Glenvale TRC Comments and Responses: Round 1

Comments Received: January 23, 2023

Responses Submitted: March 7, 2023

No.	Category	Comment / Response
1.	Greenhouse Gas Emissions	Comment: Thank you for providing the project's estimated greenhouse gas emissions. In addition to anti-idling and keeping equipment in good condition as measures to reduce vehicle and equipment emissions, we encourage the proponent to consider further measures that would reduce greenhouse gas emissions and to manage greenhouse gas emissions on an ongoing basis that demonstrates continual improvement. Approaches to reduce the main sources of emissions in quarrying include, but are not limited to, improvements in resource definition and extraction planning, operational efficiency improvement, and new drivetrain technologies. This article discusses these approaches at a high-level and we encourage the proponent to take a look: https://www.quarrymagazine.com/2022/02/18/reducing-emissions-improving-quarry-sustainability/ Response: Thank you. Hammond River Holdings (HRH) plans to employ many of the sustainability approach techniques in Figure 1 of the article provided, including 3D geological modeling to accurately define the deposit, GPS and drone surveys on a quarterly basis, and pit & dump surveys. HRH will continue to looks for ways to reduce greenhouse gas emissions.
2.	Surface Water	Comment: Section 2.7.5 states: "Monitor surface water released from the Project site to confirm that mitigation measures are maintaining the total suspended sediment (TSS) in site runoff at concentration less than 25 mg/L above background levels measured at the confluence of the receiving watercourse and a pH of between 6.5 and 9.0, as a monthly average of grab samples. Other contaminants in released water are not expected." How often will grab samples be taken? Has water quality monitoring been conducted to establish background/baseline levels? Response: It is anticipated the Approval to Operate will require grab samples on a weekly basis. The weekly samples will include one sample upstream of direct discharge from the settling pond (background), one sample at the discharge point, and one sample downstream from the discharge point. The proposed locations will be shown in the Environmental Protection Plan for construction. Baseline water quality was collected during the biophysical surveys from watercourse 1 (WC1); additional baseline samples will be collected in the spring/summer/fall of 2023.
3.	Surface Water	Comment: We recommend gathering baseline water quality data for watercourse 1 downstream of the development area (e.g. near the edge of the project development area or project development area 500 m buffer).

		Response: Acknowledged. Additional baseline surface water quality data will be collected in WC1 during the spring/summer/fall of 2023. The locations, and parameters included for analysis will be consistent with the weekly surface water sampling program which will be described in the Environmental Protection Plan for construction.
4.	Fuel	Comment: We recommend that the refueling of equipment should be conducted over a fuel pad to contain accidental spills. Response: Thank you for the recommendation. Refueling of equipment will be conducted in a designated fueling area with a spill kit.
5.	Project Alternatives	Comment: Regarding Alternatives, Section 1.2.2.1 basically says that synthetic gypsum is not readily available or is not a viable alternative to mining. Is there not synthetic gypsum produced at the Belledune (Coal-Fired) Generating Station? Hasn't JDI purchased gypsum from Belledune for the wallboard plant in the past? If so, what quantities of synthetic gypsum are/have been available from Belledune, and how does this compare to the total gypsum demand at Irving Wallboard? Response: Both the Belledune Generating Station and the Coleson Cove Generating Station produce synthetic gypsum from the operation of their flue gas desulphurization systems (scrubbers). However, the quantity of gypsum produced by these two facilities is insufficient to meet the customer's demand. Further, the Belledune Generating Station will be phased out in 2030 so the supply of synthetic gypsum from that facility is not a viable long-term approach for Atlantic Wallboard. In addition, Coleson Cove only operates during the coldest periods of the year and as such the supply of synthetic gypsum from that facility is unpredictable. Atlantic wallboard consumes approximately 300,000 metric tonnes of gypsum annually. Since 2005, Atlantic wallboard has only received 375,000 metric tonnes of synthetic gypsum from Coleson Cove.
6.	Anhydrite	Comment: This EIA Registration Document does not seem to discuss anhydrite as a by-product from Glenvale that will be sold (e.g., to agricultural markets). This came up with Upham as a project modification post-determination. If HRH has any intention of selling anhydrite from this mine, this needs to be considered part of the project description under review now. If so, please provide a brief summary document that discusses anhydrite (volumes/loads, markets, composition, handling, hazards, environmental risks, and any associated mitigation). It can be considered an addendum. Response: Based on the exploration boreholes, the geology at Upham differs from Glenvale. The gypsum and anhydrite are intermixed at Upham, thereby providing commercial value to the by-product. However, at Glenvale, there is a distinct transition from gypsum to anhydrite; once the transition has completed to anhydrite, it does not change back to gypsum. Thus, gypsum can be extracted without extracting anhydrite,

		unlike at Upham. Further, there is sufficient anhydrite at Upham to meet the small demand for the product, such that selling of anhydrite at Glenvale is not commercially viable.
7.	Property boundary	Comment: Are there no planned/required setbacks between the edge of the quarry and the property line? Figure 2.3.1 gives the impression that the open pit will go all the way to the property lines. Response: The required setbacks are dictated by the New Brunswick General Regulation 86-98 under the Mining Act, which states: "34(2) No mining operation shall be carried on within a distance of six metres from the boundary of the lease area measured from the perpendicular to the boundary." The open pit quarry, as shown in Figure 2.3.1, does not exceed this definition of the Mining Act. We are not aware of any other prescribed setbacks for open pit mines in New Brunswick.
8.	Dust suppressant	Comment: Please list and describe any dust suppressants that may be used at this quarry. Response: A combination of water and / or lignosulphonate will be used as a dust suppressant. Lignosulphonate is naturally occurring, contained in the cell walls of plants; it can be obtained as a by-product from processing paper products. It is often used as a dust suppressant due to its non-toxic and adhesive properties. Although lignosulphonate was not specifically identified in the EIA Registration document as a possible dust suppressant, please consider this response as a formal request for its use, to be confirmed as part of the Approval to Operate discussions.
9.	Pit lake water chemistry	Comment: What is the anticipated water quality/chemistry of the pit lake that will be created after mine closure? Please provide as much detail as possible, particularly with respect to pH, salinity, dissolved oxygen, metals/toxins (e.g., arsenic), nutrient (trophic) status, and general suitability for vertebrates like amphibians and even fish. I believe residual gypsum should have no impact on pH in the lake, but perhaps there are other minerals in the geology that will be exposed and submerged that could affect pH (e.g., CaCO3?). Response: The Glenvale gypsum deposit contains high purity gypsum and is devoid of base metal mineralization, based on the available geological data collected. There is no chemical processing or transformation occurring at the site, and no waste disposal. For this reason, the Project does not constitute a source of heavy metals that could be released in dust or to water, and as such there are no features of the Project that would be expected to result in increased sulphate or heavy metal concentrations. Further, the manufacturing process for wallboard can, at most, tolerate only trace amounts of salt mineral in the gypsum feedstock. For these reasons, active water treatment is not required for quarries that are extracting gypsum that meets the quality objectives for the production of wallboard. The mineable material meets the stringent screening criteria for the production of wallboard. Finally, the nature of the gypsum resource itself is an inert, chemically stable, pH neutral, non-reactive material that does not cause acid or alkali generation and thus does not result in metal leaching. The pit lake is

		expected to develop a healthy ecosystem, similar to Gypsum Mine Lake in Cheticamp, Nova Scotia, and the pit lake that has developed in the former Lafarge quarry, approximately 500 m to the northeast of the proposed site.
10.	Transportation	Comment: How many homes are along the trucking route, between the quarry and the Trans-Canada Highway? Response: A new proposed trucking route has been approved by NBDTI, see the attached revised Figure 2.3.2. Along this route there are an estimated 43 dwellings; however, not all of them might be occupied.
11.	Wildlife	Comment: If bats are found to be roosting in buildings please contact DNRED for advice on how to remove/exclude them. Response: Understood. There are no buildings on site or planned, and no known bat hibernacula within 5 km of the Project. As such, the potential presence of bats is unlikely and not of concern.
12.	Birds	Comment: Piles of soil (fill or grubbed material) should have slopes less than 70 degrees, to deter Bank Swallows from nesting. Response: Understood. Final configuration of overburden stockpiles will be at a 2:1 slope.
13.	Birds	Comment: Please be advised that some ground nesting birds such as Common Nighthawk will perform a “broken wing display” to lure predators away from their nests. If a bird is seen mimicking a wing injury during the breeding season (April 8th to August 28th), it is a very good indicator that an active nest is nearby. Response: This information will be passed along to site personnel for awareness during Construction and Operation, and will be addressed in the EMP.
14.	Site layout	Comment: The proposed area includes an area currently outside their mineral Claim 8074. If you have any questions regarding the mineral claim, please contact Joe MacIntosh at Joe.MacIntosh@gnb.ca. Response: Thank you for the comment. The extraction area will be within the Salt Brook Mineral Claim 8074. Portions of the PID that may be used for site development may reside outside the claim, however resource extraction will not occur outside the claim.

15.	Dust	Comment: It is noted that fugitive emissions from gypsum stockpiles is a potential source of air contamination, but it is later identified that due to the sizing of materials, emissions are not expected to be significant. Materials will remain open and uncovered to the environment. It is recommended that a mitigation plan for fugitive dust from gypsum stockpiles be established in the event that the prior is experienced during the operational phase. Response: Thank you for the comment. The EIA Registration document identifies that without mitigation, fugitive dust emissions could be of concern, but after adding mitigation such as sizing of materials, limiting size and shape of piles, natural revegetation, dust control on roads, etc., the residual effect is that emissions are not expected to be substantive. There is no contradiction; this is standard EIA practice to state potential effects that could occur without mitigation, but after we apply the following mitigation measures, the residual effect is acceptable.
16.	Dust	Comment: Mitigation measured in section 5.2.3.2 are satisfactory; however, the addition of the following should be considered: blasting and crushing activities as well as material movement shall be limited during high wind events to avoid transport of particulate matter off site to nearby receptors (as nearest residences are previously identified within <1 km of project site). Response: Thank you for the suggestions. Hammond River Holdings will take this into consideration.
17.	Stockpiles	Comment: As identified in Section 2.3.3, what is the maximum expected storage pile height for crushed gypsum within the project site? Response: It is expected the storage pile for crushed gypsum will not exceed 10 m above working pad elevation.
18.	Storm water	Comment: DTI requires that there is no net increase in flow to the receiving watercourse(s) which flows through DTI infrastructure downstream of the development. Please provide a Storm water Management Plan (SMP) that includes: -A map showing elevation contours of the development and the drainage area upstream of the development; -Pre- and post-development storm water flows anticipated for this project, for all rain events (from 2 to 100 year return periods), including 20% additional precipitation to account for climate change; -If some of the calculated post-development flows are greater than the pre-development flows, attenuation measures will need to be provided (for example a detention pond). Response: Thank you for the information. A storm water management plan is currently in preparation and will be submitted for the TRC's review.

19.	NBDTI	Comment: An Infrastructure Impact Assessment (IIA) may be carried out by DTI to estimate potential long-term degradation of public highways and bridges due to increased truck traffic. Please provide the following information to determine if an IIA is required: o Anticipated weight of truckloads o Number of truck trips per day o Number of years of operation If DTI determines that significant wear of public infrastructure is likely due to the project, the proponent will be required to provide mitigation measures to minimize potential damage. Response: An application for a Special Permit will be submitted with the required information. Specifically in response to the requested information, we can provide the following at this time: o Anticipated weight of truckloads: 62,500 kg maximum o Number of loaded truck trips per day: 35 - 45 o Number of years of operation: 10
20.	NBDTI	Comment: A Special Permit may be required: Trucks shall not exceed legal mass and dimensions limits prescribed in NB regulation 2001-67 under the NB Motor Vehicle Act, except as authorized by Special Permit issued pursuant to paragraph 261 of the NB Motor Vehicle Act, including spring weight restrictions when applicable. The proponent is advised to consult DTI's trucking information which is available at: https://www2.gnb.ca/content/gnb/en/services/services_renderer.3635.Trucking_Services_-_Special_Permits.html. Please contact Tanya Mitchell (Special Permits Office), 506-453-2982 to determine if a Special Permit will be needed for this Project. Response: Thank you for the information.
21.	NBDTI	Comment: A Highway Usage Permit may be required if the proponent intends to carry out any development, construction, repair, or maintenance within the limits (right-of-way) of a DTI road/highway. Please contact Peter McDonald (Highway Corridor Management), 506-453-6724 to determine if a Highway Usage Permit will be needed for this project. Response: Thank you for the information. HRH will reach out to NBDTI at the appropriate time.
22.	NBDTI	Comment:

		An Access Road Permit may be required if the proponent plans to construct a new access road off a DTI road or use an existing access road connected to a DTI road. Maps showing roads administered by DTI are available at: https://www.gnb.ca/0113/maps/Mapbooks/2021-Mapbooks-e.asp Please contact the DTI District Engineer Vincent Roussel (District 3 - Moncton), 506-856-2000 to determine if an Access Road Permit will be needed for this project <u>Response:</u> Thank you for the information. HRH will reach out to NBDTI at the appropriate time.
23.	NBDTI	<u>Comment:</u> A Certificate of Setback may be required if the proponent plans to build a structure near a DTI road. Note that in accordance with subsection 5(1) of the Provincial Set-Back Regulation 84-292 of the Community Planning Act, no building or structure may be placed, erected, or altered so that any part of it is less than: (a) 15 meters from a boundary of an arterial or collector highway; or (b) 7.5 meters from a boundary of a village street or highway other than an arterial or collector highway. Please contact the DTI District Engineer to determine if a Certificate of Setback will be needed for this project. <u>Response:</u> Thank you for the information. There are no permanent structures associated with the Glenvale Project other than a portable trailer/office, which will be placed well beyond these setbacks.
24.	NBDTI	<u>Comment:</u> The above list of permits under the mandate of DTI is not all inclusive and additional permits and requirements relevant to the project may be required. The process required for approvals can take up to several months to complete. DTI requests that the proponent contact the local DTI District Engineer well in advance of beginning the project, to ensure that all the department's concerns are addressed. The proponent should disclose any concerns regarding additional transportation issues that they are aware of to the DTI District Engineer. <u>Response:</u> Thank you for the information.
25.	NBDTI	<u>Comment:</u> All loads must be properly secured during transit in accordance with to the Motor Vehicle Act and NSC Standard 10. <u>Response:</u> Thank you for the information.
26.	NBDTI	<u>Comment:</u>

		Any spillage of material that occurs during hauling must be kept to a minimum and promptly removed from the highway following appropriate safety procedures. Response: Acknowledged.
27.	NBDTI	Comment: The Work Area Traffic Control Manual (WATCM) provides a uniform set of traffic control guidelines for all work carried out on New Brunswick provincial roads. Any work that occurs within the right-of-way of a provincial road must conform to the guidelines prescribed by this manual. A PDF version of the manual is available at: https://www2.gnb.ca/content/dam/gnb/Departments/trans/pdf/en/RoadsHighways/WATCM/WATC M2015_Revised_Manual_EN.pdf Response: Noted. Thank you for the information.
28.	Approvals	Comment: The proponent will need to apply for an Approval to Construct prior to beginning the construction phase. The proponent will need to apply for an Approval to Operate prior to beginning operation of the quarry. Response: Understood. The Approval to Construct application is currently in preparation.
29.	Approvals	Comment: The site will need to comply with the Department's Rock Quarry Siting Standards. As a reminder, the Final Operational Perimeter includes the pit, stockpile areas, as well as equipment footprints. Response: As indicated by the NBDELG during the Upham East gypsum quarry EIA review, NBDELG determined that the setbacks defined in the Rock Quarry Siting Standards do not apply to open pit mines that are subject to the Mining Act and the EIA process. Since the EIA process is more rigorous in nature and Hammond River Holdings has committed to a potable well sampling program, the installation and sampling of monitoring wells, and several mitigation measures, Hammond River Holdings has gone beyond what would be required from a quarry to which the siting standards would apply. As such, there is no need to approach landowners for permission.
30.	Groundwater	Comment: In the EIA Registration document, the consultant has presented water quality data from the DELG OWLS database. While this may show the broad water quality of an area, it should be noted that many of the water samples are collected shortly after the well is drilled, where the water quality can be affected by the lack of well development. Therefore, that data may not accurately reflect well water quality conditions

		after a well has been developed and used for many years. The baseline water quality data will be a better indicator of current water quality conditions in the area. Response: Noted. The data from the OWLS database was used in the absence of recent data. The data that will be collected from the baseline potable well sampling program prior to the start of operations will be used to characterize the groundwater conditions. Details of the baseline potable well sampling program will be provided in the Groundwater Monitoring Plan.
31.	Groundwater	Comment: The consultant indicates that four shallow and four deep monitoring wells will be drilled in the LAA to establish baseline conditions and monitor changes in water quality and level over time. An overall Groundwater Monitoring Plan will need to be submitted for review and approval. The baseline sampling should be included as part of the groundwater monitoring plan. In addition, the consultant should submit the potential locations of the 4 shallow and 4 deep monitoring wells for review before they are constructed. The groundwater monitoring plan should also include details on the frequency of groundwater quantity and quality monitoring and parameters over the long term. Response: Noted. A groundwater monitoring plan will be developed and submitted for review prior to the installation of monitoring wells. The groundwater monitoring plan will also include details of the potable well baseline sampling program.
32.	Potable well sampling	Comment: For the baseline sampling of private wells the proponent has indicated that water quality samples will be collected for general chemistry, trace metals, and microbiology. The proponent should determine, based on potential and actual site activities, if any additional parameters should be included in the groundwater sampling (e.g. dissolved petroleum products, nutrients, ammonia, nitrates, etc.). This should also be considered during the design of the groundwater monitoring plan. Response: The baseline samples will be submitted to RPC of Fredericton, NB. Their "General Chemistry" package includes nutrient parameters (total Kjeldahl nitrogen, ammonia, nitrate + nitrite, and ortho-phosphate). At this time, dissolved petroleum products or other organic parameters will not be analyzed as there is no source from planned or possible site activities, and their presence from historical uses of the property is unlikely. Fuel storage on site (if any) will be limited and therefore a large release of fuel will not occur.
33.	Site Layout	Comment: Will a water supply well need to be drilled at the site for dust suppression, mineral processing, or other water needs? Response: A supply well will only be required to operate the septic system. The water supply well will not be used for any other purposes (i.e. dust suppressants).
34.	Site Layout	Comment:

		5.2.3.3 It is mentioned in this section that "The surface of the stockpiled topsoil and overburden piles will naturally harden and naturally revegetate over time;". Once areas will no longer be continually disturbed, it is recommended to apply land reclamation seed mix that is beneficial for pollinator species. In this way revegetation will occur more quickly, and with plants beneficial to surrounding honey bees, but not detrimental to surrounding hay fields and pastures. What is to be included in the storage piles? There is no mention that a layer of lime will be removed first before the gypsum. What is the plan for this lime layer? Response: Noted. A mine and reclamation plan will be provided detailing the revegetation of the stockpiles. It is unsure what is meant by "lime layer" as this wording was not used in the EIA registration document. It is assumed the question is referring to overburden that will be removed from the open pit area in order to extract the gypsum. The overburden will be used to construct site features (access roads, settling pond, and rock stockpile). The remaining overburden will be stockpiled on site.
35.	Blasting	Comment: 5.2.3.3 The opportunity to be included in a communication plan for blasting activities should be offered to all property owners within the LAA; i.e., not only residential owners, but also owners of farms and fields within the area who may have their residences elsewhere. Response: Thank you for the information. This will be addressed in our Communication Plan within the Environmental Management Plan.
36.	Baseline water quality	Comment: Figure 5.3.2 This figure does not seem to show all domestic wells in a 2 km radius of the PDA. Wells for agricultural operations, e.g., barns usage, and field water supplies, should be included in any baseline studies. Response: Figure 5.3.2 shows wells from the OWLS database, which does not include wells prior to 1994. Properties owners within 2 km radius of the PDA (whether in the OWLS database or not) will be given the opportunity to participate in the baseline sampling program, regardless of whether their well is used for residential or agricultural use.
37.	Agricultural / livestock	Comment: 5.7.3.1 This section lists a number of potential effects of the Project on livestock. Section 5.7.3.3 mentions that some temporary behavioural changes, lower feed intake, and lower milk yields have been reported by agricultural operations for livestock near the Upham East Gypsum Quarry. What process will Hammond River Holdings Ltd follow to resolve or otherwise mitigate issues of negative agricultural impacts during operation of the Glenvale Gypsum Quarry? Response: There are no commercial agricultural operations for livestock in Upham and therefore lower milk yields have not been reported. The text this question refers to is below:

		Given the relative distance between Project activities and the nearest livestock receptors, and the experience gained as a result of sound pressure levels and vibration levels measured at the Upham East Gypsum Quarry, blasting activities may result in temporary behavioral changes, lower feed intake, and lower milk yields in cattle. Sound emissions between 95 and 105 dBA were found to lower feed efficiency and decrease milk quantity (Broucek 2014). The "experience gained as a result of sound pressure levels and vibration levels measured at the Upham East Gypsum Quarry" refers to the knowing what the sound levels and vibration levels will likely be for the Glenvale area. Based on the this knowledge, it is possible the blasting at the Glenvale quarry, assuming the blasting conditions are comparable to Upham, will be at levels that may impact lower feed intake, lower milk yields, and temporary behavioural changes, but there has been no evidence of these issues reported to date in Upham. Hammond River Holdings will work with local farmers, to the extent possible, on an optimal blasting time (morning or afternoon) to minimize impact on the dairy cattle and agricultural lands. Notification will be provided prior to blasting so that appropriate preparation by local residents and farmers can be made.
38.	Agricultural / livestock	Comment: 5.7.3.3 Two livestock receptors (#1 and #2) are referred to in this section. Are these the same as two residential noise receptors described in 5.2.2.3 and identified on Figure 5.2.1? The area where noise model receptor #2 is located (south of the PDA) is not indicated on Figure 5.7.2 as having livestock. Response: Yes, these are the same locations. Noise model receptor #2 does not have agricultural lands, this is correct. These receptor locations were chosen for multiple reasons, not just the properties that have livestock. The noise model results, however, can be applied to the surrounding areas as to what can be expected for receptors.
39.	Agricultural / livestock	Comment: 5.7.2 Figure 5.7.1 is reported to show land parcels within the LAA that are classified as farmland according to GeoNB. Please be advised that this map is incomplete. There are multiple additional agricultural properties, both north and south of Route 890. Some include barns for livestock. Response: Thank you for bringing this to our attention. Please see attached an updated Figure 5.7.1.
40.	Agricultural / livestock	Comment: 5.8.3.2 Pre-blast surveys should be extended to monitor agricultural concrete structures. Are there additional industry best practices for quarry operations in agricultural areas? Response: As part of our pre-blast surveys, residential and agricultural structures (i.e. barns) will be included. Seismometers will be installed in the surrounding area (residential and agricultural lands) to measure sound and pressure levels. Dillon and Hammond River Holdings are unaware of industry best practices for quarry operations near agricultural lands. A review of pit and quarries proposals in other jurisdictions

		indicated that blast monitoring will be conducted on agricultural lands and employ the use of dust suppression, both of which Hammond River Holdings will implement.
41.	Climate	Comment: Future Climate Scenarios for the Province of New Brunswick (Roy, P. and Huard D. 2016, link at end) – Provides projected climate scenarios for 29 climate indices for the 2020s, 2050s, and 2080s-time horizons for New Brunswick. Projected climate datasets are locally analysed to help inform and understand the impacts of climate change on the specific project area. The climate datasets and maps can be found at Adapt-Action (csrno.ca). https://csrno.ca/climat/documents/Roy,%20Huard%202016%20-%20Future%20Climate%20Scenarios%20Province.pdf Response: Thank you for the information. Given that the Project life is 10 years and that there is limited built infrastructure associated with the Project (all portable and therefore moveable), the future climate scenarios for several decades in the future would seem to be largely tangential. They will be considered however in the development of the water management plan.
42.	Climate	Comment: Intensity Duration Frequency (IDF) Climate Change Tool (UWO, V6, 2022) - A web-based intensity-duration frequency tool to update and adapt local extreme rainfall statistics to climate change. https://www.idf-cc-uwo.ca/home.aspx Response: Thank you for the information.
43.	Climate	Comment: IDF Curves with Climate Change - IDF curves based on historical observations alone are inappropriate to use for long-term decision-making. To account for climate change impacts to extreme rainfall and IDF curves, Environment and Climate Change Canada recommends use of a scaling methodology. Climatedata.ca provides historical and climate change-scaled IDF data for all ECCC IDF stations in Canada. https://climatedata.ca/resource/idf-data-and-climate-change/ Response: Thank you for the information.
44.	Climate	Comment: Flooding in New Brunswick (GNB) (https://flooding-inondations-geonb.hub.arcgis.com/), and the New Brunswick Flood Hazard Maps (https://geonb.snb.ca/flood_hazard_maps/index.html) provide information on flooding in New Brunswick, i.e. New flood hazard mapping tool, flood history database, flooding applications, flood events and a changing climate etc. and can be used to be aware of any potential flooding of the land. Response:

		Thank you for the information. The links provided indicate the proposed project is not in an area anticipated to experience flooding.
45.	Climate	Comment: For more adaptation resources and tools on current and historical datasets, climate service centres, climate change risk and vulnerability assessment frameworks please check out the new GNB's Climate Change webpage: https://www2.gnb.ca/content/gnb/en/corporate/promo/climate-change/resources.html Response: Thank you for the information.
46.	Watercourses	Comment: Please find the attached letter from Fisheries and Oceans Canada. This and the following comments are individual questions from that letter: Section 5.1.2 states that the Project will result in a change in both surface water and groundwater flow across the landscape as a result of the loss of on-site wetlands and the development of the open pit. • As per section 34.3(f) of the Fisheries Act, the proponent must maintain the flow of water that the Minister considers sufficient to permit the free passage of fish. • Project related flow reductions, that are greater than 10% of the mean annual flow, must be included in the fish habitat impact area predictions. • Quantify the expected flow reductions in the unnamed tributaries to North River (WC1 and WC2) downstream of the proposed project development area (PDA). If necessary, quantify and characterize the extent of the impacts of reduced flow on the fish habitats; • Provide details on the measures that will be put in place to ensure minimum maintenance flow downstream of the open pit during construction activities. Response: Flow from the upper reaches of WC1 will be impacted with the installation of the gypsum storage pile. The affected portion of this small watercourse are headwaters (i.e. first order streams) and minor flow changes that may occur are unlikely to affect base flow in the North River or downstream. However, water from the settling pond will discharge into the confluence of WC1 and WC2, thereby maintaining flow. Since water will not be created nor destroyed here, the overall flow is therefore not expected to vary significantly. Weekly surface water monitoring will occur during construction and operation activities; therefore, the watercourses will be observed on a weekly basis. During these observations, if flows have been reduced, steps necessary to return flow back to the watercourse will be taken. It should be noted that the watercourses are limited in size, and thus are likely to go dry for some periods at some locations in the summer.
47.	Watercourses	Comment:

		Section 5.4.3.3 states that the Project will result in the direct loss of the upper stretches of watercourse 1 (WC1) and the lower reaches of watercourse 2 (WC2) that intersect the PDA, to allow for the construction of the open pit and related surface facilities to be located on the site. • Provide the expected footprint of the loss for these watercourse in relation to their existing dimensions; • Provide details on how these watercourses will be removed from the PDA or altered in terms of excavation, diversion, infilling etc. Response: The total length of WC1 that will be impacted is 201 m and approximately 1 m in width, for an approximate permanent loss of 201 m2 of fish habitat. WC1 will be filled in with overburden material to build the gypsum storage pad. In addition, approximately 68 m2 of fish habitat associated with WC2 will be temporarily affected by the construction of a culvert on the proposed access road. If these alterations are determined by DFO to be a harmful alteration, disruption or destruction (HADD) of fish habitat, then an application for authorization under paragraph 35(2) of the federal Fisheries Act will be submitted, along with a proposed offsetting plan. Once installation of the culvert in WC2 for passage of the access road is complete, it is expected WC2 will continue to flow as it has in the past.
48.	Wetlands	Comment: Please update Figure 2.3.1 to include the delineated wetland habitat. There is no need to include the Wetland (NBDELG 2021) layer on the figure. Response: An updated figure is attached.
49.	Wetlands	Comment: There appears to be suitable upland habitat on the property for the proposed developments. Is it feasible to redesign to avoid developing proposed structures in delineated wetland habitat? Response: It is assumed the question is referring to the farmland on the property to the east of the project infrastructure. The stockpiles have been placed in the wooded area to reduce noise and dust to nearby residents. Further, use of the farmland will limit its potential future use. With respect to whether the wetlands can be avoided, the site plan continues to evolve and every effort will be made to minimize the impacts to the wetlands, where feasible. The current conceptual site layout plan for the PDA is currently maximizing the use of available space by optimizing the shape and placement of the Project facilities, in light of known information and Project objectives. Given the Project needs vis-a-vis property size, complete avoidance of wetland impacts does not appear to be possible. However, as evidenced by the results of the WESP-AC wetland functional assessments provided in Appendix B of the EIA Registration document, most wetlands exhibited wetland functions largely in the Lower and Moderate function ratings, with few function ratings exhibiting Higher characteristics.
50.	Site Layout	Comment:

		Is it feasible to remove proposed infrastructure from the watercourse, specifically the stockpiling and material management? If not, what is the intent for the watercourse? Will it be realigned? Response: The proposed infrastructure (stockpile and processing areas) are required to be a specific size in order to adequately manage the volume of material. The site plan continues to evolve and every effort will be made to minimize the impacts to the watercourses, where feasible. At this time, and based on the optimized conceptual site layout plan available at this time, avoidance of watercourse disturbance does not appear to be possible and we have conservatively assumed in this EIA Registration that sections of WC1 will be permanently lost (infilled) to make way for the storage areas and that a temporary disturbance of WC2 will occur during construction of the culvert. A WAWA permit and an authorization under the Fisheries Act will be obtained, with offsetting, at the discretion of the responsible authorities.
51.	Site Plan	Comment: Please provide an updated site plan, which would include the following: a. All proposed alterations (construction, realignment of a watercourse, soil disturbance, etc.), A revised figure is attached. b. Proposed wetland impact areas as per Table 5.5.3, and c. 30 metre buffers which will remain unaffected throughout the project. Response: A revised figure is attached.
52.	Wetlands	Comment: Is there an opportunity to have wetlands restored to pre-construction footprints on the site upon decommissioning of the project? Response: A mine and reclamation plan will be submitted at a later date. The reclamation plan will detail the manner in which the site will be reclaimed, including the wetlands to pre-construction conditions, if possible.
53.	Section 3.3.4	Comment: The report indicates in section 3.3.4, Infrastructure and Services, that the highway from Edmundson to Sackville is Highway 7. It should be Highway 2. Response: Thank you for identifying the discrepancy. We apologize for the error.
54.	Watercourse / fish	Comment: The report indicates that the watercourse from the pond in the open pit area could not be found on the ground. The pond however does exist. Was any attempt made to determine the presence of fish in the pond? If so, what species were found? Will a fish rescue be completed on the pond?

		Response: The pond is indeed present, that is correct, but the watercourse shown on GeoNB that connects to WC1 does not appear to exist, as evidenced by the observations made in the field in July 2022. That is not to say that it may not have water present at other times of the year (e.g., during the spring freshet or fall recharge period), but it was simply not identifiable at the time of the field survey. Attempts were made to determine fish presence (3 minnow traps were set). No fish were caught. It is our opinion that the pond does not contain fish and therefore a fish rescue is not required. A field reconnaissance of the area where this watercourse is shown on GeoNB will be conducted in late Spring 2023, to confirm the July 2022 findings.