Howse Property Project

Environmental Impact Statement Information Requests

Round 2 (Part 2): CEAA 5, 7, 8, 11, and 15

February 2017

CEAA 5, Round 1, Part 2	CEAA IN-IR-26a	5(1)(b) Transboundary 5(1)(c)(i) Aboriginal Peoples' Health/socio-economic conditions	6.2.1 6.3.5 6.3.4	The proponent's response to CEAA 5 (Round 1 – Part 2) states "The Proponent will finalize an action plan for the reduction of GHGs following the acquisition of data on emissions from the Howse Project once the Howse plant is fully operational." Though specific mitigation measures may not be known at this time, the Agency requires information regarding standard measures that may be considered for inclusion in such a plan. Without information on the likely mitigation measures and associated reduction in GHG emissions, the Agency cannot assume any reduction in effect; the Agency's analysis would be based on unmitigated GHG emissions.	If the proponent is unable to provide specific mitigation measures for the Howse Project, provide in lieu a list of typical industry standard mitigation measures the proponent would implement in order to reduce greenhouse gases, an estimate of the anticipated greenhouse gas reductions, and an assessment of the residual effects following mitigation; or, provide a rationale as to why no measures can be identified. Provide a draft action plan for the reduction of GHGs, if available.

HML Answer

The largest GHG contributors under the Howse Property Project are the Mini-Plant (87%) and hauling trucks (13%). The following practices will be employed by the Proponent to reduce GHG emissions at the Howse site:

- The Proponent will limit the use of the dryer to what is absolutely required. It is estimate that only 25% of the ore will be required to pass through the dryer (However, modelling of annual fuel consumption for the Howse Property was conservative and employed the worse-case scenario: it assumed that 50% of the ore required drying);
- The Howse mini-plant will be located near the rail loop, which will reduce the distance travelled to transport the ore, thus reducing the pollution load; and
- Idling of vehicles will be kept to a strict minimum.

The calculations of GHG emissions presented in the Howse EIS document are based on these practices and present the worst case scenario.

There are no changes to the assessment of this component.

A draft plan is not currently available. To improve the effectiveness of its GHG action plan, the Proponent will base its action plan on data from emissions from the Howse Project once the Howse plant is fully operational. The Proponent will present this plan to the Agency as soon as it is available.

CEAA 7, Round 1, Part 2	NL – PPD -01 IN-IR 26d	5(1)(b) Transboundary 5(1)(c)(i) Aboriginal Peoples' Health/socio-economic conditions	6.2.1 6.3.5 6.3.4	In response to CEAA 7 (Round 1 – Part 2), the proponent indicates that it: "…assumes an average burner firing rate of 50% over the operating period." The Agency understands that a burner is generally at its optimal fuel combustion nearer 100% load, so operating a burner at 50% load may lead to excess fuel combustion. Assuming the 50% rate is accurate, simply taking half of the calculation at 100% load may be an	Clarify what is meant by "an average burner firing rate of 50% over the operating period." In particular, does this mean the proponent will only be operating dryers at 50% capacity on average?

				underestimation of fuel usage owing to potentially lower combustion efficiencies at lower loads. Information is needed to understand the nature of effects with respect to release of greenhouse gases, transboundary effects, as well as the health of Indigenous people	If yes, provide a discussion on the potential effects to air and greenhouse gases that would arise operating the burner at 50%, a lower efficiency burn rate. Also, indicate why it is not possible to size the burners to ensure maximum burner efficiency. If no, explain further, describing the resulting potential effects.

HML Answer

At the Howse Mini Plant, two dryers have been included in the modelling, each of them designed for an iron ore input of 320 tonnes per hour (operating 7 months/year). Assumptions provided by Tata Steel to AECOM had indicated that 50% of the iron ore material going through any of the plants would end up going through the drying process, while the other half would be deemed to be within the acceptable range for moisture content. The use of the expression "assumes an average burner firing rate of 50% over the operating period" is misleading and should be replaced by "assumes that 50% of the iron ore material requires drying". Needless to say that whenever the dryers are operating, they are indeed operating at full optimal capacity and not at a 50% burner firing rate.

To remain conservative and to consider the uncertainty of "when" those downtimes actually occur, the modelling has not taken this 50% into account. For modelling purposes, the dryers are operating at full capacity, 24 hours per day. The 50% assumption was only used for evaluating the annual fuel consumptions, which further impact the GHG calculations.

CEAA 8, Round 1, Part 2	NL – PPD-02 IN-IR-26d	5(1)(b) Transboundary 5(1)(c)(i) Aboriginal Peoples' Health/socio-economic conditions	6.2.1 6.3.5 6.3.4	In response to CEAA 8 (Round 1 – Part 2), the proponent recalculated a number of values in Table 7-4; however errors still exist within the table. For example, as originally indicated but not addressed, the mini-plant with 20 million litres of fuel combusted cannot only emit 5601 tonnes of CO2. This value appears to be off by a factor of 10 as tonnage should be closer to 56,000 tonnes. Information is needed to understand the nature of effects with respect to release of greenhouse gases, transboundary effects, as well as the health of Indigenous people	Confirm calculations in Table 7-4. Provide a rationale for estimations regarding fuel use and combustion for the mini-plant, or provide revised calculations. Provide a revised discussion of potential effects (i.e. to air quality) associated with increased emissions, if it is found that emissions were underestimated.

HML Answer

Indeed, the proponent has changed the value of 5601 tonnes to 56,013,324 kg (or 56,013 tonnes). The text in the EIS should read:

GHG emissions from the Howse Project activities were calculated for all three phases as a whole, since the Construction and Decommissioning and Reclamation phases will be largely limited to road traffic, resulting in negligible emission (as compared to the operations phase). Emissions were estimated based on the amount of fuel burned and the emission factors of the National Inventory Report, 1990-2011 (Environment Canada, 2013a). According to this report, each litre of diesel fuel burned results in the emission of 2,663 g of CO_2, 0.13 g of CH_4 and 0.4 g of N_2O.

	L/YR	**KG CO_2/YR**	**KG CH_4/YR (KG CO2 EQ)**	**KG N_2O/YR (KG CO2 EQ)**	**MT CO2 EQ / YR**
Mini-plant	21,033,918	~~5,601332~~ 56,013,324	2734 (68,360)	8414 (2,507,243)	~~0.0081~~ 0.0586
Hauling trucks	3,261,223	8,684,639	424 (10,599)	1304 (388,738)	0.0091

Pit mining equipment	1,151,064	3,065,283	150 (3,741)	460 (137,207)	~~0.0032~~ 0.000013
Total	**25,446,206**	**~~14,688,254.37~~ 67,763,247**	**3,308 (82,700)**	**10,178 (3,033,188)**	**~~0.018~~ 0.067**

Carbon dioxide equivalents (CO2 eq) were determined by multiplying the amount of emissions of a particular gas by the global warming potential (GWP) of that gas. GHGs differ in their ability to absorb heat in the atmosphere due to their differing chemical properties and atmospheric lifetimes. For example, over a period of 100 years, methane's (CH4) potential to trap heat in the atmosphere is 25 times greater than carbon dioxide's potential, and thus it is considered to have a GWP of 25. The IPCC publishes the GWPs and atmospheric lifetimes for each GHG which can be found in Environment Canada (2013a).

The GHG emissions were calculated as CO_2 equivalent per year (CO_2eq/yr) using the following IPCC (2013) global warming potentials: 25 for CH_4 and 298 for N_2O. GHG emissions from the Howse Project are estimated to be 0.067 $MtCO_2$eq/yr. Newfoundland and Labrador total GHG emissions for the years 1990, 2005 and 2013 are 9.8, 10.3 and 8.6, respectively (Environment Canada, 2013a https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=18F3BB9C-1). The Howse emissions represent roughly 0.7% of Newfoundland and Labrador total emissions (based on a mean GHG emissions value of 9.56 MT CO2 eq/YR).

CEAA 11, Round 1, Part 2	NL – PPD-08	5(1)(b) Transboundary 5(1)(c)(i) Aboriginal Peoples' Health/socio-economic conditions	6.2.1 6.3.5 6.3.4	Based on the response to CEAA 11 (Round 1 – Part 2), the proponent calculated emission rates based on g/hp-hr (engine-based) and not as g/hr (generator-based). However, generator / engine efficiency is typically approximately 85%. Therefore, it appears that emissions are being underestimated by approximately 15%. It can also be shown that the same calculation occurs for most of the generators. Information is needed to understand the nature of effects with respect to release of greenhouse gases as well as the health of Indigenous people.	Revisit Appendix E1 and Appendix A of the EIS. Update the emission calculations, if generator-based values (g/hr) were not used. Should it be shown that the emissions were underestimated, provide a revised effects assessment for air quality.

HML Answer

- Since it is by far the most significant emission source, we assumed the focus of the original question was on the Main Plant's GenSet and therefore provided the calculation basis for the GenSet only (which is in g/hr directly, no conversion needed); we misunderstood the scope of the question.
- As requested by the Department, we reviewed the other smaller stationary generators emissions calculations. The Department is correct. Emissions are based on the Generator output (ekW) and not the Engine input (kW or BHP) as they should be.
- During the Howse EIS/EPR preparation one objective was to stay consistent with previous modelling efforts and methodology at DSO3. Some conclusions were made and discussed at that time between AECOM, TSMC and NLDEC and we did not want to alter those. This explanation is to provide historical perspective and does not serve as an excuse; the calculation discrepancy was not detected before and accurate calculations must be provided.

The table below shows the results of the emission calculations validation. The table has three parts:

- Data, as submitted: Data as reported in the EIS
- Corrected Data: Data corrected for the noted discrepancy on engine efficiency
- Current operating scenarios: During the summer of 2016 (after the submittal of the EIS), the proponent has implemented a significant mitigation measure : electricity to the Workers' Camp is now provided by the Main Plant GenSet. The four workers' camp generators are still in place, but will be used for emergency situations. Consequently, emission rates of all pollutants are lower than the worst-case presented in the original EIS.

The operational change described in c) above has the following impact :

- decreased overall emissions reduce overall impact
- in the air dispersion modelling results, the four workers' camp generators where a significant contributor to the impact at R40 since the sensitive receptor is actually located on the workers' camp premises. As indicated in Section 3.4 of the Appendix E-1, "An important reduction of exceedances at sensitive receptors can be achieved by..finding an alternative to the presence of diesel generators at the Workers' camp. This solution has been implemented by the proponent.

Consequently, the EIS as presented is overly conservative and need not be revised.

DATA, AS SUBMITTED

Location	Manufact.	Rated Power Generation *(each)* (ekW)	Modelled Operating Scenarios: Period	Load	Modelled Power (ekW)	Emission Rates: PM (g/s)	NO_x (g/s)	CO (g/s)
Concrete Batch Plant	Caterpillar	157.5	100% load – 24 hrs/day, 12 months/year	100%	158	0.009	0.18	0.15
Plant 2	MTU	1935	75% load – 24 hrs/day, 12 months/year	75%	1451	0.024	2.86	0.24
Howse Mini-Plant	MTU	1935	75% load – 24 hrs/day, 7 months/year	75%	1451	0.024	2.86	0.24
Mixer at Plant 2	FPT	182	80% load – 24 hrs/day, 12 months/year	80%	146	0.008	0.16	0.14
FN Quarry Crusher & Screener	Caterpillar	275	100% load- 24 hrs/day, 7 months/year	100%	275	0.003	0.38	0.02
Worker's Camp 1	Caterpillar	275	100% load- 24 hrs/day, 12 months/year	100%	275	0.003	0.38	0.02
Worker's Camp 2	Caterpillar	275	100% load- 24 hrs/day, 12 months/year	100%	275	0.003	0.38	0.02
Worker's Camp 3	Caterpillar	275		100%	275	0.003	0.38	0.02
Worker's Camp 4	Caterpillar	1000	100% load- 24 hrs/day, 12 months/year	100%	1000	0.007	1.84	0.05
			Total emission rates included in the modelling (g/s) =			**0.084**	**9.42**	**0.92**
Five (5) generators at Main Plant	Caterpillar		Five (5) 2825 ekW generators - 2974 BkW engines. (Emission rates obtained directly from "performance data" sheets in grams per hour, for 5 generators at 75% load) Winter operations : 5 units at 75% load – 24 hrs/day, 7 months/year Summer operations : 3 units at 75% load – 24 hrs/day, 5 months/year			0.357	43.07	1.87
			% of all generators emissions			81%	82%	67%

CORRECTED DATA

Rated Engine Power (BkW)*	Corrected Engine Power that should have been used (BkW)	Emission Rates**: PM (g/s)	NO_x (g/s)	CO (g/s)
185	185	0.010	0.21	0.18
2280	1710	0.029	3.37	0.29
2280	1710	0.029	3.37	0.29
214	171	0.010	0.19	0.17
324	324	0.004	0.45	0.03
324	324	0.004	0.45	0.03
324	324	0.004	0.45	0.03
324	324	0.004	0.45	0.03
1176	1176	0.008	2.16	0.06
Total emission rates corrected for generator efficiency (g/s) =		**0.099**	**11.09**	**1.08**
Five (5) 2825 ekW generators - 2974 BkW engines. **(No correction required)**		0.357	43.07	1.87
% of all generators emissions		78%	80%	63%

CURRENT OPERATING SCENARIOS

Location	Manufact.	Rated Engine Power (BkW)*	Period	Realistic Load	Used Engine Power (BkW)	PM (g/s)	NO_x (g/s)	CO (g/s)
Concrete Batch Plant	Caterpillar	185	75% load – 24 hrs/day, 1 week/yr	75%	139	0.008	0.15	0.14
Plant 2	MTU	2280	75% load – 24 hrs/day, 12 months/year	75%	1710	0.029	3.37	0.29
Howse Mini-Plant	MTU	2280	75% load – 24 hrs/day, 7 months/year	75%	1710	0.029	3.37	0.29
Mixer at Plant 2	FPT	214	75% load – 24 hrs/day, 6 months/year	75%	161	0.009	0.18	0.16
FN Quarry Crusher & Screener	Caterpillar	324	**Not planned**	0%	0	0.000	0.00	0.00
Worker's Camp 1	Caterpillar	324	**Workers' Camp electricity provided by Main Plant GenSet since summer 2016. Workers' Camp generators still on-site for emergency use**	0%	0	0.000	0.00	0.00
Worker's Camp 2	Caterpillar	324		0%	0	0.000	0.00	0.00
Worker's Camp 3	Caterpillar	324		0%	0	0.000	0.00	0.00
Worker's Camp 4	Caterpillar	1176		0%	0	0.000	0.00	0.00
			Total emission rates (g/s) =			**0.074**	**7.08**	**0.86**

* BkW for Plant 2 and Howse Mini-Plant Engines were obtained directly from manufacturers' data sheets. An efficiency of 85% was applied to the other generators to calculate BkW from eKW.

** Using the same modelled operating scenario assumptions as submitted in the EIS

CEAA 15, Round 1, Part 2	HC-IR-33 CEAA	5(1)(b) Transboundary 5(1)(c)(i) Aboriginal Peoples' Health/socio-economic conditions	6.2.1 6.3.5 6.3.4	During public review periods and during community meetings, Indigenous groups raised concerns about air quality and impacts on the health of Indigenous peoples. Specifically, they requested clarification regarding a wash bay. The proponent's response to CEAA 15 (Round 1-Part 2) states that "HML is currently working on securing a wash bay for access to all vehicles travelling into town, but this arrangement is not finalized yet." The proponent's commitment to implementing this	Clarify whether a wash bay would be utilized as a means of mitigation for the duration of the Project. If not, provide information on any alternative mitigation options and an assessment of their effectiveness.

				measure is uncertain. Without information on commitments to mitigation measures and associated reduction in effects to air quality, the Agency cannot assume any reduction in effect. Furthermore, the proponent did not clarify their intentions regarding use of dedicated vehicles for transportation between the project site and the community. Information is needed to understand the nature of effects with respect to the health of Indigenous people and transboundary effects.	Clarify whether the proponent would use dedicated vehicles that are only driven between the Project and the communities (i.e. not used for transportation in and around the Project site). If not, provide information on any alternative options. Verify whether the effects assessment includes these mitigation measures, clearly describe the role of these measures in reducing effects, and update the assessment if appropriate.

HML Answer

HML continues to work to provide a wash bay but this agreement has not been finalized yet.

In 2016, the Proponent implemented a policy which restricts 90% of its vehicles from travelling to Schefferville. Of those 10% with special authorization to travel to Schefferville, they do so to go to the airport (which does not pass through the center of town) or in the course of the work of environmental technicians or for logistical purposes. More vehicles will travel, occasionally, during shift changes (1 day every 2 weeks). It can be logically assumed that this mitigation measure reduces the dust incurred by vehicles travelling to and from the site by approximately 90%. The Proponent will continue this policy throughout the Howse Property Project Operations phase.

This new policy was not included in the effects assessment for Aboriginal Peoples' Health. The effects assessment for Aboriginal Peoples' Health concluded that the Howse Property's effect on Aboriginal Peoples' Health was non-significant (very low). Since this new Policy will further reduce the potential adverse effects of the Howse Mining projects on Aboriginal Peoples' Health with respect to dust, no new effects assessment is conducted.