

Review Group	Management Plan/PEPR Section	Section or Area of Focus	Rex Feedback ID (Internal)	Reviewer Feedback	Rex Response
		Lack of dust monitors along eastern section of mine.	CM001	<p><i>Gulf as sensitive receptor:</i> - “ Flora and fauna contained within the marine environment are sensitive receptors which have the potential to be impacted by the Hillside Project” (MLP Section 8.3.9) - DSD MLP Assessment Report (p. 363) – DSD “considers the sensitive receptors and associated environmental values for this environmental aspect to be:</p> <ul style="list-style-type: none"> o marine ecosystems (health and diversity) and o marine fauna and flora (faunal and flora health and diversity”. <p>Given the Gulf’s status as a sensitive receptor, and given that dust deposition has been listed in the draft MP as one of the main risks to the marine environment (Rex’s Air Quality Power Point Presentation; 2017) the dearth of permanent dust monitors along the entire 6 km stretch of the Eastern WRD immediately adjacent to the Gulf is unacceptable. The MP indicates only one dust deposition gauge at the far northern point east of the Sandy Church Road. Rex’s suggested options, given verbally during the 20th August 2017 Pine Point community meeting, are not adequate. (See word document from Community for verbal feedback provided).</p> <p>Community Recommendation 1) That one real-time BAM monitoring station be located on the eastern side of the mine site to measure dust emissions, esp. TSP. This would:</p> <ul style="list-style-type: none"> a) Fill the information gap re dust emissions reaching the Gulf b) Ensure the Company is meeting Condition 1 and 5 (Schedule 2) which specifies emission limits for each 24 hour period. We assume these conditions require the Company to be accountable for the level of emissions leaving the site on all sides, including the eastern boundary. With no monitoring on the eastern boundary, that will not be the case. <p>1. 2) That an adequate number of dust deposition gauges be located as close to the coast as possible.</p>	<p>Recommendation: To address the concern that copper bearing dust from mining activities may contaminate the marine environment, it is recommended that the Marine Monitoring Program include sediment sampling at five locations to verify / demonstrate that there is no build-up of copper or other mine derived pollutant on the sea bed. This would be in addition to the dust monitoring proposed by Rex in the Air Quality Management Plan.</p> <p>Rational: the amount of dust leaving the site is not permitted to exceed the compliance criteria, set and regulated by the DPC and EPA. These compliance criteria are designed to protect people and the environment. Should any criterion be exceeded the mine has to take immediate action and if levels remain high the mine must shut down until the issue is resolved. Therefore, the sediment quality monitoring will provide an additional level of evidence to verify the premise that mine derived dust will not have a significant (if measurable) impact the marine environment.</p>
		Groundwater Monitoring	CM002	The draft Groundwater MP indicates two monitoring bores (for baseline aquifers) on the eastern side of the mine – one at the northern end and one mid-way. There are none at the southern coastal side of the eastern WRD. Why not?	A groundwater monitoring site will be relocated further south east near Pine Point. More information will be provided in the updated Groundwater Management Plan – monitoring locations map.
		Gaps in proposed Gulf monitoring program	CM003	<p>The draft MP’s description of the monitoring program is cursory and lacks sufficient information to explain clearly what will and will not be done. It contains none of the detailed methodological descriptions outlined in the baseline studies and there is no clearly-stated commitment to implementing the full breadth of monitoring undertaken in those studies (excluding some components relevant only to the port location). In fact, several statements indicate otherwise.</p> <ul style="list-style-type: none"> • (p 9) that “The coastal and marine ecological baseline surveys... form a basis of the proposed monitoring program”. • (p 10) The program will be conductedusing the baseline sampling sites and modified methodology...” <p>The Plan fails to specify which baseline methodologies will not be implemented, nor the reasons for omitting them. A comparison between methodologies used in the 2011 baseline report and the draft MP are noted in the feedback Word document and are not listed here.</p> <p>Community Recommendations:</p> <ul style="list-style-type: none"> • A far more detailed description of monitoring methodologies including the number of sites to be monitored and reasons for doing less than in the baseline survey. <p>The current description in this draft MP is vague and we believe lacks the level of detail that could be used for regulatory purposes and for community understanding of what is being proposed.</p> <ul style="list-style-type: none"> • The inclusion (as per the baseline study) of on-going monitoring of: <ul style="list-style-type: none"> • the intertidal zone and • sub-tidal sediment characteristics (see further discussion below). 	<p>The baseline survey was designed to address the significant risk of concentrate spillage and concentrate dust emissions from loading facilities in Ardrossan. Should this program have gone ahead Tier 1 and Tier 2 monitoring would have been required.</p> <p>The Marine Monitoring Program is designed as a Tier 3 monitoring program. This is because the Ardrossan processing and loading facilities are no longer in the program removing the risk of concentrate spillage and dust emissions. A comprehensive and detailed Tier 1 or Tier 2 monitoring program is not required.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • The rational for the proposed Marine Monitoring Program, as provided in the foregoing explanation, will be added to the final Marine Monitoring Program. • More detailed descriptions of the monitoring methodologies will be added to the final MP. • All fixed marine sampling points were provided in the draft CMMP, the revised MP will also include the fixed coastal monitoring points. • The request from community representatives to move the southern marine monitoring point further south will also be included.

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Community	Coastal & Marine	Assessment of soluble metals such as copper entering the marine environment	CM004	<p>The monitoring program outlined in the draft MP seems to focus primarily on identifying potential impacts from increased sedimentation. However, there are apparently no plans to monitor the chemical features or metal concentrations of any element in the marine environment. The draft MP argues that the possibility of soluble metals such as copper entering the marine environment via surface or ground water flow is “low to negligible” (P. 8).</p> <p>While this risk assessment may turn out to be correct, it is up to the Company to PROVE this by implementing a thorough, on-going monitoring program incorporating an assessment of the chemical composition of:</p> <ul style="list-style-type: none"> o marine sediment; o seagrasses; and o biovalves (razor fish). <p>This three-pronged approach represents an amalgamation of methods used in the 2011 baseline study and the 2012 Ardrossan Region Baseline Study as described in the feedback doc.</p> <p>Community Recommendation: The monitoring program for the marine environment impacted by the mine site should be expanded to include the following components of the baseline studies:</p> <ul style="list-style-type: none"> • An assessment of the chemical composition (metal concentrations) of <ul style="list-style-type: none"> o marine sediment o seagrasses and o bio valves. <p>This is necessary to allay community concerns about potential marine contamination from heavy metals.</p>	<p>The assessment of soluble metals in the marine environment is not required since the Ardrossan processing and ship loading facility will no longer form part of the mine plan. The risk of soluble copper and other metallic compounds from mining activities at the Hillside mine, on marine sediment and biota would be very low. This risk assessment assumes the engineered drainage system, retention ponds and other measures to ensure that no potentially contaminated runoff from the mine will leave the site.</p> <p>Tier 1 and 2 water quality monitoring locations will detect any contaminants before they leave the site, see the Surface Water Management Plan.</p> <p>Recommendation:</p> <ul style="list-style-type: none"> • To verify and demonstrate that no contaminated runoff from the mine reaches the marine environment five sediment sampling points will be added to the program (as described for dust deposition). • Similarly, to demonstrate that seagrass and bivalves do not accumulate copper or other mine derived contaminants, representative samples will be collected from areas close to the sediment sampling locations. • The sediment and biota monitoring will be reviewed annually.
			CM005	<ul style="list-style-type: none"> • Seagrass monitoring: Specific details on the number and location of monitoring sites are only provided for seagrass monitoring (see Figure 2, MP). Only five are specified: 3 in the impact zone and 2 transitional sites at Rogues Point and at approx. Parara. <p>Issues:</p> <ul style="list-style-type: none"> o Limited number of transition sites: Question: what is the justification of having only two? Why aren't more required? o No control sites: Because both transitional sites could be affected by mine-generated contaminants carried northwards by the prevailing clockwise circulation pattern of the Gulf, they are not “control” sites. <p>Community Recommendation: At least one (preferably more) control site(s) situated outside of any potential impact zone seems essential. This should be located to the south of Black Point, well away from possible impacts from dust carried by strong north-westerlies.</p>	<p>Seagrass monitoring is proposed in the Management Plan at 5 locations: Site R4 is consider a potential transitional site R5 a control site. R4 is in line with Rouges Point and R5 is 3.5km NW of Rouges Point. R1 which initially was considered a potential transition point has been relocated 2 km further south and will be now considered as a potential control point. The term potential is used because it has not yet been established that there is any impact from mining activities.</p> <p>The number of seagrass monitoring sites (5) provide sufficient data to detect changes at a Tier 3 monitoring level. Should any impact be detected the number of sites would be increased to provide a greater level of confidence in the data and to better understand the potential source of the impact.</p> <p>The photo-points are strategically located in front of gullies where any potential impact from any accidental release of water from the mine is likely to cause erosion or the deposition of sediment.</p> <p>The rationale for a walkthrough survey is that it covers greater distances than fixed-point surveys, and is more efficient at detecting any impacts to the coast and foreshore areas. Should an impact be detected or suspected the additional 10 fixed-point monitoring points can be added, immediately.</p>
			CM006	<ul style="list-style-type: none"> • Photo point and walkover survey <p>Six photo points (location not provided) are referred to. Why so few, given that the baseline study focused on 16 survey points between Pine Point to just north of Rogues Point.</p>	<p>Recommendations: Provide more information regarding the methodology in the final Management Plan.</p>

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		Monitoring Timing and Frequency	CM007	<ul style="list-style-type: none"> Annual monitoring only: The draft MP (p. 12) proposes annual monitoring at about the same time each year “to minimise the effect of seasonal variation” - presumably December to coincide with the timing of the baseline studies. <p>Concern: any changes from a once-per-year monitoring program may fail to detect any changes at an early stage in the process, thereby leading to delays in taking remedial action.</p> <ul style="list-style-type: none"> No monitoring of seasonal variations <p>Draft MP states (p. 13) “No significant change is expected from the baseline indicator values other than can be reasonably explained by seasonal variations”</p> <p>Question: how will differences due to seasonal variations be identified, given that baseline data for the mine site are only available for 5-8 December.</p> <p>Community Recommendation: At least in the early stages of mine development and operation, at least six monthly monitoring is required to provide an understanding of seasonal variation and early detection of potential problems.</p>	<p>Seasonal variation in this context refers to between year seasonal variations, that is one summer may be drier than the previous summer. It is therefore important to monitor at the same time (same season) each year. Between season variation is highly likely to be much greater than what can be expected from potential mining impacts, between season variation is not required for monitoring.</p> <p>Recommendation: The community expressed an interest in establishing a local coastal and marine monitoring group, it is recommended that should such a group be set up under the HMCV, Rex would provide a training workshop by the marine biologist engaged by Rex to undertake the annual coastal surveys.</p>
		Continual review of monitoring techniques in response to changing technologies (p 13)	CM008	<p>Given the rapid nature of technological change, continual research into and evaluation of new monitoring techniques is crucial both before and throughout the life of the mine. For example, we understand the use of satellite imagery to monitor changes in seagrass coverage are being used by marine biologists, while the rapid development of drone technology may represent another option.</p> <p>Community Recommendation: An Advisory Panel, comprising community representatives and independent – preferably academic - experts/advisors responsible to the community be established to work collaboratively with Rex and its qualified marine biology on an on-going basis to:</p> <ul style="list-style-type: none"> Participate in these “continual reviews of monitoring techniques” in collaboration with Rex’s qualified marine biologist Contribute to an ongoing assessment of/research into changing monitoring techniques Act as a community watch-dog re the monitoring program results etc <p>This Panel needs to be established before any mining operations commences.</p>	<p>Continual review of monitoring methodology is a reasonable and sensible request, it will be added to MP. Advisory Groups are outside the scope of the Coastal and Marine Monitoring Program, and will be responded to separately.</p>