

INTRODUCTION

This section supports an application for approval to obtain the water required to construct and maintain winter access roads within the Sahtu Settlement Area (SSA). It contains site-specific maps, describes the proposed undertaking, provides an estimate of the quantities of water involved and addresses water deposits. A summary of the schedule of activities is also provided.

LOCATION OF UNDERTAKING (PART 3)

All-weather and winter access roads that will be constructed to access water sources, infrastructure sites, borrow sites, pipeline right-of-way and facility sites are shown in [Figure 4-1](#) through [Figure 4-82](#).

[Table 4-1](#) contains a summary of access roads in the SSA.

Table 4-1: Access Road Summary

Access Road Type	Number of All-Weather Roads	Length of All-Weather Roads (km)	Number of Winter Access Roads	Length of Winter Access Roads (km)	Annual Winter Access Road Water Requirements (m ³)
Infrastructure	7	12.0	3	18.2	5,200
Borrow sites	0	0	60	177.6	50,500
Pipeline construction	0	0	89	218.2	56,700
Facility	2	1.2	0	0	0
Total water required for access roads within the SSA (m ³ /yr):					112,400

Information on the access road types presented in [Table 4-1](#) is detailed in [Subject 4.2](#) for infrastructure access, [Subject 4.3](#) for borrow site access, [Subject 4.4](#) for pipeline construction and water source access, and [Subject 4.5](#) for facility access.

The quantities of water required for approaches to the pipeline right-of-way, water sources, and infrastructure, borrow, and facility sites are included in the access road estimates in [Table 4-1](#).

DESCRIPTION OF UNDERTAKING (PART 4)

Winter Road Construction

About 414 km of temporary winter access roads will be constructed to a standard that will accommodate transporting line pipe, construction equipment, personnel, borrow materials, water and other materials to support construction. These roads will be used to access camps, borrow sites, water sources and the pipeline right-of-way during construction. The construction of these roads might require the use of water in conjunction with natural snowfall to provide a level and durable travel surface. Potential water sources for winter road construction are listed in [Section 2](#). In most cases, water will be pumped from the listed water sources through holes drilled in the ice by self-contained pump trucks.

Construction Methodology

Winter access roads will be built in each of the winter construction seasons to accommodate the activities that will be required to develop the pipelines, borrow sites, infrastructure, and water sources in the SSA.

Winter road alignments will be selected to reduce disturbance by using existing cut lines, frozen lakes, other waterbodies and previously disturbed areas to the extent possible. The access roads will be cleared of all brush and timber, as required. The cleared width of the access road will be about 20 m wide, to accommodate the width of the largest equipment or vehicles that will be transported on the road and to provide room for snow windrows on each side. A travel surface of about 8.0 m wide will be required for borrow sites, infrastructure sites and pipeline construction access roads. Water source access roads will require a 6.0 m travel surface.

Winter road construction could start as soon as the ground is frozen and can support the weight of construction equipment. In locations where the ground is partially frozen, the snow on the access roads will be compacted with light tracked equipment to accelerate frost penetration.

Once the ground is frozen, a bulldozer will push the excess snow to each side of the right-of-way, to create a level, hard surface. The hard frozen surface organic layer will be left intact, to the extent practical, except for localized high points that will be graded to create a level surface. In the graded areas, loose surface materials will also be pushed to the side.

Snow will be compacted and water might be applied to the travel lane, if necessary, to create a smooth, hard-wearing working surface. Work areas will be prepared at locations, such as watercourse crossings, where a larger working area is required.

Most of the snow that accumulates along the access roads during the construction season will be ploughed to the side of the travel surface.

Maintenance will be required throughout the construction seasons due to the high axle loads of the vehicles and equipment and due to high traffic volumes. A maintenance crew will be assigned to grade each road and apply water, as necessary, to maintain the travel surface. A diagram showing a standard winter road cross-section is shown in [Section 3](#).

QUANTITY OF WATER INVOLVED (PART 7)

The quantity of water required for the construction and maintenance of about 414 km of temporary access roads, which includes 107.3 km of 6.0 m wide road and 306.7 km of 8.0 m wide road, will depend on the available snowfall. Estimates of water requirements for winter access road construction have been calculated and are based on the following assumptions:

- normal snowfall during the winter construction season
- 8.0 m wide roads for borrow sites and pipeline construction and 6.0 m for water sources

Water will be used during the winter construction season, which normally begins in late November or early December and continues until late March or early April. The heaviest water use will occur early in each construction season to build the road base. A reduced level of water use would be required later in the winter construction season for road maintenance.

An estimate of the water that will be required for the proposed winter access roads, based on the assumptions previously presented, is shown in [Table 4-2](#).

Table 4-2: Winter Access Road Water Requirements – SSA

Winter Access Road Requirements – SSA		
Description	Approximate Water Requirements	
	Total Annual Volume (m ³)	Average Daily Volume ^a (m ³)
Winter road construction water requirements	112,400	1,873
Total water requirements over 3 years	337,200	-
NOTE: ^a Average daily volume is total annual volume averaged over a 60-day winter road construction period and reflects heaviest water use early in the construction season.		

WASTE DEPOSITED (PART 8)

No water treatment or wastewater deposits are associated with this work. Water will be trucked to the required locations and applied, where needed, to help freeze and form the road surface. In spring, the ice and snow on the road surface will melt and flow into the surrounding natural drainage system.

SCHEDULE (PART 13)

The winter roads used to access infrastructure sites, borrow sites, water sources, and the pipeline right-of-way are currently scheduled to be developed and maintained during the winters of 2006-2007 through 2009-2010.

TITLE	SSA Application for a Type A Water Licence
SECTION	4: Water Use for Access Roads
SUBJECT	2: Borrow Sites

LOCATION OF UNDERTAKING (PART 3)

Water will be required to construct winter access roads to the borrow sites within the SSA. These are shown in the following figures:

- [Figure 4-1: SSA Road Access to Borrow Sites 20.200P and 5.036P](#)
- [Figure 4-2: SSA Road Access to Borrow Site 2.043P](#)
- [Figure 4-3: SSA Road Access to Borrow Sites 5.041PB and 5.043AP](#)
- [Figure 4-4: SSA Road Access to Borrow Sites 6.011PB, 6.012P and 6.011P](#)
- [Figure 4-5: SSA Road Access to Borrow Sites 20.202P, 6.036AP and 6.034PA](#)
- [Figure 4-6: SSA Road Access to Borrow Sites 6.042BP, 6.042CP and 6.042P](#)
- [Figure 4-7: SSA Road Access to Borrow Site 6.053P](#)
- [Figure 4-8: SSA Road Access to Borrow Site 20.112P](#)
- [Figure 4-9: SSA Road Access to Borrow Sites 6.080P and 6.077P](#)
- [Figure 4-10: SSA Road Access to Borrow Site 20.113P](#)
- [Figure 4-11: SSA Road Access to Borrow Sites 7.003AP and 20.114P](#)
- [Figure 4-12: SSA Road Access to Borrow Sites 7.006P and 7.005P](#)
- [Figure 4-13: SSA Road Access to Borrow Sites 7.015P and 7.016P](#)
- [Figure 4-14: SSA Road Access to Borrow Site 7.018P](#)
- [Figure 4-15: SSA Road Access to Borrow Sites 7.021P and 7.025P](#)
- [Figure 4-16: SSA Road Access to Borrow Site 7.035P](#)
- [Figure 4-17: SSA Road Access to Borrow Site 7.046P](#)
- [Figure 4-18: SSA Road Access to Borrow Sites 7.049P and 7.054P](#)

- [Figure 4-19: SSA Road Access to Borrow Sites 7.070P, 7.073PB and 7.073PA](#)
- [Figure 4-20: SSA Road Access to Borrow Site 7.078P](#)
- [Figure 4-21: SSA Road Access to Borrow Site 7.090P](#)
- [Figure 4-22: SSA Road Access to Borrow Sites 20.201P, 7.155AP and 7.155BP](#)
- [Figure 4-23: SSA Road Access to Borrow Site 20.086P](#)
- [Figure 4-24: SSA Road Access to Borrow Site 9.002PA](#)
- [Figure 4-25: SSA Road Access to Borrow Site 9.010PA](#)
- [Figure 4-26: SSA Road Access to Borrow Site 9.017P](#)
- [Figure 4-27: SSA Road Access to Borrow Site 9.024AP](#)
- [Figure 4-28: SSA Road Access to Borrow Sites 9.034PB, 9.034PA, 9.037PA and 9.037PB](#)
- [Figure 4-29: SSA Road Access to Borrow Sites 9.038PB and 9.038PA](#)

Table 4-3 lists the winter access roads for borrow sites within the SSA and the proposed water sources for those roads.

Table 4-3: Winter Access Roads for Borrow Sites within the SSA

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
KG-B1-W-20.200P	210.8		15.8		15.8	107/109A/110
KG-B1-W-5.036P	212.8		0.4		0.4	110
KG-B1-W-20.043Pa	220.0		2.8		2.8	114
KG-B1-W-20.043Pb	220.9		0.9		0.9	114
KG-B2-W-5.041PB	224.8		4.8		4.8	114
KG-B1-W-5.043AP	228.9			8.6	8.6	114/117

Table 4-3: Winter Access Roads for Borrow Sites within the SSA (cont'd)

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
KG-B2-W-6.011PB	242.7		1.6		1.6	120A
KG-B2-W-6.012P	242.7		3.5	9.3	12.8	120/120A
KG-B1-W-6.011P	242.7		0.7		0.7	120A
KG-B2-W-20.202Pa	271.7		1.8		1.8	128
KG-B2-W-20.202Pb	271.7		3.5		3.5	128
KG-B2-W-6.036AP	272.8		4.6		4.6	128
KG-B1-W-6.034PAa	273.5		3.2		3.2	128
KG-B1-W-6.034PAb	275.0		3.2		3.2	128
KG-B1-W-6.042BP	290.3		0.6		0.6	132
KG-B1-W-6.042CP	290.3		1.5		1.5	132
KG-B1-W-6.042P	290.3		1.7		1.7	132
KG-B1-W-6.053P	304.8		2.8		2.8	136
KG-B2-W-20.112P	324.3			7.0	7.0	Hare Indian (Rabbitskin) River
KG-B1-W-6.077P	332.9	0.9			0.9	140
KG-B1-W-6.080P	332.9	2.0			2.0	140
KG-B1-W-20.113P	335.5	2.0	9.2		11.2	140A
KG-B2-W-7.003AP	375.6			0.9	0.9	147
KG-B1-W-20.114P	376.3			0.1	0.1	147
KG-B2-W-7.006Pa	387.6			3.6	3.6	148
KG-B2-W-7.006Pb	387.6			0.3	0.3	148
KG-B1-W-7.005P	388.8		0.2		0.2	148
KG-B1-W-7.015P	412.8			1.2	1.2	150
KG-B2-W-7.016P	414.0			6.4	6.4	150/ST1
TD-B2-W-7.016P	414.0			1.6	1.6	150/ST1

Table 4-3: Winter Access Roads for Borrow Sites within the SSA (cont'd)

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
TD-B2-W-7.018P	418.6			0.3	0.3	ST1
TD-B2-W-7.021P	428.5		1.6		1.6	152
TD-B1-W-7.025P	433.1		1.3		1.3	153
TD-B1-W-7.035P	444.7		4.1		4.1	155
TD-B2-W-7.046P	466.9		4.2	0.3	4.5	Mackenzie River
TD-B1-W-7.049P	476.3	0.8		1.5	2.3	Mackenzie River
TD-B1-W-7.054P	476.3	2.7		0.8	3.5	Mackenzie River
TD-B1-W-7.070P	497.3		6.4		6.4	Mackenzie River
TD-B2-W-7.073PB	498.8		4.4		4.4	Mackenzie River
TD-B2-W-7.073PA	500.5		3.5		3.5	Mackenzie River
TD-B1-W-7.078P	505.7		4.9		4.9	Mackenzie River
TD-B2-W-7.090P	531.0			0.1	0.1	ST11
TD-B1-W-7.155AP	538.6			2.9	2.9	Mackenzie River
TD-B1-W-7.155BP	538.6		6.4	0.4	6.8	Mackenzie River
TD-B2-W-20.201P	538.6			1.6	1.6	ST11
TD-B1-W-20.086P	598.8		0.6		0.6	Mackenzie River
TD-B1-W-9.002PA	632.0		1.1		1.1	Mackenzie River
TD-B2-W-9.010PA	645.5			2.2	2.2	Mackenzie River
TD-B1-W-9.017P	656.0		0.8		0.8	Mackenzie River
TD-B1-W-9.024AP	669.2		0.6		0.6	Mackenzie River
TD-B1-W-9.034PB	681.4			0.1	0.1	164A
TD-B1-W-9.034PA	684.5			0.3	0.3	Mackenzie River ^a
TD-B1-W-9.037PA	685.5			2.0	2.0	Mackenzie River ^a
TD-B1-W-9.037PB	688.7			1.7	1.7	Mackenzie River ^a
D-B2-W-9.038PBa	689.8		3.9		3.9	Mackenzie River ^a
TD-B2-W-9.038PBb	689.8			0.5	0.5	Mackenzie River ^a
D-B2-W-9.038PBb	689.8		0.9	0.3 (DCR)	1.2	Mackenzie River ^a

Table 4-3: Winter Access Roads for Borrow Sites within the SSA (cont'd)

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
D-B1-W-9.037PB	688.7		1.6	0.9 (DCR)	2.5	Mackenzie River ^a
D-B2-W-9.038PAa	692.3		5.0		5.0	Mackenzie River ^a
D-B2-W-9.038PAb	692.3		1.4		1.4	Mackenzie River ^a
Total length of borrow source winter access roads within the SSA: 177.6 km						
Total length of borrow source all-weather (AW) access roads within the SSA: 0.0 km						
Total length of borrow source access roads within the SSA: 177.6 km						
NOTE: ^a Water source located in the Deh Cho Region						

QUANTITY OF WATER INVOLVED (PART 7)

The quantity of water required to build and maintain about 177.6 km of winter road to 55 potential borrow sites is estimated in [Table 4-4](#).

Table 4-4: Borrow Site Access Road Water Requirements – SSA

Borrow Site Access Road Water Requirements – SSA		
Description	Estimated Water Requirements	
	Total Annual Volume (m ³)	Average Daily Volume ^a (m ³)
Winter road construction water requirements	50,500	842
Total water requirements over 3 years	151,500	-
NOTE: ^a Average daily volume is total annual volume averaged over a 60-day winter road construction period and reflects heaviest water use early in the construction season.		

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TITLE	SSA Application for a Type A Water Licence
SECTION	4: Water Use for Access Roads
SUBJECT	3: Infrastructure Sites

LOCATION OF UNDERTAKING (PART 3)

Water will be required to construct winter access roads to the infrastructure sites within the SSA. These are shown in the following figures:

- [Figure 4-30: SSA Road Access to Little Chicago Infrastructure Site – \(KG-BL-A-204.5/KG-C-W-204.5\)](#)
- [Figure 4-31: SSA Road Access to Little Chicago Southern Airstrip – \(KG-A-A-222.5\)](#)
- [Figure 4-32: SSA Road Access to Fort Good Hope Infrastructure Site – \(KG-BL-A-341.9/KG-PS-A-341.9/KG-C-W-341.9\)](#)
- [Figure 4-33: SSA Road Access to Tulita \(West\) Infrastructure Site – \(TD-BL-A-548.7\)](#)
- [Figure 4-34: SSA Road Access to 12 Mile Point Infrastructure Site – \(TD-BL-A-569.9/TD-PS-W-569.9\)](#)
- [Figure 4-35: SSA Road Access to Little Smith Creek Infrastructure Site – \(TD-BL-A-632\)](#)

Table 4-5 lists the winter access roads for infrastructure sites within the SSA and the proposed water sources for those roads.

Table 4-5: Infrastructure Site Access Roads within the SSA

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
KG-BL-A-204.5	204.5		1.2 (AW)		1.2	N/A
KG-C-W-204.5	204.5		8.6		8.6	106/Mackenzie River
KG-A-A-222.5	222.5		0.8 (AW)		0.8	N/A
KG-BL-A-341.9	341.9	0.6 (AW)			0.6	N/A
KG-PS-A-341.9	341.9	2.3 (AW)		1.6 (AW)	3.9	N/A
KG-C-W-341.9	341.9		1.4	3.4	4.8	142
TD-BL-A-548.7	548.7		2.1 (AW)		2.1	N/A
TD-BL-A-569.9	569.9			0.7 (AW)	0.7	N/A
TD-PS-W-569.9	569.9			4.8	4.8	Mackenzie River
TD-BL-A-632	632.0		2.7 (AW)		2.7	N/A
Total length of infrastructure winter access roads within the SSA: 18.2 km						
Total length of infrastructure all-weather (AW) access roads within the SSA: 12.0 km						
Total length of infrastructure access roads within the SSA: 30.2 km						

QUANTITY OF WATER INVOLVED (PART 7)

The quantity of water required to build and maintain about 18.2 km of winter road to the infrastructure sites is estimated in [Table 4-6](#).

Table 4-6: Infrastructure Site Access Road Water Requirements – SSA

Infrastructure Access Road Water Requirements – SSA		
Description	Estimated Water Requirements	
	Total Annual Volume (m ³)	Average Daily Volume ^a (m ³)
Winter road construction water requirements	5,200	87
Total water requirements over 3 years	15,600	-
NOTE: ^a Average daily volume is total annual volume averaged over a 60-day winter road construction period and reflects heaviest water use early in the construction season.		

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TITLE	SSA Application for a Type A Water Licence
SECTION	4: Water Use for Access Roads
SUBJECT	4: Pipeline Construction

LOCATION OF UNDERTAKING (PART 3)

Water will be required to construct winter access roads to water sources and the pipeline right-of-way within the SSA. These are shown in the following figures:

- Figure 4-36: SSA Road Access to Water Source 104 and the Mackenzie River at KP 189.1
- Figure 4-37: SSA Road Access to Water Sources 105, 106, 107 and 108
- Figure 4-38: SSA Road Access to Water Sources 109A, 110 and 111
- Figure 4-39: SSA Road Access to Water Sources 114, 115B, I-08 and 115
- Figure 4-40: SSA Road Access to Water Source 117
- Figure 4-41: SSA Road Access to Water Sources 118, 119, 120, 120A and 121
- Figure 4-42: SSA Road Access to Water Sources 122 and 123
- Figure 4-43: SSA Road Access to Water Sources 124, 125, 126, 127 and 128
- Figure 4-44: SSA Road Access to Water Sources 129 and 130
- Figure 4-45: SSA Road Access to Water Source 131
- Figure 4-46: SSA Road Access to Water Sources 132, 133 and SKG19
- Figure 4-47: SSA Road Access to Water Sources 135 and 136
- Figure 4-48: SSA Road Access to Water Source 137
- Figure 4-49: SSA Road Access to Pipeline Shoofly, Hare Indian (Rabbit-skin) River and Water Sources 138, 139, 140, 140A, 141 and 142
- Figure 4-50: SSA Road Access to Water Sources 143, 144 and 145
- Figure 4-51: SSA Road Access to Water Sources 146 and 147
- Figure 4-52: SSA Road Access (a) to Water Source 148

- Figure 4-53: SSA Road Access (b) to Water Source 148
- Figure 4-54: SSA Road Access to Water Source 150
- Figure 4-55: SSA Road Access to Water Source 151
- Figure 4-56: SSA Road Access to Water Sources ST1 and 152
- Figure 4-57: SSA Road Access to Water Source 153
- Figure 4-58: SSA Road Access to Water Source 155 and the Mackenzie River at KP 444.0 and 447.2
- Figure 4-59: SSA Road Access to Water Source 156
- Figure 4-60: SSA Road Access to Water Sources 157 and 159
- Figure 4-61: SSA Road Access to the Mackenzie River at KP 466.6
- Figure 4-62: SSA Road Access to the Mackenzie River at KP 476.3
- Figure 4-63: SSA Road Access to the Mackenzie River at KP 499.6
- Figure 4-64: SSA Road Access to the Mackenzie River at KP 512.2
- Figure 4-65: SSA Road Access to Water Source 163
- Figure 4-66: SSA Road Access to Pipeline Shoofly
- Figure 4-67: SSA Road Access to Pipeline Shooflies and Water Source ST11
- Figure 4-68: SSA Road Access to Pipeline Shooflies
- Figure 4-69: SSA Road Access to Pipeline Shooflies
- Figure 4-70: SSA Road Access to Pipeline Shoofly
- Figure 4-71: SSA Road Access to Pipeline Shoofly
- Figure 4-72: SSA Road Access to Pipeline Shoofly
- Figure 4-73: SSA Road Access to Water Source 163A
- Figure 4-74: SSA Road Access to Water Source ST15 and the Mackenzie River at KP 588.9
- Figure 4-75: SSA Road Access to Water Source ST17

- Figure 4-76: SSA Road Access to Water Source 164
- Figure 4-77: SSA Road Access to the Mackenzie River at KP 665.8
- Figure 4-78: SSA Road Access to Water Source 164A
- Figure 4-79: SSA Road Access to Water Sources ST24, the Mackenzie River at KP-688.8 and I-10

Table 4-7 is a list of the pipeline construction and water source access roads within the SSA and the proposed water sources for those roads.

Table 4-7: Pipeline Construction Winter Access Roads within the SSA

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
KG-WS-W-104	187.8			0.1	0.1	104
KG-WS-W-MR-189.1	189.1			1.4	1.4	189.1
KG-WS-W-105	199.6		0.9		0.9	105
KG-WS-W-106	204.5		0.2		0.2	106
KG-WS-W-107	204.5		0.1		0.1	107
KG-WS-W-108	204.5		0.9		0.9	108
KG-WS-W-109Aa	208.4		0.9		0.9	109A
KG-WS-W-109Ab	210.8		1.8		1.8	109A
KG-WS-W-110	214.4		0.3		0.3	110
KG-WS-W-111	215.8		1.4		1.4	111
KG-WS-W-114	219.0		0.2		0.2	114
KG-WS-W-115B	223.0		0.5		0.5	115B
KG-WS-W-I-08	223.5		2.1		2.1	I-08
KG-WS-W-115	224.2		0.2		0.2	115
KG-WS-W-117	228.6			0.2	0.2	117
KG-WS-W-118	239.2			1.1	1.1	118
KG-WS-W-119	239.2			0.6	0.6	119
KG-WS-W-120	240.4			0.9	0.9	120
KG-WS-W-120A	242.7		0.4		0.4	120A

Table 4-7: Pipeline Construction Winter Access Roads within the SSA (cont'd)

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
KG-WS-W-121	246.6			2.5	2.5	121
KG-WS-W-122	256.4			0.9	0.9	122
KG-WS-W-123	257.7			0.6	0.6	123
KG-WS-W-124	261.4			1.9	1.9	124
KG-WS-W-125	265.2		0.3		0.3	125
KG-WS-W-126	265.2		1.4		1.4	126
KG-WS-W-127	265.7		3.0		3.0	127
KG-WS-W-128	267.4		0.7		0.7	128
KG-WS-W-129	270.1		4.7		4.7	129
KG-WS-W-130	270.1		4.4		4.4	130
KG-WS-W-131	283.3		0.5		0.5	131
KG-WS-W-132	289.3		1.3		1.3	132
KG-WS-W-133	291.2		0.3		0.3	133
KG-WS-W-SKG19	295.0		4.0		4.0	SKG-19
KG-WS-W-135	301.1		7.9		7.9	135
KG-WS-W-136	304.3		0.4		0.4	136
KG-WS-W-137	307.9		2.3		2.3	137
KG-WS-W-138	324.7			0.4	0.4	138
KG-WS-W-139	327.5		0.1		0.1	139
KG-PL-W-328.1	328.1	2.7	3.3		6.0	Hare Indian (Rabbit-skin) River
KG-WS-W-140	332.9	0.6			0.6	140
KG-WS-W-140A	335.6		0.6		0.6	140A
KG-WS-W-141	338.0	0.2			0.2	141
KG-WS-W-142	341.0		1.0	0.3	1.3	142
KG-WS-W-143	342.7		1.7	0.1	1.8	143
KG-WS-W-144	344.1		1.1		1.1	144
KG-WS-W-145	347.0			4.3	4.3	145
KG-WS-W-146	367.3			1.5	1.5	146

Table 4-7: Pipeline Construction Winter Access Roads within the SSA (cont'd)

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
KG-WS-W-147	371.8			0.5	0.5	147
KG-WS-W-148a	381.4		0.3		0.3	148
KG-WS-W-148b	386.9		1.7		1.7	148
KG-WS-W-150a	397.2		0.9		0.9	150
KG-WS-W-150b	401.4		0.5		0.5	150
KG-WS-W-151	411.9			1.6	1.6	151
TD-WS-W-ST1a	418.7		0.1		0.1	ST1
TD-WS-W-ST1b	418.7			0.6	0.6	ST1
TD-WS-W-152	424.1		0.8		0.8	152
TD-WS-W-153	432.9		0.2		0.2	153
TD-WS-W-155a	439.7		0.6		0.6	155
TD-WS-W-155b	442.5		0.8		0.8	155
TD-WS-W-MR-444	444.0		1.8	0.1	1.9	Mackenzie River
TD-WS-W-MR-447.2	447.2		0.5	0.2	0.7	Mackenzie River
TD-WS-W-156	453.2		1.5	0.5	2.0	156
TD-WS-W-157	459.3		1.1	0.3	1.4	157
TD-WS-W-159	464.6		0.4	0.3	0.7	159
TD-WS-W-MR-466.6	466.6			2.3	2.3	Mackenzie River
TD-WS-W-MR-476.3	476.3	1.0			1.0	Mackenzie River
TD-WS-W-MR-499.6	499.6		1.8	0.2	2.0	Mackenzie River
TD-WS-W-MR-512.2	512.2		1.7	0.1	1.8	Mackenzie River
TD-WS-W-163	528.1			1.7	1.7	163
TD-PL-W-538.6	538.6	2.6	13.5	18.6	34.7	Mackenzie River/ST11
TD-WS-W-ST11	538.6			0.2	0.2	ST11
TD-PL-W-548.7	548.7			2.9	2.9	Great Bear River
TD-PL-W-553.8	553.9		0.4	10.1	10.5	Great Bear River
TD-PL-W-557	557.0	4.0	3.8		7.8	Great Bear River
TD-PL-W-569.9	569.9	41.5		7.5	49.0	Mackenzie River

Table 4-7: Pipeline Construction Winter Access Roads within the SSA (cont'd)

Access Road Name	Kilometre Post (KP)	Land Use			Estimated Total Length (km)	Proposed Water Source
		Municipal Length (km)	Private Length (km)	Crown Length (km)		
TD-WS-W-163A	581.1			0.8	0.8	163A
TD-WS-W-ST15	587.1		0.1		0.1	ST15
TD-WS-W-MR-588.9	588.9		8.9		8.9	Mackenzie River
TD-WS-W-ST17	609.6			0.5	0.5	ST17
TD-WS-W-164a	620.4			2.0	2.0	164
TD-WS-W-164b	625.1			0.9	0.9	164
TD-WS-W-MR-665.8	665.8		0.4	0.1	0.5	Mackenzie River
TD-WS-W-MR-665.8	665.8		0.3		0.3	Mackenzie River
TD-WS-W-164Aa	683.7			0.5	0.5	164A
TD-WS-W-164Ab	683.7			0.1	0.1	164A
TD-WS-W-164Ac	683.7			0.2	0.2	164A
TD-WS-W-ST24	685.5			0.1	0.1	ST24
TD-WS-W-MR-688.8	688.8			3.9	3.9	Mackenzie River
D-WS-W-I-10	692.9		1.0		1.0	I-10
Total length of pipeline construction access roads within the SSA:					218.2	

QUANTITY OF WATER INVOLVED (PART 7)

The quantity of water required to build and maintain about 218.2 km of winter access roads to support pipeline construction, which includes 107.3 km of access roads to 84 water sources and 110.9 km of direct pipeline right-of-way access roads (shooflies), is estimated in [Table 4-8](#).

Table 4-8: Pipeline Construction Access Road Water Requirements – SSA

Pipeline Construction Access Road Water Requirements – SSA		
Description	Water Requirements – Cubic Metres per Season	
	Total Annual Volume (m ³)	Average Daily Volume ^a (m ³)
Winter road construction water requirements	56,700	945
Total water requirements over 3 years	170,100	-

NOTE:

^aAverage daily volume is total annual volume averaged over a 60-day winter road construction period and reflects heaviest water use early in the construction season.

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TITLE	SSA Application for a Type A Water Licence
SECTION	4: Water Use for Access Roads
SUBJECT	5: Facilities

There are no identified water requirements for facility access road construction within the SSA. Facility sites within the SSA will be accessed by all-weather roads or the pipeline right-of-way (see [Section 5](#)).

