

Baffinland Response to Comments Received on the Mary River Project 2014 Annual Monitoring Report		
Regulator Comment		Baffinland Response
Note: Agency comments were summarized by the Nunavut Impact Review Board and provided to Baffinland via letter on July 27, 2015. Baffinland has considered the entirety of each submission in our response.		
Qikiqtani Inuit Association		
Dust Suppression Protocol	QIA commented on dust suppression, noting that protocol for when dust suppression methods will be used on site are not well defined, but rather are based on a qualitative judgement by Baffinland staff. QIA recommends that the protocol to be used for dust suppression be rigorously defined to be reflective of industry best practices, and the potentially significant associated health risks.	Based on dust monitoring from 34 installed dust collectors throughout 2014, dust levels were at or below predicted levels as per the FEIS (Section 7.2.1.4 of the Annual Report) and therefore do not pose a significant health risk. Dust monitoring continues along the Tote Road in 2015. Baffinland has commenced its dust suppression program during 2015 based on observation of road conditions with the application of calcium chloride on roads at the camps and on several sections of the Tote Road. This is in accordance with Baffinland’s Dust Management Protocol for the Mary River Project Roads (August 2013). The dustfall monitoring program is included as Attachment 6 of the Air and Noise Abatement Management Plan (Appendix J1) and also appears as part of the Terrestrial Environment Management and Monitoring Plan (TEMMP; Appendix J7). Baffinland's approach to dust suppression is widely accepted accross Nunavut and Canada.
Habitat Loss	QIA commented that the 2014 Annual Report indicated no new habitat loss occurred in 2014, further questioning that as construction activities began in 2014 it was doubtful of the validity of Baffinland’s conclusion that no change in available habitat occurred. QIA additionally observed discrepancies in relation to monitoring project impacts on birds, indicating the need for greater consistency and clarity in reporting.	Baffinland noted in the 2014 Annual Report to the NIRB that "activities were confined within the established Project Development Area (PDA) that was defined in the FEIS" which is a true statement (Section 7.3.1.3). Baffinland is working to develop a more accurate method of assessing project area footprint and/or disturbed areas in 2015. Nevertheless, the impact assessment assumed that all areas in the PDA would be cleared and therefore unavailable for wildlife or vegetation. It is questionable as to what information is gained from knowing the number of hectares cleared within a given year, given that the total footprint from clearing the PDA was assessed and reviewed by the QIA during the environmental assessment stage. Baffinland will attempt to provide better clarity and consistency between the summary information provided in the NIRB annual reports to the detailed information provided in the terrestrial ecosystem annual reports.

Human Resources	<p>QIA commented on the Aquatic Effects Mentoring Program run by Knight Piesold, and further noted that the Program only achieved a 5% Inuit employment and has not achieved higher levels for Inuit participation. QIA request an explanation for this relative lower rate of Inuit employment and/or suggest measures that will be taken in the future to increase Inuit participation.</p>	<p>The table in the report summarizes Inuit summer students or temporary staff hired for the field programs only. It is important to note that Baffinland also employs permanent Environmental Technicians. In 2015, two Inuit Technicians are working on site. The technicians work on a variety of programs and tasks that come under Environment's purview and as such, are not reflected in the percentage of those hired specifically for field programs. Baffinland will make this more clear in the 2015 report.</p> <p>As QIA is aware, Baffinland has funded the Environmental Technician Program at Arctic College in Pond Inlet and was very successful in hiring many of these students and graduates into environment technician roles at Mary River over the years, including aquatic sampling. As of 2015, the AEMP is now being run in-house by the Site Environment team with support from specialized environmental scientists at Minnow Environmental Inc. This change was driven by a regulatory requirement to have an Aquatic Effects Monitoring Program (AEMP) under the Type A Water Licence. QIA was involved in the development of the AEMP and is well aware of the specialized scientific rigour of the program that needs to satisfy requirements such as the MMER overseen by Environment Canada. The result of compliance to these regulations is that specialized scientists are required to run these programs. An additional reality of the AEMP is that it focuses on the summer months when lakes and rivers are not frozen, thereby making the opportunity for work only temporary (aproximately 3 months). Baffinland suggests that when the QIA hires their Inuit environmental personnel at site, that those individuals would be able to gain experience and insight into the AEMP and help the QIA and Baffinland identify where opportunities might exist for greater Inuit participation and capacity building in the AEMP above and beyond Baffinland's existing efforts with hiring from the environmental technology program at Arctic College.</p>
Outstanding Marine Information	<p>QIA noted that the 2014 Annual Report was deficient of marine information regarding fuel spill modelling, hydrodynamic modeling and underwater sound monitoring, recommending that that as shipping activity increases, it is essential for Baffinland to report on all the outstanding marine information.</p>	<p>QIA has been invited to two workshops (2014 and 2015) on fuel spill modelling and is aware that during 2014, modelling was underway and completed in 2015 prior to the shipment of ore. QIA and all stakeholders received the modelling report in May 2015, 1 month prior to the June 2015 workshop. At the time of publishing the 2014 Annual Report, modelling results were not completed, nor was this a requirement of the Project Certificate. The Spill at Sea Response Plan is currently being finalized based on input from the modelling report and review and input from multiple agencies, including Transport Canada and Canadian Coast Guard. The QIA will also recall that the modelling report also addressed QIA's suggestion for local knowledge to be heard and incorporated into fuel response planning. The plan and the modelling report will be provided in the 2015 Annual Report to the NIRB.</p> <p>QIA is also a member of the Marine Environment Working Group where underwater sound monitoring has been presented on in detail. A program is underway for the 2015 field season and results will be included in the 2015 Annual Report. QIA's marine consultant has commended the work that Baffinland is doing in the marine environment, including acoustic recordings. We look forward to presenting future results of our programs at the marine environment working group and having QIA's input.</p>

Contractor Employment	QIA noted that information in the 2014 Annual Report pertaining to Inuit employment has not included contractors’ employment, further indicating that collection of this information is a requirement under Article 20 of the IIBA, and to be included in Baffinland’s annual reporting to provide greater clarity regarding Inuit employment overall.	<p>Condition 134 of the Project Certificate asks for the following information regarding "employee origin":</p> <p>a. The number of Inuit and non-Inuit employees hired from each of the North Baffin communities, specifying the number from each;</p> <p>b. The number of Inuit and non-Inuit employees hired from each of the Kitikmeot and Kivalliq regions, specifying the number from each;</p> <p>c. The number of Inuit and non-Inuit employees hired from a southern location or other province/territory outside of Nunavut, specifying the locations and the number from each; and</p> <p>d. The number of non-Canadian foreign employees hired, specifying the locations and number from each foreign point of hire.</p> <p>Baffinland employees are accounted for in the 2014 Annual Report to the NIRB in Table 3.2 and 3.3.</p> <p>As this comment comes from the QIA, Baffinland will note that the 2014 IIBA Annual Implementation Report does speak to both the Baffinland and contractor workforce in section 2.5 of that report. Specifically Table 2-4 shows how the most common jobs at the project in 2014 – Baffinland and contractor roles. Figure 2-2 and Figure 2-3 present the full range of work performed in Nunavut by all employees. The tables include work done both by direct Baffinland employees as well as the contractors.</p>
Apprenticeship Programs	QIA noted that the 2014 Annual Report has not included information regarding a 2014 Apprenticeship Program, and additionally details regarding number of Inuit participants, selection criteria, hours of training and successful completion rate.	<p>Again, Baffinland notes that QIA's comments are specifically addressed in the 2014 IIBA Annual Implementation Report. Section 2.3.10 of the IIBA Annual Implementation Report identified the Apprenticeship Preparatory Program that was undertaken in 2014. This program included practice testing and gap analyses for related training in areas such as math, science and communications which is needed in order to be successful in apprenticeship technical training. Initial assessments of potential apprentices are being used to develop program content to be delivered in 2015 to support apprentice’s success. This will prepare the candidate to successfully write the appropriate Trades Entrance Exam or help identify other avenues for success.</p> <p>Baffinland will be sure to include details of all training programs in the 2015 Annual Report to the NIRB in support of PC conditions 132, 135, 136, and 138.</p>
Government of Nunavut		
Polar Bear Monitoring- Shipping and Marine Wildlife Management Plan	GN commented on the Shipping and Marine Wildlife Management Plan, noting that the Plan has yet to include monitoring and mitigation for Polar bears. The GN recommends an update to the Plan to either include baseline and monitoring for polar bears on the sub-population(s) scale, or alternately have Baffinland collaborate with GN Department of Environment on research initiatives for the relevant subpopulations.	The Shipping and Marine Wildlife Management Plan (Appendix J10) includes sections describing environmental management related to polar bears. Section 5 describes mitigation measures applicable to marine mammals, including polar bears (see Table 3). Section 6 describes monitoring programs that include polar bear monitoring. Note, as per NIRB direction, "marine mammals" includes polar bears. Baffinland does not propose to conduct population monitoring for polar bears, but is willing to consider collaboration with GN and other research and resource management agencies. In fact, this topic is the subject of discussion at MEWG meetings.

Terrestrial Wildlife Monitoring	<p>The GN commented on terrestrial wildlife monitoring, noting that the 2013 Board recommendation to refine study design and improve monitoring program for mammals were insufficient in scope and practically inapplicable to detect any project-related effects on terrestrial mammals (e.g. caribou and wolves). The GN recommends cessation of den surveys until prey species densities are sufficient to support wolves and further recommends that Baffinland conduct caribou monitoring by participating in the regional monitoring effort led by the GN.</p>	<p>Baffinland continues to refine study design and improve the monitoring programs for mammals. This is reflected in the discussions recorded in the meeting minutes of the Terrestrial Environment Working Group meetings, the Terrestrial Environment Annual Monitoring Reports, and in the continually updated Terrestrial Environment Mitigation and Monitoring Plan (current version 3.2, 29 February 2015 and Appendix J7 of the Annual Report). The surveys are adjusted based on preliminary data analyses, statistical power to detect change, and applicability to implementing mitigation actions.</p> <p>Based on results to date and the dynamic nature of wildlife ecology in the region (e.g., extreme low abundance/density of caribou and their predators on north Baffin Island), Baffinland agrees with the GN’s suggestion of cessation of den surveys (as required in Project Condition 55 to be conducted in collaboration with the GN). Den surveys were not conducted in 2015 and will not be conducted until they are deemed useful through discussions with the TEWG. Baffinland notes that it was the GN that specifically requested the NIRB to direct Baffinland to conduct den surveys, so we are pleased that the GN has accepted Baffinland's original position on the matter.</p> <p>Baffinland will continue site-specific monitoring to ensure that operational mitigation actions are triggered when necessary based on local wildlife presence. Those surveys are designed to be sufficient in scope and practicality to detect and mitigate project-specific effects.</p> <p>As per Baffinland’s commitment no. 58, and as required in PC condition 51, Baffinland is committed to contributing to regional monitoring and information gathering that can better inform mitigation for project-induced effects. Through discussions within the TEWG and follow-up with the GN, Baffinland will be supporting the GN's herd-level classification survey in fall 2015.</p>
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Vegetation Monitoring	<p>The GN commented on vegetation abundance monitoring, noting that the current study design will be unable to detect meaningful changes to the terrestrial vegetation and lichen due to small sample size, limited study area extent and site variability. The GN specifically recommends that vegetation monitoring program be redesigned to increase sampling efforts, and incorporate where possible other field techniques such as use of high resolution remotely sensed images.</p>	<p>The vegetation abundance monitoring program was designed to detect project effects with consideration of the best available literature and widely accepted, repeatable survey methods for long-term monitoring of arctic vegetation. Reference to the literature can be found in the 2014 Annual Terrestrial Monitoring report. The study design is valid, incorporating on the ground, plot level detail.</p> <p>Baffinland acknowledges that the current sample size is insufficient for reasonable power of detection of change. Increased sampling effort was identified in the 2014 Annual Terrestrial Environment Monitoring report. Baffinland continues to refine the study design to improve sample size for the vegetation abundance program. Results after one year of monitoring and power simulations using twice the current number of samples show that sample size will need to be increased to 15 balanced transects to account for inter-site variability.</p> <p>Where project effects are most expected to occur (within 30m of the PDA), Baffinland would have high power to detect a decline in ground cover (30% with 87% power) and canopy cover (25% with 90% power). Lichen cover was inherently low in the study area (3.27%); therefore, power to detect a decline was less given the very low base value. Regardless, power simulation within 30m of the PDA (based on dust fall analyses) found a relative decline of 50% lichen cover could be detected with 83% power. With the changes to sample size, statistical power analysis simulations show that we will be able to detect a potential loss of 1.6% lichen cover within 30m of the PDA — which will be a direct indication of a Project-related effect should it occur. Baffinland continues to explore power simulations for vegetation at further distance classes from the PDA, but effects are unlikely based on current dust fall analyses.</p>
Temporary or Premature Mine Closure	<p>The GN commented on the Closure Scenario Report, noting that Baffinland considers temporary or premature mine closure very unlikely. The GN requests that Baffinland provide a more detailed and comprehensive risk assessment for temporary or premature mine closure in consideration of the inherent risk associated with the mining industry, as well as demonstrate engagement with the relevant stakeholders mentioned in the mitigation plans as well as the Mary River Socio-Economic Monitoring Working Group and Qikiqtaaluk Socio-Economic Monitoring Committee.</p>	<p>The Closure Scenario Socio-Economic Study provided (Appendix O3) considered the economic, social and cultural impacts of temporary or permanent closure, and takes into consideration the potential drop in employment between the construction and operations phases of the Project. BIM stands by its original modelling on these matters as provided in the closure report. Further BIM continues to commit to create partnerships with its government and community stakeholders to implement programs to support employee transition, if and when it becomes evident that closure, temporary or otherwise, is a likely occurrence.</p>

Health Related Terms and Conditions	<p>The GN noted that the 2014 Annual Report did not specifically address term and conditions related to monitoring of demographic changes, employee and family health and well-being, including counselling and treatment programs, as well as impact to health services pursuant to conditions 133, 153, 154, 157 and 158 of the Project Certificate. The GN recommends that Baffinland conduct its residency and housing surveys in consultation with the Nunavut Housing Corporation to implement the relevant conditions.</p>	<p>Please note that not all conditions are specifically addressed in the body of the report, but status of all conditions is included in Appendix E.1.</p> <p>Condition 153, 154, and 157 are met by the Employee and Family Assistance Program (EFAP) as noted in Appendix E.1. Also noted in the appendix, regarding condition 158, a Memorandum of Understanding was signed with the Government of Nunavut Department of Health in November 2013.</p> <p>Where available on these matters, Baffinland, as part of its socio-economic reporting framework will provide to the GN and QSEMC reliable, quantifiable data related to these effects. However, the Company will only do so in aggregate form to ensure the privacy rights and expectations of its workforce are maintained. Reporting on these matters will need to take a long term view, as trends cannot be accurately identified with only one year of data.</p> <p>The housing survey referenced by GN was a proposal for consideration and not a final document. BIM will discuss further with GN moving this survey forward to determine if it provides information that would be valid, valued, and how the survey can be implemented and information communicated. Residency change data is presently identified through changes to the employees point of departure for flights to site, and changes to the employees address as identified thought the payroll record. The results of monitoring employee change-of-address are presented in Section 2.1.1 of Appendix O1.</p>
Access to Affordable Housing Options	<p>The GN commented on employees' access to affordable housing options, and further reported that Baffinland has yet to design its housing programs and measures to assist Project employees with homeownership or access to affordable housing options pursuant to condition 151. The GN indicated that the Nunavut Housing Corporation is willing to work with Baffinland to explore realistic options and viable opportunities to support the housing needs of its employees.</p>	<p>Baffinland operates a remote site camp and provides accommodations to all employees while they are on-rotation. The provision of affordable housing and housing alternatives is the mandate of the Government of Nunavut, not industry. The mandate of the Nunavut Housing Corporation, according to their own website, is to "create, coordinate and administer housing programs so that we may provide fair access to a range of affordable housing options to families and individuals in Nunavut." This mandate is legislated through the Nunavut Legislature by the <i>Northwest Territories Housing Corporation (Nunavut) Act</i> . Baffinland, by way of providing salaried employment in the territory, and helping their employees set up permanent bank accounts, is providing means to invest, borrow financing, and obtain housing.</p>
Family Services-Career Development	<p>The GN commented on employee recruitment, noting it would like to clarify whether efforts are being made to recruit employees from other communities in the Baffin region and across the other two regions. The GN additionally requests that information on the process used by Baffinland to determine whether there is sufficient labor supply in Nunavut to ensure that residents of Nunavut are hired before sourcing southern Canadian workers be provided.</p>	<p>All of Baffinland's open positions are posted on its web site, which is accessible to all potential candidates in all regions. Baffinland endavours to follow the hiring potocols set forth in Section 7.5 of the IIBA. As an outome of the recent QSEMC meeting in the spring of 2015, which the GN attended, Baffinland is reviewing alternative means to reaching potential candidates in other communities. Baffinland refers GN to the Labour Market Analysis report previously submitted to NIRB as Appendix O2, for information regarding the process used by Baffinland to determine whether there is sufficient labour supply in Nunavut.</p>

Environment Canada		
Disposal of Sewage Sludge	EC commented on Sewage and Grey Water Management, recommending that Baffinland provide additional information to demonstrate that incineration of the polymer bound sludge is an environmentally sound practice, and that emissions from the incinerators will meet design specifications when processing sludge/polymer cake.	<p>Sewage sludge at Mary River Project sites is not polymer based. During the MBR process, sewage is only treated with alum to control phosphorus levels and calcium carbonate or sulphuric acid for minor adjustments to pH as needed. Remaining sludge is physically dewatered using a filter press prior to incineration.</p> <p>The MBRs have been operating in full compliance since commissioned in early 2014 as demonstrated in discharge results presented annually in Mary River Annual Report(s). The Incinerator Manual and Standard Operation Procedure is Appendix C of Appendix J23. Stack test of Project incinerators will performed as per Project Certificate Conditions based on representative sample of typical incineration batch showing compliance with appropriate regulations.</p>
Exceedance of effluent discharge quality limits	EC commented on the Waste Management Plan, further recommending that the Membrane Bioreactor treatment plant performance be reviewed with necessary steps taken to ensure that effluent treatment is optimized.	The MBRs have been operating in full compliance since commissioned in early 2014 as demonstrated in discharge results presented annually in Mary River Annual Report(s). Performance is reviewed on regular basis to ensure that effluent treatment is consistently optimized. It is Baffinland’s position that their performance since commissioning has been excellent.
Waste Management Plan- Incineration	EC commented on the Waste Management Plan, recommending that Baffinland revise the Plan to remove the option to incinerate grease and discontinue incineration of plastic materials.	Noted. Baffinland implements waste sorting procedures to ensure proper segregation of poly-chlorinated plastics and any materials that would cause emissions of air discharges not within established criteria. The Incinerator Manual and Standard Operation Procedure is Appendix C of Appendix J23. Stack tests of Project incinerators were performed as per Project Certificate Conditions based on representative sample of typical incineration batch showing compliance with appropriate regulations.
Waste Management Plan- Record Keeping	EC commented on the Waste Management Plan, recommending that landfill operators keep written records of what wastes are accepted, when, how much, and where they are deposited within the landfill.	Landfill operations and documentation requirements are conducted in accordance with the Landfill Maintenance and Operation Manual which is Appendix D of Appendix J23. Landfill access is tightly controlled and limited to only authorized personnel. Inspection by Baffinland Environmental Representatives is conducted regularly to ensure accepted waste is deposited in accordance to the Landfill Maintenance and Operation Manual including waste types and locations. Quantities deposited in the Landfill are reported on a quarterly basis and are presented annually in the Annual Report to the Nunavut Water Board. It is Baffinland’s position that waste segregation practices are currently very effective as evidenced by inspections undertaken during 2014 by AANDC and QIA which have indicated that wastes deposited in the landfill are acceptable.

Unacceptable Environmental Risk	EC requested clarification on the definition of “unacceptable environmental risk”, recommending that Baffinland provide what environmental standards site remediation will be judged against.	<p>Baffinland’s approach will abide by the remediation criteria that are approved for use in Nunavut as provided in the Environmental Guideline for the Management of Contaminated Sites, Department of the Environment, Government of Nunavut, 2009.</p> <p>In the event that a Tier 1/criteria-based approach is not deemed suitable for the site (e.g., pathways of exposure, target chemicals, receptors, or other site characteristics differ from those used to develop the criteria-based approaches), a modified-criteria (Tier 2) or detailed risk-based (Tier 3) approaches will be implemented. In this case, risk assessment procedures will be developed in consultation with the Land Owner(s) and other stakeholders to develop site-specific remediation objectives that correspond to an acceptable level of risk to human or ecological receptors.</p>
Pre-clearing Nest Surveys	EC requested that Baffinland update the key sensitive nesting period in the TEMMP to minimize the risk of incidental take, as well as prevent detrimental effects on migratory birds, nests and eggs. EC recommends that pre-clearing nest survey results include searching for evidence of nesting (e.g., presence of birds in breeding habitat through observation of singing birds, alarm calls, distraction displays) in its pre-clearing nest survey methodology. Additionally, EC recommends that pre-clearing nest surveys be carried out by skilled and experienced observers using appropriate methodologies, and that Baffinland increase training effort of staff to improve survey effectiveness.	<p>The Project TEMMP identifies the nesting season as 31 May to 04 August. Based on information provided recently by Environment Canada, the TEMMP will be updated to reflect a revised nesting period based on the fact that the Mary River Project is in Zone N10 and the nesting period is expected to extend from May 17th to August 15th (http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1#_02).</p> <p>The next update of Baffinland’s TEMMP will include the Active Migratory Bird Nest Survey Protocol that has been used on site since construction began. Based on comments provided by EC in the March 2015 TEWG meeting, the protocol now includes rope dragging to help locate potential inconspicuous nesting birds, such as red knot. All birds identifiable by surveyors that are observed during the surveys are noted during the surveys, including notes on behaviour.</p> <p>Biologists skilled in active migratory bird nest surveys have provided training to on-site environmental staff in 2014 and 2015. That training includes field exercises as a component of the training programme for the environment staff. Based on EC’s suggestion, training in 2015 included the additional technique of rope dragging as a precautionary measure to help locate potentially inconspicuous nesting birds such as red knot. Results of the 2015 surveys and mitigation actions will be reported in the 2015 annual terrestrial environment monitoring report.</p>
Roadside Waterfowl Surveys	EC noted its concerns that Roadside Waterfowl surveys did not reconcile with indicator species identified in Project Certificate condition 74. EC questions the value of these surveys both in terms of impact prediction and contribution to regional monitoring, and further suggesting repeating surveys over the breeding season to better capture the range of nest initiation of various species and account for failed breeding attempts. EC additionally indicated concerns with respect to annual variation in sampling of waterbodies, indicating that sample sizes of most species are too small to determine any trend with confidence and recommending the re-allocation of resources to higher priority bird monitoring needs.	<p>Roadside waterfowl surveys have been conducted primarily as a response to Baffinland's commitment no. 76 (Baffinland is committed to carrying out monitoring over the next few years to look at other types of birds not considered during other research for the Mary River Project). There is no Project Condition committing Baffinland to conduct these surveys. They surveys have been conducted by Baffinland on an opportunistic basis when qualified ornithologists are on site at the appropriate time of year. Resources required for this survey are minimal because they are conducted opportunistically while ornithologists are on site for other required survey work, and conducted at Baffinland’s discretion and do not conflict with higher priority monitoring efforts.</p>

Documented Bird Species within the Terrestrial Regional Study Area	EC noted that baseline and monitoring data provided within the project area suggests that more bird species have been detected than reported in the annual report, with some unreported species being of conservation concern in Nunavut, including the Red Knot, listed on the Species at Risk Act. EC recommends that a thorough review of bird baseline and monitoring data be conducted to determine presence of bird species, including species at risk within the project area as well as follow-up on updating Table 26 of the 2014 Annual Terrestrial Monitoring Report.	<p>Baffinland acknowledges that incidental sightings of red knot were recorded in 2007 and 2008, and that those records were inadvertently omitted from baseline reporting. Knowledge of those sightings does not affect Baffinland's mitigation practices for protection of active migratory bird nests.</p> <p>A thorough review of baseline data available at the time of preparation of the bird baseline for the FEIS and subsequent report was conducted at the time of publication. Further to this, baseline PRISM data used for follow-up reporting was provided to EC in the summer of 2015 for their review purposes. In addition to ongoing active migratory bird nest surveys, a qualified ornithologist was on site in late June 2015 to conduct additional shoreline surveys for staging birds in Milne Inlet, and to investigate likely areas of red knot nesting habitat along the tote road. The cumulative bird species list of observations on site, including retroactive accounts of recently available data, will be updated in the 2015 annual terrestrial environment monitoring report.</p>
Monitoring of Flight Altitude in Key Site for Moulting Snow Geese	EC noted its concerns with respect to monitoring flight altitude in key sites for moulting snow geese. EC specifically commented that helicopters on site were flying below recommended altitudes most of the time, and that Baffinland need to create increased pilot and staff awareness of the area of concern by displaying maps in appropriate locations or upload digital information in navigation GPSs, as well as analyze helicopter track log information in the Annual Terrestrial Monitoring Report.	This condition continues to be discussed within the Terrestrial Environment Working Group, of which Environment Canada is a member. Baffinland has committed to continuing to provide helicopter track log data, including compiling and analyzing data in relation to the Snow Goose Management Area for the Annual Report in 2015.
Reporting of Project-related Mortalities, including Migratory Birds	EC commented on project-related mortality with specific notes on migratory birds' collision with project infrastructures. EC observed discrepancies between the earlier draft and final versions of the 2014 Annual Terrestrial Monitoring Report, noting that the final version of the report was missing a table of all project-related mortalities, as well as details regarding two long-tailed ducks that flew into an operational sheet piling crane. EC recommends that project-related mortality of migratory birds be reported to EC Wildlife Enforcement and that the reporting process be formalized in the TEMMP. Additionally, EC further recommends that Baffinland report all project-related mortalities with sufficient detail in the annual monitoring report to allow for adaptive management, and that information collected should include: date and time of discovery, estimate of date and time of death, species and number, suspected cause of death and rationale, general notes on weather at time of death (for e.g. high winds or fog), and any other information that may help to understand the specific circumstances.	Baffinland will incorporate reporting procedures in future revisions of the TEMMP with informaiton provided by EC. Future annual terrestrail environment monitoring reports will include a tabulated summary of project-related mortalities.

Department of Fisheries and Oceans		
Effects of Lake Sedimentation on Arctic Char Egg Survival	DFO commented on the potential for deposition of sediments to adversely affect egg survival, recommending that Baffinland’s monitoring of sediment deposition target actual spawning locations. DFO requested clarification with respect to Baffinland’s future plans to identify Arctic Char spawning shoals in order to determine appropriate site selection for the sedimentation monitoring program.	Athough spawning sites have not been identified for Mine Area lakes, the lake sedimentation monitoring program was designed to monitor for effects in different habitats, including suitable Arctic Char spawning habitat (based on water depths and substrate). Effects of the Project on sedimentation were predicted to be highest in Sheardown Lake, though sedimentation rates were predicted to remain below the benchmark of 1 mm/year. The monitoring program therefore is intended to confirm the impact predictions and to monitor within the waterbody that will be most affected by this pathway of effect. Should the program find higher deposition rates than predicted in the FEIS, targeted programs could be conducted to attempt to identify spawning sites in the Mine Area lakes.
Stream Diversion Barrier Monitoring	DFO commented on the Stream Diversion Barrier Monitoring, requesting clarification on the visual assessment methodology used to determine water levels and barriers in the stream diversion barrier study proposed by Baffinland. DFO further requested clarification as to whether or not future surveys will include only visual surveys or utilize electrofishing surveys to confirm fish presence/absence when there is uncertainty regarding fish passage at potential barriers.	Visual assessment as referred to in AEMP Section 4.3.3 refers to the use of professional visual assessment of whether or not a low water area on a given stream represents a fish barrier. More than visual assessment is used, however. The Initial Stream Diversion Monitoring Study Design (Appendix H of the AEMP) describes the approach in more detail. Additionally, Appendix H of the 2014 AEMP Annual Report presents how the monitoring program was conducted in its first year. In addition to visual observations and recording conditions with photographs, transects and flow velocity measurements were collected.
Milne Inlet Unmanned Aerial Vehicle (UAV) Field Test	DFO questioned the UAV used in the Milne field test, requesting additional information and clarification with respect to the maximum flight altitude achieved and resolution of camera used during the test. DFO recommended that Baffinland document behavioral reaction of marine mammals to the UAV in the event of future trials.	A report has been prepared on the UAV deployment trials and is included as Appendix N5 of the Annual Report to the NIRB, including specifics on each UAV launch. Should Baffinland conduct future trials, the study design can include behavioural observations of any marine mammals encountered. More detailed information on the UAV tirals can be provided through direct dalogue between Baffinland consultants and DFO via the MEWG.

Bruce Head Shore Based Monitoring Report	DFO commented on the 2014 Bruce Head Shore Based Monitoring Report, questioning whether or not the monitoring program did test for observer biases, and further requested that Baffinland indicate how such biases was corrector for. Additionally, DFO commented on the Model Results reported in Section 3.3.3 and questioning whether the addition of an auto-correlation structure to the model was considered.	<p>(1) Although we are not entirely clear about DFO's questions re: observer bias, we assume it is a general question about having an estimated detection function and correction factors for missed narwhals independent of vessel presence or absence. We did not test for observer bias in the relative abundance and distribution (RAD) data although we have considered it. Accounting for observer bias would likely require a modified experimental design and more personnel in the field because independent observers would be needed to ascertain a correction factor(s). This can be done in principle but has logistical challenges. We will undertake to investigate this question further in the 2015 analyses and the analyses of the combined 2013, 2014, and 2015 RAD data.</p> <p>(2) In short, yes, autocorrelation has been considered in the statistical model. Discrete data make dealing with autocorrelation difficult and autocorrection functions for a negative binomial distribution are an area of current research. Our efforts with survey design and developing a modelling approach to test for large vessel effects on narwhals have been more focused on spatial correlation in narwal distribution in Milne Inlet. A mixed-effects model, in combination with a stratified spatial survey design, is an approach to take into account existing evidence that narwhals are not randomly distributed throughout the survey area. It is an attempt to account for spatial correlation. We recognize, in addition to spatial correlation, that there is temporal autocorrelation in narwhal numbers with respect to the count data; however, with the 2013 and 2014 datasets, we were limited by a small sample size with respect to presence of large vessels when statistically treating both spatial and temporal autocorrelation.</p> <p>One way that we have taken into account temporal patterns in the count data is by including a variable in the model to account for temporal trends in narwhal relative abundance throughout the season. In 2014, we included a quadratic term for day of the year, which allows the model to fit natural seasonal increase/peak/decrease in narwhal numbers as the open-water season progresses. Additionally, day of the year was treated as a random-effect, which helps to account for autocorrelation between counts within a single day. It should also be noted that spatial and temporal autocorrelation between consecutive samples within a given day are often one in the same. We certainly welcome any suggestions/examples by DFO for ways to improve our statistical treatment of spatial/temporal correlation.</p>
Ship Based Pilot Program Draft Report	DFO commented on its review of the Ship Based Observer Pilot Program Draft Report, questioning whether the option of including passive acoustic monitoring on the ships has been considered by Baffinland.	Baffinland has considered this option, however based on the current level of technological capability, it would not be practical or effective to mount systems on vessels transiting to the shipping port. Baffinland will continue to monitor for practical methods for detection and avoidance of marine mammals, and will seek input from agencies such as DFO through the MEWG.