



## **COASTAL AND MARINE MANAGEMENT PLAN**

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**Revision History**

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1.0	12/07/2017	Draft - Technical
2.0	18/07/2017	Management Review
3.0	19/07/2017	HMCV ready
4.0	04/10/2017	Final version incorporating responses to community and DPC feedback.
5.0	20/12/2017	Approved by Management – Ready for PEPR submission

## Definition of Terms

ACR	Annual Compliance Report
AQMP	Air Quality Management Plan
BOM	Australian Government – Bureau of Meteorology
CMMMP	Coastal and Marine Monitoring Plan
DPC	Department of the Premier and Cabinet
DSD	Department of State Development, South Australia
EFS	Extended Feasibility Study announced by Rex Minerals in May 2015
EML	Extractive Minerals Lease 6439
EMS	Environmental Management System
EPA	Environment Protection Authority
GSV	Gulf St Vincent
GWMP	Ground Water Management Plan
HMCV	Hillside Mine Community Voice
LoM	Life of Mine
µg/m <sup>2</sup>	Microgram/square meter
ML	Mineral Lease 6438
MLP	Mining Lease Proposal
MPL	Miscellaneous Purposes Licence 146
ppt	Parts per thousand (Grams of salt per kilogram of sea water)
RSF	Rock Storage Facilities
SWMP	Surface Water Management Plan
TSF	Tailings Storage Facility
YP	Yorke Peninsula
YPC	Yorke Peninsula Council

## **1. INTRODUCTION**

Rex Minerals Limited plans to develop and operate the Hillside Mine, situated 12 kilometres south of the township of Ardrossan. Conventional open cut mining techniques will be employed using trucks and excavators to deliver ore to a processing plant that will produce a copper concentrate.

This Plan provides a description of the measures to be implemented by the Hillside Mine to manage the impacts on the coastal and marine ecosystem and comply with the conditions outlined within the Mineral Lease 6438 (ML), Extractive Minerals Lease 6439 (EML) and Miscellaneous Purposes Licence 146 (MPL) conditions and other statutory requirements.

### **1.1 ENVIRONMENTAL MANAGEMENT SYSTEM**

Rex Minerals is committed to minimising the impact of its operations on the local environment and community, and is developing a comprehensive Environmental Management System (EMS), that will be based on the International Standard 14001:2015. This Coastal and Marine Management Plan (CMMP) is a component of the Hillside Mine EMS.

### **1.2 OBJECTIVES**

The objective of this Plan is to provide the framework for:

- ensuring compliance with all relevant statutory requirements;
- Rex Minerals Policies and Standards;
- implementing tools and practices to manage and minimise the impact of mining activities on the coastal and marine environment;
- providing details on marine monitoring responsibilities; and
- maintaining an effective response mechanism to deal with issues and complaints.

## **2. COASTAL AND MARINE CONDITIONS**

There are no ML, EML and MPL conditions (Second Schedule) that relate to the coastal and marine environments.

However, the Second Schedule conditions for Hillside Mine ML state that Rex Minerals must comply with all State and Commonwealth legislation and regulations applicable to the proposed mining activities. Legislation relating to coastal and marine environments includes (but is not limited to) the:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *National Parks and Wildlife Act 1972*
- *Environment Protection Act 1993*
- *Harbours and Navigation Act 1993*
- *Marine Parks Act 2007*
- *Natural Resources Management Act 2004*
- *Native Vegetation Act 1991*

### **3. COASTAL AND MARINE OUTCOMES**

The following Hillside Mine ML clause (Sixth Schedule) relates to Coastal and Marine Outcomes:

26. The Tenement Holder must ensure that there is no loss of abundance and diversity of marine flora and fauna from contaminants and dust deposition resulting from mining operations during and post mine completion.

There are no EML and MPL outcomes (Sixth Schedule) that relate to the coastal and marine environments.

### **4. BASELINE MEASUREMENTS AND MODELLING**

Gulf St Vincent (GSV) is characterised by relatively high mean salinities ranging from 35.5 to 42.0 parts per thousand (ppt) and temperatures above 26°C in summer (Bye, 1976). Most of the coastline is sheltered with low wave energy, weak currents, and extensive areas of quiet water shallows.

Low annual rainfall and high summer temperatures combined with relatively shallow waters, particularly on the expansive intertidal flats, mean that evaporation rates exceed fresh-water input. This results in higher seawater salinity in the upper reaches of GSV than in the southern (Kangaroo Island) end. Gulf waters have a limited exchange with the Southern Ocean in the Investigator Straight.

Net clockwise water circulation in the GSV is “in” at the surface and “out” along the bottom, which is opposite to that of classical estuarine circulation. For this reason, GSV is referred to as a reverse (or inverse) estuary. Upper Gulf waters are typically turbid because of the input of suspended carbonate matter from the south, which is transported northwards along the long-shore drift to the upper Gulf area (Shepherd & Sprigg, 1976).

The tidal range at the entrance of GSV is about 1m increasing to 3m at the upper reaches of the Gulf (Schulter, et al., 1995). The most defining tidal patterns of GSV are the periods of dodge tides; a South Australian term for flat neaps, that is when neap tides have minimal rise or fall over a 24-hour period. GSV experiences dodge tides for 1-2 days twice a month. Kangaroo Island at the mouth of the Gulf slows tidal flushing; it takes 80-100 days for Gulf waters to completely flush through. Wind waves rather than currents are the main modifying factor for the eastern coast of Yorke Peninsula (Edyvane, 1999).

The seagrass communities growing on the sand substrates in the Hillside Mine survey area were dominated by species from the *Posidonia* genus; *P. sinuosa*, *P. angustifolia* and *P. australis*, (COOE, 2011). The seagrass communities identified and mapped in the baseline survey are shown in Figure 1.

The lower intertidal zone was composed of patches of *Zostera* (*Z. tasmanica*) and *P. australis*. The deeper subtidal waters (water depth greater than -7m) consisted of sparse to medium dense mixed communities of *Halophila*, *Zostera* and *Posidonia* seagrass and sparse filter feeders such as Razorfish (*Pinna bicolor*), sponges, soft corals (*Gorgonia* sea fans - order Alcyonacea) and hydroids.

There was very little reef habitat recorded throughout the survey area. Of the reefs recorded, these habitats consisted of rock boulders and broken bottom reef with sparse macroalgae and filter feeding communities. The marine habitats were dominated by seagrass communities that are widespread in the Upper GSV.

Status of the coastal and marine environment identified in the baseline survey of 2011:

- intertidal and coastal habitats: these habitats consist of cliff face intersected with gullies supporting vegetation and coastal birds and fauna, including 47 plants and 11 bird species identified in the baseline survey;
- subtidal habitats: predominantly a sandy bottom supporting seagrass communities and rocky reefs;
- the seagrass communities in 2011 consisted of extensive areas of dense and healthy Posidonia, Halophila and Zostera communities with filter feeders such as razorfish, sponges, soft corals, and hydrooids;
- subtidal sediment characteristics were generally sandy with some fines. Chemical analysis found elevated concentrations of metals including copper, zinc, arsenic and cobalt around the wharf and elevated total hydrocarbons in the diesel and heavy fuel range (C15 to C28, fractions using US EPA method 5030/8260) just off Rogues Point.

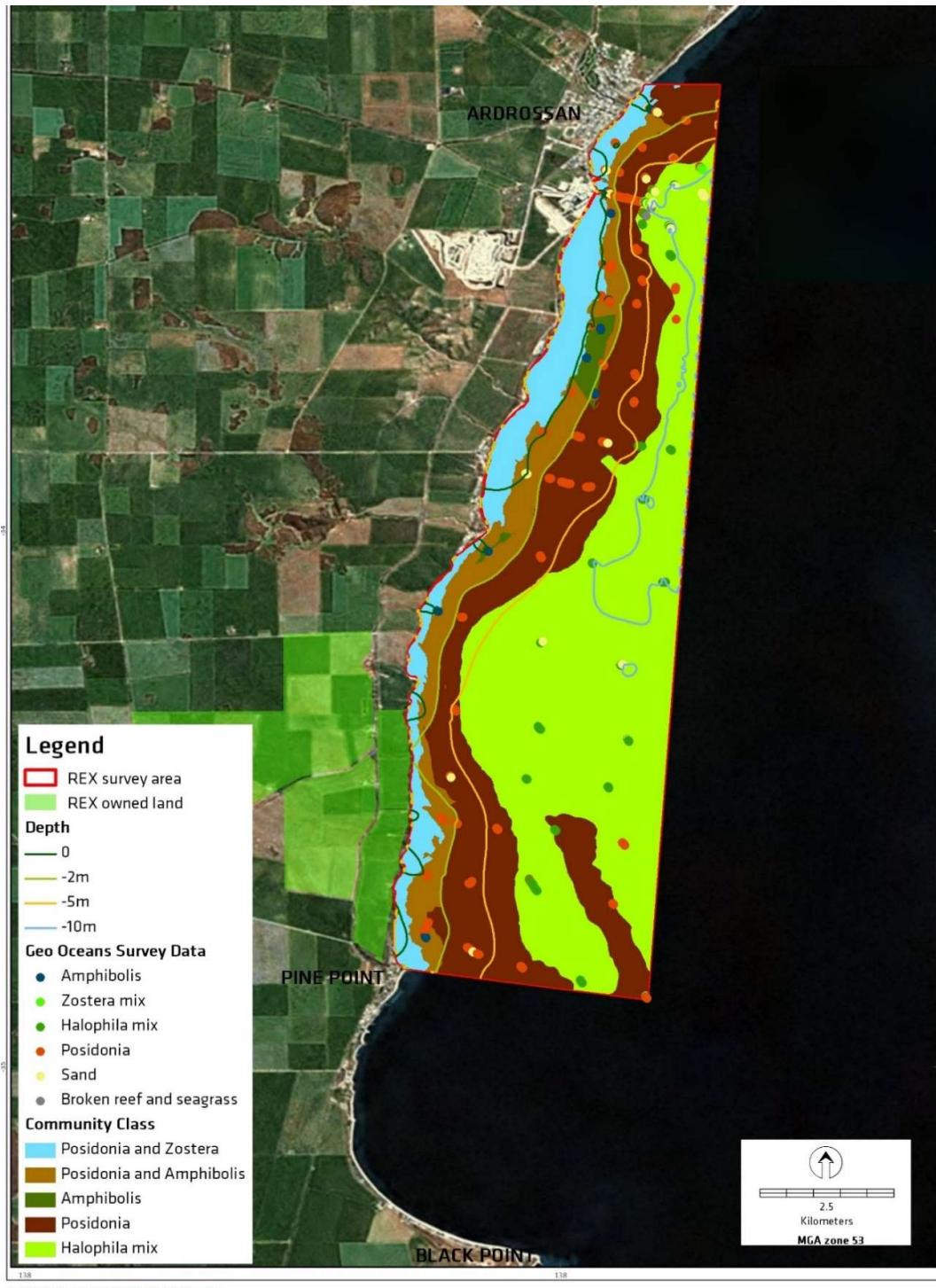


Figure 1: Baseline Survey of Seagrass Community Distributions

## **5. UNCERTAINTY ASSESSMENT**

Key assumptions made in predicting marine impacts by the Hillside Mine and in recommending mitigation and management controls are:

- all potentially contaminated runoff from the mine footprint will be contained within the mine footprint and will drain towards the pit or the engineered retaining ponds;
- runoff from the outer surface of the rock storage facilities (RSF) may contain sediment (but no potentially harmful contaminants), this will drain towards the retaining ponds on the mine lease;
- the surface water management system will trap sediments and prevent their release to the natural drainage system in the area;
- baseline dust modelling is correct, uncertainty will remain until the dust models are calibrated and validated.

## **6. KEY RISKS**

The main risk to the coastal and marine environment evaluated in the initial Mining Lease Proposal (MLP) was dust and concentrate spillage from the Ardrossan processing and ship loading facilities. The ship loading facilities will not be used in the revised mine plan; therefore, the potential impact from dust and sediment bearing runoff at the Port of Ardrossan will no longer have a potential impact on the coastal and marine environment.

Dust from mine activities and exposed surfaces are predicted to reach the marine environment but the level of dust is not expected to be high. The maximum annual dust deposition on the closest stretch of marine environment reaches around 60 microgram/square meter ( $\mu\text{g}/\text{m}^2$ ) (Pacific Environment Modelling, 2015) or in agricultural terms 0.006 kg/ha in one year, modelled for the worst year (year 5) of the Project. This level of dust deposition is not likely to have any measurable impacts on the marine environment.

Therefore, the risk of dust dispersion from the RSF and Tailing Storage Facility (TSF) and other exposed surfaces reaching the marine environment is low after dust suppression measures and progressive rehabilitation are implemented as outlined in the Air Quality Management Plan (AQMP).

Sediment bearing runoff from exposed surfaces is not likely to impact the coastal strip and nearby marine habitats, because the engineered sumps, drains and diversions will considerably reduce the level of risks of contaminated surface water reaching the marine environment as outlined in the Surface Water Management Plan (SWMP).

If in the unlikely event that storm water runoff containing sediment from the mine leaves the property it may cause some gully erosion, sediment fallout on the coastal intertidal strip and enter the sea. This may adversely affect coastal and seagrass communities by increasing erosion, smothering of intertidal habitats, increased turbidity in the sea and sediment deposition. The main impacts on the marine environment would be reduced seagrass productivity from potential suspended particles and changing of marine substrates and associated habitats.

The risk of soluble metals such as copper entering the marine environment via surface or groundwater flow was investigated as outlined in the Groundwater Management Plan (GWMP). With all potentially contaminated water being directed towards the pit during construction and for hundreds of years after mine closure, the risk of soluble metals reaching the marine environment is considered to be low to negligible.

## **7. MARINE CONTROL MEASURES**

Control measures for dust and airborne contaminants have been addressed in the AQMP. The equipment proposed by Rex for dust monitoring is applicable to air space monitoring but is not appropriate for monitoring impacts on the marine environment. While there is some scope for using data from dust deposition gauges to provide information on the amount and composition of dust that may settle on the surrounding waters, the interpretation of this data with respect to marine impacts is complicated, because on contact with the sea surface the particulates will disperse over very wide areas.

Control measures will be implemented to prevent sediment from leaving the mine site, particularly with the presence of surface water runoff points adjacent to the site, as provided in the SWMP. Any suspended sediments that may arise despite mine control measures would disperse offshore with the finer particles moving out further from the coastline. This dispersion will be further complicated by tidal circulation, which also transports large quantities of sediment from several kilometres away.

Monitoring of coastal and marine flora and fauna will provide verification of the success of the control measures implemented. No relevant criteria have been developed as the background conditions are not expected to change, other than what could be expected from seasonal variations between years.

### **7.1 PRO-ACTIVE MEASURES TO PREVENT ENVIRONMENTAL IMPACT**

The surface water management system and progressive rehabilitation will provide the primary control measures for preventing dust, sediment and pollutants from reaching the coastal and marine environment. Should the leading criteria for air quality or surface water be exceeded, a review of the risk to the marine environment will be undertaken. The outcomes from this risk assessment may trigger additional marine surveys to investigate any potential coastal or marine impacts due to exceedances of compliance criteria.

### **7.2 MITIGATION MEASURES**

Mitigation measures to prevent impacts on the marine environment will be undertaken upstream of the coastal and marine environment, details of these mitigation measures are included in the AQMP and the SWMP. In response to community concern regarding potential contamination of groundwater and subsequent seepage into the marine environment, Rex has implemented a groundwater monitoring well on the southeast corner of the ML near Pine Point. More information regarding groundwater monitoring is provided in the GWMP.

A Marine Monitoring Program will be implemented to verify the effectiveness of dust prevention measures and surface water contamination, as outlined in Section 10.

## **8. CONSULTATION**

The coastal and marine baseline studies were presented to community through community consultation meetings including the HMCV. Rex Minerals continues this communication through the HMCV, and results of the monitoring program will be included in the Annual Compliance Report (ACR). This Plan includes responses to the feedback and additional or modified monitoring proposed by the Department of the Premier and Cabinet (DPC) and the community.

## **9. RESPONSE PROCEDURES**

Should marine monitoring find trends that signal potential marine impacts attributable to mining activities, Hillside Mine management will be immediately notified, and an investigation of mining activities will be undertaken to identify the potential source and implement corrective measures. Likely corrective measures will consist of modifications to the relevant upstream operational response procedures, and to the AQMP, SWMP or the GWMP. Should the impact be outside the scope of the Management Plans that address the potential causes of contaminates on the marine environment, the Hillside Mine management will consult with a marine specialist to investigate and recommend remedial action.

A response procedure or contingency plan is not required for the CMMP as any potential impact on the marine ecosystem will be addressed by upstream operational responses.

## **10. MONITORING PROGRAM**

The proposed monitoring program is designed to track changes to the coastal and marine habitats close to the Hillside Mine. The coastal and marine ecological baseline surveys undertaken for the Mining Lease Proposal (MLP) (COOE, 2011) form a basis of the proposed monitoring program.

The Hillside Mine will implement three tiers of environmental monitoring:

- Tier 1 (Management Monitoring): these monitoring sites will be located on the ML and will be used primarily for occupational health and safety, and general site management.
- Tier 2 (Compliance Monitoring): these monitoring sites will be located close to the ML boundary for compliance monitoring. These monitoring locations will not exceed Environmental Compliance Criteria set under the licence conditions or legislation by the regulators, the DPC and the EPA respectively. These criteria are intended to protect the environment and people.
- Tier 3 (Verification Monitoring): these monitoring sites will be located off the Mining Lease and are intended to verify that the predicted levels of dust, noise or any other contaminant are not exceeded. These monitoring stations should not be detecting any potential contaminant or dust originating from mining activities at or above the compliance level.

Tiers 1 and 2 monitoring for dust, surface water and groundwater quality are presented in the AQMP, the SWMP and the GWMP, respectively.

### **10.1 RATIONAL FOR THE COASTAL AND MARINE MONITORING PROGRAM**

The proposed construction and operational activities of the Hillside Mine have the potential to impact the coastal and marine environments close to the mine. The current mine plan excludes activities at Port Ardrossan and will therefore be excluded from the proposed monitoring program. The baseline environmental surveys for the coastal and marine habitats at Port Ardrossan have already been established should additional monitoring sites be required at a later stage.

The overarching monitoring objective is to demonstrate that there is no loss of abundance and diversity of marine flora and fauna, attributable to pollutants or dust deposition resulting from mining operations during construction, mine operation and post-mine completion.

Without the initial activities planned for Port of Ardrossan, any potential risk to the coastal and marine environment would be through suspended sediments and contaminants in surface runoff waters or dust deposition directly from the mine.

The proposed coastal and marine monitoring program is designed to provide supporting evidence to demonstrate that contaminants and dust from mining activities do not have a statistically significant impact on the coastal and marine environment.

#### **10.1.1 Marine Sediment**

To address the concern that copper bearing dust or contaminated surface water runoff from mining activities may contaminate the marine sediments, the Marine Monitoring Program will include sediment sampling at five locations to verify and demonstrate that there is no build-up of copper or other mine derived pollutant on the sea bed. There will be three sites located within the potential impact area and two outside the potential impact area as controls. This would be in addition to the Tier 1 and Tier 2 dust monitoring programs proposed by Rex in the AQMP. The data can also be compared to the 2012 baseline and another baseline prior to mine construction.

**Rational:** the amount of dust leaving the site is not permitted to exceed the compliance criteria, set and regulated by the DPC on the mine and the EPA off site. These compliance criteria are designed to protect people and the environment. Should any criteria 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 confidence and validate the premise that mine derived dust will not have a significant (if measurable) impact the marine environment.

In the unlikely event that sediment monitoring detects a build-up of copper in the potential impact sites, but not in the control site, further sediment sampling will be undertaken, and marine organisms will be collected to investigate any potential accumulation in organic tissue. The baseline data of potential contaminants reported in the 2012 marine environment survey will provide a benchmark if required.

#### **10.1.2 Abundance of Marine Flora and Fauna**

Suspended particulates from dust deposition or sediment bearing runoff will have a direct impact on sedentary marine organisms. Seagrass is one of the most sensitive sedentary marine organisms to suspended particulates because light attenuation will reduce photosynthesis and therefore bio productivity. The highest potential risk from contaminants and dust deposition is to seagrass health, which has been evaluated as low to undetectable.

The primary aims of the seagrass monitoring program are to:

- determine the species composition and density of the seagrass communities;
- assess the condition of seagrass communities.

The program will be conducted annually by a marine scientist using the baseline sampling sites and modified methodology appropriate for the operational and post closure phase of mining. Sampling sites R1 to R5 that were set-up as long-term seagrass monitoring sites during the Baseline Survey, will be used as seagrass health monitoring sites.

The GPS coordinates of the permanent seagrass monitoring sites are provided in Table 1 and are mapped in Figure 2.

Table 1: Coordinates of Marine Monitoring Sites

Site	Zone	Easting	Northing
R1 (new)	53 H	766256.00 m E	6169360.00 m S
R1 (old)	53 H	766707.68 m E	6171206.43 m S
R2	53 H	766516.70 m E	6173773.05 m S
R3	53 H	765654.93 m E	6176562.44 m S
R4	53 H	767605.00 m E	6179034.17 m S
R5	53 H	768731.08 m E	6181129.76 m S

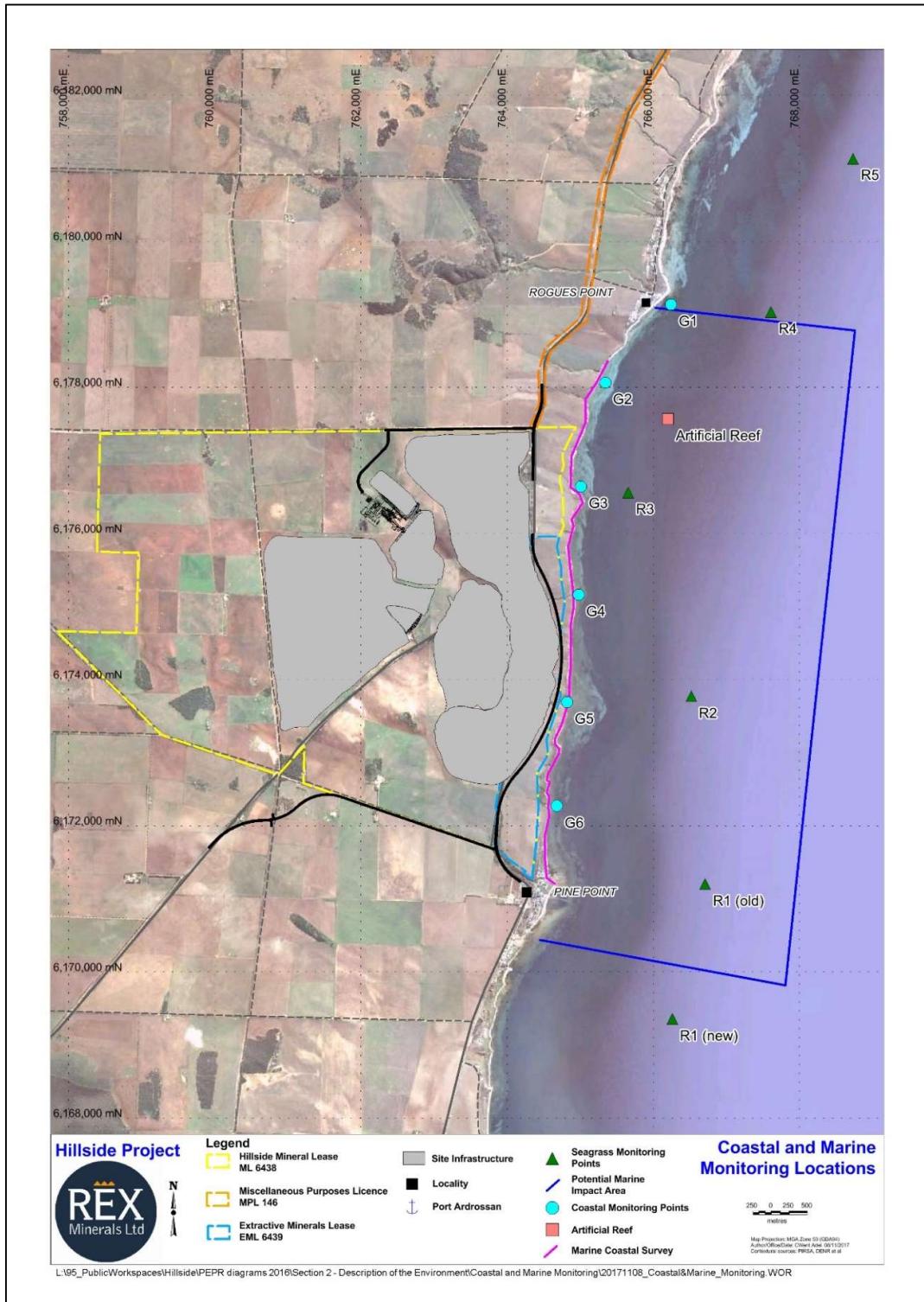


Figure 2: Marine Monitoring Sites

The permanent underwater monitoring sites were established using a sub-surface buoy extending 1m above the seafloor as a photographic target. The buoys were attached to 1m nylon cord and secured to the seafloor using stainless steel anchors hammered into the substrate, refer to Figure 3. Note that Site R1 (new) will be established in the proposed pre-construction baseline survey.



Figure 3: Site R5 permanent marker, in dense *Posidonia sinuosa*

#### 10.1.3 Seagrass Monitoring Activities

The monitoring activities proposed at each seagrass monitoring dive site will consist of the following:

- Photographs of the seagrass at each site, taken 1.5m due south of each buoy from a height of 1.5m above the seafloor using a digital underwater camera.
- A 50m measuring tape is randomly laid out on the seafloor. A scientific diver will swim along the tape and record the types of seagrass occurring within 1m of the tape and make an estimate of the percentage cover of each seagrass species.
- Representative photographs of the seagrass communities will be taken along each transect.
- The seagrass *Posidonia sinuosa* will be harvested from three randomly placed 25cm x 25cm quadrats by cutting the seagrass leaves off where the leaves join the rhizome (usually at the level of the substrate). The leaves will be placed in labelled plastic bags and frozen prior to analysis in the laboratory.
- In the laboratory excess water will be removed from seagrass samples by allowing the samples to passively dry for 30 minutes. The wet weight of combined samples from each site will be measured.
- The length of seagrass leaves will also be measured to determine the mean length and standard deviation of seagrass leaves at each site.

**Rational:** Seagrass monitoring will be at five locations: In response to the HMCV feedback, site R1 is now further south than the original baseline R1, to act as the southern control site. Sites R2 and R3 are in the potential impact zone, site R4 is considered a transitional zone, and site R5 is the Northern control site, with site R1 (new) as the Southern control site. Site R4 (the transitional site) is in line with Rouges Point and R5 is 3.5km NW of Rouges Point. Site R1, which was initially 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 here because it has not yet been established that there is any impact from mining activities.

Five seagrass monitoring sites should provide sufficient data to detect changes between the sites, at a Tier 3 monitoring level. Should an unexpected impact be detected during a marine survey, the number of sites will be increased to provide a greater level of confidence in the data, and provide additional information to better understand the impact and develop a management response.

#### **10.1.4 Diversity of Marine Flora and Fauna**

Diversity of marine flora and fauna was mapped during the baseline survey using underwater video transects using georeferenced frames. This methodology was appropriate for marine mapping of baseline conditions; in the annual marine monitoring program, it is proposed to lower a video camera at randomly selected locations between Pine Point and Rogues Point, within the blue area in Figure 2, to identify the seagrass species and marine habitat type. At least 10 x 50m tows will be made, with additional transects if any discrepancies are detected between the baseline map and current survey.

Figure 1 shows that significant seabed diversity can occur within each habitat type for example, sandy bottom will occur within an area classified as *Posidonia*. Therefore, the video camera will be allowed to traverse approximately 50m as the boat drifts over the bottom. At each randomly selected site the seagrass species and seabed type and an approximate ground cover percentage will be recorded using the same classifications system as the baseline.

**Rational:** The baseline survey of 2011 mapped the marine habitat between Ardrossan and Pine Point, Figure 1 shows five seagrass communities interspersed with sand and broken reef. Additional mapping at this level of detail and extent is not necessary to detect impacts. The proposed fixed point transects will provide information on the health and abundance of seagrass at representative locations; the towed video surveys will provide an additional layer of information verifying the diversity recorded in the initial surveys remains unharmed.

#### **10.1.5 Coastal Monitoring Sites**

A photo-point and walkthrough survey of the coastal foreshore will be undertaken between Pine Point and Rogues Point, purple line in Figure 2. Six permanent photo points have been established to track the ongoing erosion of the foreshore, cliffs and gullies, refer Figure 2. This is intended to provide a historic record to demonstrate that mining activities do not have an impact on the coastal and marine habitats bordering the mine tenement boundary.

##### **Photo-point survey**

The photo-points were GPS referenced in the baseline survey. A copy of the original photograph will be taken into the field and using a digital camera, a photograph of the same area will be taken. Field notes will include weather conditions, date and time the photograph was taken, GPS coordinates and any visual evidence of potential mine induced impacts, such as additional gully erosion, mud covered sand or rocky foreshore, detritus and rubbish build-up, and any loss of vegetation.

### **Coastal and Foreshore Walkthrough Survey**

The surveyor will walk along the foreshore between Rogues Point and Pine Point, taking field notes and photographs of marine and terrestrial plants, animals and surface features. The baseline survey species lists and linear transect information will be used in the field as a check list, and to help locate species to confirm species diversity and abundance is within the expected range observed during the baseline.

These will be compared to the information reported in linear transects during the baseline survey. The field information will be compared to the baseline survey to verify that the general coastal features, flora and fauna have not significantly changed from the baseline because of mining activities.

**Rational:** 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.

The rational for a walkthrough survey is that it covers greater distances than fixed-point or linear transect surveys, and is more efficient at detecting any impacts to the coast and foreshore areas, especially the build-up of detritus or rubbish that may collect off fixed point transects. Should an impact be detected or suspected, the monitoring program will be reviewed and if required additional monitoring points will be added.

#### **10.1.6 Frequency of Monitoring**

Both the seagrass health (indicator of abundance) and seabed type (seagrass communities as indicators of diversity) will be monitored in early spring to summer each year. This will ensure that the same time of the year is compared to minimise seasonal variability.

An annual walkthrough and photo-point survey will be also undertaken in early spring to summer each year to verify that mining activities have not had an adverse impact on the cliff and foreshore ecosystem.

An artificial reef was installed north of Rogues Point in 2016. This significant activity may have impacted the marine habitats mapped during the baseline surveys of 2011. Therefore, the first marine monitoring event will be undertaken before any Hillside Mine construction activities commence to confirm that the baseline conditions have not been affected by this major marine activity.

#### **10.1.7 Review of Coastal and Marine Monitoring Program**

Marine monitoring methodology has been changing rapidly over the past decade. The Hillside Mine baseline survey used towed video, what was then pioneering technology, to rapidly and accurately map the seabed using GPS and Sonar for special referencing.

Satellite imagery using multispectral imagery has been used in marine monitoring but is limited to shallow waters due to high reflectance from the sea surface, new software has been emerging that could change this limitation. Rex will investigate monitoring methodology as it becomes available, any change to the monitoring program presented in the PEPR can only be implemented subject to approval by the regulator.

## **11. REPORTING**

Seagrass health and seabed classification data will be analysed and compared to baseline conditions and historic surveys to detect trends. The results will be reported in the ACR.

The results of the coastal habitat photo monitoring and visual survey will be reported with the Seagrass and Marine Habitat Annual Monitoring Report.

## **12. PERFORMANCE INDICATORS**

To demonstrate that there are no adverse effects on the coastal and marine ecosystem, the marine monitoring needs to show that the baseline conditions for seagrass health and seabed habitat have not been adversely affected by mining activities.

The baseline data, validated by a pre-mine commencement survey, will be used to measure performance over the Hillside Mine life and post closure. No significant change is expected from the baseline indicator values other than can be reasonably explained by seasonal variation and natural ecological habitat creep, particularly that attributable to climate change.

## **13. CONTINUAL IMPROVEMENT**

Rex Minerals will apply the best practice principals to mining and environmental management. The operating procedures and monitoring programs will be reviewed and improved as new technology or better methods develop over time.

## **14. REVIEW**

The CMMP will be reviewed annually, and updated if required to ensure that the monitoring is generating robust information to detect any changes to the coastal or marine environment.

## **15. REFERENCES**

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## **16. APPENDICES**

### **Appendix 1: Correspondence Records**

Key relevant communications with DPC, HMCV, YP Council and the community relating to this management plan are detailed below.

Date	Communication with	Action or Outcomes
20/08/2017	Community, HMCV and the DPC	Extend southern control site.
12/10/2017	HMCV Working Group	Added sediment monitoring program, implemented several recommendations and suggestions from the working group.
16/06/2017	Public Meeting	Public meeting held to present plan. Written public feedback from both DPC and public received as a result presentation and discussion.
05/12/2017	DPC	Feedback from public meeting and DPC was addressed and where applicable incorporated into management plan. A Table of all feedback on each topic and how they were addressed is incorporated in the PEPR in Section 7.

## Appendix 2: Coastal and Marine Management Plan Requirements Checklist

Condition	Requirement	Section
<b>Rex Minerals Hillside Mine Mineral Lease Conditions (ML 6438) Second Schedule</b>		
There are no Hillside Mine ML conditions (Second Schedule) relating to coastal and marine.		
<b>Rex Minerals Hillside Mine Miscellaneous Purposes Licence Conditions (MPL 146) Second Schedule</b>		
There are no Hillside Mine MPL conditions (Second Schedule) relating to coastal and marine.		
<b>Rex Minerals Hillside Mine Extractive Minerals Lease Conditions (EML 6439) Second Schedule</b>		
There are no Hillside Mine EML conditions (Second Schedule) relating to coastal and marine.		
<b>Rex Minerals Hillside Mine Mineral Lease Conditions (ML 6438) Sixth Schedule</b>		
<b>Coastal &amp; Marine Outcome</b>		
26	The Tenement Holder must ensure no loss of abundance and diversity of marine flora and fauna from contaminants and dust deposition resulting from mining operations, during operations and post mine completion.	Section 5 and control measures outlined in Section 7 of this report.
<b>Rex Minerals Hillside Mine Miscellaneous Purposes Licence Conditions (MPL 146) Sixth Schedule</b>		
There are no Hillside Mine MPL conditions (Sixth Schedule) relating to coastal and marine.		
<b>Rex Minerals Hillside Mine Extractive Minerals Lease Conditions (EML 6439) Sixth Schedule</b>		
There are no Hillside Mine EML conditions (Sixth Schedule) relating to coastal and marine.		