

APPENDIX C

TRAFFIC ASSOCIATED WITH THE JAY PROJECT

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Abbreviations

Abbreviation	Definition
IR	Information Request
Project	Jay Project
DAR	Developer's Assessment Report
i.e.	that is
TCWR	Tibbitt to Contwoyto Winter Road
et al.	and more than one additional author
WRSA	waste rock storage area

Units of Measure

Unit	Definition
%	percent
km	kilometre

C1 INTRODUCTION

Numerous Information Requests (IRs) were received that relate to traffic associated with the Jay Project (Project), and have similar themes. Requests generally relate to:

- current mine sit traffic volume / frequency;
- clarification on how long-haul traffic frequency, presented in the Developer's Assessment Report (DAR), was calculated;
- traffic volume / frequency estimates for all vehicle types associated with the Jay Project at the mine during each phases (operations and closure/reclamation);
- anticipated variation in Jay traffic (i.e., seasonal, daily);
- changes to traffic volume on the Tibbitt to Contwoyto Winter Road associated with the Project;
- current and future traffic level monitoring;
- current traffic management plan and modifications for the Project; and,
- traffic management plan when caribou are in the vicinity of the Project roads (i.e., pattern modifications, temporary road closures, mitigative measures to protect caribou/wildlife and to minimize disturbance).

This document has been prepared to provide a collective response to these inquiries. IRs specifically which this document addresses, in no particular order, are: DAR-GNWT-IR-70; DAR-IEMA-IR-44; DAR-LKDFN-IR-02; DAR-KIA-IR-01; DAR-KIA-IR-02; DAR-KIA-IR-25; DAR-KIA-IR-38; DAR-KIA-IR-39; and DAR-MVEIRB-IR-93. Other IRs with traffic volume references include: DAR-IEMA-IR-27; DAR-KIA-IR-32; and DAR-MVEIRB-IR-86.

C2 TIBBITT TO CONTWOYTO WINTER ROAD

C2.1 Current Traffic

Historic traffic on the Tibbitt to Contwoyto Winter Road (TCWR) is presented in Table 1. Only a portion of the traffic on the road is associated with the Ekati Mine. The TCWR is built, permitted, and operated by a joint venture of mining companies (Diavik Diamond Mines Inc., Dominion Diamond Ekati Corporation, and De Beers Canada Inc.) operating in the area, and is shared by other industrial users (i.e., exploration companies). The road is open to the public and provides access for hunters and tourists.

Additional description of the TCWR is provided in Section 3.4.2 of the DAR.

Table 1 Tibbitt to Contwoyto Winter Road Statistics

Year	Operating Period	Operating Days	Total Tonnes Hauled (north bound)	Number of Truckloads (north bound)	Number of Backhauls (south bound)
1997 ^(a)	Jan 21 - Apr 15	84	100,000	3,500	
1998 ^(a)	Jan 19 - Apr 4	75	82,000	2,543	
1999 ^(a)	Jan 28 - Mar 31	62	57,000	1,844	
2000 ^(b)	Feb 1 - Mar 22	50	111,090	3,703	135
2001 ^(b)	Feb 4 - Mar 24	48	245,586	7,981	201
2002 ^(c)	Jan 26 - Apr 16	80	256,915	7,735	433
2003 ^(c)	Feb 1 - Apr 2	60	198,818	5,243	883
2004 ^(c)	Jan 28 - Mar 31	63	179,144	5,091	165
2005 ^(c)	Jan 26 - Apr 5	69	252,533	7,607	243
2006 ^(c)	Feb 5 - Mar 26	49	177,674	6,841	469
2007 ^(c)	Jan 27 - Apr 9	72	330,002	10,922	818
2008 ^(c)	Jan 29 - Mar 31	62	245,585	7,484	890
2009 ^(c)	Feb 1 - Mar 22	49	173,195	4,847	530
2010 ^(c)	Feb 4 - Mar 21	45	120,020	3,508	429
2011 ^(c)	Jan 28 - Mar 31	62	239,000	6,832	530
2012 ^(c)	Feb 1 - Mar 31	59	210,188	6,551	648
2013 ^(d)	Jan 30 - Mar 31	60	223,206	6,071	454

a) Source: TCWR Joint Venture (2009) combined with Mesher et.al. (2008).

b) Source: TCWR Joint Venture (2013a), DAR Table 12.3-2.

c) Source: Joint Venture (2014), DAR Table 16.3-1.

d) Source: TCWR Joint Venture (2013b), DAR Table 12.3-2.

The mean number of annual northbound haul trucks along the TCWR from 2002 to 2012 was 6,606 with a standard deviation of 1,965 (DAR Table 16.3-1). The mean number of annual northbound haul truck along the TCWR from 1997 to 2013 was 5,783 with a standard deviation of 2,326.

The average number of haul trucks associated with Ekati Mine operations is currently up to 4,000 trucks per winter road season (DAR Section 3.4.2 and Section 16.3), between late January and early April.

C2.2 Winter Road Traffic - Jay Project

During construction of the Project (2016 to 2019), the initial number of northbound loads was estimated to be an increase of about 200 trucks per winter road season; however, the estimated number of truckloads will be refined during detailed planning.

Thereafter, current traffic volumes on the TCWR for the Ekati Mine are expected to resume as the mine production rate will remain constant during the operational phase of the Jay Project (2020 to 2030) (DAR Section 3.4.2 and Section 16.3). Therefore, up to approximately 4,000 loads per season will continue to supply freight to the Ekati Mine throughout the operation period of the Jay Project. Traffic levels are estimated to remain the same or decrease slightly during closure (2031 to 2034).

C3 CURRENT OVERVIEW MINE SITE TRAFFIC

C3.1 Ekati Mine

Traffic around the Ekati Mine has varied over time and seasonally. In general, traffic varies depending on the location of where kimberlite (ore) is being extracted and based on other site activities (i.e., construction, exploration, new developments). The Ekati Mine, the location of the various existing open pits, along with proposed open pits and the associated roads, is shown in Figure 1.

Construction for the Ekati Mine first began in 1997 and ore extraction began in 1998. The construction period was a period of vigorous and variable activity.

During operations, traffic loads are more consistent. Haul truck traffic varies based on where kimberlite extraction is occurring (which open pit and any underground operation is active) and where waste materials are being deposited. The mining location affects which roads haul traffic travels on to take kimberlite to the processing plant and which roads are used to take waste to one of the Ekati Mine waste rock storage areas (WRSAs). For example, mining in the Misery Pit first commenced in 2001 and continued until 2005. This resulted in kimberlite being hauled between the Misery Pit and the Ekati processing plant along the Misery Road and waste being hauled to the Misery WRSA. Push back to resume operations in the Misery Pit commenced in 2011 and resulted in waste rock being hauled from the Misery Pit to the Misery WRSA. Mining in the Misery Pit is scheduled to resume in 2015 and continue until 2017. This will result in kimberlite being hauled to the Ekati processing plant along the Misery Road and waste rock hauled to the Misery WRSA. The Misery Pit and camp area along with the Jay Project proposed development, is shown in Figure 2.

During each winter, when the ice road is open, traffic on the Misery Road increases to transport materials from the ice road to the Ekati main camp.

For comparison to the Jay Project projections, the haul road that has had the highest traffic volume at the Ekati Mine has been the Fox haul road. Fox kimberlite comprised 59% of the total processing plant feed during the peak years of mining from the Fox open pit (2007 to 2012). Kimberlite haul traffic on the Fox haul road would have averaged in the order of 74 round trips per day (95-tonne, '777' haul trucks) from 2007 to 2012, or an approximated average in the order of 10 minutes between haul truck occurrences. Based on the estimates of associated light vehicle use of the road that were developed for Jay Project (Table 2 and Table 3 for the Jay Road per Section C4.2 below) proportioned to about 59% (based on kimberlite production), peak light vehicle use of the Fox road would have been in the order of 20 to 30 trips per day or an approximated average in the order of 24 - 36 minutes between light vehicle occurrences. Calculation methodology is described in Section C4.1 below.

An Ekati Mine traffic management plan for caribou mitigation is being prepared as part of Ekati Mine operations, and is anticipated to be completed in April 2015. In addition to assisting with current Ekati Mine operations, this report will also be relevant to the Jay Project and the report will be circulated through the Mackenzie Valley Environmental Impact Review Board (MVEIRB) public registry when available.

G:\CLIENTS\DOMINION\DEC_Jay and Lynx\Projects\Figures\13-1328-0041_Jay & Lynx_EA\General\POST-DAR_IRs\POSTDAR_IR_Gen_001_GIS.mxd



LEGEND

- EKATI MINE FOOTPRINT
- DIAVIK MINE FOOTPRINT
- PROPOSED JAY FOOTPRINT
- PROPOSED SABLE PIT AND ROAD FOOTPRINT
- PROPOSED PIGEON PIT FOOTPRINT
- WINTER ROAD
- TIBBITT TO CONTWOYTO WINTER ROAD
- NORTHERN PORTION OF TIBBITT TO CONTWOYTO WINTER ROAD
- ELEVATION CONTOUR (10 m INTERVAL)
- ESKER
- WATERCOURSE
- WATERBODY

REFERENCE

CANVEC © NATURAL RESOURCES CANADA, 2012
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
DATUM: NAD83 PROJECTION: UTM ZONE 12N

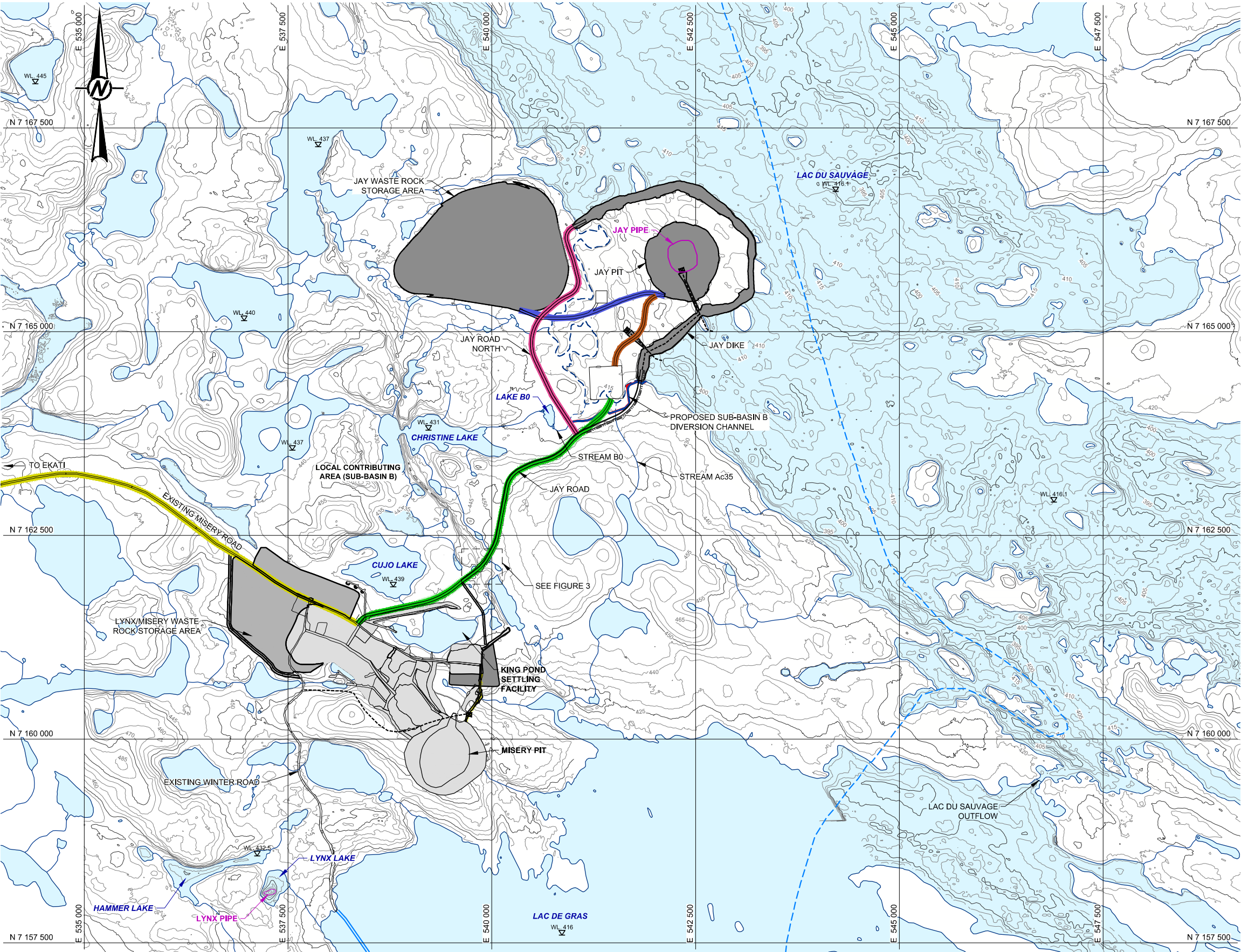
DOCUMENT

TRAFFIC ASSOCIATED WITH THE JAY PROJECT



PROJECT		DOMINION DIAMOND		JAY PROJECT NORTHWEST TERRITORIES, CANADA	
TITLE		EKATI MINE			
	PROJECT		1419751	FILE No. POSTDAR_IR_Gen_001_GIS	
	DESIGN	DB	14/01/14	SCALE AS SHOWN	REV 0
	GIS	SM	26/02/15		
	CHECK	FE	06/04/15		
	REVIEW	FE	06/04/15	MAP 1	

N:\Client\Dominion Diamond\Jay\Cardinal Project\09_PROJECTS\1419751\02_PRODUCTION\3200\35\1419751-3200-35_2.dwg | Layout: 2 JAY PROJECT ROADS AND TRAFFIC ASSESSMENT | Modified: 2015-04-06 10:23 AM | Plotted: 2015-04-06 10:23 AM



LEGEND

EKATI MINE FOOTPRINT (MISERY OPERATION)

JAY PROJECT INFRASTRUCTURE

LYNX PROJECT INFRASTRUCTURE

WATERBODY

WATERCOURSE

ROAD

SUB-BASIN B DIVERSION CHANNEL

WINTER ROAD - YEARLY CONSTRUCTION

WINTER ROAD - ON DEMAND CONSTRUCTION

PIPE LOCATION

WATER LEVEL ELEVATION

DISCONTINUED STREAM PORTION

ROAD AND TRAFFIC ASSESSMENT

ROAD SEGMENT 1

ROAD SEGMENT 2

ROAD SEGMENT 3

ROAD SEGMENT 4

ROAD SEGMENT 5

- NOTES
1.

ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2.

GROUND SURFACE AND BATHYMETRY CONTOURS ARE SHOWN AT 5 m INTERVALS.
3.

COORDINATES ARE SHOWN IN DATUM: NAD 83, PROJECTION: UTM ZONE 12.
4.

DIKE LAYOUT UPDATED TO FINAL PFS DIKE DESIGN.
5.

DRAINAGE FROM THIS AREA WILL BE DIRECTED TO THE JAY RUNOFF SUMP IF WATER QUALITY IS NOT SUITABLE FOR DISCHARGE TO LAC DU SAUVAGE. IN THE WATER BALANCE MODEL THIS AREA IS CONSERVATIVELY ASSUMED TO DRAIN TO THE JAY RUNOFF SUMP.

- REFERENCES
1.

CONTOUR AND BATHYMETRY DATA PROVIDED BY AURORA GEOSCIENCES LTD., FILE: Final 1m Contours - Priority Area.dxf, DATE RECEIVED: OCTOBER 29, 2013.
2.

WATER OBTAINED FROM CANVEC NATURAL RESOURCES CANADA, 2012.
3.

JAY PIT MODEL: GOLDER ASSOCIATES LTD., 2014. DOMINION DIAMOND PRE-FEASIBILITY MINE DESIGN STUDY. SUBMITTED TO DOMINION DIAMOND EKATI CORPORATION, DATED OCTOBER 7, 2014. REFERENCE NO: 1313280041-E14065-R-Rev0-2020. (FILE NAME: pit_v6_OL.dxf).
4.

JAY PIPE LOCATION RECEIVED FROM DOMINION DIAMOND CORPORATION, FILE: jay_kimberlite_pipe_OL.dxf, DATED: JULY 19, 2013.
5.

LYNX PIPE LOCATION RECEIVED FROM DOMINION DIAMOND CORPORATION, FILE: lynx_polyline.dxf, DATED: JUNE 25, 2013.



2015-04-06

REV

DATE

ISSUED FOR REVIEW

REVISION DESCRIPTION

FE

JK

FE

FE

DES

CADD

CHK

RWW

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

JAY PROJECT
ROADS AND TRAFFIC ASSESSMENT

Golder Associates

PROJECT No.

1419751.3200.35

FILE No.

1419751-3200-35_2

DESIGN

FE

2015-03-25

SCALE

AS SHOWN

CADD

JK

2015-03-25

FIGURE

CHECK

FE

2015-04-06

REVIEW

FE

2015-04-06

2

C4 JAY PROJECT

The following sections provide additional information regarding traffic volumes and frequencies associated with the Jay Project.

Figure 2 presents the plan view of the Jay Project development and in particular the location of the proposed roads, both during the construction phase and operations.

C4.1 Ore Haul Calculations

The estimated vehicle traffic associated with hauling ore from the Jay Ore Transfer Pad to the processing plant at the Ekati main camp, as presented in the DAR (Section 3.5.1.6), is based on the following assumptions:

- Jay Pit will supply 4.35 million tonnes of ore per year to the processing plant;
- long-haul trucks, also referred to as road trains, with a capacity of 216 tonnes will transport ore from the Jay ore transfer pad to the processing plant at the main Ekati Mine site. Travel will be along the Jay Road and Misery Road; and,
- ore delivery to the processing plant occurs 365 days per year.

Based on the above assumptions, 55.2 long-haul ore deliveries to the processing plant per day are required to supply the plant. Therefore, 55.2 round trips are required. As a partial trip (0.2) is not reasonable, this equates to 56 round trips required per day, 365 days per year.

Assuming two 12 hour shifts each day, then 7 long-haul trucks, each making 8 round trips per day would provide the required number of ore deliveries to the processing plant. This traffic would operate on the Jay Road and the Misery Road. This assumes each truck and driver is 100 percent (%) efficient. However, 100% efficiency is not a practical assumption. Therefore, if it is assumed each truck/driver is 60% efficient, on an annual basis, then 12 (11.2) long-haul trucks will be required to meet the demand.

The time between haul vehicles was estimated based on the number of trips per 24 hour day.

Average time between haul traffic (minutes) = $\frac{24 \text{ hours} \times 60 \text{ minutes/hour}}{55.2 \text{ trips} \times 2 \text{ (round trips)}} = 13 \text{ minutes}$

This assumes that haul traffic is equally spaced throughout the day.

Sections 3.5.1.6 and 12.4.2.2.2 of the DAR both report that 56 deliveries of ore, using the long-haul truck (road trains) are required to supply the processing plant with the required amount of ore. The average time between vehicles was stated to be 12 minutes. The assessment has been conducted based on the long-haul trucks making 56 round trips, 365 days per year, with the constant 12 minute interval between each truck.

C4.2 Total Traffic Estimates

Various IRs requested additional information on total traffic estimates on each of the roads utilized as part of the Jay Project.

Table 2 presents a summary of the estimated range in the number of round trips, per day for: haul traffic, non-haul traffic, and total traffic, for the operation (2019 to 2030) and closure phase (2031 to 2033) of the Jay Project. The vehicle estimate is presented for the various road segments shown on Figure 2 and the Misery Road shown on Figure 1.

The non-haul traffic category includes, but is not limited to: road maintenance equipment, mechanics trucks, crew buses, pick-up trucks, bulk explosive trucks, refuelling trucks, water trucks, snow plows, graders, garbage trucks, water supply trucks, waste transport trucks, low-bed trucks, and emergency vehicles.

Table 2 Estimated Range of Round Trip Traffic by Road Segment (24 hours)

Years	Estimated Range of Round Trips per day (24 hours)	
	Operation Phase	Closure ^(a)
	2019 to 2030	2031 to 2033
Waste Haul Road (Jay Pit to Jay WRSA) – Segment 4		
Haul truck (i.e., CAT 789)	5 – 525	0
Non-haul vehicles	20 – 40	0 – 10
Total	25 – 565	0 – 10
Ore Haul Road (Jay Pit to Jay Ore Transfer Pad) – Segment 3		
Haul truck (i.e., CAT 777)	65 – 145	0
Non-haul vehicles	10 – 25	0 – 10
Total	75 – 170	0 – 10
Jay Road (Jay Ore Transfer Pad to Misery Road) – Segment 2		
Long-haul ore trucks (roadtrains)	50 – 60	0
Non-haul vehicles	20 – 30	0 – 20
Total	70 – 90	0 – 20
Misery Road (Misery to Ekati) – Segment 1		
Long-haul ore trucks (roadtrains)	50 – 60	0
Non-haul vehicles ^(b)	30 – 45	0 – 20
Total ^(b)	80 – 105	0 – 20
Jay North Road (Jay Road to Jay WRSA) – Segment 5		
Non-haul vehicles	10 – 25	0 – 10
Total	10 – 25	0 – 10

Notes:

a) Traffic volumes during closure will be significantly less than during operation, and on a daily basis will be more variable. In particular, less activity is anticipated during the winter.

b) Traffic estimate does not include freight hauled on the Misery Road associated with the annual winter road operation.

WRSA = waste rock storage area.

The road with the most haul traffic is the Waste Haul Road (between the Jay Pit and Jay WRSA). As the amount of waste produced per year varies, this traffic volume will also have a greater variation than the ore haul traffic volume. Estimates for traffic volumes during closure are substantially lower than during operations. These values are presented per year, but it is expected that the traffic volume will vary significantly with more work occurring during the summer and less occur during the winter.

Table 3 presents the corresponding estimate of time, in minutes, between vehicles (based on data shown on Table 2), for each road segment and for categories of traffic (haul traffic, non-haul traffic, and total traffic). The average time between vehicles, irrespective of direction of travel, assumes that all traffic is equally spaced throughout the day, and 365 days per year. In reality, some variation will occur; for instance, at shift change, for a short interval each day, a decrease in haul traffic will occur and an increase in non-haul traffic volume will likely occur, immediately before and after the shift change. In general, haul traffic operation will be more consistent throughout the day, and from one day to the next. More daily variability is expected for the non-haul traffic volumes.

Table 3 Estimated Range of Time Between Vehicles (365 days per year)

Years	Estimated Time (minutes) between vehicles	
	Operation Phase	Closure ^(a)
	2019 to 2030	2031 to 2033
Waste Haul Road (Jay Pit to Jay WRSA) – Segment 4		
Haul truck (i.e., CAT 789)	1.4 – 144	0
Non-haul vehicles	18 – 36	72 – 1440
Total	1.3 - 29	72 – 1440
Ore Haul Road (Jay Pit to Jay Ore Transfer Pad) – Segment 3		
Haul truck (i.e., CAT 777)	5 – 11	0
Non-haul vehicles	29 – 72	72 – 1440
Total	4.2 – 9.6	72 – 1440
Jay Road (Jay Ore Transfer Pad to Misery Road) – Segment 2		
Long-haul ore trucks (roadtrains)	12 – 14.4	0
Non-haul vehicles	24 – 36	36 – 1440
Total	8 – 12	36 – 1440
Misery Road (Misery to Ekati) – Segment 1		
Long-haul ore trucks (roadtrains)	12 – 14.4	0
Non-haul vehicles ^(b)	16 – 24	36 – 1440
Total ^(b)	6.9 – 9	36 – 1440
Jay North Road (Jay Road to Jay WRSA) – Segment 5		
Non-haul vehicles	29 – 72	72 – 1440
Total	29 – 72	72 – 1440

Notes:

a) Traffic volumes during closure will be significantly less than during operation, and on a daily basis will be more variable. In particular, less activity is anticipated during the winter.

b) Traffic estimate does not include freight hauled on the Misery Road associated with the annual winter road operation.

WRSA = waste rock storage area.

Table 4 has been prepared to show the estimated number of round trips for haul traffic, non-haul traffic, and total traffic, per day, per year, for the operation (2019 to 2030) and closure (2031 to 2033) phases of the Jay Project. Table 5 presents the corresponding estimate of time, in minutes, between vehicles, on each of the road segments. These values should be considered averages only, and not maximum values. For example, the average number of round trips made by non-haul vehicles on the Jay Road is estimated to be 24. The estimated range in traffic volumes is shown on Table 2.

As Dominion Diamond has committed to temporarily shutting down the Jay Road and/or the Misery Road to reduce the impact to migrating caribou, if and when necessary, and recognizing the northern location of the mine and potential for short term road closures as a result of poor driving conditions (i.e., blizzards, fog, ice), additional traffic estimates shown in Table 6 and Table 7 have been prepared. The values show estimates assuming that mining operations, primarily ore hauling, occurs only over 350 days (i.e., cumulative 15 days without hauling, could be full days or portions of days), in comparison with the 365 days of operation assumed and presented in Table 4 and Table 5.

The values in Table 2 through Table 7 do not include freight traffic on the Misery Road during the time when the TCWR is operational. A higher volume of traffic will occur each winter on the Misery Road, approximately between late January and early April each year, associated with this freight movement. This, short term, annual increase in traffic has occurred throughout the mining operation of the Ekati Mine.

Table 4 Total Traffic Estimates, Operation 365 days per Annum

Years	Round Trips per day (24 hours), Operation 365 days per annum														
	Operation Phase												Closure ^(a)		
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Waste Haul Road (Jay Pit to Jay WRSA) – Segment 4															
CAT 789 haul truck	0	250	442	485	468	245	199	158	114	74	36	8	0	0	0
Non-haul vehicles	30	30	30	30	30	30	30	30	30	30	30	30	4	4	4
Total	30	279	471	515	497	275	228	188	143	104	65	38	4	4	4
Ore Haul Road (Jay Pit to Jay Ore Transfer Pad) – Segment 3															
CAT 777	0	67	133	133	133	132	132	132	132	132	132	131	0	0	0
Non-haul vehicles	12	12	12	12	12	12	12	12	12	12	12	12	3	3	3
Total	12	78	144	144	144	144	144	144	144	144	144	143	3	3	3
Jay Road (Jay Ore Transfer Pad to Misery Road) – Segment 2															
Long-haul ore trucks (roadtrains)	0	56	56	56	56	56	56	56	56	56	56	56	0	0	0
Non-haul vehicles	24	24	24	24	24	24	24	24	24	24	24	24	4	4	4
Total	24	80	80	80	80	80	80	80	80	80	80	80	4	4	4
Misery Road (Misery to Ekati) – Segment 1															
Long-haul ore trucks (roadtrains)	0	55	55	55	55	55	55	55	55	55	55	55	0	0	0
Non-haul vehicles ^(b)	39	39	39	39	39	39	39	39	39	39	39	39	6	6	6
Total ^(b)	39	94	94	94	94	94	94	94	94	94	94	94	6	6	6
Jay North Road (Jay Road to Jay WRSA) – Segment 5															
Non-haul vehicles	22	22	22	22	22	22	22	22	22	22	22	22	4	4	4
Total	22	22	22	22	22	22	22	22	22	22	22	22	4	4	4

Notes:

a) Traffic volumes during closure will be significantly less than during operation, and on a daily basis will be more variable. In particular, less activity is anticipated during the winter.

b) Traffic estimate does not include freight hauled on the Misery Road associated with the annual winter road operation.

WRSA = waste rock storage area.

Table 5 Estimate Time between Vehicles (in either direction), Operation 365 days per Annum

Years	Average Time Between Vehicles (minutes), Operation 365 days per annum														
	Operation Phase												Closure ^(a)		
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Waste Haul Road (Jay Pit to Jay WRSA) – Segment 4															
CAT 789 haul truck	0	2.9	1.6	1.5	1.5	2.9	3.6	4.5	6.3	9.7	20.2	87.3	-	-	-
Non-haul vehicles	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	173	173	173
Total	24.3	2.6	1.5	1.4	1.4	2.6	3.2	3.8	5.0	7.0	11.1	19.0	173	173	173
Ore Haul Road (Jay Pit to Jay Ore Transfer Pad) – Segment 3															
CAT 777	0	10.8	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.5	-	-	-
Non-haul vehicles	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	270.5	270.5	270.5
Total	61.9	9.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	270.5	270.5	270.5
Jay Road (Jay Ore Transfer Pad to Misery Road) – Segment 2															
Long-haul ore trucks	0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	-	-	-
Non-haul vehicles	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	196.6	196.6	196.6
Total	29.9	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	196.6	196.6	196.6
Misery Road (Misery to Ekati) – Segment 1															
Long-haul ore trucks	0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	-	-	-
Non-haul vehicles ^(b)	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	116.8	116.8	116.8
Total ^(b)	18.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	116.8	116.8	116.8
Jay North Road (Jay Road to Jay WRSA) – Segment 5															
Non-haul vehicles	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	196.6	196.6	196.6
Total	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	196.6	196.6	196.6

Notes:

a) Traffic volumes during closure will be significantly less than during operation, and on a daily basis will be more variable. In particular, less activity is anticipated during the winter.

b) Traffic estimate does not include freight hauled on the Misery Road associated with the annual winter road operation.

WRSA = waste rock storage area.

Table 6 Total Traffic Estimates, Operation 350 days per Annum

Years	Round Trips per day (24 hours), Operation 350 days per annum														
	Operation Phase												Closure ^(a)		
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Waste Haul Road (Jay Pit to Jay WRSA) – Segment 4															
CAT 789 haul truck	0	260	461	506	488	256	207	165	119	77	37	9	0	0	0
Non-haul vehicles	30	30	30	30	30	30	30	30	30	30	30	30	4	4	4
Total	30	290	490	536	517	285	237	195	148	107	67	38	4	4	4
Ore Haul Road (Jay Pit to Jay Ore Transfer Pad) – Segment 3															
CAT 777	0	70	138	138	138	138	138	138	138	138	138	137	0	0	0
Non-haul vehicles	12	12	12	12	12	12	12	12	12	12	12	12	3	3	3
Total	12	81	150	150	150	150	150	150	150	150	150	148	3	3	3
Jay Road (Jay Ore Transfer Pad to Misery Road) – Segment 2															
Long-haul ore trucks (roadtrains)	0	58	58	58	58	58	58	58	58	58	58	58	0	0	0
Non-haul vehicles	24	24	24	24	24	24	24	24	24	24	24	24	4	4	4
Total	24	82	82	82	82	82	82	82	82	82	82	82	4	4	4
Misery Road (Misery to Ekati) – Segment 1															
Long-haul ore trucks (roadtrains)	0	58	58	58	58	58	58	58	58	58	58	58	0	0	0
Non-haul vehicles ^(b)	39	39	39	39	39	39	39	39	39	39	39	39	6	6	6
Total ^(b)	39	96	96	96	96	96	96	96	96	96	96	96	6	6	6
Jay North Road (Jay Road to Jay WRSA) – Segment 5															
Non-haul vehicles	22	22	22	22	22	22	22	22	22	22	22	22	4	4	4
Total	22	22	22	22	22	22	22	22	22	22	22	22	4	4	4

Notes:

a) Traffic volumes during closure will be significantly less than during operation, and on a daily basis will be more variable. In particular, less activity is anticipated during the winter.

b) Traffic estimate does not include freight hauled on the Misery Road associated with the annual winter road operation.

WRSA = waste rock storage area.

Table 7 Estimate Time between Vehicles (in either direction), Operation 350 days per Annum

Years	Average Time Between Vehicles (minutes), Operation 350 days per annum														
	Operation Phase												Closure ^(a)		
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Waste Haul Road (Jay Pit to Jay WRSA) – Segment 4															
CAT 789 haul truck	0	2.8	1.6	1.4	1.5	2.8	3.5	4.4	6.1	9.3	19.4	83.7	-	-	-
Non-haul vehicles	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	173	173	173
Total	24.3	2.5	1.5	1.3	1.4	2.5	3.0	3.7	4.9	6.7	10.8	18.9	173	173	173
Ore Haul Road (Jay Pit to Jay Ore Transfer Pad) – Segment 3															
CAT 777	0	10.4	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.3	-	-	-
Non-haul vehicles	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	61.9	270.5	270.5	270.5
Total	61.9	8.9	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.9	270.5	270.5	270.5
Jay Road (Jay Ore Transfer Pad to Misery Road) – Segment 2															
Long-haul ore trucks	0	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	-	-	-
Non-haul vehicles	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	196.6	196.6	196.6
Total	29.9	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	196.6	196.6	196.6
Misery Road (Misery to Ekati) – Segment 1															
Long-haul ore trucks	0	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	-	-	-
Non-haul vehicles ^(b)	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	116.8	116.8	116.8
Total ^(b)	18.7	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	116.8	116.8	116.8
Jay North Road (Jay Road to Jay WRSA) – Segment 5															
Non-haul vehicles	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	196.6	196.6	196.6
Total	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	196.6	196.6	196.6

Notes:

a) Traffic volumes during closure will be significantly less than during operation, and on a daily basis will be more variable. In particular, less activity is anticipated during the winter.

b) Traffic estimate does not include freight hauled on the Misery Road associated with the annual winter road operation.

WRSA = waste rock storage area.

C5 TRAFFIC – CARIBOU AND WILDLIFE

The current, effective mitigation practices and procedures for safety of caribou and other wildlife on roads, airstrip, and other areas of the mine will be continued and expanded to include the Jay Project. These practices include reporting of wildlife sightings by all employees and deterring wildlife from hazardous areas, and control of encounters by Ekati Environment staff. Examples of mitigation that can be used to deter wildlife from hazardous areas include the use of noise making deterrents and herding techniques, which are a common procedures implemented at Ekati (Rescan 2009, 2010) and Diavik mines. Road-specific mitigation measures will also be continued, including:

- Wildlife always have the right-of-way.
- Drivers have standard safety training and are provided with awareness training.
- Appropriate signage is in place to identify areas of high wildlife use.
- Vehicles encountering wildlife on roads are required to stop and communicate the presence of wildlife on the roads to the Environment Department and others in the area.
- Observations of wildlife (including caribou) are to be reported to the Environmental Department. Radios are frequently used to report these observations so that others working in the area are also aware of the sighting.
- Wildlife mortalities are monitored and reported, which provides feedback for adaptive management.
- Vehicles are restricted to designated roads and prepared work areas (recreational use of off-road vehicles is prohibited).
- Modified traffic patterns and road closures will be used as necessary to protect caribou and people for the Jay Project. Dominion Diamond is committed to implementing temporary road closures of the Jay Road and/or Misery Road if necessary to protect caribou.

There have been no caribou mortalities at the Ekati Mine related to vehicle collisions. A Traffic Management Plan that documents current practices for caribou safety around roads at the Ekati Mine is being prepared for operational purposes, and is scheduled to be circulated in April 2015.

Wildlife mitigations on the winter road also are effective at preventing mortality due to vehicle collisions. Although traffic volumes on the winter road range from 3,506 to 10,922 trucks per operating period, only 7 caribou mortalities have been reported along the TCWR from 1996 to early winter 2014 (Near 2014). Five animals were killed in 1999, and two caribou were struck by a vehicle in January 2014 near the Lockhart Lake Winter Road Camp. One animal was killed on impact and the other sustained injuries. On February 1, 2014, a pick-up truck on the Gahcho Kué Project winter access road stopped after noticing a group of approximately 50 caribou. Approximately 20 of these caribou then ran towards the truck. At least two caribou struck the vehicle resulting in two mortalities (De Beers 2014).

Caribou crossings are a key measure that mitigates risk to caribou movement across roads. In the DAR, Dominion Diamond proposed to construct caribou crossings at appropriate discreet locations along the Jay Road. After receiving input from Aboriginal communities during the engagement process and during site visits, Dominion Diamond has changed its approach to caribou crossings along the Jay Road to reflect that feedback, as described below.

Because of the importance of the esker for caribou movement as identified through community engagement, the portion of the Jay Road that cuts through the esker will be constructed as a caribou crossing. The pipelines will be covered over with crushed rock along this section of the road, except where there are valves or joints that require visual inspection for safe operation. Dominion Diamond will strategically construct the pipelines to reduce the number of joints or valves through the esker crossing.

Dominion Diamond's community engagement program has indicated that the area to be crossed by the Jay Road is important for caribou movement. In response to the feedback received through community engagement, Dominion Diamond proposes to construct an increased number of caribou crossings along the main section of the Jay Road (i.e., roughly between King Pond Dam and the approach to the active operations area at Lac du Sauvage). This main section of the Jay Road will be constructed with frequent and wide caribou crossings that will respect the communities' identification of the importance of this area for caribou movement. Caribou crossings will not be built in areas where raised safety berms are required by the Mines Inspector, or at locations where there are necessary joints and valves in the pipelines that require visual inspection for safe operation. The pipelines will be strategically designed to reduce the number of locations that cannot be constructed as caribou crossings due to joints and valves. This approach also makes beneficial use of 'lessons-learned' from the original Misery Road, where caribou crossings were only installed after construction of the road.

Caribou crossings will be constructed using crushed rock (200 millimetres or less in size) so that the side slopes of the road are flatter and easier walking for caribou than the large roadfill rock. In the caribou crossing areas, the pipelines will also be covered with crushed rock. Once the road is constructed, monitoring, including by Aboriginal community members, will be implemented to assess the effectiveness of the constructed caribou crossings.

C6 REFERENCES

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