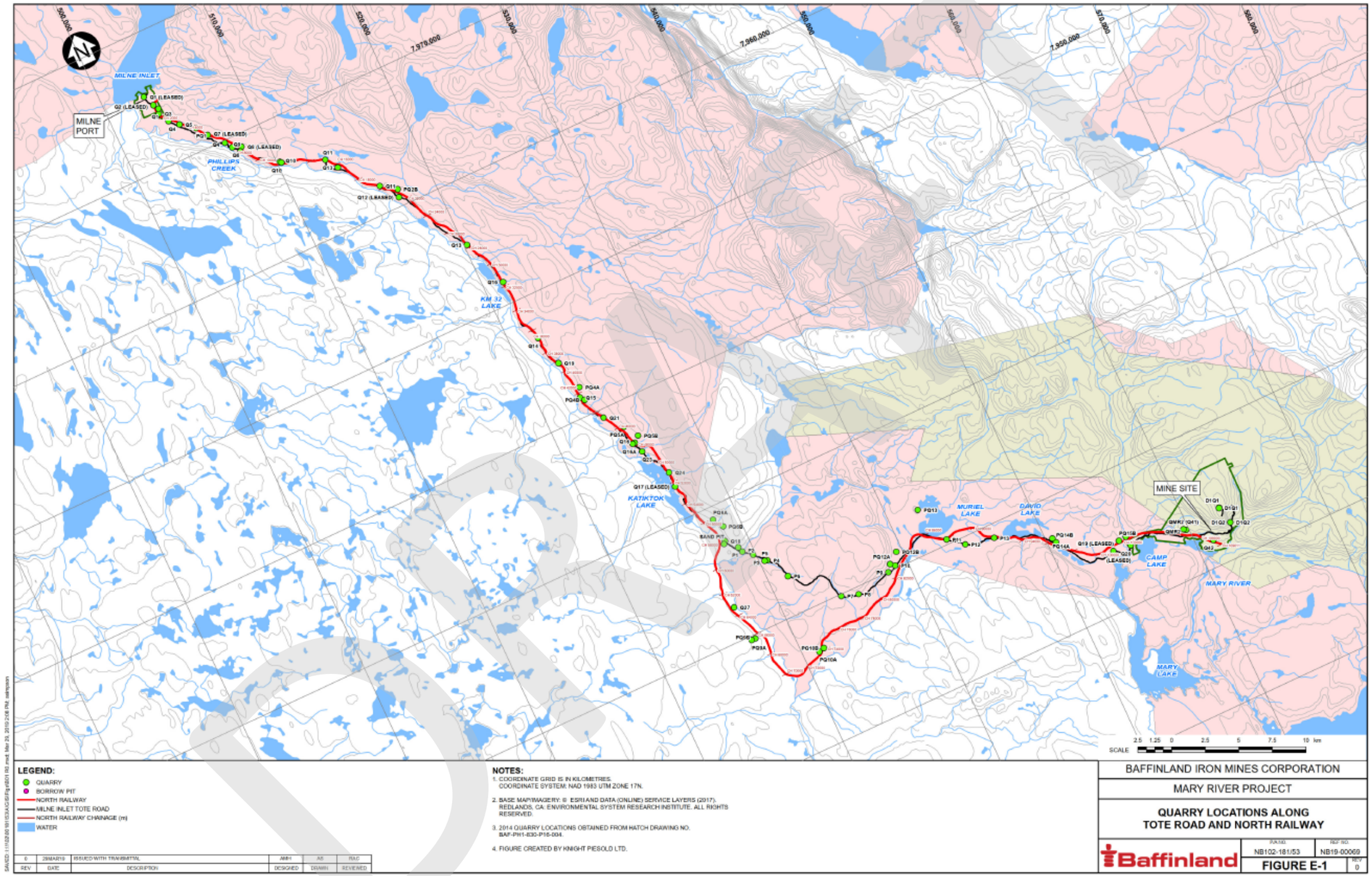
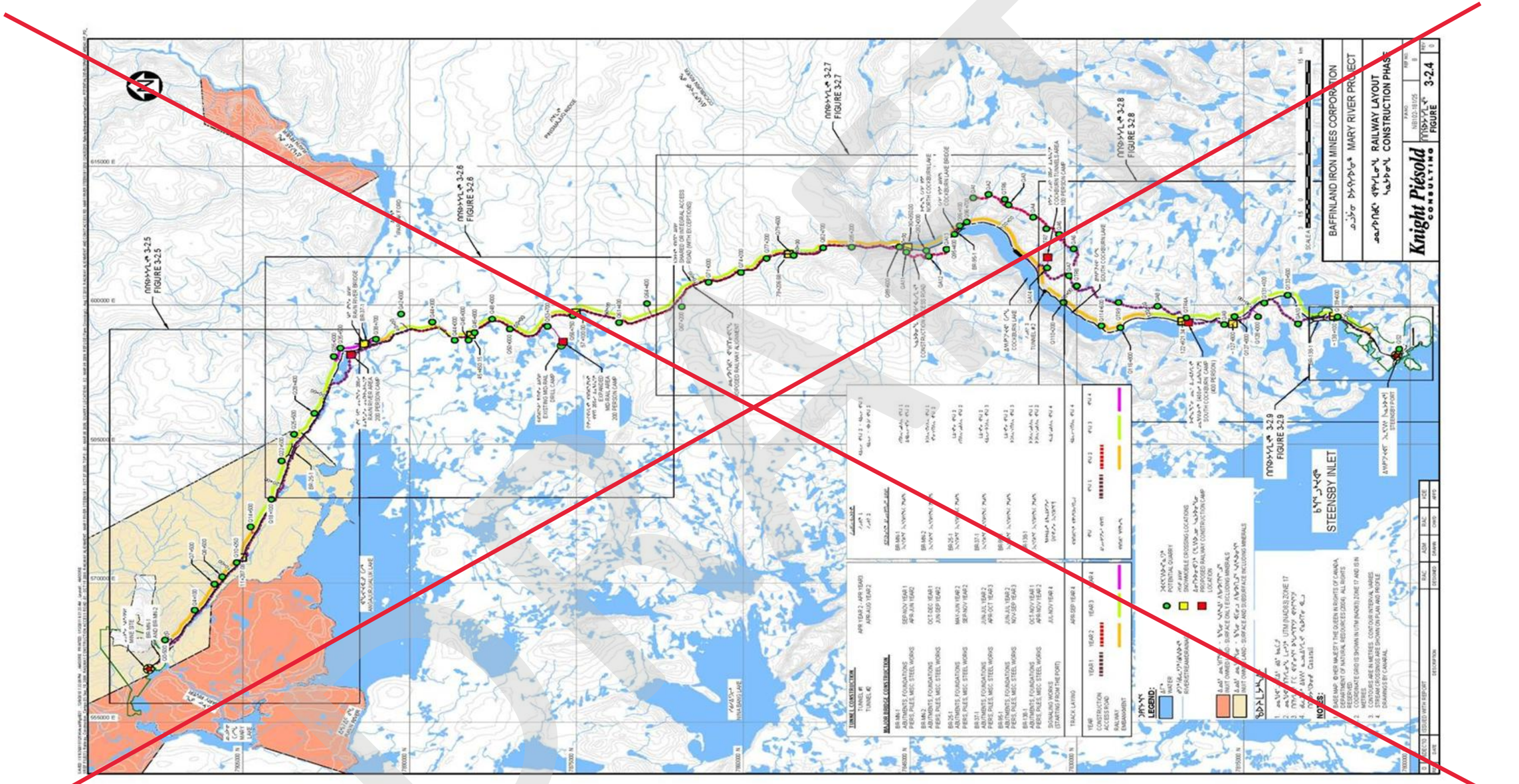


FIGURE E-1: QUARRY LOCATIONS ALONG ~~THE~~ TOTE ROAD AND NORTH RAILWAY



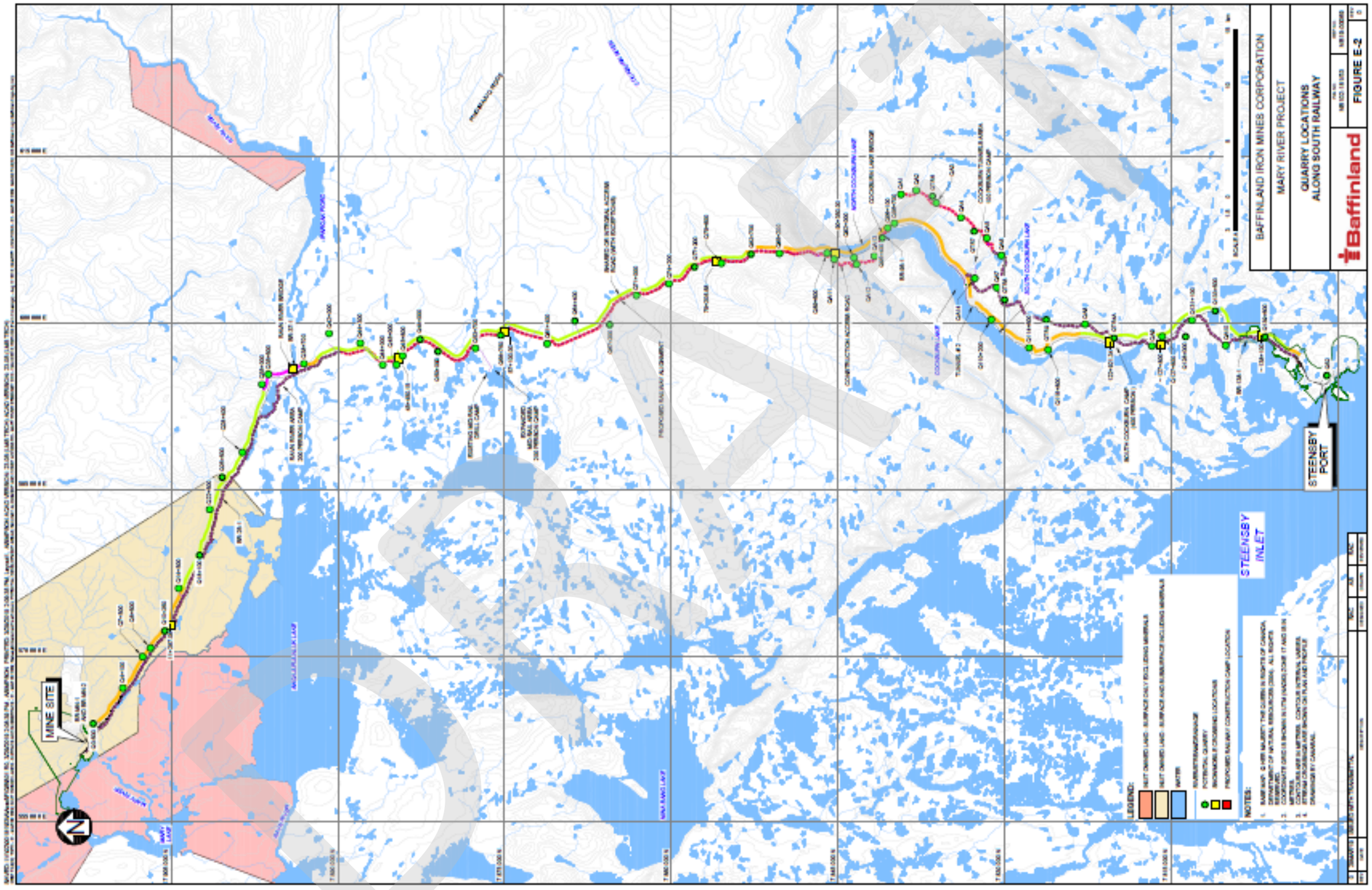


FIGURE E-2: QUARRY LOCATIONS ALONG SOUTH RAIL ALIGNMENT ~~(FROM BAFFINLAND IRON MINES FEIS; VOLUME 3, FIGURE 3-2.4)~~

TABLE E-1: YIELDS FOR QUARRIES FOR MARY RIVER PROJECT AT MINE SITE

Quarry Name	Approximate Station[1]	Northing Coordinates	Easting Coordinates	Estimated size, Volume with Contingency (m^3)[2]	Drilled
QMR2	Mary River	7,914,203	560,128	538,130	Yes
D1 Q1	6+500 along Haul Road	7 914 658	563 044	6.7 ha, 275,000 m^3	Yes
D1Q2	2+000 along Haul Road	7 913 326	563 374	11 ha, 700,000m^3	

TABLE E-2: APPROVED AND PROPOSED QUARRIES~~EXPECTED YIELDS FOR QUARRIES AND BORROW SOURCES FOR MARY RIVER PROJECT ALONG TOTE ROAD~~

~~Name~~	~~Kilometre (km)~~	~~Coordinates~~		~~Haul distance to road (m)~~	~~Direction from Alignment~~	~~Estimated Size (m)~~
		~~Northing (m)~~	~~Easting (m)~~			
~~Q1~~	~~1+000~~	~~7,976,181~~	~~503,426~~	~~<25~~	~~E~~	~~~1000x200x30~~
~~km 1 & 2 Borrow~~	~~1+000~~			~~@ road~~	~~N & S~~	~~100,000 m^3~~
~~Q2~~	~~2+000~~	~~7,975,332~~	~~503,801~~	~~<25~~	~~E~~	~~~1000x100x30~~
~~Q3~~	~~3+250~~	~~7,974,577~~	~~503,919~~	~~<50~~	~~E~~	~~~1000x100x40~~
~~Q4~~	~~4+125~~	~~7,973,774~~	~~504,325~~	~~<50~~	~~E~~	~~~1000x200x40~~
~~Q5~~	~~5+000~~	~~7,973,207~~	~~504,956~~	~~<50~~	~~E~~	~~~1000x200x40~~
~~Q6~~	~~5+900~~	~~7,972,500~~	~~505,606~~	~~<50~~	~~E~~	~~~1000x200x40~~
~~Q7~~	~~7+000~~	~~7,971,596~~	~~506,543~~	~~<150~~	~~E~~	~~5.3ha (75,000 m^3 in 2014)~~
~~Q8~~	~~10+300~~	~~7,969,748~~	~~508,465~~	~~<500~~	~~E~~	~~500x200x40~~
~~Q9~~	~~10+500~~	~~7,969,455~~	~~508,204~~	~~<10~~	~~W~~	~~500x75x20~~
~~Q10~~	~~13+500~~	~~7,967,526~~	~~510,549~~	~~<10m~~	~~W~~	~~10x20~~
~~Q11~~	~~11+000~~	~~7,962,744~~	~~516,585~~	~~@ road~~	~~E~~	~~5 ha (175,000 m^3 in 2014)~~
~~Q12~~	~~23+900~~	~~7,961,395~~	~~577,477~~	~~@ road~~	~~W~~	~~250x100~~
~~Q13~~	~~30+800~~	~~7,956,039~~	~~520,568~~	~~~200~~	~~W~~	~~>500 in length~~
~~Q14~~	~~38+600~~	~~7,947,516~~	~~522,432~~	~~<500~~	~~E~~	~~n/a~~
~~Q15~~	~~45+050~~	~~7,942,195~~	~~523,415~~	~~<500~~	~~E~~	~~continuous N-S bedrock ridge~~
~~Q16~~	~~49+900~~	~~7,937,416~~	~~525,691~~	~~<200~~	~~E~~	~~continuous N-S bedrock ridge~~
~~Q16A~~	~~50+000~~	~~7,937,399~~	~~525,494~~	~~<50~~	~~E~~	~~continuous N-S bedrock ridge~~
~~Q17~~	~~54+600~~	~~7,933,202~~	~~527,006~~	~~~200~~	~~E~~	~~continuous N-S bedrock ridge~~
~~Q18~~	~~61+500~~	~~7,927,975 (7,928,029)~~	~~526,660 (529,029)~~	~~~200~~	~~E~~	~~continuous N-S bedrock ridge~~
~~Q19~~	~~93+500~~	~~7,915,063~~	~~554,574~~	~~@ road~~	~~N~~	~~Several ridges/hills, 1.9 ha (175,000 m^3 in 2014)~~
~~Q20~~	~~97+500~~	~~7,914,882~~	~~555,921~~	~~100 – 200~~	~~N~~	~~bedrock knoll, ~200x100x15~~
~~P1~~	~~62+500~~	~~7,927,133~~	~~529,364~~	~~@ road~~	~~E~~	~~previously opened, 7.6 ha, (275,000 m^3 in 2014)~~
~~P2~~	~~63+000~~	~~7,926,710~~	~~529,512~~	~~@ road~~	~~W~~	~~previously opened~~
~~P3~~	~~63+900~~	~~7,926,138~~	~~530,139~~	~~@ road~~	~~W~~	~~previously opened~~
~~P4~~	~~65+100~~	~~7,925,324~~	~~530,939~~	~~@ road~~	~~W~~	~~previously opened; 30x100x1~~
~~P5~~	~~65+100~~	~~7,925,364~~	~~530,727~~	~~<100~~	~~W~~	~~150x50x5~~
~~P6~~	~~67+100~~	~~7,923,616~~	~~531,817~~	~~@ road~~	~~W~~	~~previously opened; 20x40x0.5~~
~~P7~~	~~71+700~~	~~7,920,584~~	~~534,800~~	~~@ road~~	~~W~~	~~previously opened~~
~~P8~~	~~73+800~~	~~7,920,168~~	~~536,031~~	~~@ road~~	~~W~~	~~previously opened~~
~~P9~~	~~75+700~~	~~7,920,709~~	~~538,703~~	~~@ road~~	~~E~~	~~previously opened~~

~~Name~~	~~Kilometre (km)~~	~~Coordinates~~		~~Haul distance to road (m)~~	~~Direction from Alignment~~	~~Estimated Size (m)~~
		~~Northing (m)~~	~~Easting (m)~~			
~~P10~~	~~75+900~~	~~7,920,952~~	~~539,391~~	~~@ road~~	~~W~~	~~previously opened; 30x100x1.5m~~
~~P11~~	~~80+400~~	~~7,921,090~~	~~543,685~~	~~@ road~~	~~S~~	~~previously opened; 30x100x1.5m~~
~~P12~~	~~83+100~~	~~7,920,168~~	~~544,796~~	~~@ road~~	~~S~~	~~several ridges and hills; ~100x100x10m~~
~~P13~~	~~85+500~~	~~7,919,693~~	~~546,932~~	~~@ road~~	~~S & N~~	~~on N side 200x150x4m~~
~~P14~~	~~90+000~~	~~7,917,805~~	~~550,574~~	~~@ road~~	~~S & N~~	~~S side of road previously opened~~
~~P15~~	~~91+100~~	~~7916,730~~	~~551,384~~	~~@ road~~	~~N~~	~~~500x250x10m~~
~~P16/ Km 97~~	~~97+400~~	~~7914,882~~	~~555,921~~	~~@ road~~	~~N & S~~	~~previously opened source ~7,5 ha (150,000 m³)~~
~~Km103/104~~	~~104+500~~			~~@ road~~	~~N~~	~~Previously opened source 50,000 m³~~

Quarry No.	Railway Chainage	UTM Easting	UTM Northing	Material	Available Volume (m³)	Approximate Footprint (ha)
Q1[1]	CH2000	504013	7974915	Granitic Gneiss	400,000	33.6
PQ1	CH4500 to 6200	505953	7972448	Granitic Gneiss	1,110,000	66.7
Q4	CH7200	507438	7970518	Granitic Gneiss	7,687	0.8
Q6	CH7800	507804	7969988	Granitic Gneiss	6,348	0.6
Q10	CH11800	510638	7967431	Granitic Gneiss	14,140	1.4
Q11	CH14900	513679	7966223	Limestone	5,000	0.4
Q13	CH16200	514295	7965314	Limestone	118,245	7.9
PQ2b	CH22000	517664	7961973	Limestone	160,000	23.3
Q16	CH 31700	521838	7952395	Limestone	81,717	5.4
Q19	CH39200	523024	7945186	Limestone	28,114	2.8
PQ4a	CH41600	523697	7942901	Limestone	180,000	11.1
PQ4b	CH42500	523651	7941894	Limestone	180,000	12.3
Q21	CH44600	524356	7940085	Limestone	9,000	1.1
PQ5a	CH45700	525439	7938839	Limestone	240,000	18.6
PQ5b	CH46800	526119	7937802	Limestone	500,000	47.2
Q23	CH48600	525886	7936586	Limestone	4,041	0.4
Q24	CH51250	527063	7934336	Limestone	42,412	4.2
PQ6a	CH56200	528552	7929763	Limestone	360,000	26.9
PQ6b	CH57100	528993	7928994	Limestone	300,000	22.4

Quarry No.	Railway Chainage	UTM Easting	UTM Northing	Material	Available Volume (m^3)	Approximate Footprint (ha)
Rail Sand Pit	CH58000	528498	7927790	Glacial till	TBD2	8.0
Q27	CH63350	527208	7923193	Limestone	136,086	9.1
PQ9a	CH66000	527378	7920441	Limestone	225,000	6.4
PQ9b	CH66000	527651	7920425	Limestone	75,000	2.2
PQ10a	CH73100	531568	7917522	Limestone	180,000	13.5
PQ10b	CH74200	531982	7917635	Limestone	120,000	9.7
PQ12a	CH84500	539072	7921210	Sandstone	240,000	25.8
PQ12b	CH84500	539898	7921837	Sandstone	120,000	20.4
PQ13	CH85700	542676	7923983	Sandstone	180,000	44.7
PQ14a	CH96700	550836	7917829	Sandstone	80,000	4.6
PQ14b	CH96000	550983	7917458	Sandstone	30,000	9.5
PQ15a	CH101500	555853	7915626	Diorite	80,000	8.3
PQ15b	CH102300	555270	7915586	Diorite	45,000	6.1
QMR2[1]	CH107000	559982	7914323	Diorite	250,000	28.0
Q42	CH109000	561673	7912667	Diorite	125,000	6.6
D1Q1[1]	Deposit No. 1	563055	7914645	Granitic Gneiss/schist	275,000	6.7
D1Q2[1]	Deposit No. 1	563376	7913330	Granitic Gneiss/schist	700,000	13.1

NOTES:

[1] EXISTING APPROVED QUARRY WITH AN EXISTING QUARRY MANAGEMENT PLAN.

[2] THE RAIL SAND PIT IS EXPECTED TO BE USED DURING RAIL OPERATIONS ONLY, EXTRACTING 5,000 TO 10,000 m^3 OF SAND AND GRAVEL ANNUALLY. SOURCE: APPLICATION TO AMEND TYPE A WATER LICENSE 2AM-MRY1325, REV 4, SEPTEMBER 26, 2018.

TABLE E-3: YIELDS FOR QUARRIES FOR MARY RIVER PROJECT ALONG RAIL CORRIDOR

Quarry Name	Approximate Station[1]	Northing Coordinates	Easting Coordinates	Volume with Contingency (m^3)[2]			Drilled in 2011
				Railway	Road	Total	
QMR2	Mary River	7,914,203	560,128	491,079	47,052	538,130	Yes
Q-0+500	- 0+500	7,911,899	563,668	826,508	196,174	1,022,683	Yes
Q4+100	4+100	7,909,418	566,698	570,968	199,833	770,801	Yes
Q7+500	7+500	7,907,667	569,432	619,585	174,374	793,959	Yes
Q10+250	10+250	7,905,378	572,883	1,007,536	206,620	1,214,157	Yes

Quarry Name	Approximate Station[1]	Northing Coordinates	Easting Coordinates	Volume with Contingency (m^3)[2]			Drilled in 2011
				Railway	Road	Total	
Q14+500	14+200	7,904,382	575,868	1,232,091	240,446	1,472,537	Yes
Q18+100	18+100	7,902,853	578,804	1,463,455	263,943	1,727,398	Yes
Q22+500	22+500	7,901,663	583,415	1,484,696	230,582	1,715,278	Yes
Q25+500	25+500	7,900,221	586,954	755,019	124,801	879,820	Yes
Q28+400	28+400N	7,898,617	588,240	158,886	104,426	263,312	Yes
Q31+500	31+500N	7,897,863	590,944	53,356	128,885	182,242	Yes
Q35+000	35+000N	7,896,866	594,445	77,971		77,971	
Q35+500	35+500N	7,896,244	595,477	248,555	118,172	366,726	Yes
Q38+700	38+700N	7,893,140	596,368	342,908	116,780	459,687	Yes
Q40+600	40+600N	7,889,375	596,009	812,884	153,489	966,373	
Q42+000	42+000N	7,890,881	598,151	305,177	96,131	401,308	Yes
Q44+300	44+300N	7,888,054	598,208	302,919	62,185	365,104	Yes
Q44+000	44+000	7,885,927	596,138	178,149	38,931	217,080	Yes
Q45+000	45+000	7,884,724	596,201	54,862	29,020	83,882	Yes
Q45+800	45+800	7,884,147	596,990	34,368	42,430	76,798	
Q48+000	48+000	7,882,597	598,495	28,241	58,397	86,637	
Q50+000	50+000	7,881,100	597,357	134,915	70,757	205,672	Yes
Q53+700	53+700	7,877,567	597,616	339,267	78,350	417,616	Yes
Q56+750	56+750	7,875,280	598,852	426,916	87,668	514,583	Yes
Q60+000	60+000	7,871,954	599,087	327,131	102,084	429,214	
Q64+400	64+400	7,868,565	600,221	203,898	94,957	298,854	
Q67+200	67+200	7,865,619	600,161	156,728	79,560	236,288	
Q71+000	71+000	7,863,169	602,398	161,614	71,915	233,530	
Q74+200	74+200	7,860,226	603,469	109,863	63,161	173,024	
Q77+200	77+200	7,857,588	604,840	86,660	65,983	152,642	
Q79+600	79+600	7,855,411	605,366	145,051	77,616	222,666	
Q82+700	82+700	7,852,449	605,710	166,692	90,198	256,890	Yes
Q85+200	85+200	7,850,087	606,073	227,871	89,196	317,067	Yes
Q88+800	88+800	7,846,674	605,956	238,151	63,999	302,150	Yes
QTR21	90+400	7,845,379	605,707		51,239	51,239	
Q92+000	92+000	7,843,535	605,816	98,287		98,287	
QTR22	92+000	7,843,330	605,243		47,682	47,682	
QTR23	93+600	7,841,721	606,018		33,456	33,456	
Q95+400	95+150	7,840,905	607,500	16,898	56,143	73,041	
Q96+100	96+100	7,840,533	608,580	17,031	149,531	166,562	
Q96+700	96+700	7,839,908	608,976	6,493		6,493	
QTR10	97+300	7,839,328	611,431		203,081	203,081	
QTR11	98+700	7,838,013	611,995		134,433	134,433	
QTR6	98+900	7,836,409	611,377		101,012	101,012	
QTR13	100+700	7,833,967	609,448		165,509	165,509	Yes
QTR12	101+100	7,836,190	610,857		162,040	162,040	Yes
NTUN-DH01	102+540	7,835,656	605,976				Yes
NTUN-DH03	102+930	7,835,382	605,698				Yes
NTUN-DH05	103+140	7,835,245	605,535				Yes
STUN-DH03	108+180	7,832,812	601,490				Yes
QTR7	108+300	7,832,685	608,302		132,606	132,606	

Quarry Name	Approximate Station[1]	Northing Coordinates	Easting Coordinates	Volume with Contingency (m^3)[2]			Drilled in 2011
				Railway	Road	Total	
QTR17	105+700	7,832,984	603,944		948,392	948,392	
QTR14	104+300	7,831,608	607,681		171,297	171,297	
QTR15	105+200	7,830,326	606,224		227,039	227,039	
QTR16	106+200	7,830,731	603,228		905,620	905,620	
Q110+200	110+200	7,831,193	600,359	253,809		253,809	
QTR8	112+000	7,830,182	602,012		603,136	603,136	
Q114+600	114+600	7,827,828	597,850	382,501		382,501	Yes
QTR9	116+500	7,826,260	600,261		361,991	361,991	Yes
Q116+800	116+800	7,826,194	597,422	764,455		764,455	Yes
QTR18	120+600	7,822,808	599,870		536,571	536,571	
QTR4A	123+000	7,820,410	598,555	958,066	636,598	1,594,664	Yes
QTR19	126+900	7,816,806	597,863		451,609	451,609	
Q127+800	127+800	7,815,755	598,770	545,218		545,218	
Q128+000	128+000	7,813,922	598,828		222,278	222,278	
Q131+100	131+100	7,813,509	600,177	112,666	191,240	303,906	Yes
Q133+500	133+500	7,811,052	601,482				
QTR20	134+100	7,810,467	598,087		169,565	169,565	
Q138+100	138+100	7,807,612	598,865		104,996	104,996	Yes
Q139+600	139+600	7,806,105	598,727		119,999	119,999	Yes
QS3A	Steensby	7,800,000	595,698				Yes
QS3	Steensby	7,799,349	597,500				
QS2	Steensby	7,801,066	595,200		300,000	300,000	Yes
QS1	Steensby	7,803,054	593,500				Yes
SI-OLD-004	Steensby	7,798,314	592,879				Yes
SI-OLD-005	Steensby	7,798,331	592,860				Yes
SI-OLD-006	Steensby	7,798,409	592,876				Yes
SI-OLD-007	Steensby	7,798,424	592,840				Yes
SI-OLD-008	Steensby	7,798,489	592,891				Yes

Notes:

[1] Two sets of stationing are used along the rail alignment. Following the Ravn River realignment, which extends from approximately station 26+100 to station 46+582.93, the stationing resets to 43+830 to be consistent with the stationing used prior to the Ravn River realignment. To avoid confusion, stationing along the Ravn River realignment has an "N" suffix.

[2] Volumes obtained from the DEIS.

Appendix F
Concordance Table

TABLE F- 1: CONCORDANCE WITH NWB TYPE A WATER LICENCE, 2AM-MRY1325

No.	Term and Condition	Comments
Part D #4	Quarrying activities shall be conducted in accordance with all applicable legislation, guidelines and industry standards including the *Northern Land Use Guidelines, Pits and Quarries* (INAC, 2009).	Refer to Section 3. Updates have been done in accordance with 2010 edition
Part D #7	The License shall submit to the Board for review, an addendum to the Plan referred to in Part D, Item 6a for any quarry site selected for future development that the plan does not adequately address. If the content of the existing quarry plan referred to under Part D, Item 6a, does not adequately address the proposed activities for the management requirements of the selected Quarry site, the Licensee shall submit to the Board for approval, a site-specific Quarry management plan.	Refer to Section 1.1. This management plan provides the overarching plan for Quarry and Borrow Source development. Respective Quarry and Borrow Source Management Plans have site specifics (e.g. drainage plans).
Part D #14	The Licensee shall maintain a minimum of thirty-one (31) metre undisturbed buffer zone between the periphery of Quarry sites and the ordinary High Water Mark of any water body unless otherwise approved by the Board in writing. The Licensee shall not excavate and/or remove material from any Quarry beyond a depth of one (1) meter above the ordinary High Water Mark or above the groundwater table, to prevent the potential contamination of groundwater unless otherwise approved by the Board in writing. The Licensee shall construct and operate the Mine Site and associated infrastructure and facilities in accordance with all applicable legislation and industry standards.	Refer to Sections 3.3 and 3.4.
Part D #15	All surface runoff from Quarry activities for the Project, where flow may directly or indirectly enter a Water body, shall be sampled Weekly and not exceed the Effluent quality limits under Part D, Item 16.	Refer to Section 6.1
Part D #16	All surface runoff during the Construction Phase of the Project, where flow may directly or indirectly enter a Water body, shall be sampled Weekly and not exceed the following Effluent quality limits: Table 1: Effluent quality limits for surface runoff during construction **Parameter** / **Maximum Average Concentration (mg/L)** / **Maximum Concentratio of Any Grab Sample (mg/L)** Total Suspended Solids / 50 / 100 Oil and Grease / No Visible Sheen / No Visible Sheen pH / Between 6.0 and 9.5 / Between 6.0 and 9.5	Refer to Section 6.1
Part F #28	The Licensee shall incorporate best management practices including ditches, diversions, sumps and berms where necessary to minimize or prevent surface runoff from entering nearby water bodies from Quarry and borrow pit sites.	Refer to Section 3.4
Part I #23	The Licensee shall monitor runoff and/or discharge from borrow pits and rock Quarry sites, on a monthly basis, for the following parameters: • Total Suspend Solid (TSS) • Oil and Grease • Ammonia (total NH_3-N) • Nitrate (total NO_3-N) • pH • Conductivity; and • Demonstrate to be non-acutely toxic.	Refer to Section 6.1

TABLE F- 2: CONCORDANCE WITH NIRB PROJECT CERTIFICATE NO. 005

No.	Term and Condition		Comments
30	**Category:**	Landforms, Geology and Geomorphology – Quarries	Refer to Section 1.1 and respective Quarry and Borrow Source Management Plans.
	Responsible Parties:	The Proponent	
	Project Phase:	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring	
	Objective:	To provide oversight on quarry design and management.	
	Term or Condition:	The Proponent shall develop site-specific quarry operation and management plans in advance of the development of any potential quarry site or borrow pit.	
	Reporting Requirements:	Plans to be provided to the NIRB for review and comment at least 30 days prior to commencement of construction activities.	