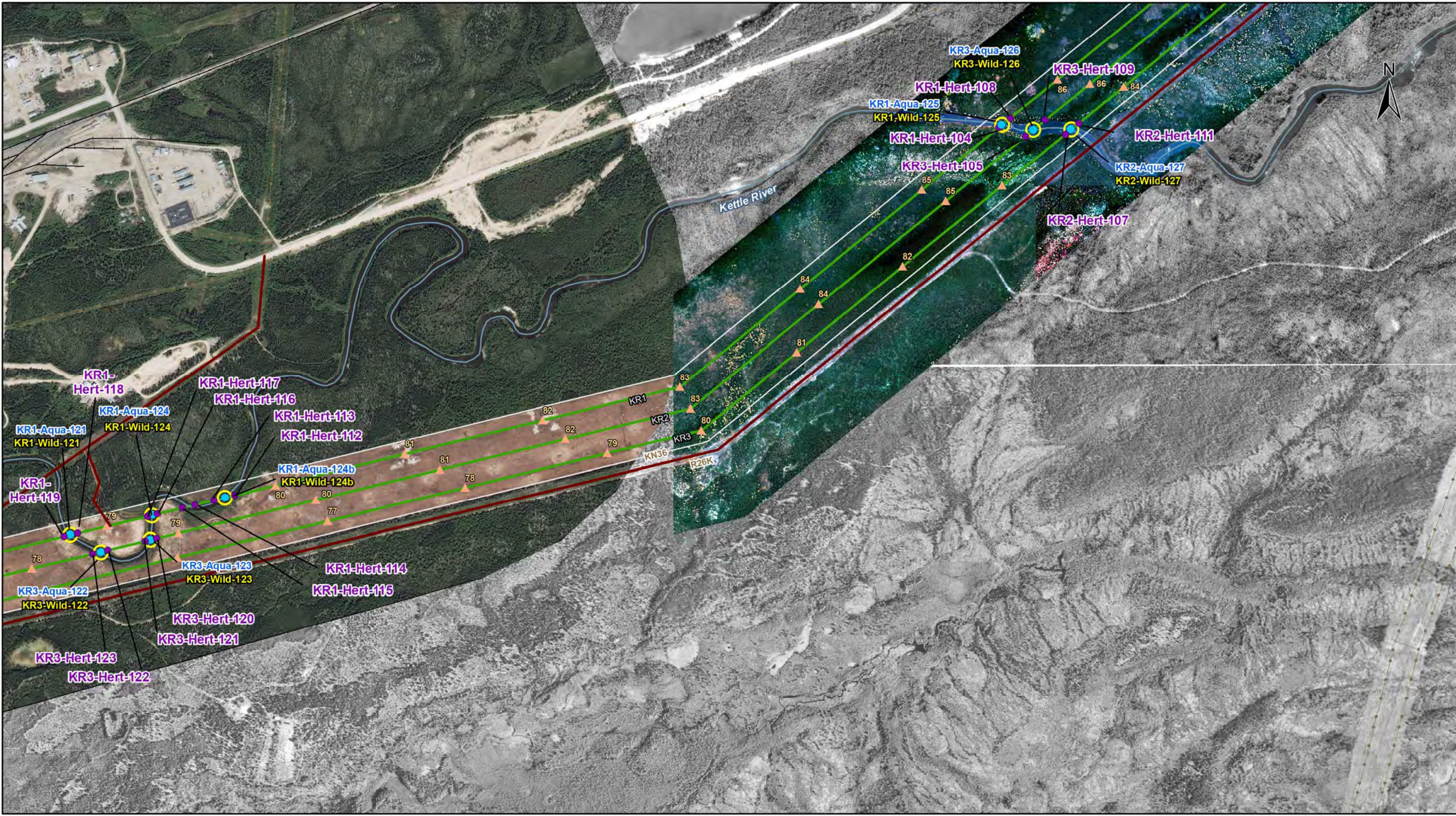
Sec-ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KR1	KR-Hert-200	Culture and Heritage Resource	399623	6247462	15N

Potential Effects:

Potential Loss of Heritage Resources

Specific Mitigation:

- Identify and flag a 10m buffer prior to start of work
- Minimize surface disturbance around the site to the extent possible
- Remove trees that aren't identified as culturally significant trees by low-disturbance methods within buffer





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0 120 240 480
Metres
1:10,000

Land Base

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Project Infrastructure

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ESS Features

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- Historical
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- Water and Wetland Habitat
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Keyask Transmission Project
Construction Environmental Protection Plan
Environmentally Sensitive Site Locations
Unit (KR) Lines

Map 2

ESS Group: Archaeological

Sec-ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KR1	KR-Hert-104	Potential Archaeological Site	397897	6246160	15N
KR3	KR-Hert-105	Potential Archaeological Site	397971	6246136	15N
KR2	KR-Hert-107	Potential Archaeological Site	398082	6246141	15N
KR1	KR-Hert-108	Potential Archaeological Site	397929	6246186	15N
KR3	KR-Hert-109	Potential Archaeological Site	398025	6246180	15N
KR2	KR-Hert-111	Potential Archaeological Site	398119	6246172	15N
KR1	KR-Hert-112	Potential Archaeological Site	395787	6245150	15N
KR1	KR-Hert-113	Potential Archaeological Site	395732	6245134	15N
KR1	KR-Hert-114	Potential Archaeological Site	395681	6245122	15N
KR1	KR-Hert-115	Potential Archaeological Site	395648	6245112	15N
KR1	KR-Hert-116	Potential Archaeological Site	395578	6245097	15N
KR1	KR-Hert-117	Potential Archaeological Site	395546	6245091	15N
KR1	KR-Hert-118	Potential Archaeological Site	395359	6245042	15N
KR1	KR-Hert-119	Potential Archaeological Site	395319	6245032	15N
KR3	KR-Hert-120	Potential Archaeological Site	395576	6245029	15N
KR3	KR-Hert-121	Potential Archaeological Site	395544	6245020	15N
KR3	KR-Hert-122	Potential Archaeological Site	395441	6244997	15N
KR3	KR-Hert-123	Potential Archaeological Site	395400	6244987	15N

Potential Effects:

Potential discovery for unknown heritage resources

Specific Mitigation:

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Identify and flag prior to start of work
- Conduct site investigation with Archaeologist post clearing and prior to construction
- Minimize surface disturbance around the site to the extent possible
- Inspect excavated materials or surface disturbance for heritage resources and report any finds to Environmental Inspector
- Implement additional mitigation from site investigation

ESS Group: Water Crossing

Sec-ID	ESS ID	ESS Name	Easting	Northing	UTM Zone	Channel Width	Wet Width	Fish Habitat Class	Habitat Sensitivity
KR1	KR-Aqua-121	Kettle River	395338	6245037	15N	N/A	N/A	N/A	N/A
KR3	KR-Aqua-122	Kettle River	395422	6244988	15N	N/A	N/A	N/A	N/A
KR1	KR-Aqua-123	Kettle River	395559	6245023	15N	N/A	N/A	N/A	N/A
KR1	KR-Aqua-124	Kettle River	395564	6245063	15N	N/A	N/A	N/A	N/A
KR1	KR-Aqua-124b	Kettle River	395764	6245139	15N	N/A	N/A	N/A	N/A

KR1	KR-Aqua-125	Kettle River	397906	6246167	15N	N/A	N/A	N/A	N/A
KR3	KR-Aqua-126	Kettle River	397993	6246154	15N	N/A	N/A	N/A	N/A
KR2	KR-Aqua-127	Kettle River	398096	6246155	15N	N/A	N/A	N/A	N/A

Potential Effects:

Habitat loss & contamination from structure foundations & installations; Increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbance & impeded fish movement.

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory veg will be maintained along with trees that do not violate MH Veg Clearance Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing

ESS Group: Birds and Habitat

Sec-ID	ESS ID	ESS Name	Easting	Northing	UTM Zone
KR1	KR-Wild-121	Kettle River	395338	6245037	15N
KR3	KR-Wild-122	Kettle River	395422	6244988	15N
KR3	KR-Wild-123	Kettle River	395559	6245023	15N
KR1	KR-Wild-124	Kettle River	395564	6245063	15N
KR1	KR-Wild-124b	Kettle River	395764	6245139	15N
KR1	KR-Wild-125	Kettle River	397906	6246167	15N
KR3	KR-Wild-126	Kettle River	397993	6246154	15N
KR2	KR-Wild-127	Kettle River	398096	6246155	15N

Potential Effects:

Potential loss of SAR habitat; Higher risk of wire collision within the ROW

Specific Mitigation:

- Adhere to reduced risk timing windows for protection of birds (August 1- April 30)
- Maintain applicable setback during nesting and breeding timing window
- Conduct priority assessment for bird diverters and other measures prior to transmission line stringing
- Install bird diverters or other measures at high priority sites