
TITLE	SSA Crown Lands Application for a Type A Land Use Permit
SECTION	6: Pipeline Segments
SUBJECT	1: Summary

INTRODUCTION

This section supports an application for the land use activities and operations associated with the 20 pipeline segments on Crown lands in the Sahtu Settlement Area (SSA) (see [Figure 6-1](#)). It includes:

- an estimate of personnel requirements
- a summary of the operations
- a description of potential environmental and resource effects
- construction equipment estimates
- detailed information about the pipeline segments, including:
 - pipeline rights-of-way
 - watercourse crossings
 - access roads
 - appurtenances

The pipeline segments in this section are numbered from north to south and are determined by the boundaries between the settlement regions and between private land, Crown land and Commissioner's land. This results in 45 pipeline segments in the SSA, 20 on Crown land, 3 on Commissioner's land and 22 on Sahtu private land.

Site-specific maps showing the location of individual pipeline segments are provided in the subjects included in this section.

Type B Water Licence Applications will be submitted to the Mackenzie Valley and Water Board regarding watercourse crossings and barge landings.

PERSONNEL (PART 3)

Parts of four pipeline construction spreads will be built across Crown lands during the winters of 2006-2007 through 2009-2010. About 264.5 km of the proposed pipelines will be constructed on Crown lands.

Beginning at the Inuvik area facility (KP-0.0), there will be two parallel pipelines sharing the same 50 m right-of-way – an NPS 10 NGL pipeline and an NPS 30 gas pipeline. At the Norman Wells compressor station the NGL line will branch off to the Enbridge interconnect facility and the gas line will continue south in a 40 m right-of-way. The construction spread configuration for the entire pipeline is shown in the foldout maps in [Appendix C](#).

The construction crews will operate out of the Little Chicago, Fort Good Hope, Norman Wells and Little Smith Creek infrastructure sites. The personnel in these spreads will consist of up to 1,350 people to manage, support and execute all elements of the construction process.

SUMMARY OF OPERATIONS (PART 5)

The land use activities and operations described in this section include:

- developing and maintaining about 140.7 km of 50 m wide pipeline right-of-way that will contain:
 - about 140.7 km of NPS 30 gas pipeline
 - about 140.7 km of NPS 10 NGL pipeline
 - pipeline appurtenances such as valves, cathodic protection devices, signs and markers
 - watercourse crossings, where required, along the pipeline right-of-way
- developing and maintaining about 123.8 km of 40 m wide pipeline right-of-way that will contain:
 - about 123.8 km of NPS 30 gas pipeline
 - pipeline appurtenances such as valves, cathodic protection devices, signs and markers
 - watercourse crossings, where required, along the pipeline right-of-way
- developing and maintaining about 42 access roads with a total length of 73.6 km (for cross-sections, see [Section 3](#)) connecting the pipeline right-of-way, existing transportation routes, water sources, infrastructure sites and roads near watercourse crossings
- using additional temporary workspace in support of construction activities

Figure 6-1 is an overview map of the pipeline segments. The following subjects describe the proposed alignment of these pipeline segments:

- Subject 6.2 Pipeline Segment C1
- Subject 6.3 Pipeline Segment C2
- Subject 6.4 Pipeline Segment C3
- Subject 6.5 Pipeline Segment C4
- Subject 6.6 Pipeline Segment C5
- Subject 6.7 Pipeline Segment C6
- Subject 6.8 Pipeline Segment C7
- Subject 6.9 Pipeline Segment C8
- Subject 6.10 Pipeline Segment C9
- Subject 6.11 Pipeline Segment C10
- Subject 6.12 Pipeline Segment C11
- Subject 6.13 Pipeline Segment C12
- Subject 6.14 Pipeline Segment C13
- Subject 6.15 Pipeline Segment C14
- Subject 6.16 Pipeline Segment C15
- Subject 6.17 Pipeline Segment C16
- Subject 6.18 Pipeline Segment C17
- Subject 6.19 Pipeline Segment C18
- Subject 6.20 Pipeline Segment C19
- Subject 6.21 Pipeline Segment C20

Preconstruction Activities

Before construction activities begin on the right-of-way:

- a preconstruction survey will be conducted to finalize the alignment
- detailed planning will be conducted to locate temporary construction access from the pipeline right-of-way to existing transportation routes, water sources, borrow sites and near watercourse crossings
- geotechnical evaluations will be conducted, as required

Development Activities

Pipeline Right-of-Way

The segments of the pipelines on Crown lands within the SSA are included in [Table 6-1](#).

Figure 6.1 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Table 6-1: Pipeline Segments within Sahtu Crown Lands

Segment	Starting Kilometre Post (KP)	Ending Kilometre Post (KP)	Length (km)
C1	186.3	197.5	11.2
C2	228.5	262.8	34.3
C3	276.5	277.7	1.2
C4	287.2	287.8	0.6
C5	308.4	324.9	16.5
C6	330.0	330.2	0.2
C7	344.9	378.5	33.6
C8	402.7	417.2	14.5
C9	417.2	424.0	6.8
C10	450.5	472.3	21.8
C11	512.9	556.2	43.3
C12	558.8	563.2	4.4
C13	568.4	587.0	18.6
C14	601.0	611.5	10.5
C15	617.5	628.0	10.5
C16	635.1	635.2	0.1
C17	635.6	642.4	6.8
C18	643.1	648.6	5.5
C19	656.3	665.2	8.9
C20	672.7	687.9	15.2

On either side of these segments, the pipeline traverses SSA private lands or Commissioner's lands. These right-of-way segments are the subject of the SSA private land use permit application and the Municipal and Community Affairs land use permit application.

The right-of-way width provides for most pipeline construction activities, including storage of snow, spoil and slash, workspace for trenching, welding and stringing activities, and a travel lane for moving of personnel and equipment. [Section 3](#) contains typical schematics of the pipeline right-of-way configurations.

Temporary workspace will be required in certain areas such as watercourse crossings, pipeline appurtenances, cross slopes and truck turnarounds during the construction period, as shown in [Section 3](#). The temporary workspace requirement for watercourse crossings and pipeline appurtenances is listed in the pipeline subjects that follow. Temporary workspace requirements for pipeline construction activities are shown in [Table 6-2](#).

This space is necessary for construction activities and is incremental to the right-of-way itself. The need, exact location and size of any additional temporary workspaces will be determined in the field and will be based on, among other things, geographic conditions encountered during construction (see [Section 3](#)).

Table 6-2: Estimated Temporary Workspace Requirements

Use of Temporary Workspace	Description of Use	Approximate Site Size	Number of Locations	Total Area (ha)
Truck turnarounds	Area for trucks and buses to turn around	20 m x 50 m	11	1.1
Cross slopes	Area required for working on right-of-way where cross slopes are excessive	8 m x length of cross slope	327	37.1
Pipeline crossings	Extra space required when crossing another pipeline	~ 3,000 m ²	3	0.9
Road crossings	Extra space required when crossing a roadway	~ 5,000 m ²	10	4.5
Laydown areas	Extra space required at the beginning and end of each construction spread	200 m x 150 m	1	3.2
Watercourse crossings	Area required for crossing activities and to lay down pipe	6,000 m ²	55	35.5
Block valves/ CP sites	Extra space required for construction of a valve/CP site on the right-of-way	4,500 m ²	18	8.1
Total				90.4

Access Roads

About 42 temporary access roads will be required on Crown lands in the SSA. These roads will provide access to the pipeline right-of-way, existing transportation routes, water sources, borrow sites and watercourse crossings (see [Table 6-3](#)). The alignment of these roads will be finalized as engineering design

progresses. Estimated road lengths allow for an additional 30% for topography and routing uncertainties.

Table 6-3: Access Roads for Water Sources and Pipeline Construction

Segment	Number of Access Roads	Land Use			Estimated Length (km)
		Municipal Length (km)	Private Length (km)	Crown Length (km)	
C1	2	-	-	1.5	1.5
C2	8	-	-	8.7	8.7
C3	0	-	-	0.0	0.0
C4	0	-	-	0.0	0.0
C5	1	-	-	0.4	0.4
C6	0	-	-	0.0	0.0
C7	5	-	2.7	6.7	9.4
C8	1	-	-	1.6	1.6
C9	1	-	-	0.6	0.6
C10	6	-	5.3	3.7	9.0
C11	7	2.6	17.4	33.8	53.8
C12	0	-	-	0.0	0.0
C13	2	41.5	-	8.3	49.8
C14	1	-	-	0.5	0.5
C15	2	-	-	2.9	2.9
C16	0	-	-	0.0	0.0
C17	0	-	-	0.0	0.0
C18	0	-	-	0.0	0.0
C19	1	-	0.4	0.1	0.5
C20	5	-	-	4.8	
Totals	42	44.1	25.8	73.6	138.7

Watercourse Crossings

Access Roads and Right-of-Way Travel Lanes

Watercourses and ravines encountered during the construction of access roads and right-of-way travel lanes, both between sites and at crossing locations, will be crossed using one of six main techniques – permanent bridges, temporary bridges,

culvert crossings, timber fill crossings, ice bridges and snow fill crossings. Descriptions of each crossing type are provided in [Section 3](#).

Crossing locations are listed in [Subject 6.2 \(C1\)](#) through [Subject 6.21 \(C20\)](#).

Pipelines

Watercourses encountered along the right-of-way will be crossed using one of three main techniques – trenchless horizontal directional drilling, isolated crossings or open cut crossings. Large open cut crossings require temporary workspace and regular open cut crossings do not. Descriptions of these techniques are contained in [Section 3](#). No aerial crossings are planned for watercourse crossings on Crown lands within the SSA.

A summary of the crossings for each pipeline segment is shown in [Table 6-4](#).

Table 6-4: Watercourse Crossings Along the Pipeline Right-of-Way

Segment	Horizontal Directional Drills (HDD)	Isolated	Large Open Cut	Open Cut	Number of Crossings
C1	-	-	6	9	15
C2	-	-	3	11	14
C3	-	-	-	1	1
C4	-	-	-	-	0
C5	-	-	2	9	11
C6	-	-	-	-	0
C7	-	3	3	13	19
C8	-	1	7	15	23
C9	-	-	-	2	2
C10	-	0	5	8	13
C11	1	2	6	6	15
C12	-	-	-	1	1
C13	-	1	2	3	6
C14	-	-	2	4	6
C15	-	-	-	3	3
C16	-	-	-	-	0
C17	-	-	2	-	2
C18	-	-	1	-	1

Table 6-4: Watercourse Crossings Along the Pipeline Right-of-Way (cont'd)

Segment	Horizontal Directional Drills (HDD)	Isolated	Large Open Cut	Open Cut	Number of Crossings
C19	-	-	6	5	11
C20	-	-	2	2	4
Totals	1	7	47	92	147

Pipeline Appurtenances

Various appurtenances will be installed on the right-of-way for pipeline operations and maintenance. These include cathodic protection devices, block valves, pigging facilities, signs and markers (see [Section 3](#)).

A summary of the pipeline appurtenances is provided in [Table 6-5](#). Most appurtenances will be located in shared sites to reduce disturbance and to facilitate operations and maintenance activities. For appurtenance locations, see [Section 3](#) and the individual pipeline segment descriptions in this section.

Table 6-5: Pipeline Appurtenances Summary

Segment	Block Valve Sites	Gas Block Valve Sites	NGL Block Valve Sites	Cathodic Protection Sites
C1	-	-	-	-
C2	-	-	1	-
C3	-	-	1	-
C4	-	-	-	-
C5	-	1	3	1
C6	-	-	-	-
C7	-	-	4	-
C8	-	-	2	-
C9	-	-	-	-
C10	-	-	-	-
C11	-	1	-	1
C12	-	-	-	-
C13	-	-	-	-

Table 6-5: Pipeline Appurtenances Summary (cont'd)

Segment	Block Valve Sites	Gas Block Valve Sites	NGL Block Valve Sites	Cathodic Protection Sites
C14	-	-	-	-
C15	-	1	-	1
C16	-	-	-	-
C17	-	-	-	-
C18	-	-	-	-
C19	-	-	-	-
C20	-	-	-	-

SUMMARY OF POTENTIAL ENVIRONMENTAL AND RESOURCE EFFECTS (PART 6)

Individual pipeline segments in the SSA might cover different ecological regions with significant variations in the terrestrial environment including vegetation types, soils and landforms, and wildlife habitat. This makes the prediction of specific effects and mitigation on a segment-specific basis difficult to quantify at this stage of the project. Therefore, information addressing potential environmental and resource effects has been presented for the region in [Section 8](#).

PUBLIC INVOLVEMENT

Local community representatives provided input during the 2002 helicopter reconnaissance along the K'ahsho Got'ine District and Tulita District pipeline system sections. They assisted in defining the route through the Little Chicago area, the Fort Good Hope area including the Hare Indian (Rabbitskin) River crossing and south to Gibson's Gap, the routing near Bear Rock and the Great Bear River crossing, and the project routing south of Tulita District to the Deh Cho Region (DCR).

In early 2003, several Fort Good Hope residents expressed concern about avoiding and respecting the gravesites located in the Little Chicago area. During further public involvement activities, Fort Good Hope residents also expressed general concerns related to the pipeline route, which included:

- avoiding burial sites and traditional trails
- considering sensitive areas, trapping areas (marten), harvesting areas (moose and caribou), migratory birds, ground dwelling animals and protected areas

- respecting the small lakes (fish, beaver) with setbacks
- ensuring the local community has provided input and acceptance to the proposed pipeline route
- ensuring that TK data has been considered during the detailed route planning phase of the project

The community of Tulita expressed concern with the proximity of the preliminary pipeline route (adjacent to the Enbridge pipeline river crossing) to Tulita's water intake system. After further evaluation, an alternative route was selected, about 6 km upstream of the Enbridge pipeline river crossing. The community of Tulita confirmed their acceptance of this proposed pipeline route.

During the MVEIRB Environmental Assessment of the proposed Field Geotechnical Investigation Program in the DCR, the communities of Fort Simpson and Wrigley expressed concern over developments in the Blackwater River area. According to these communities, this area is an extremely significant cultural meeting place and has many spiritual sites (e.g., sacred rock and people turn to stone), an important harvest area including moose pastures and caribou migration zone. It is also situated in a managed candidate protected area.

Public involvement activities are documented in [Section 10](#) of this application.

EQUIPMENT (PART 10)

[Table 6-6](#) shows an estimate of the equipment that might be required for a typical pipeline construction spread. An exact list and numbers will not be known until immediately before construction.

Table 6-6: Estimate of Typical Pipeline Construction Equipment

Type and Approximate Number per Site	Size, Model or Equivalent	Proposed Use
Trucks – 32	Tandem tractor	Hauling
Trucks – 7	Tandem crane	Lifting
Trucks – 164	4x4 pick-up and crew cab	Personnel transport
Trucks – 110	Mechanic rig	Field mechanic
Ambulances – 14	4x4	First aid, med-evac
Trucks – 7	Tandem fuel	Equipment fuelling
Trucks – 7	Tandem service	Equipment servicing
Trucks – 37	1 and 3 ton flat bed	Hauling
Trucks – 2	10 ton truck	Loading and hauling
Trucks – 8	Tandem water	Water hauling

Table 6-6: Estimate of Typical Pipeline Construction Equipment (cont'd)

Type and Approximate Number per Site	Size, Model or Equivalent	Proposed Use
Trailers – 10	Low-boy	Hauling
Jeeps – 3	4x4	Personnel transport
Trailers – 19	Pole, tri-axle	Hauling
Trailers – 32	High-boy	Hauling
Trailers – 23	Warehouse van	Parts and supplies
Trailers – 11	Office skid	Administration
Buses – 55	36, 24, 12 passenger 4x2	Personnel transport
Athey tracks – 13	As required	Hauling
Sidebooms – 63	Standard medium to large sized sidebooms	Pipe work
Sidebooms – 18	Auto-weld	Carry welding shelters
Bulldozers – 64	Medium and large sized dozers (310-400 HP)	Earth moving
Tractors – 5	Medium sized tractor	Pipe crews, early work
Mechanical welding equipment – 1	As required	Weld pipe
Quad welders – 8	As required	Weld pipe
Mechanical welding shelters – 18	As required	Shelter welders
Welding sleds – 8	As required	Transport welders
Ditchers – 3	Bucket	Trenching
Ditchers – 4	Chain	Trenching
Clamshell mechanical ditchers – 4	Medium sized excavator	Excavation
Tracked mechanical ditchers – 45	Large sized excavator	Excavation
Dump trucks – 48	Articulated	Hauling earth
Snow machines – 13	As required	Transport
Nodwells – 4	As required	Hauling
Graders – 6	Medium sized grader (4.3 m blade)	Road grading
Loaders – 8	Large sized loader (3.0 m ³ bucket loader)	Loading granular dump trucks
Cranes – 5	100 tonne tracked	Lifting and loading
Bending machines (comes with dies and mandrels) – 2	As required	Pipe bending

Table 6-6: Estimate of Typical Pipeline Construction Equipment (cont'd)

Type and Approximate Number per Site	Size, Model or Equivalent	Proposed Use
Internal clamps – 4	As required	Pipe work
Skid sleds – 64	As required	Pipe work
External clamps – 10 to 20	As required	Pipe work
Bevelling machines – 5 to 10	As required	Pipe work
Sand blasting units – 13	As required	Cleaning pipe
Lower-in belts – 10	As required	Pipe work
Pumps – 72	Assorted sizes	Ditch dewatering and testing
Testing trailers – 2	As required	Monitoring and pressure testing
Compressors – 21	150 through 1,600 cfm	Pipe work, dewatering and testing
Generators – 4	Assorted sizes	Power for hand tools and pumps
Radios – 54	Base (4) and mobile (50)	Communications
Propane tanks – 5	1,890 L	Propane storage
Holiday detectors – 15	As required	Testing pipe coating
Light towers – 92	Assorted sizes	Work area lighting
Pipe cradles – 13	Assorted sizes	Pipe work
Hydraulic rock drills – 5	Assorted sizes	Drilling rock
Trench boxes – 8	Assorted sizes	Store safety equipment
Skid stackers – 4	As required	Collecting and bundling skids
Fuel tanks – 15	Assorted sizes	Fuel storage

PERIOD OF OPERATION (PART 14)

The right-of-way and the pipeline through Crown lands within the SSA are scheduled for development during the winters of 2006-2007 through 2009-2010 (see [Section 3](#)).

LOCATION OF ACTIVITIES BY MAP COORDINATES (PART 16)

Map coordinates of pipeline segments are listed in [Table 6-7](#).

Kilometre post markers are approximate and shown for relative placement purposes only. Final KP markers will depend on the final pipeline route.

Table 6-7: Map Coordinates of Pipeline Segments

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C1 Begin	186.3	67.3251	-130.4019	439687	7468305	9
C1 End	197.5	67.2561	-130.2152	447575	7460437	9
C2 Begin	228.5	67.0224	-129.9192	459961	7434168	9
C2 End	262.8	66.7766	-129.4880	478526	7406558	9
C3 Begin	276.5	66.6940	-129.2603	488508	7397298	9
C3 End	277.7	66.6882	-129.2377	489502	7396640	9
C4 Begin	287.2	66.6330	-129.0781	496543	7390475	9
C4 End	287.8	66.6290	-129.0674	497018	7390029	9
C5 Begin	308.4	66.4845	-128.7860	509526	7373933	9
C5 End	324.9	66.3587	-128.5944	518149	7359956	9
C6 Begin	330.0	66.3186	-128.5396	520633	7355496	9
C6 End	330.2	66.3172	-128.5392	520649	7355344	9
C7 Begin	344.9	66.1900	-128.4777	523529	7341182	9
C7 End	378.5	65.9047	-128.2494	534194	7309489	9
C8 Begin	402.7	65.7502	-127.8903	550855	7292513	9
C8End	417.2	65.6281	-127.8125	554639	7279142	9
C9 Begin	417.2	65.6281	-127.8125	554639	7279142	9
C9 End	424.0	65.5839	-127.7153	559256	7274141	9
C10 Begin	450.5	65.4115	-127.3535	576441	7255320	9
C10 End	472.3	65.3049	-126.9636	594921	7243971	9
C11 Begin	512.9	65.1311	-126.2356	629689	7225909	9
C11 End	556.2	64.9496	-125.4845	382641	7205142	10
C12 Begin	558.8	64.9336	-125.4484	384277	7203297	10
C12 End	563.2	64.9233	-125.3599	388418	7201988	10
C13 Begin	568.4	64.9084	-125.2576	393190	7200155	10
C13 End	587.0	64.8041	-124.9892	405520	7188106	10
C14 Begin	601.0	64.6942	-124.8675	410937	7175685	10

Table 6-7: Map Coordinates of Pipeline Segments (cont'd)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C14 End	611.5	64.6082	-124.8186	412998	7166037	10
C15 Begin	617.5	64.5585	-124.7965	413897	7160475	10
C15 End	628.0	64.4670	-124.7542	415642	7150217	10
C16 Begin	635.1	64.4088	-124.7164	417284	7143682	10
C16 End	635.2	64.4081	-124.7132	417435	7143601	10
C17 Begin	635.6	64.4066	-124.7056	417799	7143430	10
C17 End	642.4	64.3617	-124.6464	420519	7138356	10
C18 Begin	643.1	64.3566	-124.6398	420826	7137778	10
C18 End	648.6	64.3168	-124.5794	423629	7133264	10
C19 Begin	656.3	64.2818	-124.4512	429739	7129222	10
C19 End	665.2	64.2142	-124.3694	433537	7121601	10
C20 Begin	672.7	64.1505	-124.3502	434320	7114485	10
C20 End	687.9	64.0243	-124.2579	438465	7100491	10

FEES (PART 18)

The total land area required for activities contained in this section is 1,436.3 ha.

The land requirements are shown in [Appendix A](#).

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 2: Pipeline Segment C1

DESCRIPTION

The first segment of pipeline right-of-way on SSA Crown lands starts at KP-186.3, the Sahtu-Gwich'in boundary. This segment of is about 11.2 km long and ends at KP-197.5, west of Tutsieta Lake (see [Figure 6-2](#) for KP-184 to KP-195 and [Figure 6-3](#) for KP-195 to KP-205). [Table 6-8](#) lists map coordinates of this pipeline segment.

Table 6-8: Pipeline Segment C1 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C1 Begin	186.3	67.3251	-130.4019	439687	7468305	9
C1 End	197.5	67.2561	-130.2152	447575	7460437	9

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (D1), in which this segment is located, will be working between the Little Chicago infrastructure site and the Sahtu-Gwich'in boundary. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 1.5 km of access roads will be required on this segment. [Table 6-9](#) contains access road details. [Figure 6-2](#) shows the alignment of these roads.

Table 6-9: Access Roads within Pipeline Segment C1

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
KG-WS-W-104	187.8	0.1	0.1
KG-WS-W-MR-189.1	189.1	1.4	1.4

The defined temporary access to the right-of-way uses winter road KG-C-W-204.5 from the Little Chicago infrastructure site. This access road connects to all-weather access road KG-BL-A-204.5 from the infrastructure site to the barge landing. Both access roads are completely within private lands (see the Sahtu Private Land Use Permit Application).

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 15 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 3.6 ha of temporary workspace will be required. [Table 6-10](#) identifies watercourse crossings in this segment.

Table 6-10: Watercourse Crossings within Pipeline Segment C1

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-173	Unnamed	187.2	Open cut	-
Active II	RPR-174	Unnamed	188.5	Open cut	0.6
Vegetated	RPR-175	Unnamed	188.7	Open cut	0.6
Active II	RPR-176	Unnamed	190.1	Open cut	0.6
Vegetated	RPR-177	Unnamed	190.6	Open cut	0.6
Vegetated	RPR-178	Unnamed	190.7	Open cut	0.6
Vegetated	RPR-179	Unnamed	191.1	Open cut	-
Vegetated	RPR-180	Unnamed	191.8	Open cut	0.6
Vegetated	RPR-181	Unnamed	192.2	Open cut	-
Vegetated	RPR-182	Unnamed	192.4	Open cut	-
Vegetated	RPR-183	Unnamed	193.2	Open cut	-
Vegetated	RPR-184	Unnamed	194.8	Open cut	-
Vegetated	RPR-185	Unnamed	195.1	Open cut	-
Vegetated	RPR-186	Unnamed	195.6	Open cut	-
Vegetated	RPR-187	Unnamed	196.7	Open cut	-

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.2 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.3 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 3: Pipeline Segment C2

DESCRIPTION

The second segment of pipeline right-of-way on SSA Crown lands starts at KP-228.5, southeast of the Little Chicago facility site. This segment is about 34.3 km long and ends at KP-262.8, west of Yeltea Lake. See the following figures:

- [Figure 6-4: SSA Crown Land Pipeline Segment C2 Map 1 \(KP-226 to KP-243\)](#)
- [Figure 6-5: SSA Crown Land Pipeline Segment C2 Map 2 \(KP-239 to KP-247\)](#)
- [Figure 6-6: SSA Crown Land Pipeline Segment C2 Map 3 \(KP-247 to KP-258\)](#)
- [Figure 6-7: SSA Crown Land Pipeline Segment C2 Map 4 \(KP-258 to KP-268\)](#)

Table 6-11 lists map coordinates of this pipeline segment.

Table 6-11: Pipeline Segment C2 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C2 Begin	228.5	67.0224	-129.9192	459961	7434168	9
C2 End	262.8	66.7766	-129.4880	478526	7406558	9

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment also contains a valve site.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (D2), in which this segment is located, will be working between the Little Chicago infrastructure site and Fort Good Hope. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 8.7 km of access roads will be required on this segment. [Table 6-12](#) contains access road details. The alignment of these roads is shown in [Figure 6-4](#), [Figure 6-5](#), [Figure 6-6](#) and [Figure 6-7](#).

Table 6-12: Access Roads within Pipeline Segment C2

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
KG-WS-W-117	228.6	0.2	0.2
KG-WS-W-118	239.2	1.1	1.1
KG-WS-W-119	239.2	0.6	0.6
KG-WS-W-120	240.4	0.9	0.9
KG-WS-W-121	246.6	2.5	2.5
KG-WS-W-122	256.4	0.9	0.9
KG-WS-W-123	257.7	0.6	0.6
KG-WS-W-124	261.4	1.9	1.9

The defined temporary access to the right-of-way uses winter road KG-C-W-204.5 from the Little Chicago infrastructure site. This access road connects to all-weather access road KG-BL-A-204.5 from the infrastructure site to the barge landing. Both access roads are completely within private lands (see the Sahtu Private Land Use Permit Application).

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 14 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 1.8 ha of temporary workspace will be required. [Table 6-13](#) identifies watercourse crossings in this segment.

Table 6-13: Watercourse Crossings within Pipeline Segment C2

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-206	Unnamed	230.0	Open cut	-
Vegetated	RPR-207	Unnamed	230.1	Open cut	-
Vegetated	RPR-208	Unnamed	230.9	Open cut	-
Vegetated	RPR-209	Unnamed	232.7	Open cut	-
Vegetated	RPR-210	Unnamed	233.0	Open cut	-
Active I	RPR-211	Unnamed	234.7	Open cut	0.6
Active I	RPR-212	Unnamed	243.6	Open cut	0.6
Vegetated	RPR-213	Unnamed	247.2	Open cut	-
Vegetated	RPR-214	Unnamed	247.3	Open cut	-
Active II	RPR-215	Payne Creek	254.2	Open cut	0.6
Vegetated	RPR-216	Unnamed	255.5	Open cut	-
Vegetated	RPR-217	Unnamed	258.9	Open cut	-
Vegetated	RPR-218	Unnamed	260.9	Open cut	-
Vegetated	RPR-219	Unnamed	261.9	Open cut	-

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

Along the right-of-way within the SSA, there are gas and NGL valve sites and cathodic protection sites. All of these sites will be accessed through the pipeline right-of-way. Temporary workspace is required for valve locations along the right-of-way.

[Table 6-14](#) shows the appurtenances and temporary workspace in this segment of Crown lands (see also [Figure 6-4](#)).

Gas Valve Sites

There are no gas block valve sites associated with this pipeline segment.

NGL Block Valve Sites

One NGL valve site occurs within this segment of the right-of-way. It is located at KP-235.3 and will not require any additional permanent lands (see [Table 6-14](#) and [Figure 6-4](#)).

Cathodic Protection Sites

There are no cathodic protection sites associated with this pipeline segment.

Table 6-14: Appurtenances within Pipeline Segment C2

Appurtenance / Facility ID	Name and Location	Kilometre Post (KP)	Temporary Workspace (ha)
NGL BV-010 / NGL CV-005	NGL block valve No. 10 and NGL check valve No. 5 (manual)	235.3	0.45

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.4 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.5 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.6 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.7 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

DESCRIPTION

The third segment of pipeline right-of-way on SSA Crown lands starts at KP-276.5, southeast of the Tieda River. This segment is about 1.2 km long and ends at KP-277.7 (see [Figure 6-8](#) for KP-269 to KP-278). [Table 6-15](#) lists map coordinates of this pipeline segment.

Table 6-15: Pipeline Segment C3 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C3 Begin	276.5	66.6940	-129.2603	488508	7397298	9
C3 End	277.7	66.6882	-129.2377	489502	7396640	9

One watercourse crossing occurs in this pipeline segment. This segment also contains a valve site.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (D2), in which this segment is located, will be working between the Little Chicago infrastructure site and Fort Good Hope. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

There are no access roads in this segment of Crown land. Access to this segment is along the pipeline right-of-way from access roads described in other sections.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There is one watercourse crossing along the right-of-way in this segment of Crown land. This crossing will be completed using an open cut watercourse

crossing method. Designs for the crossing will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. This open cut does not require any temporary workspace. [Table 6-16](#) identifies the watercourse crossing in this segment.

Table 6-16: Watercourse Crossings within Pipeline Segment C3

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-222	Unnamed	276.5	Open cut	-

OTHER CROSSINGS

There are no third party pipeline or road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

Along the right-of-way within the SSA, there are gas and NGL valve sites and cathodic protection sites. All of these sites will be accessed through the pipeline right-of-way. Temporary workspace is required for valve locations along the right-of-way.

[Table 6-17](#) shows the appurtenances and temporary workspace in this segment of Crown lands (see also [Figure 6-8](#)).

Gas Valve Sites

There are no gas block valve sites associated with this pipeline segment.

NGL Block Valve Sites

One NGL valve site occurs within this segment of the right-of-way. It is located at KP-276.9 and will not require any additional permanent lands (see [Table 6-17](#) and [Figure 6-8](#)).

Cathodic Protection Sites

There are no cathodic protection sites associated with this pipeline segment.

Table 6-17: Appurtenances within Pipeline Segment C3

Appurtenance / Facility ID	Name and Location	Kilometre Post (KP)	Temporary Workspace (ha)
NGL BV-012 / NGL CV-006	NGL block valve No. 12 and NGL check valve No. 6 (manual)	276.9	0.45

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.8 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 5: Pipeline Segment C4

DESCRIPTION

The fourth segment of pipeline right-of-way on SSA Crown lands starts at KP-287.2. This segment is about 600 m long and ends at KP-287.8, west of Loon Lake (see [Figure 6-9](#) for KP-284 to KP-300). [Table 6-18](#) lists map coordinates of this pipeline segment.

Table 6-18: Pipeline Segment C4 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C4 Begin	287.2	66.6330	-129.0781	496543	7390475	9
C4 End	287.8	66.6290	-129.0674	497018	7390029	9

No watercourse crossings occur in this pipeline segment. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (D2), in which this segment is located, will be working between the Little Chicago infrastructure site and Fort Good Hope. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

There are no access roads in this segment of Crown land. Access to this segment is along the pipeline right-of-way from access roads described in other sections.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are no watercourse crossings along the right-of-way in this segment of Crown land.

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.9 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 6: Pipeline Segment C5

DESCRIPTION

The fifth segment of pipeline right-of-way on SSA Crown lands starts at KP-308.4, south of Loon River. This segment is about 16.5 km long and ends at KP-324.9, north of Fort Good Hope (see [Figure 6-10](#) for KP-307 to KP-319 and [Figure 6-11](#) for KP-315 to KP-332). [Table 6-19](#) lists map coordinates of this pipeline segment.

Table 6-19: Pipeline Segment C5 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C5 Begin	308.4	66.4845	-128.7860	509526	7373933	9
C5 End	324.9	66.3587	-128.5944	518149	7359956	9

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment also contains valve sites and a cathodic protection facility.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (D2), in which this segment is located, will be working between the Little Chicago infrastructure site and Fort Good Hope. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 0.4 km of an access road will be required on this segment. See [Table 6-20](#) for the access road details. [Figure 6-11](#) shows the alignment of this road.

Table 6-20: Access Roads within Pipeline Segment C5

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
KG-WS-W-138	324.7	0.4	0.4

The defined temporary route to the right-of-way uses winter road KG-C-W-204.5 from the Little Chicago infrastructure site. This road connects to all-weather access road KG-BL-A-204.5 from the infrastructure site to the barge landing. Both roads are completely within private lands (see the Sahtu Private Land Use Permit Application).

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 11 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 1.2 ha of temporary workspace will be required. [Table 6-21](#) identifies watercourse crossings in this segment.

Table 6-21: Watercourse Crossings within Pipeline Segment C5

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-235	Unnamed	310.1	Open cut	-
Vegetated	RPR-236	Unnamed	310.5	Open cut	-
Vegetated	RPR-237	Unnamed	311.1	Open cut	-
Vegetated	RPR-238	Unnamed	311.9	Open cut	0.6
Vegetated	RPR-239	Unnamed	316.2	Open cut	-
Active II	RPR-240	Unnamed	316.6	Open cut	0.6
Vegetated	RPR-241	Unnamed	319.4	Open cut	-
Vegetated	RPR-242	Unnamed	322.3	Open cut	-
Vegetated	RPR-243	Unnamed	322.7	Open cut	-
Vegetated	RPR-244	Unnamed	323.0	Open cut	-
Vegetated	RPR-245	Unnamed	324.9	Open cut	-

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

Along the right-of-way within the SSA, there are gas and NGL valve sites and cathodic protection sites. All of these sites will be accessed through the pipeline right-of-way. Temporary workspace is required for valve locations along the right-of-way.

Table 6-22 shows the appurtenances and temporary workspace in this segment of Crown lands (see also Figure 6-10 and Figure 6-11).

Gas Valve Sites

One gas valve site occurs within this segment of the right-of-way. It is located at KP-309.7 and will not require any additional permanent lands (see Table 6-22 and Figure 6-10).

NGL Block Valve Sites

Block valve site NGL BV-014A is located at KP-309.5, block valve site NGL BV-014B is located at KP-309.6 and block valve site NGL BV-015 is located at KP-324.2 (see Figure 6-10 and Figure 6-11). These NGL block valve sites will not require any additional permanent lands.

Cathodic Protection Sites

There is one cathodic protection site within this segment. The site is located at KP-309.7 and is labelled CP-08. It is located within a valve site (see Figure 6-10) and will not require any additional permanent lands.

Table 6-22: Appurtenances within Pipeline Segment C5

Appurtenance / Facility ID	Name and Location	Kilometre Post (KP)	Temporary Workspace (ha)
NGL BV-014A	Loon River future pump station (automated NGL block valve No. 14A)	309.5	0.45
NGL BV-014B	Loon River future pump station (NGL block valve No. 14B)	309.6	0.45
CP-8	Cathodic protection site No. 8 (within facility footprint)	309.7	-
GAS BV-005	Loon River future compressor station (automated gas block valve No. 5)	309.7	0.45
NGL BV-015	NGL block valve No. 15 (automated)	324.2	0.45

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.10 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.11 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE	SSA Crown Lands Application for a Type A Land Use Permit
SECTION	6: Pipeline Segments
SUBJECT	7: Pipeline Segment C6

DESCRIPTION

The sixth segment of pipeline right-of-way on SSA Crown lands starts at KP-330.0 north of the Hare Indian (Rabbit-skin) River. This segment is about 200 m long and ends at KP-330.2 (see [Figure 6-12](#) for KP-315 to KP-332). [Table 6-23](#) lists map coordinates of this pipeline segment.

Table 6-23: Pipeline Segment C6 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C6 Begin	330.0	66.3186	-128.5396	520633	7355496	9
C6 End	330.2	66.3172	-128.5392	520649	7355344	9

One watercourse crossing occurs in this pipeline segment. This watercourse will have a more detailed crossing plan. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C1), in which this segment is located, will be working between the Fort Good Hope and Norman Wells infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

There are no access roads in this segment of Crown lands. Access to this segment is along the pipeline right-of-way from access roads described in other sections.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are no watercourse crossings along the right-of-way in this segment of Crown land. The details of this crossing are the subject of the MACA Land Use Permit application.

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.12 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE	SSA Crown Lands Application for a Type A Land Use Permit
SECTION	6: Pipeline Segments
SUBJECT	8: Pipeline Segment C7

DESCRIPTION

The seventh segment of pipeline right-of-way on SSA Crown lands starts at KP-344.9, south of Fort Good Hope. This segment is about 33.6 km long and ends at KP-378.5, north of the Donnelly River. See the following figures:

- [Figure 6-13: SSA Crown Land Pipeline Segment C7 Map 1 \(KP-342 to KP-352\)](#)
- [Figure 6-14: SSA Crown Land Pipeline Segment C7 Map 2 \(KP-353 to KP-364\)](#)
- [Figure 6-15: SSA Crown Land Pipeline Segment C7 Map 3 \(KP-364 to KP-374\)](#)
- [Figure 6-16: SSA Crown Land Pipeline Segment C7 Map 4 \(KP-374 to KP-386\)](#)

[Table 6-24](#) lists map coordinates of this pipeline segment.

Table 6-24: Pipeline Segment C7 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C7 Begin	344.9	66.1900	-128.4777	523529	7341182	9
C7 End	378.5	65.9047	-128.2494	534194	7309489	9

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment also contains valve sites.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C1), in which this segment is located, will be working between the Fort Good Hope and Norman Wells infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 6.7 km of access roads will be required on this segment. [Table 6-25](#) contains access road details. [Figure 6-13](#), [Figure 6-14](#), [Figure 6-15](#) and [Figure 6-16](#) show the alignment of these roads.

Table 6-25: Access Roads within Pipeline Segment C7

Access Road Name	Kilometre Post (KP)	Land Use		Estimated Length (km)
		Private Length (km)	Crown Length (km)	
KG-WS-W-142	341.0	1.0	0.3	1.3
KG-WS-W-143	342.7	1.7	0.1	1.8
KG-WS-W-145	347.0	-	4.3	4.3
KG-WS-W-146	367.3	-	1.5	1.5
KG-WS-W-147	371.8	-	0.5	0.5

The defined temporary route to the right-of-way uses winter road KG-C-W-341.9 from the Fort Good Hope infrastructure site. This road connects to all-weather access road KG-PS-A-341.9 from the infrastructure site to the pipe storage. From there, all-weather access road KG-BL-A-341.9 connects to the barge landing. Portions of these roads cross SSA private or municipal lands that are the subject of the Sahtu private land use and Municipal and Community Affairs land use permit applications.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 19 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by one of two different watercourse crossing methods – open cut or isolated. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 3.6 ha of temporary workspace will be required. [Table 6-26](#) identifies watercourse crossings in this segment.

Table 6-26: Watercourse Crossings within Pipeline Segment C7

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-254	Unnamed	346.8	Open cut	-
Active I	RPR-255	Unnamed	348.1	Open cut	0.6
Active I	RPR-256	Tsintu River	351.7	Isolate	0.6
Vegetated	RPR-256.1	Unnamed	357.1	Open cut	-
Vegetated	RPR-257	Unnamed	361.6	Open cut	-
Vegetated	RPR-257.1	Unnamed	362.5	Open cut	0.6
Vegetated	RPR-257.2	Unnamed	363.0	Open cut	-
Active I	RPR-258	Snafu North	365.7	Isolate	0.6
Vegetated	RPR-259	Unnamed	366.9	Open cut	-
Vegetated	RPR-260	Unnamed	367.7	Open cut	-
Active I	RPR-261	Snafu South	368.7	Isolate	0.6
Vegetated	RPR-262	Unnamed	369.8	Open cut	-
Vegetated	RPR-262.05	Unnamed	372.0	Open cut	-
Vegetated	RPR-262.1	Unnamed	372.3	Open cut	-
Vegetated	RPR-262.2	Unnamed	374.1	Open cut	-
Vegetated	RPR-262.3	Unnamed	374.3	Open cut	-
Active II	RPR-263	Unnamed	374.4	Open cut	0.6
Vegetated	RPR-263.1	Unnamed	377.3	Open cut	-
Vegetated	RPR-263.2	Unnamed	377.8	Open cut	-

OTHER CROSSINGS

There are three third party road crossings along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). A listing of the third party road crossings within this segment are presented in [Table 6-27](#).

Table 6-27: Third Party Road Crossings within Pipeline Segment C7

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Winter Road	368.4	SSA	Crown	65.9897	-128.3218	530792	7318920	9
Winter Road	373.1	SSA	Crown	65.9495	-128.2902	532278	7314463	9
Winter Road	374.6	SSA	Crown	65.9371	-128.2791	532799	7313085	9

APPURTENANCES

Along the right-of-way within the SSA, there are gas and NGL valve sites and cathodic protection sites. All of these sites will be accessed through the pipeline right-of-way. Temporary workspace is required for valve locations along the right-of-way.

[Table 6-28](#) shows the appurtenances and temporary workspace in this segment of Crown lands (see also [Figure 6-13](#) and [Figure 6-15](#)).

Gas Valve Sites

There are no gas block valve sites associated with this pipeline segment.

NGL Block Valve Sites

There are four NGL block valve sites associated with this segment of Crown lands (see [Figure 6-13](#) and [Figure 6-15](#)). These NGL block valve sites will not require any additional permanent lands.

Cathodic Protection Sites

There are no cathodic protection sites associated with this pipeline segment.

Table 6-28: Appurtenances within Pipeline Segment C7

Appurtenance / Facility ID	Name and Location	Kilometre Post (KP)	Temporary Workspace (ha)
NGL BV-018	NGL block valve No. 18 (automated)	347.5	0.45
NGL BV-019 / NGL CV-009	NGL block valve No. 19 and NGL check valve No. 9 (manual)	352.2	0.45
NGL BV-020	NGL block valve No. 20 (automated)	365.2	0.45
NGL BV-021 / NGL CV-010	NGL block valve No. 21 and NGL check valve No. 10 (manual)	368.9	0.35

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.13 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.14 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.15 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.16 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE	SSA Crown Lands Application for a Type A Land Use Permit
SECTION	6: Pipeline Segments
SUBJECT	9: Pipeline Segment C8

DESCRIPTION

The eighth segment of pipeline right-of-way on SSA Crown lands starts at KP-402.7, south of Chick Lake. This segment is about 14.5 km long and ends at KP-417.2, the Tulita-K'ahsho Got'ine district boundary. See the following figures:

- [Figure 6-17: SSA Crown Land Pipeline Segment C8 Map 1 \(KP-394 to KP-406\)](#)
- [Figure 6-18: SSA Crown Land Pipeline Segment C8 Map 2 \(KP-406 to KP-417\)](#)
- [Figure 6-19: SSA Crown Land Pipeline Segment C8 Map 3 \(KP-417 to KP-426\)](#)

Table 6-29 lists map coordinates of this pipeline segment.

Table 6-29: Pipeline Segment C8 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C8 Begin	402.7	65.7502	-127.8903	550855	7292513	9
C8 End	417.2	65.6281	-127.8125	554639	7279142	9

Two watercourse crossings occur in this pipeline segment. This segment also contains valve sites.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C1), in which this segment is located, will be working between the Fort Good Hope and Norman Wells infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 1.6 km of an access road will be required on this segment. [Table 6-30](#) contains the access road details. [Figure 6-18](#) shows the alignment of this road.

Table 6-30: Access Roads within Pipeline Segment C8

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
KG-WS-W-151	411.9	1.6	1.6

The defined temporary access to the right-of-way uses winter road KG-C-W-341.9 from the Fort Good Hope infrastructure site. This access road connects to all-weather access road KG-PS-A-341.9 from the infrastructure site to the pipe storage. From there, all-weather access road KG-BL-A-341.9 connects to the barge landing. Portions of these access roads cross SSA private or municipal lands that are the subject of the Sahtu private land use and Municipal and Community Affairs permit applications.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 23 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by one of two different watercourse crossing methods – open cut or isolated. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 4.8 ha of temporary workspace will be required. [Table 6-31](#) identifies watercourse crossings in this segment.

Table 6-31: Watercourse Crossings within Pipeline Segment C8

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-270	Unnamed	404.1	Open cut	-
Vegetated	RPR-271	Unnamed	406.3	Open cut	0.6
Vegetated	RPR-271.05	Unnamed	406.6	Open cut	-
Vegetated	RPR-271.06	Unnamed	406.8	Open cut	-
Vegetated	RPR-271.07	Unnamed	407.1	Open cut	-

Table 6-31: Watercourse Crossings within Pipeline Segment C8 (cont'd)

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-271.1	Unnamed	408.4	Open cut	0.6
Lake	RPR-272	Unnamed	409.5	Open cut or route pipeline to avoid lake.	-
Lake	RPR-273	Unnamed	409.6	Open cut or route pipeline to avoid lake.	-
Vegetated	RPR-273.1	Unnamed	409.8	Open cut	-
Lake	RPR-274	Unnamed	410.1	Open cut or route pipeline to avoid lake.	-
Vegetated	RPR-274.1	Unnamed	410.2	Open cut	-
Vegetated	RPR-275	Unnamed	410.6	Open cut	-
Vegetated	RPR-276	Unnamed	410.9	Open cut	0.6
Vegetated	RPR-277	Unnamed	411.3	Open cut	-
Lake	RPR-278	Unnamed	411.7	Open cut or route pipeline to avoid lake.	-
Vegetated	RPR-279	Unnamed	412.1	Open cut	0.6
Vegetated	RPR-280	Unnamed	412.6	Open cut	-
Vegetated	RPR-281	Unnamed	412.8	Open cut	0.6
Vegetated	RPR-282	Unnamed	413.3	Open cut	-
Vegetated	RPR-283	Unnamed	414.4	Open cut	-
Vegetated	RPR-284	Unnamed	415.2	Open cut	0.6
Active I	RPR-285	Hanna River	415.7	Isolate	0.6
Vegetated	RPR-286	Unnamed	416.4	Open cut	0.6

OTHER CROSSINGS

There are three third party road crossings along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). [Table 6-32](#) identifies the third party road crossings in this segment.

Table 6-32: Third Party Road Crossings within Pipeline Segment C8

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Winter Road	402.7	SSA	Crown	65.7501	-127.8904	550853	7292505	9
Winter Road	404.2	SSA	Crown	65.7373	-127.8853	551111	7291082	9
Winter Road	409.1	SSA	Crown	65.6932	-127.8876	551093	7286163	9

APPURTENANCES

Along the right-of-way within the SSA, there are gas and NGL valve sites and cathodic protection sites. All of these sites will be accessed through the pipeline right-of-way. Temporary workspace is required for valve locations along the right-of-way.

[Table 6-33](#) shows the appurtenances and temporary workspace in this segment of Crown lands (see also [Figure 6-17](#) and [Figure 6-18](#)).

Gas Valve Sites

There are no gas block valve sites associated with this pipeline segment.

NGL Block Valve Sites

Block valve site NGL BV-024 is located at KP-404.6 and block valve site NGL BV-025 is located at KP-416.0 (see [Figure 6-17](#) and [Figure 6-18](#)). These NGL block valve sites will not require any additional permanent lands.

Cathodic Protection Sites

There are no cathodic protection sites associated with this pipeline segment.

Table 6-33: Appurtenances within Pipeline Segment C8

Appurtenance / Facility ID	Name and Location	Kilometre Post (KP)	Temporary Workspace (ha)
NGL BV-024	NGL block valve No. 24 (automated)	404.6	0.45
NGL BV-025 / NGL CV-012	NGL block valve No. 25 and NGL check valve No. 12 (manual)	416.0	0.45

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.17 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.18 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.19 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 10: Pipeline Segment C9

DESCRIPTION

The ninth segment of pipeline right-of-way on SSA Crown lands starts at KP-417.2, the Tulita-K'ahsho Got'ine district boundary. This segment is about 6.8 km long and ends at KP-424.0 (see [Figure 6-20](#) for KP-417 to KP-426). [Table 6-34](#) lists map coordinates of this pipeline segment.

Table 6-34: Pipeline Segment C9 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C9 Begin	417.2	65.8281	-127.8125	554639	7279142	9
C9 End	424.0	65.5839	-127.7153	559256	7274141	9

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C1), in which this segment is located, will be working between the Fort Good Hope and Norman Wells infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 0.6 km of an access road will be required on this segment. [Table 6-35](#) contains the access road details. [Figure 6-20](#) shows the alignment of this road.

Table 6-35: Access Roads within Pipeline Segment C9

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
TD-WS-W-ST1b	418.7	0.6	0.6

The defined temporary access to the right-of-way uses winter road KG-C-W-341.9 from the Fort Good Hope infrastructure site. This access road connects to all-weather access road KG-PS-A-341.9 from the infrastructure site to the pipe storage. From there, all-weather access road KG-BL-A-341.9 connects to the barge landing. Portions of these access roads cross SSA private or municipal lands that are the subject of the Sahtu private land use and Municipal and Community Affairs permit applications.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are two watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. These open cuts do not require any temporary workspace. [Table 6-36](#) identifies watercourse crossings in this segment.

Table 6-36: Watercourse Crossings within Pipeline Segment C9

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-287	Unnamed	418.0	Open cut	-
Vegetated	RPR-287.1	Unnamed	423.4	Open cut	-

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.20 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

DESCRIPTION

The tenth segment of pipeline right-of-way on SSA Crown lands starts at KP-450.5, south of Oscar Creek. This segment is about 21.8 km long and ends at KP-472.3, west of Norman Wells. See the following figures:

- [Figure 6-21: SSA Crown Land Pipeline Segment C10 Map 1 \(KP-448 to KP-457\)](#)
- [Figure 6-22: SSA Crown Land Pipeline Segment C10 Map 2 \(KP-457 to KP-466\)](#)
- [Figure 6-23: SSA Crown Land Pipeline Segment C10 Map 3 \(KP-466 to KP-474\)](#)

[Table 6-37](#) lists map coordinates of this pipeline segment.

Table 6-37: Pipeline Segment C10 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C10 Begin	450.5	65.4115	-127.3535	576441	7255320	9
C10 End	472.3	65.3049	-126.9636	594921	7243971	9

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C1), in which this segment is located, will be working between the Fort Good Hope and Norman Wells infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 50 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 3.7 km of access roads will be required on this segment. [Table 6-38](#) contains access road details. [Figure 6-21](#), [Figure 6-22](#) and [Figure 6-23](#) show the alignment of these roads.

Table 6-38: Access Roads within Pipeline Segment C10

Access Road Name	Kilometre Post (KP)	Land Use		Estimated Length (km)
		Private Length (km)	Crown Length (km)	
TD-WS-W-MR-444 ^a	444.0	1.8	0.1	1.9
TD-WS-W-MR-447.2 ^a	447.2	0.5	0.2	0.7
TD-WS-W-156	453.2	1.5	0.5	2.0
TD-WS-W-157	459.3	1.1	0.3	1.4
TD-WS-W-159	464.6	0.4	0.3	0.7
TD-WS-W-MR-466.6	466.6	-	2.3	2.3

NOTE:
^aCrown segments of these roads are shown in Segment P8 of the SSA private land use permit application.

The defined temporary access to the right-of-way uses winter road KG-C-W-341.9 from the Fort Good Hope infrastructure site. This access road connects to all-weather access road KG-PS-A-341.9 from the infrastructure site to the pipe storage. From there, all-weather access road KG-BL-A-341.9 connects to the barge landing. Portions of these access roads cross SSA private or municipal lands that are the subject of the Sahtu private land use and Municipal and Community Affairs permit applications.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 13 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 3.0 ha of temporary workspace will be required. [Table 6-39](#) identifies watercourse crossings in this segment.

Table 6-39: Watercourse Crossings within Pipeline Segment C10

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-293	Unnamed	450.9	Open cut	-
Vegetated	RPR-294	Unnamed	453.1	Open cut	0.6
Vegetated	RPR-295	Unnamed	455.1	Open cut	-
Vegetated	RPR-296	Unnamed	455.5	Open cut	0.6
Vegetated	RPR-297	Unnamed	457.0	Open cut	0.6
Vegetated	RPR-298	Unnamed	458.1	Open cut	-
Vegetated	RPR-298.1	Unnamed	458.8	Open cut	-
Vegetated	RPR-298.2	Unnamed	459.3	Open cut	0.6
Vegetated	RPR-298.3	Unnamed	460.2	Open cut	-
Vegetated	RPR-298.4	Unnamed	460.8	Open cut	-
Vegetated	RPR-298.6	Unnamed	461.7	Open cut	-
Active I	RPR-299	Billy Creek	464.1	Open cut	0.6
Vegetated	RPR-300	Unnamed	464.9	Open cut	-

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.21 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.22 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.23 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

DESCRIPTION

The eleventh segment of pipeline right-of-way on SSA Crown lands starts at KP-512.9, south of Prohibition Creek. This segment is about 43.3 km long and ends at KP-556.2, at the Great Bear River. See the following figures:

- [Figure 6-24: SSA Crown Land Pipeline Segment C11 Map 1 \(KP-505 to KP-514\)](#)
- [Figure 6-25: SSA Crown Land Pipeline Segment C11 Map 2 \(KP-514 to KP-525\)](#)
- [Figure 6-26: SSA Crown Land Pipeline Segment C11 Map 3 \(KP-525 to KP-534\)](#)
- [Figure 6-27: SSA Crown Land Pipeline Segment C11 Map 4 \(KP-530 to KP-541\)](#)
- [Figure 6-28: SSA Crown Land Pipeline Segment C11 Map 5 \(KP-542 to KP-550\)](#)
- [Figure 6-29: SSA Crown Land Pipeline Segment C11 Map 6 \(KP-550 to KP-559\)](#)

Table 6-40 lists map coordinates of this pipeline segment.

Table 6-40: Pipeline Segment C11 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C11 Begin	512.9	65.1311	-126.2356	629689	7225909	9
C11 End	556.2	64.9496	-125.4845	382641	7205142	10

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment also contains a valve site and a cathodic protection facility.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C2), in which this segment is located, will be working between the Norman Wells and Little Smith

Creek infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 33.8 km of access roads will be required on this segment. [Table 6-41](#) contains access road details. [Figure 6-24](#), [Figure 6-25](#), [Figure 6-26](#), [Figure 6-27](#), [Figure 6-28](#) and [Figure 6-29](#) show the alignment of these roads.

Table 6-41: Access Roads within Pipeline Segment C11

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Length (km)
		Municipal Length (km)	Private Length (km)	Crown Length (km)	
TD-WS-W-MR-499.6	499.6	-	1.8	0.2	2.0
TD-WS-W-MR-512.2	512.2	-	1.7	0.1	1.8
TD-WS-W-163	528.1	-	-	1.7	1.7
TD-WS-W-ST11	538.6	-	-	0.2	0.2
TD-PL-W-538.6	538.6	2.6	13.5	18.6	34.7
TD-PL-W-548.7	548.7	-	-	2.9	2.9
TD-PL-W-553.8	553.9	-	0.4	10.1	10.5

The defined temporary access to the right-of-way uses all-weather road TD-B1-A-7.057 (Quarry Road) from the Norman Wells infrastructure site and all-weather road TD-BL-A-482.7 from the Canadian Coast Guard barge landing. These access roads connect to the right-of-way at KP-482.7 and are exclusively on municipal land.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 15 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by one of three different watercourse crossing methods – open cut, isolated or horizontal directional drill. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 7.9 ha of temporary workspace will be required. [Table 6-42](#) identifies watercourse crossings in this segment.

Table 6-42: Watercourse Crossings within Pipeline Segment C11

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-318.1	Unnamed	514.1	Open cut	-
Vegetated	RPR-319	Unnamed	514.9	Open cut	0.6
Vegetated	RPR-320	Unnamed	515.4	Open cut	-
Vegetated	RPR-321	Unnamed	515.9	Open cut	-
Vegetated	RPR-321.1	Unnamed	516.9	Open cut	-
Vegetated	RPR-321.2	Unnamed	517.9	Open cut	0.6
Vegetated	RPR-322	Unnamed	518.9	Open cut	0.6
Active I	RPR-323	Vermillion Creek	519.3	Isolate	0.6
Active I	RPR-324	Nota Creek	519.9	Isolate	0.6
Active I	RPR-325	Jungle Ridge Ck	525.0	Open cut	0.6
Vegetated	RPR-326	Unnamed	544.1	Open cut	-
Vegetated	RPR-327	Unnamed	546.6	Open cut	0.6
Vegetated	RPR-328	Unnamed	552.0	Open cut	0.6
Vegetated	RPR-329	Unnamed	552.7	Open cut	-
Large	RPR-330	Great Bear River	556.0	Trenchless	3.1

OTHER CROSSINGS

There is a foreign pipeline and a third party road crossing along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). [Table 6-43](#) identifies the foreign pipeline and the third party road crossings in this segment.

Table 6-43: Foreign Pipeline and Third Party Road Crossings within Pipeline Segment C11

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Winter Road	522.6	SSA	Crown	65.0777	-126.0791	637302	720294	9
Enbridge Pipeline	538.5	SSA	Crown	65.0025	-125.8101	367530	7211682	10

APPURTENANCES

Along the right-of-way within the SSA, there are gas and NGL valve sites and cathodic protection sites. All of these sites will be accessed through the pipeline right-of-way. Temporary workspace is required for valve locations along the right-of-way.

[Table 6-44](#) shows the appurtenances and temporary workspace in this segment of Crown lands (see also [Figure 6-29](#)).

Gas Valve Sites

One gas valve site occurs within this segment of the right-of-way. It is located at KP-551.4 and will not require any additional permanent lands (see [Table 6-45](#) and [Figure 6-29](#)).

NGL Block Valve Sites

There are no NGL block valve sites associated with this pipeline segment.

Cathodic Protection Sites

There is one cathodic protection site within this segment. The site is located at KP-551.4 and is labelled CP-11. It is located within a valve site (see [Figure 6-29](#)) and will not require any additional permanent lands.

Table 6-44: Appurtenances within Pipeline Segment C11

Appurtenance / Facility ID	Name and Location	Kilometre Post (KP)	Temporary Workspace (ha)
GAS BV-008	Great Bear River future compressor station (automated gas block valve No. 8)	551.4	0.45
CP-11	Cathodic protection site No. 11 (within facility footprint)	551.4	-

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

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Figure 6.25 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

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Figure 6.27 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.28 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.29 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

DESCRIPTION

The twelfth segment of pipeline right-of-way on SSA Crown lands starts at KP-558.8. This segment is about 4.4 km long and ends at KP-563.2, east of Tulita (see [Figure 6-30](#) for KP-550 to KP-559, [Figure 6-31](#) for KP-557 to KP-561 and [Figure 6-32](#) for KP-561 to KP-569). [Table 6-45](#) lists map coordinates of this pipeline segment.

Table 6-45: Pipeline Segment C12 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C12 Begin	558.8	64.9336	-125.4484	384277	7203297	10
C12 End	563.2	64.9233	-125.3599	388418	7201988	10

One watercourse crossing occurs in this pipeline segment. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C2), in which this segment is located, will be working between the Norman Wells and Little Smith Creek infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

There are no access roads in this segment of SSA Crown land. Access to this segment is along the pipeline right-of-way from access roads described in other sections.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There is one watercourse crossing along the right-of-way in this segment of Crown land. This crossing will be completed using an open cut watercourse crossing method. Designs for the crossing will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. This open cut crossing does not require any temporary workspace. [Table 6-46](#) identifies the watercourse crossing in this segment.

Table 6-46: Watercourse Crossings within Pipeline Segment C12

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-330.1	Unnamed	558.9	Open cut	-

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.30 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.31 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

DESCRIPTION

The thirteenth segment of pipeline right-of-way on SSA Crown lands starts at KP-568.4, east of the town of Tulita. This segment is about 18.6 km long and ends at KP-587.0. See the following figures:

- [Figure 6-33: SSA Crown Land Pipeline Segment C13 Map 1 \(KP-561 to KP-569\)](#)
- [Figure 6-34: SSA Crown Land Pipeline Segment C13 Map 2 \(KP-569 to KP-578\)](#)
- [Figure 6-35: SSA Crown Land Pipeline Segment C13 Map 3 \(KP-578 to KP-586\)](#)
- [Figure 6-36: SSA Crown Land Pipeline Segment C13 Map 4 \(KP-583 to KP-600\)](#)

[Table 6-47](#) lists map coordinates of this pipeline segment.

Table 6-47: Pipeline Segment C13 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C13 Begin	568.4	64.9084	-125.2576	393190	7200155	10
C13 End	587.0	64.8041	-124.9892	405520	7188106	10

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C2), in which this segment is located, will be working between the Norman Wells and Little Smith Creek infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 8.3 km of access roads will be required on this segment. [Table 6-48](#) contains access road details. [Figure 6-33](#) and [Figure 6-35](#) show the alignment of these roads.

Table 6-48: Access Roads within Pipeline Segment C13

Access Road Name	Kilometre Post (KP)	Land Use		Estimated Length (km)
		Municipal Length (km)	Crown Length (km)	
TD-PL-W-569.9	569.9	41.5	7.5	49.0
TD-WS-W-163A	581.1	-	0.8	0.8

The defined temporary route to the right-of-way uses all-weather road TD-B1-A-7.057 (Quarry Road) from the Norman Wells infrastructure site and all-weather road TD-BL-A-482.7 from the Canadian Coast Guard barge landing. These roads connect to the right-of-way at KP-482.7 and are exclusively on municipal land.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are six watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by one of two different watercourse crossing methods, open cut or isolated. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 1.8 ha of temporary workspace will be required. [Table 6-49](#) identifies watercourse crossings in this segment.

Table 6-49: Watercourse Crossings within Pipeline Segment C13

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-333	Unnamed	570.7	Open cut	0.6
Vegetated	RPR-334	Unnamed	572.6	Open cut	-
Vegetated	RPR-334.1	Unnamed	574.2	Open cut	0.6

Table 6-49: Watercourse Crossings within Pipeline Segment C13 (cont'd)

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-334.2	Unnamed	576.3	Open cut	-
Active II	RPR-335	Unnamed	576.6	Isolate	0.6
Vegetated	RPR-336	Unnamed	585.3	Open cut	-

OTHER CROSSINGS

There is a foreign pipeline and four third party road crossings along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). [Table 6-50](#) identifies the foreign pipeline and the third party road crossings in this segment.

Table 6-50: Foreign Pipeline and Third Party Road Crossings within Pipeline Segment C13

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Enbridge Pipeline	570.0	SSA	Crown	64.8992	-125.2306	394435	7199081	10
Winter Road	570.5	SSA	Crown	64.8966	-125.2221	394825	7198781	10
Winter Road	575.9	SSA	Crown	64.8815	-125.1164	399771	7196927	10
Winter Road	577.4	SSA	Crown	64.8819	-125.0912	400965	7196028	10
Winter Road	579.5	SSA	Crown	64.8599	-125.0613	402300	7194433	10

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.33 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.34 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.35 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.36 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 15: Pipeline Segment C14

DESCRIPTION

The fourteenth segment of pipeline right-of-way on SSA Crown lands starts at KP-601.0. This segment is about 10.5 km long and ends at KP-611.5, north of Big Smith Creek (see [Figure 6-37](#) for KP-598 to KP-609 and [Figure 6-38](#) for KP-609 to KP-619). [Table 6-51](#) lists map coordinates of this pipeline segment.

Table 6-51: Pipeline Segment C14 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C14 Begin	601.0	64.6942	-124.8675	410937	7175685	10
C14 End	611.5	64.6082	-124.8186	412998	7166037	10

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C2), in which this segment is located, will be working between the Norman Wells and Little Smith Creek infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 0.5 km of an access road will be required on this segment. [Table 6-52](#) contains the access road details. [Figure 6-38](#) shows the alignment of this road.

Table 6-52: Access Roads within Pipeline Segment C14

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
TD-WS-W-ST17	609.6	0.5	0.5

The defined temporary access to the right-of-way uses all-weather road TD-B1-A-7.057 (Quarry Road) from the Norman Wells infrastructure site and all-weather road TD-BL-A-482.7 from the Canadian Coast Guard barge landing. These access roads connect to the right-of-way at KP-482.7 and are exclusively on municipal land.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are six watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 1.2 ha of temporary workspace will be required. [Table 6-53](#) identifies watercourse crossings in this segment.

Table 6-53: Watercourse Crossings within Pipeline Segment C14

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-343	Unnamed	601.1	Open cut	-
Active II	RPR-344	Unnamed	602.0	Open cut	-
Active II	RPR-345	Unnamed	605.6	Open cut	0.6
Active II	RPR-346	Unnamed	605.7	Open cut	0.6
Vegetated	RPR-347	Unnamed	609.3	Open cut	-
Vegetated	RPR-348	Unnamed	611.2	Open cut	-

OTHER CROSSINGS

There is a third party road crossing along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). [Table 6-54](#) identifies the third party road crossings in this segment.

Table 6-54: Foreign Pipeline and Third Party Road Crossings within Pipeline Segment C14

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Winter Road	601.3	SSA	Crown	64.6920	-124.8642	411088	7175432	10

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.37 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.38 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 16: Pipeline Segment C15

DESCRIPTION

The fifteenth segment of pipeline right-of-way on SSA Crown lands starts at KP-617.5, south of Big Smith Creek. This segment is about 10.5 km long and ends at KP-628.0, north of Little Smith Creek (see [Figure 6-39](#) for KP-609 to KP-619 and [Figure 6-40](#) for KP-619 to KP-629). [Table 6-55](#) lists map coordinates of this pipeline segment.

Table 6-55: Pipeline Segment C15 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C15 Begin	617.5	64.5585	-124.7965	413897	7160475	10
C15 End	628.0	64.4670	-124.7542	415642	7150217	10

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This pipeline segment also contains a gas valve site and a cathodic protection facility.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (C2), in which this segment is located, will be working between the Norman Wells and Little Smith Creek infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 2.9 km of access roads will be required on this segment. [Table 6-56](#) contains access road details. [Figure 6-39](#) and [Figure 6-40](#) show the alignment of these roads.

Table 6-56: Access Roads within Pipeline Segment C15

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
TD-WS-W-164a	620.4	2.0	2.0
TD-WS-W-164b	625.1	0.9	0.9

The defined temporary access to the right-of-way uses all-weather road TD-B1-A-7.057 (Quarry Road) from the Norman Wells infrastructure site and all-weather road TD-BL-A-482.7 from the Canadian Coast Guard barge landing. These access roads connect to the right-of-way at KP-482.7 and are exclusively on municipal land which is the subject of a MACA land use application.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are three watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. These open cut crossings do not require any temporary workspace. [Table 6-57](#) identifies the watercourse crossings in this segment.

Table 6-57: Watercourse Crossings within Pipeline Segment C15

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-349.5	Unnamed	619.8	Open cut	-
Vegetated	RPR-349.6	Unnamed	622.2	Open cut	-
Vegetated	RPR-350	Unnamed	627.0	Open cut	-

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

Along the right-of-way within the SSA, there are gas and NGL valve sites and cathodic protection sites. All of these sites will be accessed through the pipeline right-of-way. Temporary workspace is required for valve locations along the right-of-way.

[Table 6-58](#) shows the appurtenances and temporary workspace in this segment of Crown lands (see also [Figure 6-40](#)).

Gas Valve Sites

One gas valve site occurs within this segment of the right-of-way. It is located at KP-622.6 and will not require any additional permanent lands (see [Table 6-58](#) and [Figure 6-40](#)).

NGL Block Valve Sites

There are no NGL block valve sites associated with this pipeline segment.

Cathodic Protection Sites

There is one cathodic protection site within this segment. The site is located at KP-622.6 and is labelled CP-12. It is located within a valve site (see [Figure 6-40](#)) and will not require any additional permanent lands.

Table 6-58: Appurtenances within Pipeline Segment C15

Appurtenance / Facility ID	Name and Location	Kilometre Post (KP)	Temporary Workspace (ha)
GAS BV-009	Little Smith Creek future compressor station (automated gas block valve No. 9)	622.6	0.45
CP-12	Cathodic protection site No. 17 (within facility footprint)	622.6	-

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.39 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.40 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 17: Pipeline Segment C16

DESCRIPTION

The sixteenth segment of pipeline right-of-way on SSA Crown lands starts at KP-635.1, south of Little Smith Creek. This segment is about 100 m long and ends at KP-635.2 (see [Figure 6-41](#) for KP-629 to KP-641). [Table 6-59](#) lists map coordinates of this pipeline segment.

Table 6-59: Pipeline Segment C16 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C16 Begin	635.1	64.4088	-124.7164	417284	7143682	10
C16 End	635.2	64.4081	-124.7132	417435	7143601	10

No watercourse crossings occur in this pipeline segment. This segment also contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (B1), in which this segment is located, will be working between the Little Smith Creek infrastructure site and Ochre River infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

There are no access roads in this segment of Crown land. Access to this segment is along the pipeline right-of-way from access roads described in other sections.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are no watercourse crossings along the right-of-way in this segment of Crown land.

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.41 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 18: Pipeline Segment C17

DESCRIPTION

The seventeenth segment of pipeline right-of-way on SSA Crown lands starts at KP-635.6, south of Little Smith Creek. This segment is about 6.8 km long and ends at KP-642.4, south of Seagrams Creek (see [Figure 6-42](#) for KP-629 to KP-641 and [Figure 6-43](#) for KP-641 to KP-653). [Table 6-60](#) lists map coordinates of this pipeline segment.

Table 6-60: Pipeline Segment C17 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C17 Begin	635.6	64.4066	-124.7056	417799	7143430	10
C17 End	642.4	64.3617	-124.6464	420519	7138356	10

Two watercourse crossings occur in this pipeline segment. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (B1), in which this segment is located, will be working between the Little Smith Creek infrastructure site and Ochre River infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

There are no access roads in this segment of Crown land. Access to this segment is along the pipeline right-of-way from access roads described in other sections.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are two watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 1.2 ha of temporary workspace will be required. [Table 6-61](#) identifies watercourse crossings in this segment.

Table 6-61: Watercourse Crossings within Pipeline Segment C17

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Active II	RPR-352	Unnamed	637.4	Open cut	0.6
Active II	RPR-353	Seagrams Creek	640.3	Open cut	0.6

OTHER CROSSINGS

There is one foreign pipeline crossing along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). [Table 6-62](#) identifies the foreign pipeline crossing within this segment.

Table 6-62: Foreign Pipeline Crossings within Pipeline Segment C17

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Enbridge Pipeline	637.0	SSA	Crown	64.4021	-124.6795	419041	7142889	10

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.42 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.43 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

DESCRIPTION

The eighteenth segment of pipeline right-of-way on SSA Crown lands starts at KP-643.1, south of Seagrams Creek. This segment is about 5.5 km long and ends at KP-648.6, northeast of the Saline River (see [Figure 6-44](#) for KP-641 to KP-653). [Table 6-63](#) lists map coordinates of this pipeline segment.

Table 6-63: Pipeline Segment C18 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C18 Begin	643.1	64.3566	-124.6398	420826	7137778	10
C18 End	648.6	64.3168	-124.5794	423629	7133264	10

One watercourse crossing occurs in this pipeline segment. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (B1), in which this segment is located, will be working between the Little Smith Creek infrastructure site and Ochre River infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

There are no access roads in this segment of Crown land. Access to this segment is along the pipeline right-of-way from access roads described in other sections.

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There is one watercourse crossing along the right-of-way in this segment of Crown land. This crossing will be completed by an open cut watercourse crossing

method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 0.6 ha of temporary workspace will be required. [Table 6-64](#) identifies the watercourse crossing in this segment.

Table 6-64: Watercourse Crossings within Pipeline Segment C18

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Active II	RPR-354	Unnamed	644.0	Open cut	0.6

OTHER CROSSINGS

There are no foreign pipeline or third party road crossings along the right-of-way in this segment of Crown land.

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.44 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Crown Lands Application for a Type A Land Use Permit**
SECTION 6: Pipeline Segments
SUBJECT 20: Pipeline Segment C19

DESCRIPTION

The nineteenth segment of pipeline right-of-way on SSA Crown lands starts at KP-656.3, south of the Saline River. This segment is about 8.9 km long and ends at KP-665.2, north of Steep Creek (see [Figure 6-45](#) for KP-653 to KP-664 and [Figure 6-46](#) for KP-664 to KP-674). [Table 6-65](#) lists map coordinates of this pipeline segment.

Table 6-65: Pipeline Segment C19 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C19 Begin	656.3	64.2818	-124.4512	429739	7129222	10
C19 End	665.2	64.2142	-124.3694	433537	7121601	10

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (B1), in which this segment is located, will be working between the Little Smith Creek infrastructure site and Ochre River infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 0.1 km of an access road will be required on this segment. [Table 6-66](#) contains the access road details. [Figure 6-46](#) shows the alignment of this road.

Table 6-66: Access Roads within Pipeline Segment C19

Access Road Name	Kilometre Post (KP)	Land Use		Estimated Length (km)
		Private Length (km)	Crown Length (km)	
TD-WS-W-MR-665.8	665.8	0.4	0.1	0.5

The defined temporary access to the right-of-way uses the existing Mackenzie Highway from the Little Smith Creek infrastructure site and all-weather road TD-BL-A-632.0 from the barge landing (see [Section 4](#)).

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are 11 watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 3.6 ha of temporary workspace will be required. [Table 6-67](#) identifies watercourse crossings in this segment.

Table 6-67: Watercourse Crossings within Pipeline Segment C19

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-359	Unnamed	656.5	Open cut	0.6
Active II	RPR-360	Unnamed	656.9	Open cut	0.6
Vegetated	RPR-361	Unnamed	657.6	Open cut	-
Vegetated	RPR-362	Unnamed	658.0	Open cut	-
Vegetated	RPR-363	Unnamed	658.6	Open cut	0.6
Vegetated	RPR-364	Unnamed	659.0	Open cut	0.6
Vegetated	RPR-365	Unnamed	660.3	Open cut	-
Vegetated	RPR-366	Unnamed	660.6	Open cut	-
Active II	RPR-367	Unnamed	662.0	Open cut	0.6
Vegetated	RPR-368	Unnamed	662.1	Open cut	0.6
Vegetated	RPR-369	Unnamed	663.0	Open cut	-

OTHER CROSSINGS

There is a third party road crossing along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). [Table 6-68](#) identifies the third party road crossings in this segment.

Table 6-68: Foreign Pipeline and Third Party Road Crossings within Pipeline Segment C14

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Winter Road	658.2	SSA	Crown	64.2687	-124.4268	430886	7127729	10

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

Figure 6.45 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

Figure 6.46 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE	SSA Crown Lands Application for a Type A Land Use Permit
SECTION	6: Pipeline Segments
SUBJECT	21: Pipeline Segment C20

DESCRIPTION

The twentieth segment of pipeline right-of-way on SSA Crown lands starts at KP-672.7, south of Steep Creek. This segment is about 15.2 km long and ends at KP-687.9, the Sahtu-Deh Cho boundary. See the following figures:

- [Figure 6-47: SSA Crown Land Pipeline Segment C20 Map 1 \(KP-664 to KP-674\)](#)
- [Figure 6-48: SSA Crown Land Pipeline Segment C20 Map 2 \(KP-674 to KP-684\)](#)
- [Figure 6-49: SSA Crown Land Pipeline Segment C20 Map 3 \(KP-680 to KP-691\)](#)

[Table 6-69](#) lists map coordinates of this pipeline segment.

Table 6-69: Pipeline Segment C20 (Map Coordinates)

Segment	Kilometre Post (KP)	Latitude (DD)	Longitude (DD)	UTM Easting (m)	UTM Northing (m)	UTM Zone
C20 Begin	672.7	64.1505	-124.3502	434320	7114485	10
C20 End	687.9	64.0243	-124.2579	438465	7100491	10

Several watercourse crossings occur in this pipeline segment. Some watercourses will have detailed crossing plans, while others will have typical crossing plans. This segment contains no facilities, valve sites or cathodic protection facilities.

PIPELINE RIGHT-OF-WAY

The pipeline route through this segment of Crown land runs in a southeast direction. The crew involved in construction of the spread (B1), in which this segment is located, will be working between the Little Smith Creek infrastructure site and Ochre River infrastructure sites. Construction of this segment is planned for the winters of 2006-2007 through 2009-2010.

The right-of-way will be 40 m wide. In some areas, construction activities will require a temporary workspace during the construction period (see [Summary of Operations](#) in [Subject 6.1](#) and [Section 3](#)).

ACCESS

About 4.8 km of access roads will be required on this segment. [Table 6-70](#) contains access road details. [Figure 6-48](#) and [Figure 6-49](#) shows the alignment of these roads.

Table 6-70: Access Roads within Pipeline Segment C20

Access Road Name	Kilometre Post (KP)	Crown Length (km)	Estimated Length (km)
TD-WS-W-164Aa	683.7	0.5	0.5
TD-WS-W-164Ab	683.7	0.1	0.1
TD-WS-W-164Ac	683.7	0.2	0.2
TD-WS-W-ST24	685.5	0.1	0.1
TD-WS-W-MR-688.8	688.8	3.9	3.9

The defined temporary access to the right-of-way uses the existing Mackenzie Highway from the Little Smith Creek infrastructure site and all-weather road TD-BL-A-632.0 from the barge landing (see [Section 4](#)).

Appropriate temporary crossings will be built along the right-of-way travel lane and winter access roads to accommodate the construction traffic. [Section 3](#) contains descriptions of temporary crossings that might be installed.

WATERCOURSE CROSSINGS

There are four watercourse crossings along the right-of-way in this segment of Crown land. These crossings will be completed by an open cut watercourse crossing method. Designs for the crossings will be done as part of the detailed pipeline design before construction begins.

Temporary workspace for larger crossings is required for crossing activities and to lay down pipe before trenching. About 1.2 ha of temporary workspace will be required. [Table 6-71](#) identifies watercourse crossings in this segment.

Table 6-71: Watercourse Crossings within Pipeline Segment C20

Crossing Class	Crossing ID	Crossing Name	Kilometre Post (KP)	Proposed Crossing Methodology	Proposed Temporary Workspace (ha)
Vegetated	RPR-373	Unnamed	674.1	Open cut	-
Vegetated	RPR-373.1	Unnamed	674.8	Open cut	-
Vegetated	RPR-374	Unnamed	679.3	Open cut	0.6
Vegetated	RPR-375	Unnamed	686.3	Open cut	0.6

OTHER CROSSINGS

There are four third party road crossings along the right-of-way within this segment of Crown land. Temporary workspace requirements for crossing activities are shown in [Table 6-2](#). [Table 6-72](#) identifies the third party road crossings in this segment.

Table 6-72: Third Party Road Crossings within Pipeline Segment C20

Crossing Type	Kilometre Post (KP)	Region	Land Owner	Latitude (DD)	Longitude (DD)	Easting (m)	Northing (m)	UTM Zone
Winter Road	675.0	SSA	Crown	64.1307	-124.3442	434562	7112268	10
Winter Road	679.2	SSA	Crown	64.0954	-124.3211	435605	7108310	10
Winter Road	679.4	SSA	Crown	64.0937	-124.3199	435663	7108125	10
Winter Road	683.7	SSA	Crown	64.0567	-124.3096	436353	7103987	10

APPURTENANCES

There are no valves or cathodic protection facilities in this pipeline segment.

PUBLIC INVOLVEMENT

Community comments regarding the pipeline route through the SSA have been summarized in [Subject 6.1](#) of this application. Public involvement activities are documented in [Section 10](#) of this application.

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