SOIL AND LANDFORM MANAGEMENT PLAN

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Document Owner

Sustainability Manager

Document Approver

Project Director

Revision History

Version No.	Date Published	Details
1.0	04/07/2017	First Draft
2.0	05/07/2017	Management Review
3.0	12/07/2017	Technical Review
4.0	20/07/2017	DPC and HMCV Review

Definition of Terms

ACR	Annual Compliance Report
ANCOLD	Australian National Committee on Large Dams
DEWNR	Department of Environment, Water and Natural Resources
DPC	Department of Premier and Cabinet
EML	Extractive Minerals Lease 6439
EMS	Environmental Management System
EPBC	Environment Protection and Biodiversity Conservation
HMCV	Hillside Mine Community Voice
ICMM	International Council on Mining and Metals
km	Kilometre
m	metres
Mt	Million tonnes
ML	Mineral Lease 6438
MOP	Mine Operations Plan
MPL	Miscellaneous Purposes Licence 146 (infrastructure corridor)
Mtpa	Million tonnes per annum
NNAC	Narungga Nation Aboriginal Corporation
NVMP	Native Vegetation Management Plan
PPAMP	Pest Plant and Animal Management Plan
PMLU	Post-mining land use
ROM	Run of mine pad
RSF	Rock Storage Facility
SEB	Significant Environmental Benefit
SLMP	Soil and Land Management Plan
TSF	Tailings Storage Facility

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.

The SLMP provides a framework for managing and mitigating the potential impacts to soil quality and landform stability from all construction and operational activities arising from the Hillside Mine operations and related infrastructure. This Plan outlines how the quantity and quality of soil will be managed by Rex Minerals to comply with the conditions outlined within the ML, EML and MPL for the Hillside Mine.

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 14001:2004. This SLMP 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;
- managing and mitigating the potential impacts to soil and land management;
- protect agricultural cropping land from soil erosion;
- improve the condition of pasture and cropping land;
- locate topsoil stockpile to minimise erosion, encourage vegetation cover and avoid water ponding;
- direct the placement and spreading of topsoil with due care regarding depth, to meet rehabilitation requirements;
- supress loss of soil through the suppression of dust and prevention of erosion; and
- maintain a current inventory of topsoil and subsoil and a record of all movements.

1.3 REGULATORY REQUIREMENTS

South Australia through the DEWNR addresses sustainable soil and landform management through a range of state and regional level strategies, including:

- South Australia's Strategic Plan.
- Natural Resources Management Act 2004.
- State Natural Resources Management Plan.
- Regional Natural Resources Management Plans.

1.4 LEGAL REQUIREMENTS

Applicable legislation and standards:

- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).
- Natural Resources Management Act 2004 (SA).

- Environment Protection Act 1993 (SA).

1.4.1 Relevant regulations guidelines and planning measures

- Environment Protection Regulations 2009 (SA).
- South Australian Environmental Protection Authority, "Guidelines for Miners: Tailings and Tailings Storage Facilities in South Australia", Minerals Regulatory Guideline (MG5), September 2009.
- Australian National Committee on Large Dams (ANCOLD), "Guideline on Tailings Dams – Planning, Design, Construction, Operation and Closure", May 2012.
- Australian Standard 1940-2004: The storage and handling of flammable and combustible liquids.
- Australian Standard 1692-2006: Steel tanks for flammable and combustible liquids.
- Environmental Protection Authority, Bunding and Spill Management, August 2012.
- State Natural Resources Management Plan (Corporate Plan 2016-2019).
- Regional Natural Resource Management Plan (2012-2017).

2. SOIL AND LAND CONDITIONS

The following Hillside Mine ML conditions (Second Schedule) relate to soil and land disturbance:

19. The Tenement Holder must, ensure that:
    - 19.1. There is no contamination of land and soils either on or off site because of mining operations; and
    - 19.2. No contamination of land and soils either on or off site after mine completion occurs because of mining operations.
20. The Tenement Holder must ensure that all commercial or industrial waste (which does not include tailings and waste rock) is disposed of in an EPA licensed facility.
21. The TSF embankment must be designed and constructed using downstream construction methods.
22. The TSF construction and operation must be verified by a suitably qualified independent expert approved by the Director of Mines, against the design and plans that have been adopted for the TSF construction and operation
    - 22.1. for the initial stage of TSF construction; and
    - 22.2. for each subsequent stage of TSF construction including the cover system; and
    - 22.3. on an annual basis for operations or at a frequency as the Director of Mines may specify by notice in writing.
    - 22.4. The expert must prepare reports of the findings of the verifications. The initial expert report for construction verification must be provided to the Director of Mines prior to the initial placement of tailings in the TSF and subsequent reports must be provided to the Director of Mines within 1 month of completion of the verification and all reports will be made publically available.

Additional Information in the Program

33. In accordance with section 70B(2)(d) of the Act it is a condition of the grant of the Mining Tenement that a proposed PEPR submitted in accordance with Part 10A of the Act must include reports from suitably qualified independent experts on the following matters:

    33.2. The effectiveness of the proposed strategies in the proposed PEPR achieving the environmental outcomes identified in the proposed PER, including but not limited to reports from

        33.2.5. an Independent Geomorphology Expert (i.e.: for Landform design, soil and erosion management)

Conditions 21 and 22 are addressed separately under the Section 5 of the PEPR.

The following Hillside Mine MPL conditions (Second Schedule) relate to soil and land disturbance:

Soil and Land Disturbance

2. The Tenement Holder must, in construction, operation, and post mine completion, ensure that the existing (pre-mining) soil quality and quantity is maintained.

3. SOIL AND LAND OUTCOMES

The following Hillside Mine ML clauses (Sixth Schedule) relate to soil and land:

Visual Amenity Strategies

14 The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(c) of the Regulations in relation to the outcome in Sixth Schedule Clause 11;

- 14.1 develop and implement strategies in consultation with affected parties for the management of visual amenity which should include (but not limited to):
- 14.2 Screening of prominent built structures where practicable and use of non-reflective, natural coloured materials;
- 14.3 establishing vegetation and mature trees to screen built infrastructure and minimise views into the site;
- 14.4 positioning and design of permanent mine landforms or other earthen bunds to screen activities;
- 14.5 sculpture permanent mine landforms to soften the visual impact and reflect surrounding landscape;
- 14.6 prompt rehabilitation of disturbed areas once no longer required for mining operations, utilising every available opportunity provided by the mine plan;
- 14.7 rehabilitation of the final batters immediately following the completion of each WRD lift;
- 14.8 vegetate external faces of permanent mine landforms where practical to reduce the impact of changes in landscape colour.

Condition 14 is described in detail in Section 5 of the PEPR and the Mine Closure Plan.

Soil and Land Disturbance Outcomes

15. The Tenement Holder must, during construction, operation and post mine completion ensure that the existing (pre-mining) soil quality and quantity is maintained.

16. Before mine completion, the Tenement Holder must satisfy the Director of Mines that where practicable, the pre-mining land use can be recommenced after mine completion.

Soil and Land Disturbance Strategies

17. The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(c) of the Regulations in relation to Sixth Schedule Clauses 14 and 15;

    17.1. strategies to achieve recovery of topsoil and subsoil from areas to be disturbed by mining operations.

    17.2. Strategies for maintaining the quality and quantity of stockpiled soil/s until such time that it is used for rehabilitation purposes.

    17.3. Strategies for reinstatement of these soils to maximise the likelihood of achieving the outcome in Sixth Schedule Clauses 14 and 15.

    17.4. An auditable record of soil movement including recovery, stockpiling and reinstatement.

    17.5. Strategies for the establishment of post mine completion land uses and areas, including the re-establishment of land for agriculture, must be consistent with Section 6.9.3 and 6.9.4 of the Mining Lease Proposal.

    17.6. A plan for establishing appropriate mechanisms to ensure effective transfer of responsibility for any maintenance of the site and control of any future development post completion. (addressed in Section 7 of PEPR)

Soil and Land Disturbance Criteria

18. The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(c) of the Regulations in relation to Sixth Schedule Clauses 14 and 15;

    18.1. Baseline data to characterise the pre-mining condition of soils within the land.

The following Hillside Mine EML clauses (Sixth Schedule) relate to soil and land:

Soil and Land Disturbance Outcome

6. The Tenement Holder must, in construction, operation and post mine completion, ensure that the existing (pre-mining) soil quality and quantity is maintained.

The following Hillside Mine MPL clauses (Sixth Schedule) relate to soil and land:

Soil and Land Disturbance Strategies

2. The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(c) of the Regulations in relation to the Soils Outcome Schedule 2 - Condition 2;

2.1. the location and depth below the natural surface of the concentrate and water pipelines must prevent any foreseeable damage due to accidental excavation or surface disturbance.

Strategy 2.1 is no longer applicable as Rex Minerals is not pumping concentrate or returning seawater to or from the Ardrossan Port Facility.

4. BASELINE MEASUREMENTS

Rex Minerals has undertaken preliminary overburden (topsoil and subsoil) characterisation studies as a component of the baseline environmental and social surveys and to inform design engineers, (MLP Appendix 5.14-B, 2012). Baseline soil maps from the soil characterisation study undertaken in 2011 to establish a baseline dataset of the pre-mining condition of soils topsoil and subsoil are presented in Figure 1 and Figure 2 respectively.

Soil resources that were identified with suitable characteristics for rehabilitation and construction applications will be separated from the other overburden. Poor quality overburden materials will require special handling or selective placement within the mine rock storage facilities.

The baseline soil characterisation survey will be supplemented by additional pre-stripping soil surveys, conducted by a trained site soil specialist. At this point, the overburden will be classified and mapped. Volumes of materials by type will be calculated and allocated to the appropriate handling, storage, and subsequent placement.

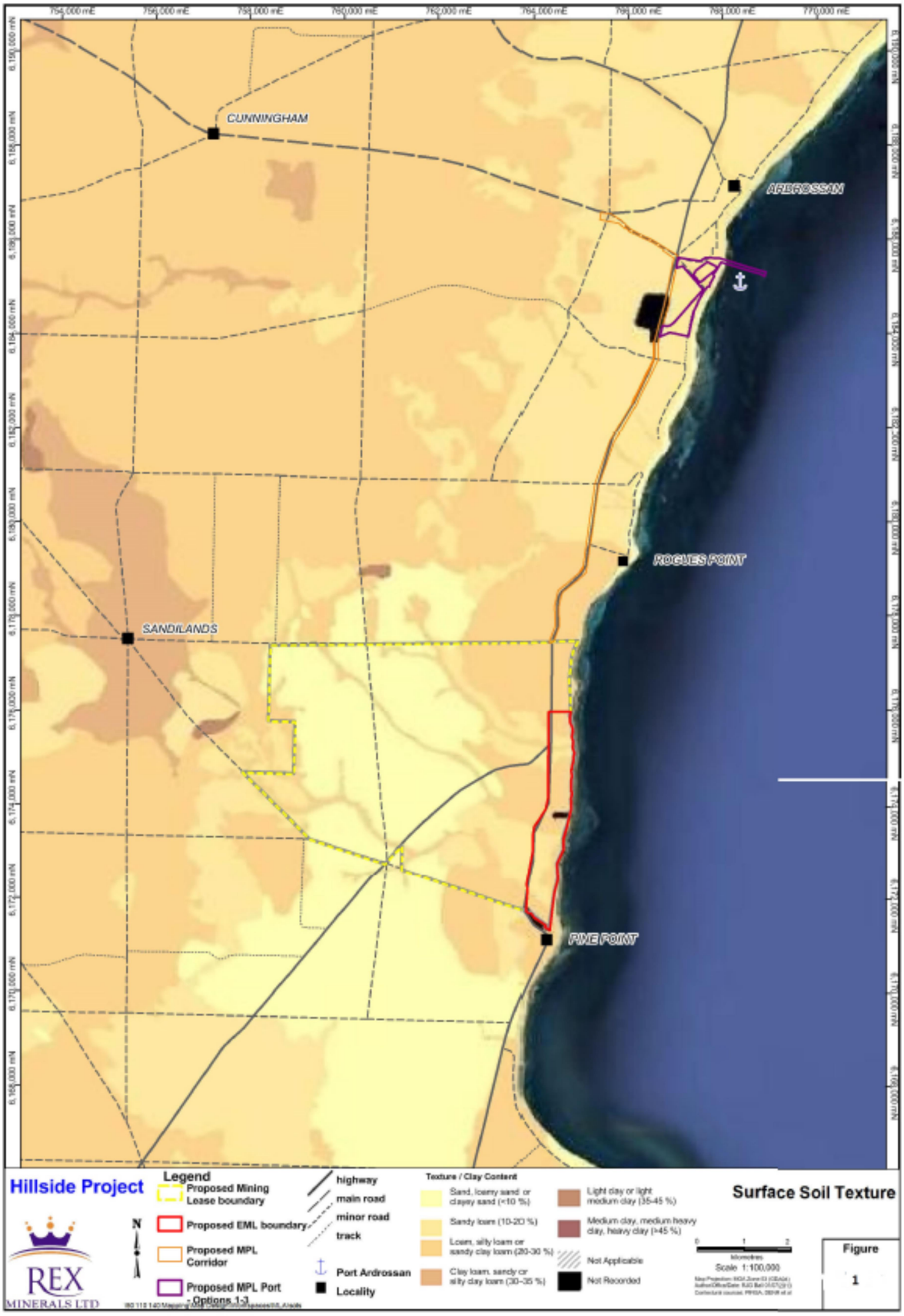

Figure 1: Surface Soil Texture

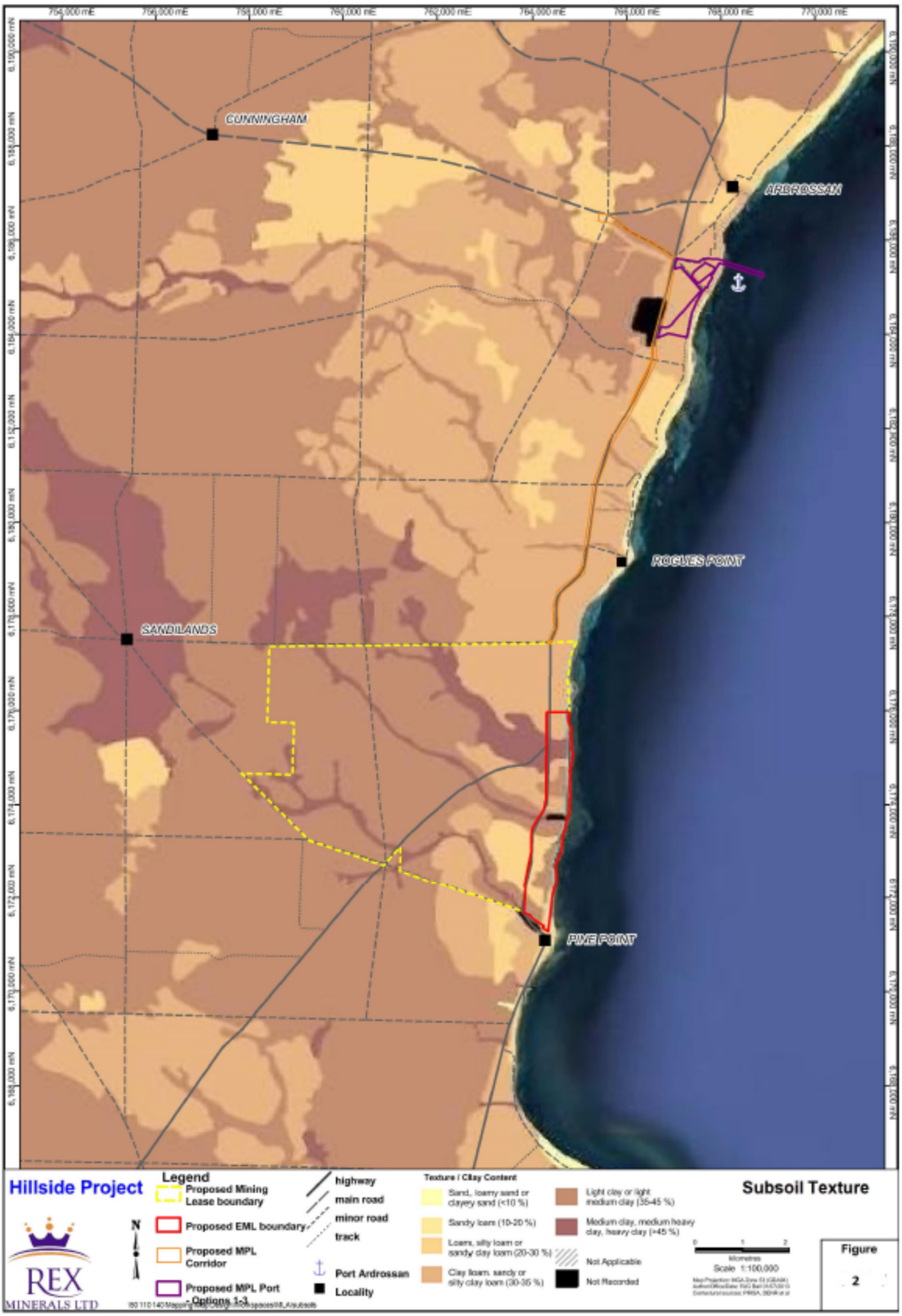

Figure 2: Subsoil Texture

4.1 EXISTING SOIL RESOURCES

The soils within the proposed Hillside Mine ML are formed into ridges west north-west of the site over aeolian sands with reworked aeolian sediments in alluvial drainage depressions. The proposed MPL corridor comprises soft/rubbly calcareous sediments and soils formed on unconsolidated sediments/deeply weathered rock and basement rock.

Based on a soil characterisation study of the top 10m from 10 bore holes on the proposed Hillside Mine ML (MLP Appendix 5.14-B, 2012) the soil profile is described as follows:

- topsoil (the organic layer and A horizon) to an average of 0.5m within the Hillside Mine ML, comprising of mainly sand to sandy clay loams, but topsoil can be non-existent around rocky outcrops;
- subsoil (B and C horizons) ranging to 2m deep, comprising light to medium clays with medium to heavy clays in the valleys and clay loams on the ridges;
- deep regolith (D horizon or R), found mostly deeper than 2m, consisting of sandy clay becoming finer to loam clay to the east of the Hillside Mine ML and rocky regolith in or near gullies.

The topsoil is generally alkaline and mildly saline with low fertility, soil phosphorus at most sites was below 0.2mg/kg and nitrates below 5mg/kg. Soils were identified as being more saline and sodic with depth below the surface. Soils became more acidic with depth in 70% of the profiles examined.

In summary, the topsoil depth varies across the site with an average approximate topsoil depth of 0.3m. The subsoil is highly variable in depth, with most samples below 2m being classified as very strongly sodic.

A preliminary soil balance has identified more than sufficient topsoil and subsoil will be available for the rehabilitation works. It is estimated that the landform at mine closure will require 10% more topsoil than the original flat terrain, however, the soil recovered from the pit footprint will generate around 20-25% more soil than required (see Table 1 below). Surplus soil will be used strategically to improve the final soil depth and overall quality.

Table 1: Topsoil balance

	Tonnes
Topsoil stripped (0.3m)	5,992,871
Topsoil required for rehabilitation (0.2 - 0.3m)	4,819,636

Note: (EFS, May 2015)

Initial site investigations suggest that topsoil stripped and stockpiled for rehabilitation purposes is likely to have a significant weed seed bank due to historic agricultural activities. Rex Minerals has developed and implemented a PPAMP to prevent weed infestations in topsoil stockpiles. This will reduce weed introduction or the spread of weeds during subsequent spreading of topsoil.

4.2 SEQUENCE OF MINING AND REHABILITATION OPERATIONS

The pit will be mined in five phases, with mining beginning on the north-eastern resources, progressively moving to the west. The topsoil will be removed separately and directly transferred to its destination or stored for later use in mine rehabilitation. Overburden materials will be used to create noise bunds to the east, build the TSF walls and the base of the ROM pad.

The overburden materials from the west will be dumped within the eastern part of the pit to minimise haulage and create haulage access into the Hillside Mine. The amount of material moved will be constrained to 65 Mtpa. The designed pit dimensions will extend 2.3km north-south, 1.2km east-west and 0.44km deep, with an estimated 685 Mt of material.

Appendix 1 presents a sequence of maps that show the cumulative progressive rehabilitation on an annual basis from year zero to year 13 and post mining. Appendix 2 summarises the Hillside Mine proposed vegetation and topsoil management.

5. UNCERTAINTY ASSESSMENT

Strategies for soil and land management are based on information from studies undertaken for the MLP (MLP & MP, August 2013).

The geotechnical baseline data gathered to develop the Hillside Mine plan has a high level of certainty, because many of the structures have been designed around the available resources. While this information has been verified through repetitive surveys and therefore assumed to be accurate, it is possible that Hillside Mine operational activities may encounter deviations from the planned activities or expected soil types.

6. KEY RISKS

The main risks to soil and land management identified in the MLP are the loss of topsoil and potential contamination of soil.

Contamination includes:

- impact on soil quality from hydrocarbon spills;
- the uncontrolled release of process water or tailings;
- the release of acidic leachates from waste rock;
- soil compaction; and
- the presence of weed seed in topsoil.

Loss of topsoil includes:

- wind and water erosion;
- inappropriate classification;
- losses during transport; and
- incorrect use of materials from topsoil stockpiles.

6.1 RISK ARISING FROM SOIL CLASSIFICATION

Topsoil for the Hillside Mine is generally found in the upper 0.3m of the regolith. Therefore, the stripping program has been designed to remove the upper 0.3m and stockpile this resource separately. The topsoil profiles are variable, tending to be deeper in between hills and shallower on hilltops.

This variability presents a risk of either not collecting all available topsoil or collecting stony soil around rocky outcrops. The risk of incorrectly classifying soil will be reduced by appointing a soil specialist to map topsoil thickness to better inform the operations team and training operators to recognise and adjust to varying thickness of topsoil. Once classified, soil will be transported and stored in the designated stockpiles to prevent the risk of mixing soils of different qualities and the further loss of topsoil resource.

The overburden characterisation study (MLP Appendix 5.14-B, 2012) used the Australian soil classification system identifying salinity, high sodium content (sodicity) and acidity as key factors in determining soil quality at the Hillside Mine. Saline soils interfere with plant growth, while sodic soils tend to have dispersive clays, susceptible to erosion, and acid soils adversely affect plant growth.

Further investigations of soil quality will be undertaken prior to soil stripping to better identify dispersive or highly saline soils to ensure that such soils are not used in rehabilitation.

6.2 RISK FROM OPERATIONAL ACTIVITIES

The key risks to soil quality and quantity from mine operational activities are:

- Compaction from machinery.
- Incorrect stripping and stockpiling can cause issues with the biological viability of the soil and cause soil degradation.
- Build-up of salt from dust suppression activities, or natural salt layers will limit the re-vegetation capabilities of the topsoil and soil which has been used as a road base and watered with saline water will have to be managed accordingly.
- Contamination from spills of fuel, oil, or a hazardous chemical.
- Permanent changes in land use through the construction of long-term buildings and other facilities such as the excavation of the open pit, RSF area and construction of roads.

7. SOIL AND LAND CONTROL MEASURES

The control measures outlined in this section address soil and land disturbance. These measures will include design and operational procedures to protect soil quality and preserve soil quantity and restore land disturbance to the pre-mining land-use, where practicable.

7.1 RECOVERY OF TOPSOIL

Rex Minerals proposes to strip and preserve topsoil and suitable subsoil in stockpiles for later use in mine rehabilitation. Topsoil and subsoil will be stored in separate stockpiles where it will be protected from wind erosion by a cover of vegetation.

Erosion and sediment control systems will be installed to contain soil erosion as near to the source as practicable, and to divert clean surface water runoff around the mine site. Control measures include seeding exposed land where possible, establishing contour banks, engineered drains, silt retention basins and sumps to trap sediment.

The following procedures will ensure this soil storage and management strategy is implemented:

- Develop and implement a site-specific soil identification procedure to group stripped soils by type to ensure that all available soil resources are used and handled appropriately.
- Soil type classification will be based on intended end use; ie. as a final cover on rehabilitation, or as subsoils and fill materials.
- Soil physical and chemical properties will be analysed to support the final end-use decisions. This will be necessary to identify both hazardous soils, such as the sodic dispersive soils, and useful soils such as clays for improving the sandy to sandy loam top-soils currently found on the property.
- A soil map will be prepared prior to stripping an area and verified during stripping, to properly recover and use the soil resources. The information will assist operational staff in tracking soil volumes by type, from the cleared area to the designated stockpile and final placement.
- An operational soil stripping and storage procedure will be developed to ensure that the correct soil type is stored in stockpiles dedicated for each soil type. When practicable, soil will be hauled directly to the final placement area to minimise handling.

- Only trained personnel will undertake soil stripping and stockpiling to ensure that the soil is collected and stored correctly.
- Trafficked roads will be formed to shed water and appropriate drainage put in place to avoid soil compaction, erosion, and soil loss.

7.2 SCHEDULING OF SOIL STRIPPING

Scheduling of soil stripping will be largely driven by mining operations, consideration will be given to the soil condition to prevent soil degradation during soil stripping. Areas designated for clearing and soil removal will be surveyed to classify and map the soil by group and designated stockpile.

Details of the soil stripping scheduling will be largely defined during the early construction phase of mining, and will be determined by the actual sequence of work. This is to ensure that the area of exposed land is minimised to prevent erosion and dust. The proposed work schedule is in the following order:

- Administration and process plant areas.
- Access roads and water drainage/bund areas.
- Haul road construction.
- Mine pit and RSF area (progressively).
- TSF areas (progressively).
- Other general ancillary areas.

The area and depth of each soil type that will be removed from a given activity will be documented during stripping, to quantify materials removed. This information will be tracked as described in Section 7.6

7.3 SOIL STRIPPING FIELD PRACTICE AND TECHNIQUES

Prior to any earthworks, the designated area must be cleared in consultation with NNAC (who represent the traditional owners) to carry out any works in relation to Aboriginal sites, objects or remains in accordance with the Aboriginal tradition as provided for under Section 37 of the Aboriginal Heritage Act.

A vegetation clearance procedure will outline measures to be undertaken prior to clearing of vegetation within the project area. The measures will include the pre-stripping soil mapping and a habitat assessment, with reference to the NVMP.

Where practical, seeds from native vegetation will be collected and stored. While no rare or endangered species are expected within the Hillside Mine footprint, any such encounters will be carefully collected and transferred to a nursery until they can be safely relocated to an SEB offset site.

Once cleared of woody vegetation and any remnant infrastructure such as fences and pipes, the soils will be stripped using the preferential method. Soil stripping will generally consist of using graders and dozers to push soil into windrows for collection using a front-end loader and dump truck to transport materials to their destination. Scrapers may be used to strip soil where areas become too large for economical or effective dozer and grader stripping.

Soil moisture content will be checked prior to stripping soil to avoid handling saturated soils that may damage soil structure or result in the loss of soils. Long-term and daily weather forecasts will be consulted prior to making final decisions to remove soil. Soil stripping activities will be delayed during wet weather conditions until it is safe to remove soil without harming soil quality or losing soil.

Soil stripping will be conducted in multiple passes; after removing remnant infrastructure and debris the topsoil, comprising of the organic layer and A horizon, will be stripped to around 0.3m, or as indicated on the soil map, or using visual cues such as colour or texture. The next layer will comprise of materials designated as subsoil, this will on average be down to around 2m, but this will be controlled to ensure the separation of hazardous soils (highly saline, or sodic, or acidic) from the "clean" subsoil.

Soils will be stripped and delivered directly to soil stockpiles or rehabilitation areas when practicable. Hazardous soils will be deposited low within the RSF and covered as soon as practicable with competent cover materials.

Most of the stripped topsoil will come from agricultural land and is expected to have negligible natural native seed stock. There will be some areas of native vegetation cleared during construction, topsoil from these areas will be collected and stockpiled for rehabilitation areas designated for native vegetation. These stockpiles will be used as soon as practicable, to protect the native seed bank and beneficial organisms.

All soil will be stored apart from saline soils, and the drainage from saline soils will be directed away from topsoil and subsoil stockpiles to avoid contamination.

Through all stages of soil stripping, operations will be closely supervised to maintain correct recovery depths of suitable soils in accordance with the SLMP. The Production Superintendent will direct and control the recovery, handling, and management of soils. The Senior Environment Co-ordinator responsibilities will include:

- Delineation of areas and volumes of soil type to be stripped.
- Delineation of suitable stockpile areas.
- Direction of soil collection/hauling to stockpiles according to soil type.
- Recording data on location, soil type, volume and descriptions of any ameliorants added to stockpile materials in a soil database.
- Signposting of stockpiles.

Rex Minerals proposes to minimise compaction of soils during mining through controlled land clearance, traffic management and ripping compacted soil as part of rehabilitation activities.

7.4 MANAGEMENT OF SOIL STOCKPILES

In conformance with the Hillside Mine ML conditions stockpile management will address the risks of soil erosion and the generation of dust and sediments. Stockpile management also will ensure the protection of soil quality characteristics (biotic and abiotic) for sustainable plant growth on rehabilitated surfaces. The overarching strategy is to maintain the volume (quantity) and quality of stockpiled soil until reused.

The main points for management are listed below:

- Topsoil and subsoil will be stockpiled separately. If practical, topsoil will be directly returned to site rehabilitation works.
- Stockpiles will be located where they will not be disturbed by mining activities, as excessive handling will adversely affect soil structure. Appendix 3 provides maps of the proposed topsoil and subsoil stockpile locations during mine life.
- Implement a dust control program to avoid loss during haulage, while on the stockpile and during rehabilitation.

- Runoff will be directed around the stockpiles to prevent erosion and to prevent degradation of stockpiles in low lying areas.
- Surface of the completed soil stockpiles will be left in a rough condition to help with prevention of erosion until vegetation is established and to promote water infiltration.
- Establish a vegetated cover to reduce the potential for erosion. Sterile ryegrass (or similar species) may be included into the seeding program to provide fast growing vegetation cover to protect the soil surface until the pasture or native species establish.
- Soil with dispersive clays will be treated with gypsum to reduce soil erosion.
- All stockpiles will be signposted with the date of construction and soil classification.
- All stockpile management activities will be recorded on the soil database to track soil amelioration, weed control, and seeding.
- Long-term stockpiles will be constructed up to 3m in height with slopes at a maximum acceptable angle to resist erosion depending on soil type.
- Topsoil containing native seeds will be reused as soon as possible, and ideally not stored for more than 12 months, if potentially longer time is required the stockpiles will not exceed 2m in height, to maintain a viable seed bank.
- Subsoil stockpile heights will be determined by storage volumes and available space.
- Non-saline water, from sewerage treatment plants and the SA Water mains water supply will be used for dust suppression on all soil stockpiles. Any soil sprayed with saline water during construction and operations will be removed or separated during the closure stage so that salt contaminated soil does not impact on rehabilitation activities.
- Drainage lines will be maintained throughout the life of the stockpiles.
- A contingency plan for preventing wind erosion and dust from topsoil stockpiles, hydro mulching will be used to form a growing medium for vegetation and create a crust on the surface of the stockpile.

7.5 LANDFORMING AND THE REINSTATEMENT OF SOIL

The strategy for reshaping disturbed land and reinstating soil to establish vegetation screening for improving visual amenity and to re-establish agricultural as the pre-mine land use will:

- Implement a progressive rehabilitation program to meet the rehabilitation and mine closure plan. This will include procedures to ensure that rehabilitation begins as soon as the final landforms become available and as seasonal conditions allow.
- A rehabilitation procedure will be prepared for each landform and mine completion objectives. Most of the land will be returned to agriculture with strips of native vegetation to protect hill slopes. The procedure will outline land profiling, soil amelioration requirements, such as deep ripping, addition of gypsum or clay, and a list of native species or pastures to over sow.
- Landforms will be engineered to provide soil stability and where practical visual continuity with surrounding hillsides.
- Soil will be returned to as near the original location as practicable placing the subsoil first and covering with topsoil. Claying of topsoil will be trialled and if high yields can be demonstrated, the method will be adopted as an ongoing practice in other rehabilitation work.

- The returned soil will be given time to stabilise, allowing viable seed in the topsoil to establish, providing protection to the soil and encouraging the soil biota to recover. Where designated native vegetation screening will be planted as soon as practicable.
- Implement an annual site rehabilitation monitoring program to measure progress towards meeting mine completion criteria.

7.6 RECORD OF SOIL MOVEMENT

In addition to the strategy outlined in Section 7.1, the following will be implemented to record soil movement from point of recovery to stockpiling and reinstatement:

- Develop and implement a procedure to track soil by type and volume from the source to stockpiles and final placement. The procedure will include a soil volumes reconciliation schedule to ensure that sufficient topsoil and subsoil resources are available as and when required for rehabilitation purposes.
- Monitor and audit soil quality and quantity and verify that topsoil is used on rehabilitated surfaces for agricultural pursuits or to support native vegetation.

7.7 SOIL AMELIORATION

Where required soil amelioration with clay and/or gypsum will be scheduled to coincide with the soil placement to minimise compaction and double handling. The sandy and water repelling topsoil will benefit most from the addition of clay.

The preliminary soil characterisation found that many soil samples were highly sodic and therefore prone to soil dispersion. Sodic soils are also prone to surface crusting, low permeability and tend to be hard setting. Dispersive soils can be highly erodible, tunnel erosion being of concern on mine rehabilitation. Salinity and clay content affect the degree of dispersion.

Soil salinity, exchangeable cations, and clay type and content modify the dispersive nature of sodic soils. Consequently, an experienced soil scientist will be involved in the assessment of the risk of dispersion.

Sodic or dispersive soils may be ameliorated by the application of gypsum, rates to be determined through soil testing. Since the application of gypsum on the waste rock stockpiles can be difficult, it may be more practical to apply the gypsum before the initial stripping. Gypsum has low solubility and will take longer to dissolve and modify the soil, but will have an added benefit of reducing erosion from soil stockpiles.

Little can be done to remediate saline soils. The most common management strategy for saline soils is to identify them and ensure that they are not placed close to the surface of rehabilitated landforms. This will also require the management of potential saline seepage from the base of constructed landforms.

Some management options will include the placement of saline soils below ground level, minimising deep drainage by encapsulation if possible, or placing deep soil covers to store rain water in winter and release moisture during dry periods. Salt tolerant native species could be planted at the base of landforms that have a potential to leach saline water. Many native species will benefit with the addition of rocky waste materials to increase salt leaching from the plant root zone.

7.8 SUMMARY OF CONTROL MEASURES AND RESPONSIBILITY

The proposed management control measures outlined above are summarised in Table 2 below.

Table 2: Soil and land management control and mitigation measures

Control /	Description of proposed	Data / Records	Responsibility	Timing

Mitigation	actions			
Recovery of topsoil	Soil characterisation and detailed mapping	Delineation of area estimation of volume by soil type	Sustainability Manager	Prior to land clearance
	Direct returns or stockpiling (topsoil)	Update stockpile records by type and volume	Sustainability Manager	Monthly
Scheduling of soil stripping	• Develop a soil stripping schedule to coincide with mine plan, update as required by operational	Soil stripping dates and areas.	Sustainability Manager & Mining Manager	Pre-construction and updated regularly
Soil stripping practice and technique	• Vegetation clearance procedure factoring in removal of rubbish, protection of organic material and soil moisture content before handling	Records of measures implemented to protect volume and quality of soil	Sustainability Manager	During stripping, stockpiling and on rehabilitation
	• Stripping of soil in layers by type and transferring to designated stockpiles	Record of soil volume by type, location and any treatments	Sustainability Manager	During stripping and stockpiling
Management of soil stockpiles	• Implement a dust suppression cover	Record of visual check of stockpile covers	Sustainability Manager	Routinely
		Monitor dust	Sustainability Manager	Monthly
	• Implement erosion control cover, drainage and bunding (if required)	Record of visual check of stockpile covers	Sustainability Manager	Monthly
Reinstatement of soil	• Landform disturbed areas into a stable structure to blend with the background topography	Record of visual check for landform stability	Sustainability Manager	Monthly
	• Transfer and place soil on final landforms and revegetate with species in the mine completion criteria	Record of visual check for vegetation	Sustainability Manager	Monthly
	• Implement a site rehabilitation monitoring program	Vegetation type, cover and health	Sustainability Manager	Annual
Record of soil movement	• Develop and implement a procedure to track soil movement	Record of soil by volume type and current location	Sustainability Manager	As reported by operators
	• Reconcile soil volumes by type	As above	Sustainability	Monthly balance

	and audit		Manager	Annual Audit
Soil amelioration	• Determine soil amelioration requirements after soil survey and apply (depending on prescribed soil amelioration method)	Soil amendments including methods and application rates	Sustainability Manager & Mining Manager	During stripping, stockpiling and on rehabilitation
Disposal of commercial and industrial wastes	• Waste oils and hydrocarbons will be stored in approved containers on-site, and removed by an EPA licenced hydrocarbon re-cycling and disposal group. • Used tyres will be re-cycled through the supplier • Other commercial waste will be stored on site and disposed of through authorised re-cyclers or through an approved EPA disposal facility.	Record of hydrocarbon and tyre removal	Sustainability manager	On an as needed or regular basis

8. CONSULTATION

This Plan is being prepared in consultation with the DPC, the HMCV and directly with local landowners.

9. RESPONSE PROCEDURES

Operational response procedures are detailed in Section 7. If deemed feasible further testing of any soil and landform management recommendations will be undertaken in the field and the results communicated with the originator and if adopted to the community through the mechanisms identified in Section 8.

Any community issues and/or complaints raised in relation to this Plan will be recorded by Rex Minerals into the site event management database in accordance with the Hillside Mine procedure for complaints. The database will include reporting, incident/event notification, close out action tracking, inspections, and audits.

10. SOIL AND LAND MONITORING PROGRAM

The key objectives of the soil and land management monitoring program will:

- Demonstrate that soil quantity and quality is maintained and tracked throughout mine life.
- Demonstrate that site disturbance will be confined to the planned mine footprint and not impact soil and land outside the tenement boundaries.
- Monitor progress of rehabilitation in returning disturbed land to the pre-mine use; pasture, crops, or native vegetation.
- Design and implement a leading practice rehabilitation monitoring program to track progress on the rehabilitation mine closure criteria, within one year of commencing the rehabilitation program.

Rex Minerals will adopt leading practice rehabilitation monitoring based on the ICMM's good practice guidance for mining and biodiversity (ICMM, 2006).

10.1 SOIL AND LAND MONITORING OUTCOMES

The monitoring program will be assessed against realistic site-specific rehabilitation goals, accounting for the physical resources and scale of disturbance. The outcomes of the soil and land management monitoring program will:

- Be integrated into whole-of-life mine planning to ensure timely and cost-effective solutions to facilitate sustainable mine closure.
- Include carefully selected monitoring indicators or parameters to enable useful long-term monitoring and evaluation of the response to mine rehabilitation.
- Inform adaptive rehabilitation management.
- Progressively generate data on the selected indicators or parameters through the life of the mine.
- Generate data over the mine life to inform on the performance of control measures on soil stripping, stockpile management and site rehabilitation.
- Build confidence in the achievement of the Hillside Mine completion criteria.

10.2 SOIL AND LAND MONITORING PROCESS

Good record-keeping will enable managers to track the performance of soil and rehabilitated landform. This feedback will ensure that continuous improvement can be achieved, and provide continuity as new staff are engaged. Monitoring will document the following:

- site preparation (eg. deep ripping, rock armouring, application of gypsum);
- the use of topsoil (including sources, handling, storage length);
- fertiliser types, application rates and history;
- seeding including the composition of seed, rates, and application method;
- the density of species planted; and
- the occurrence of disturbances such as storm events (gales or flooding) and fires.

The data collected will consist of:

- Biotic variables such as species composition, diversity, and abundance.
- Abiotic information such as rainfall, temperature, wind speed, site run-off, groundwater level and quality, erosion rills, sedimentation, water infiltration.

The monitoring sites will include:

- Reference (or analogue) sites are unmined land that rehabilitation is trying to emulate. These will be used to cross-check how site rehabilitation is performing and factor in responses to seasonal conditions.
- Impact sites, are mine disturbed and rehabilitated areas that will represent various mine completion targets, including restored agricultural land and native vegetation.

Frequency of monitoring:

- Baseline and continuing monitoring of both reference and impact sites to provide comparisons in benchmarking or quality control.
- Initial establishment monitoring, to be undertaken within 12 months after completion of rehabilitation.

- Long-term monitoring beginning two to three years after initial establishment to evaluate trends and if those trends are likely to deliver a sustainable ecosystem.

10.3 SOIL AND LAND MONITORING METHODS

10.3.1 Routine Stockpile and Rehabilitation Inspections

The soil monitoring program will comprise of regular visual inspections of the stockpiles to detect any early signs of erosion, record information on vegetation such as date of establishment milestones, type of vegetation, ground cover and any weed species. This information will directly feed into the soil and land management program to take preventative action, or make improvements to the control measures.

10.3.2 Soil and Land Characterisation

Soil surveys are required to provide information on the available soil resources, and on the likely topsoil resources that could be harvested for rehabilitation works. Prior to any site disturbance a soil and land use survey will be conducted to collect information on the current (pre-mining) land use, condition, landscape attributes and soil group. This will be in addition to the broad scale overburden characterisation study (MLP Appendix 5.14-B, 2012) and provide the first set of data for the soil monitoring program.

Morphological descriptions of soil profiles will be undertaken for each identified soil type. Representative soil samples from each stratum will be collected, composited, and sent for analysis by an accredited laboratory. (Appendix 3, Figure 6).

Appendix 4 provides key classification nomenclature for Australian soils, (ASRIS, 2017). The following testing is proposed:

- Chemical tests for pH, electrical conductivity (EC), cation exchange capacity (CEC) and exchangeable cations, organic carbon, total nitrogen, available phosphorus.
- Physical tests will include particle size analysis, Emerson aggregate test and plant available water capacity.
- Sensory information will include the presence of rocks and debris. This information will be useful when planning mine rehabilitation as a surface rock cover can reduce erosion potential and increase water movement to depth, and potentially reducing salinity impacts.

Sampling protocols will be developed by a competent soil specialist to ensure that the quality of the data and appropriate sampling intensity is obtained to meet the monitoring objectives. Sampling design and strategy can reduce the cost of the program, for example the strategic bulking of subsamples.

10.3.3 Rehabilitation Monitoring

Elements of the Rehabilitation Monitoring Program are provided below and will continue to evolve as the Hillside Mine is constructed. Sites will be selected to represent all aspects of the rehabilitated mine disturbed land. It is important to survey rehabilitated sites and reference (analogue) sites to evaluate progression towards the target ecosystem and to detect seasonal effects. Reference sites should have similar ecological features and preferably be within 10km of the Hillside Mine ML.

GPS coordinates of each monitoring location will be recorded and transect lines marked with star pickets and labels for the duration of the monitoring program, which could be more than 10 years. Transect lengths are generally 50m long unless constrained by topography.

The selection of biotic variables will be determined on a site-specific basis, and are likely to include vegetation type and cover percentage. Similarly, abiotic variables will be selected as determined by site specific factors, and may include soil chemical and physical parameters.

Photo monitoring points will be strategically selected to track the overall condition of the Rehabilitation Monitoring Program, capturing photographic evidence of landform stability, vegetation cover and establishment of a self-sustaining land-use.

10.3.4 Soil Database

Rex Minerals will develop a soil database which will include records of soil stockpile locations, soil classifications, soil volumes, amelioration treatment, weed control, fertiliser application and the dates and methods of soil stripping.

The database will be used to calculate the effectiveness of the soil stripping methods employed and explore potential improvements and generate research ideas. The soil database will also enable the calculation of soil volumes by type and placement location, used on rehabilitation or construction activities.

10.4 CONTINGENCY OPTIONS

10.4.1 Revegetation contingency

If vegetation does not establish on the topsoils stockpile due to soil conditions or other unforeseen factors, other revegetation methods such hydro mulching will be considered. These methods will be used to improve the soil structure and create a growing medium for the selected revegetation species.

10.4.2 Soil Availability

A preliminary soil balance has identified more than sufficient topsoil and subsoil will be available for the rehabilitation works. In the highly unlikely situation that the topsoil available is not sufficient to complete the rehabilitation of all the areas which have been affected by the mining operations, research programs will be conducted during the Hillside Mine operational phase to identify the soil amelioration required to convert overburden into a suitable growing medium for crops and native vegetation.

10.4.3 Saline Soil Conditions

Rex Minerals will be undertaking progressive rehabilitation field trials that will quickly establish the requirement for this treatment. If salt from underlying layers should rise into the topsoil cover, making them too saline to sustain cropping or native vegetation, alternative measures will be investigated. This could consist of planting salt tolerant species, such as salt bush, to form a ground cover primarily to reduce soil erosion.

11. REPORTING

Rex Minerals will report on the performance of the SLMP in the ACR and may include details on the following:

- Total soil stripped for the reporting period.
- Total soil stockpiled on site, including amelioration treatments to these stockpiles.
- Photo monitoring reports of stockpiles.
- Total soil used in rehabilitation for the reporting period and the effectiveness of the rehabilitation.

The ACR will also report of the effectiveness of the soil stripping methods employed by Rex Minerals and the performance of the soil management activities in meeting the soil and land management objectives. This will include key milestones or results of rehabilitation trials. Operational reporting of rehabilitation trials will be communicated in monthly reports to management and significant outcomes to the wider community through Rex Minerals Newsletters and the HMCV.

The ACR will be provided to the HMCV and made available for public information on the Rex Minerals website.

12. PERFORMANCE INDICATORS

Performance indicators will be selected to evaluate conformance with the Hillside Mine ML, EML and MPL conditions, these indicators will include:

- Indicators of soil quality from Section 10.3.2 to measure compliance with soil baseline conditions and quality standards at selected monitoring locations.
- Indicators of vegetation and land stability from Section 10.3.3 to measure performance in achieving the rehabilitation outcomes.
- Public perception of performance on soil and land management based on trends of frequency and extent of complaints on this topic.
- Compliance with this Plan, as indicated by internal and statutory reporting.

13. CONTINUAL IMPROVEMENT

The Hillside Mine will strive to continually improve on the mine's environmental performance by applying the principles of best practice to mining operations, including where cost-effective and practicable, the adoption of new best practice and improved methods of topsoil storage and rehabilitation of post-mining soils with the aim of returning the soil to the pre-mining state. Rex Minerals will conduct trials and research into improving the methods behind rehabilitating waste rock dumps productive agriculture.

Results from rehabilitation soil testing and trial work on rehabilitation methods will guide the process of continually improving the soil quality during the rehabilitation process.

14. REVIEW

The SLMP will be reviewed annually for the first three years then every three years from year three of mine operations onwards. If necessary, the Plan will be revised to the satisfaction of the DPC and in consultation with relevant government agencies.

The Plan will be revised in accordance with the requirements to review, update and seek approval of the PEPR under any of these conditions:

- following changes to project approval or licence conditions relating to soil and land management or monitoring;
- following any significant soil or land stability related incident;
- when a significant improvement has been identified;
- for necessary or any unforeseen changes to soil and land disturbance monitoring locations; and
- where a risk assessment identifies the requirement to alter the Plan.

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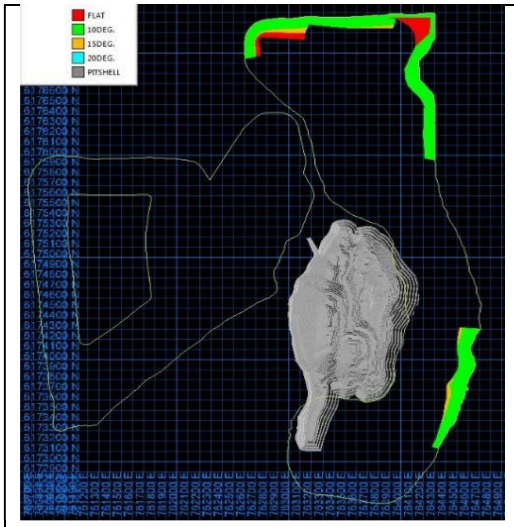
Aboriginal Heritage Act; Section 37 Register of Aboriginal Sites

International Standard 14001:2004

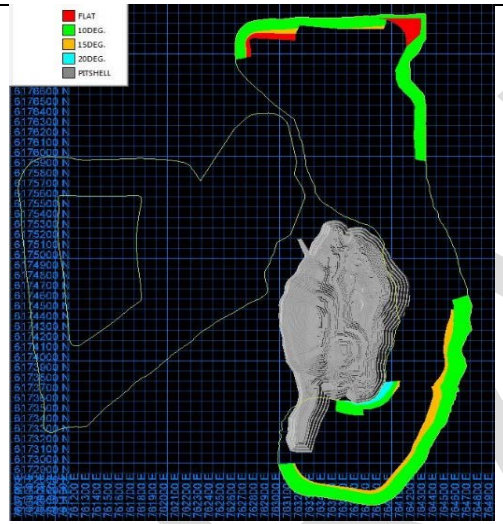
16. APPENDICES

APPENDIX 1: Progressive Rehabilitation Maps

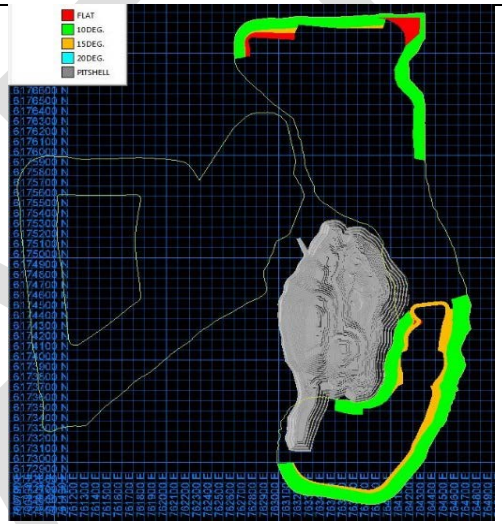
The following maps show the cumulative progressive rehabilitation on an annual basis from Year 0 to Post Mining. Red shaded areas show flat terrain (less than 10 degree slopes, green shaded area shows slopes of around 10 degree slopes, orange shaded area shows slopes of around 15 degrees and blue slopes are the steeper slopes of around 20 degrees.



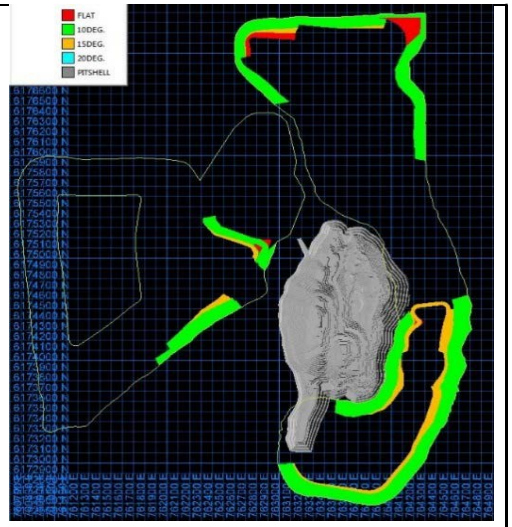
Year 0



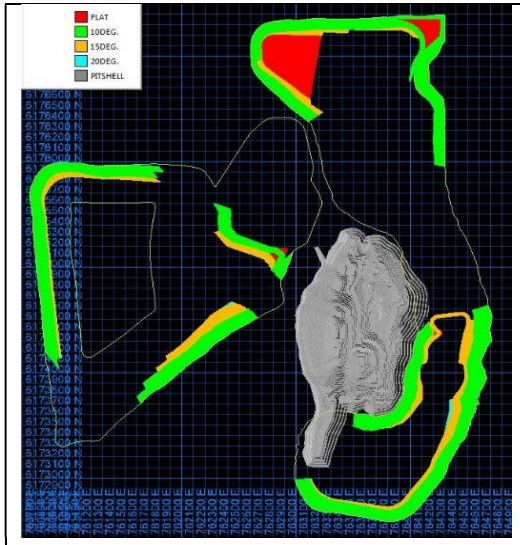
Year 1



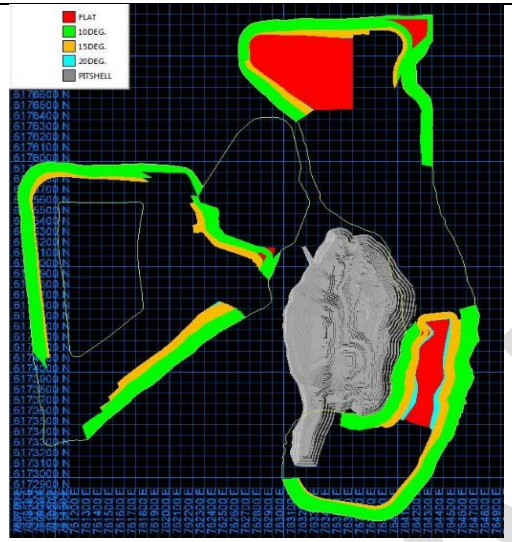
Year 2



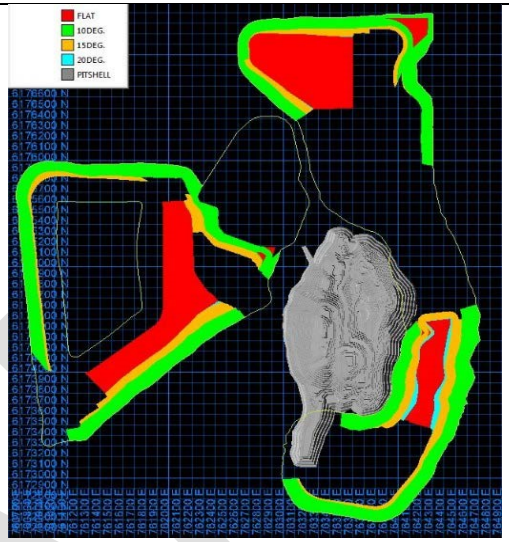
Year 3



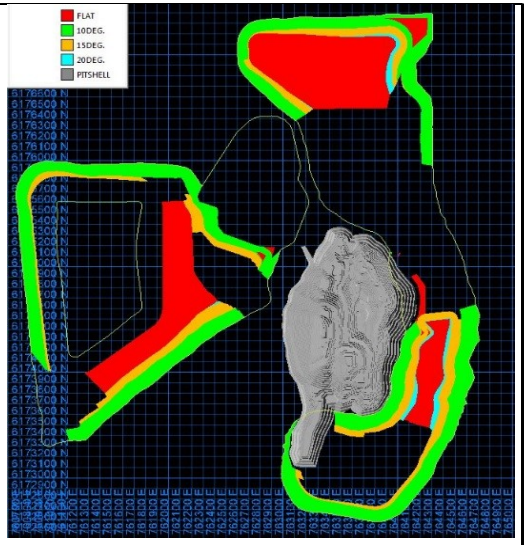
Year 4



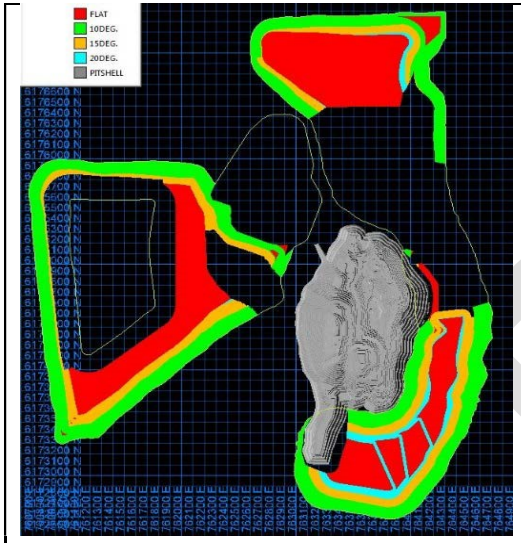
Year 5



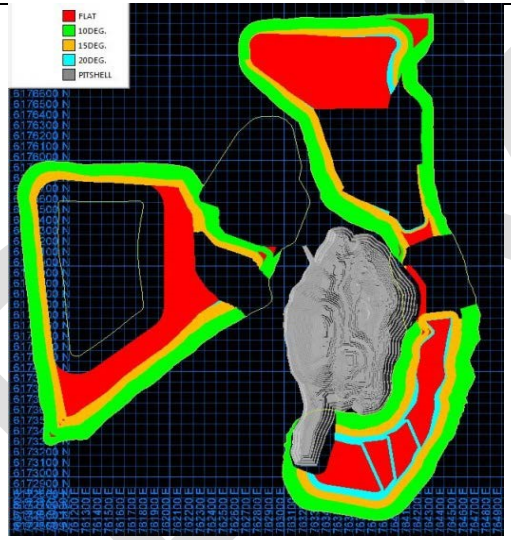
Year 6



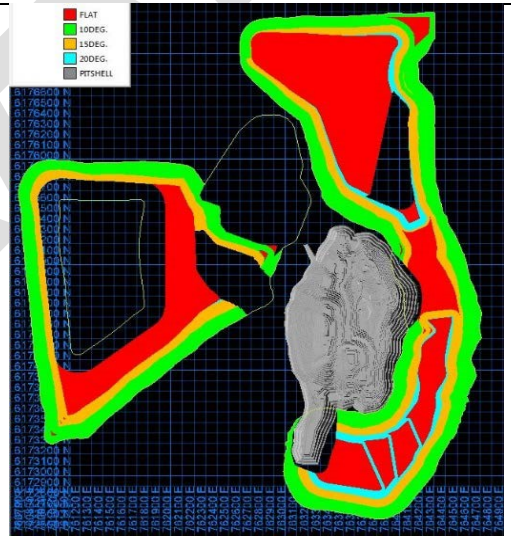
Year 7



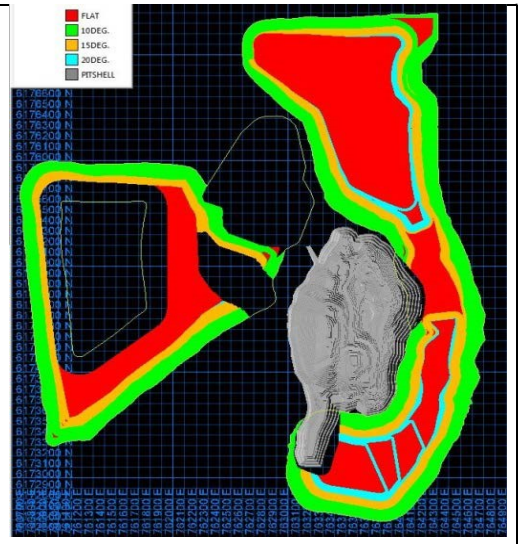
Year 8



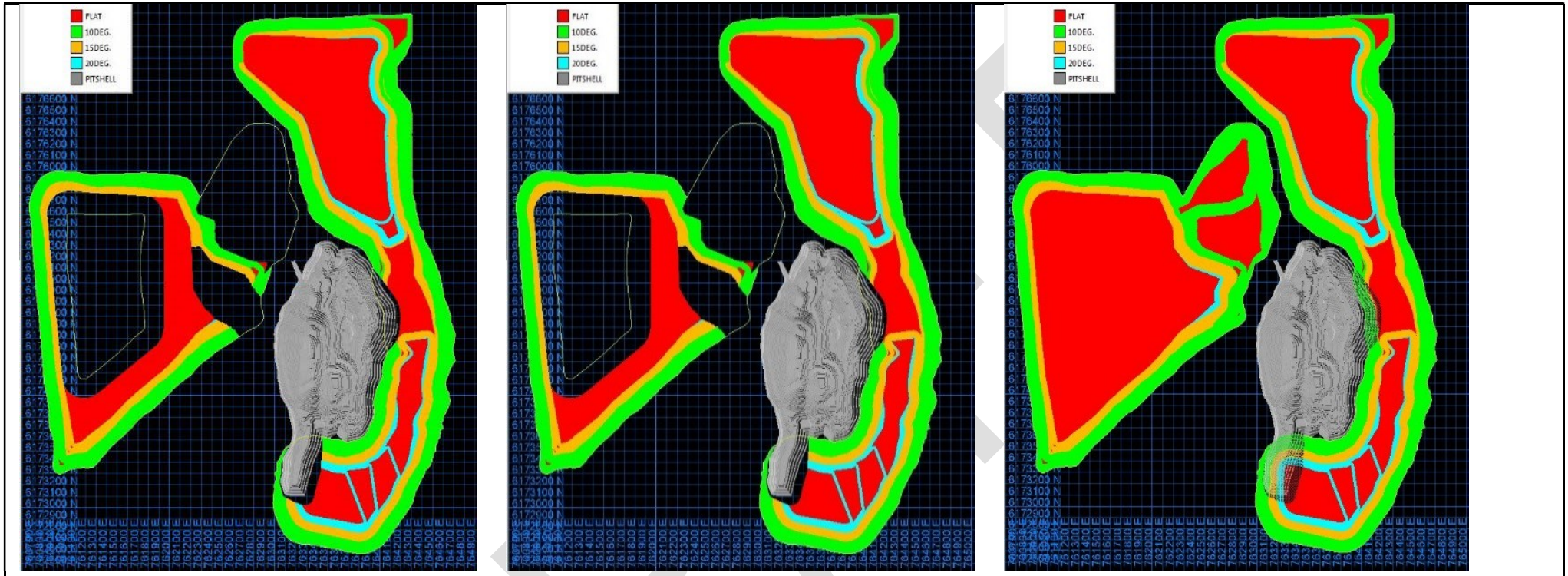
Year 9



Year 10



Year 11



Year 12 **Year 13** **Post mining**

APPENDIX 2: A summary of the Hillside Mine proposed vegetation and topsoil management.

The Hillside Mine area has been used almost exclusively for broad acre cropping for several decades. Greater than 96% of the area has been cleared for farming. The remaining original and replanted natural vegetation generally remains around the roadside verges. The topsoil depth varies across the site with an average approximate topsoil depth of 0.3m. The subsoil is highly variable in depth, with most soil profiles below 2m being classified as very strongly sodic.

The closure plan has been developed to ensure that as much land as possible is suitable for agriculture. Native vegetation will be planted in strategic locations to reinstate and improve vegetation corridors utilising slopes which are unsuitable for agricultural pursuits. The required average strip depth of subsoil (removing the top 0.3m as topsoil) for the rehabilitation as specified in Table 3 is 1.5m (equating to stripping to a depth of 1.8m across the open pit).

Table 3: Proposed Cover Type for each Final Landform

Area	Topsoil depth (m)	Subsoil depth (m)	Proposed Cover Type	Area (ha)	Topsoil (Mt)	Subsoil (Mt)
TSF	0.2	0	Native grasses/salt bush/salt tolerant species	168.4	0.573	-
RSF 0 flat land *(all RSFs inc. cleared flat area around pit)*	0.3	0.4	Agricultural (cropping)	297.9	1.520	2.026
RSF 10 slopes *(all RSFs)*	0.3	0.4	Agricultural (cropping)	252.1	1.286	1.715
RSF 15 slopes *(South & North)*	0.2	0	Native vegetation (SEB offset)	86.9	0.296	-
RSF 15 slopes *(West)*	0.3	0	Agricultural pursuits (other)	57.0	0.194	-
RSF 20 slopes (*all RSFs)*	0.2	0	Native vegetation (SEB offset)	43.0	0.146	-
Plant	0.3	0	Agricultural (cropping)	19.2	0.098	-
ROM	0.3	0.4	Agricultural (cropping)	83.5	0.426	0.568
Roads/Other	0.3	0	Agricultural (cropping)	55.3	0.282	-
Total				**1063.5**	**4.820**	**4.308**

A soil cover of approximately 0.7m, consisting of 0.3m topsoil and 0.4m subsoil, has been allocated in the plan to enable cropping on cleared flat land and on the RSF's on slopes of 10 degrees or less. This cover thickness is based on the rooting depth for wheat, which is dependent on many biotic and abiotic factors, but generally considered to be less than 1m in the Northern Yorke Peninsula (Lilley & Kirkegaard, 2016). Thinner soil covers are proposed for the steeper slopes, this is driven largely by the increased risk of soil erosion on steeper slopes. Consequently, it is proposed to revegetate these hill slopes with native species. The rehabilitated infrastructure will not be stripped of subsoil, therefore after removing the structures it is proposed to deep rip the surface, followed by the application of a topsoil layer. The remediated flat grounds will be returned to agricultural species.

Area and percentage of each final land use after mine closure is presented in Table 4 below.

Other 'non-disturbed' areas that are within the mining footprint will be stabilised as required with suitable vegetation cover.

Table 4: Area and percentage by type of land use at Mine Closure

Land Use Cover Type	Area (ha)	Percentage of Final Landform
Native grasses/salt bush/salt tolerant species	168.4	16%
Agricultural (cropping)	708.1	67%
Native vegetation (SEB offset)	129.9	12%
Agricultural (other)	57.0	5%
Total	**1063.4**	**100%**

All the stripped topsoil is to be used for rehabilitation and up to 0.5m of the subsoil is to be used for rehabilitation and construction of the tailings dam. The soil will be removed using dozers with high precision GPS control, pushing into temporary stockpiles up to 2m high.

The smaller excavator (260t) would then load the trucks in backhoe configuration from this elevated position. The topsoil and subsoil will be placed where required or stockpiled separately. The stockpiles will be paddock dumped and reclaimed using spare capacity from the ROM loaders or small excavators. The topsoil and subsoil will be placed progressively on the RSFs as they are constructed over the life of the mine. The soil will only be placed if the RSF lift stage has reached its final slope angle which is variable between 0° and 20°.

Soil Volume Contingency

The proposed 0.7m soil depth is achievable with the stripped topsoil and subsoil from the mine footprint, however trials will be undertaken during operations to better inform on the final depth required to rehabilitate RSFs to agriculture.

APPENDIX 3: Topsoil and subsoil stockpile locations

Stockpiles of topsoil (brown) and subsoil (pink), along with the areas available for progressive rehabilitation (with final slopes angles of flat, 10, 15 and 20 degree) for years 0, 4, 9 and 13. These years were selected as they represent significant development of the staged pits (grey lines), surface clearance (green and dashed grey lines) and RSF rehabilitation.

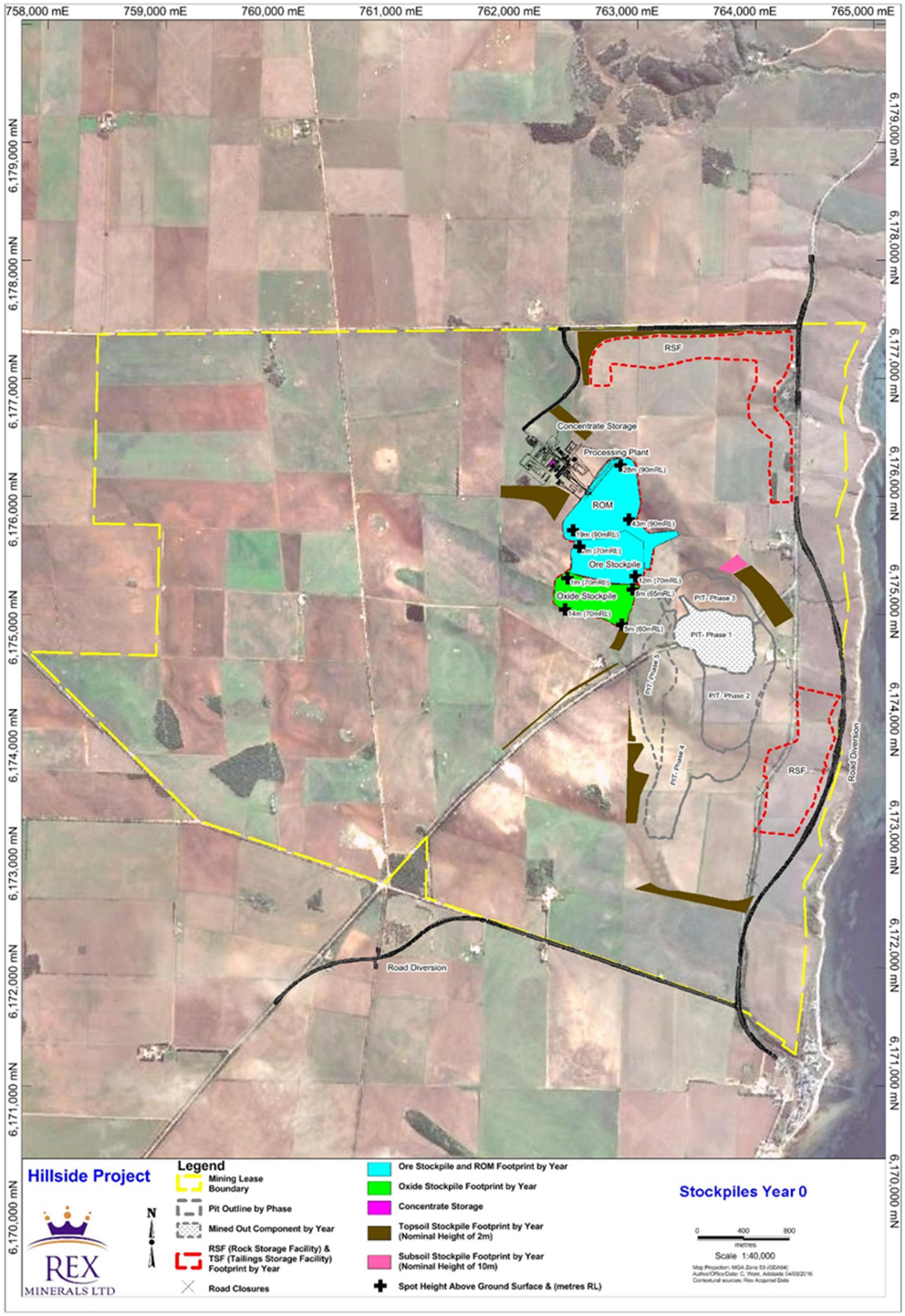


Figure 3: Year 0 stockpile locations

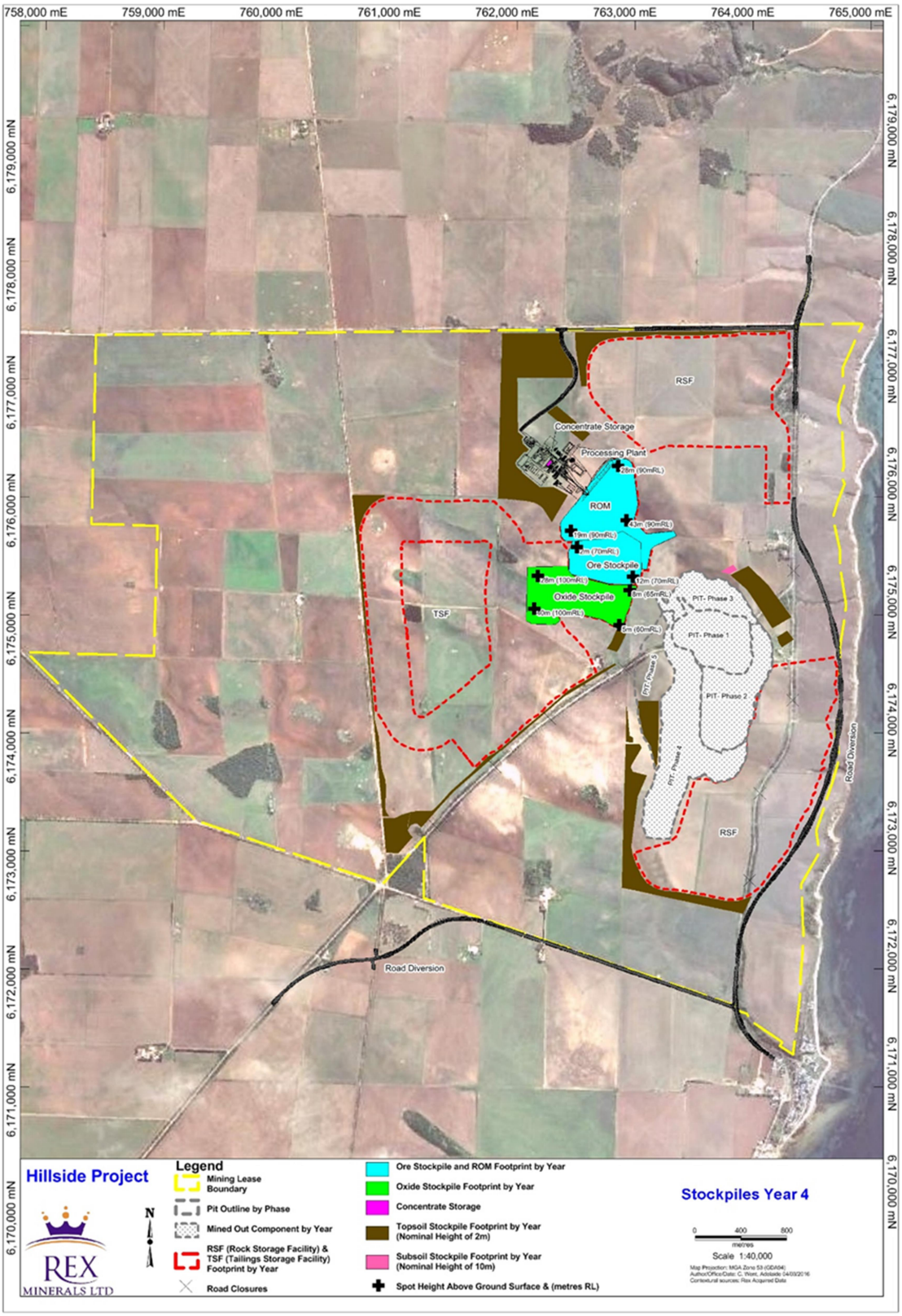


Figure 4: Year 4 stockpile locations

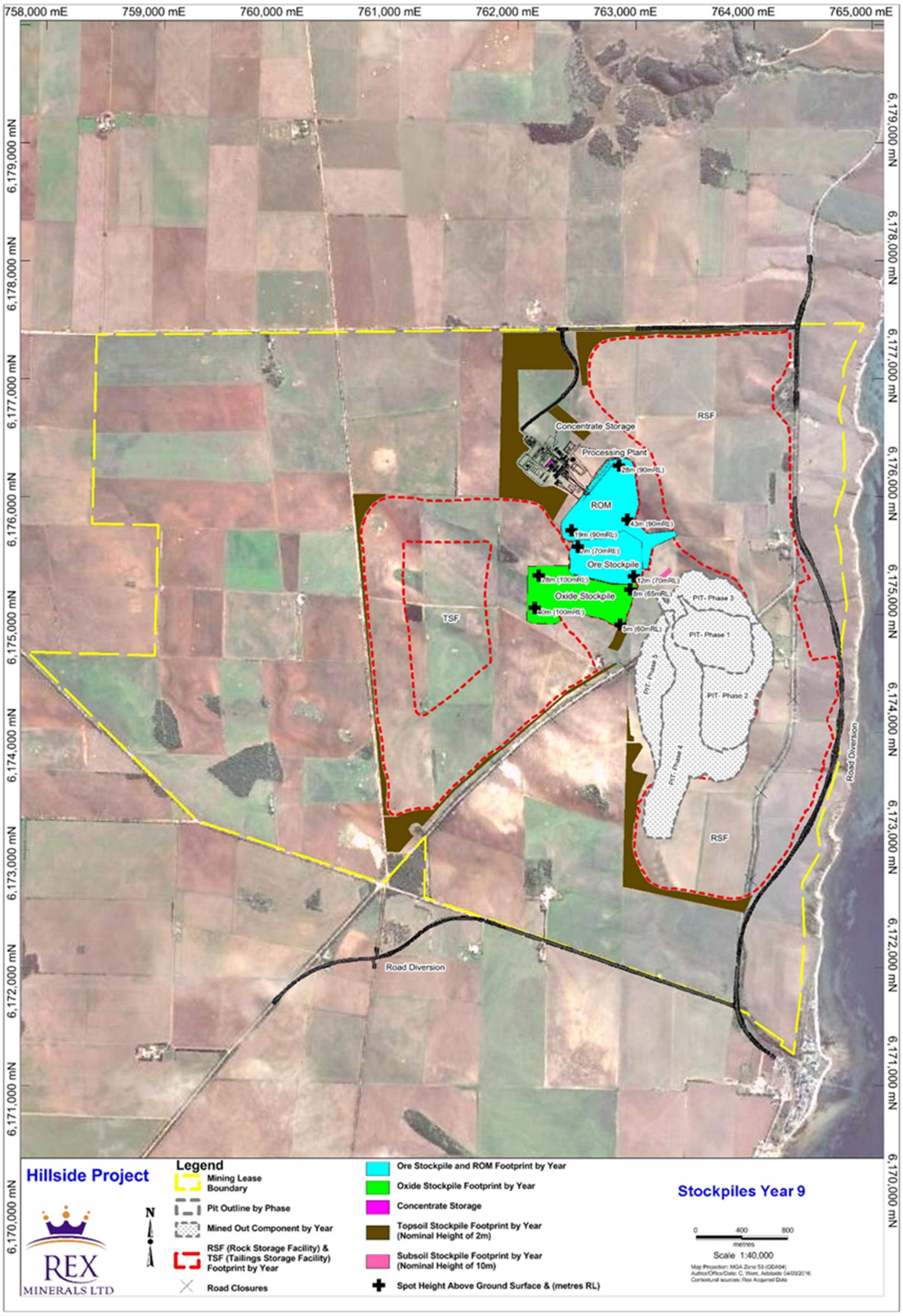


Figure 5: Year 9 stockpile locations

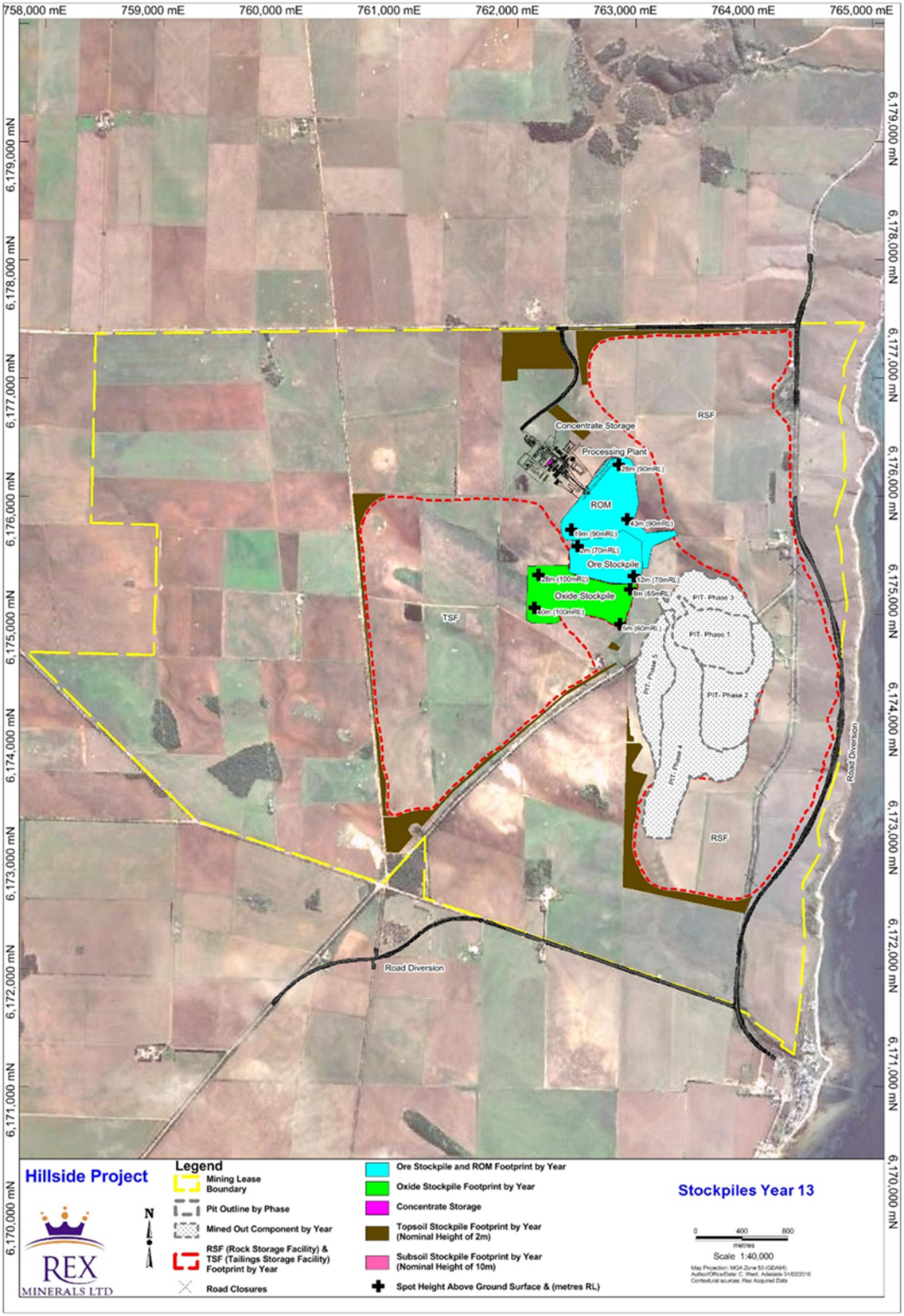


Figure 6: Year 13 stockpile locations

APPENDIX 4: Soil & Land Capability Classification

The following tables are based on the Australian Soil Resource Information System:

Table 5: Main soil properties

Attribute	Significance
Texture	Affects most chemical and physical properties. Indicates some processes of soil formation.
Clay content	As for texture.
Coarse fragments	Affects water storage and nutrient supply.
Bulk density	Suitability for root growth. Guide to permeability. Necessary for converting gravimetric estimates to volumetric.
pH	Controls nutrient availability and many chemical reactions. Indicates the degree of weathering.
Organic carbon	Guide to nutrient levels. Indicator of soil physical fertility.
Depths to A1, B2, impeding layers, thickness of solum and regolith	Used to calculate volumes of water and nutrients (eg. plant available water capacity, storage capacity for nutrients and contaminants).
Volumetric water content ($\theta_{-10\ kPa}$)	Used to calculate water availability to plants and water movement.
Volumetric water content ($\theta_{-1.5MPa}$)	Used to calculate water availability to plants and water movement.
Plant available water capacity	Primary control on biological productivity and soil hydrology.
Saturated hydraulic conductivity	Indicates likelihood of surface runoff and erosion. Indicator of the potential for water logging. Measure of drainage.
Electrical conductivity	Presence of potentially harmful salt. Indicates the degree of leaching.
Aggregate stability	Guide to soil physical fertility. Potential for clay dispersal and adverse impacts on water quality.
Sum of exchangeable bases	Guide to nutrient levels. Indicates the degree of weathering.
Cation exchange capacity	Guide to nutrient levels. Indicates the degree of weathering. Guide to clay mineralogy (when used with clay content).
Exchangeable sodium percentage	Indicator of dispersive clays and poor soil physical properties.

Table 6: Landform morphological type

Code	Code description
C	Crest
D	Closed depression
F	Flat
H	Hillock
L	Lower-slope
M	Mid-slope
R	Ridge
S	Simple-slope
U	Upper-slope
V	Open depression (vale)

Extracted from (MLP & MP, August 2013)

Table 7: Soil Salinity, Sodicity and Acidity Classification

Classification	ECe (µS/cm)	ESP %	pH (unit)
Saline	>4000		<8.5
Saline-sodic	>4000	>15	<8.5
Sodic	<4000	>15	>8.5
Strongly acidic			<4.5

ECe = electrical conductivity of extract, ESP = exchangeable sodium percentage and pH is a measure of soil reaction (acidity or alkalinity). (1 dS/m = 1000 µS/cm)

APPENDIX 5: Soil and Landform Management Plan Requirements Checklist

Condition	Requirement	Section
Rex Minerals Hillside Mine Mineral Lease Conditions (ML 6438) Second Schedule		
Soil and Land Disturbance		
19	The Tenement Holder must, ensure that:	2, 4, 7, 10, 12
19.1	There is no contamination of land and soils either on or off site as a result of mining operations; and	
19.2.	no contamination of land and soils either on or off site after mine completion occurs as a result of mining operations.	
20	The Tenement Holder must ensure that all commercial or industrial waste (which does not include tailings and waste rock) is disposed of in an EPA licensed facility.	2, 6.2, 7.8
21	The TSF embankment must be designed and constructed using the downstream construction method.	Section 5 – TSF Operating Manual
22	The TSF construction and operation must be verified by a suitably qualified independent expert approved by the Director of Mines, against the design and plans that have been adopted for the TSF construction and operation	Section 5 – TSF Operating Manual
22.1	for the initial stage of TSF construction; and	
22.2	for each subsequent stage of TSF construction including the cover system; and	
22.3	on an annual basis for operations or at a frequency as the Director of Mines may specify by notice in writing.	
22.4	The expert must prepare reports of the findings of the verifications. The initial expert report for construction verification must be provided to the Director of Mines prior to the initial placement of tailings in the TSF and subsequent reports must be provided to the Director of Mines within 1 month of completion of the verification and all reports will be made publically available.	
Additional Information in the Program		
33	In accordance with section 70B(2)(d) of the Act it is a condition of the grant of the Mining Tenement that a proposed PEPR submitted in accordance with Part 10A of the Act must include reports from suitably qualified independent experts on the following matters:	Refer Section 7 – Independent Expert Review
33.2	The effectiveness of the proposed strategies in the proposed PEPR achieving the environmental outcomes identified in the proposed PER, including but not limited to reports from	
33.2.5	an Independent Geomorphology Expert (i.e.: for Landform design, soil and erosion management)	
Conditions 21 and 22 are addressed separately under the Section 5 of the PEPR		

Rex Minerals Hillside Mine Mineral Lease Conditions (ML 6438) Sixth Schedule		
Visual Amenity Strategies		
14	The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(c) of the Regulations in relation to the outcome in Sixth Schedule Clause 11;	3
14.1	develop and implement strategies in consultation with affected parties for the management of visual amenity which should include (but not limited to):	
14.2	Screening of prominent built structures where practicable and use of non-reflective, natural coloured materials;	
14.3	establishing vegetation and mature trees to screen built infrastructure and minimise views into the site;	Appendix 1, plus refer Closure Plan
14.4	positioning and design of permanent mine landforms or other earthen bunds to screen activities;	2, 4.2, 7.8, Appendix 1
14.5	sculpture permanent mine landforms to soften the visual impact and reflect surrounding landscape;	Appendix 1, Appendix 2, plus refer Closure Plan
14.6	prompt rehabilitation of disturbed areas once no longer required for mining operations, utilising every available opportunity provided by the mine plan;	4.2, 7.5, 7.8, Appendix 2
14.7	rehabilitation of the final batters immediately following the completion of each WRD lift;	4.2, 7.5, 7.8, plus refer Closure Plan
14.8	vegetate external faces of permanent mine landforms where practical to reduce the impact of changes in landscape colour.	Appendix 2, plus refer Closure Plan
Soil and Land Disturbance Outcomes		
15	The Tenement Holder must, in construction, operation and post mine completion ensure that the existing (pre-mining) soil quality and quantity is maintained.	3, 4, 7, 10, Appendix 2
16	Before mine completion, the Tenement Holder must satisfy the Director of Mines that where practicable, the pre-mining land use can be recommenced after mine completion.	3, 7.5, 7.7, 10, Appendix 2
Soil and Land Disturbance Strategies		
17	The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(c) of the Regulations in relation to Sixth Schedule Clauses 14 and 15;	3
17.1	strategies to achieve recovery of topsoil and subsoil from areas to be disturbed by mining operations	4, 7.1, 7.2, 7.3, 7.8
17.2	Strategies for maintaining the quality and quantity of stockpiled soil/s until	4, 7.4, 7.5, 7.6,

	such time that it is used for rehabilitation purposes.	7.7, 7.8, 10, 12
17.3	Strategies for reinstatement of these soils so as to maximise the likelihood of achieving the outcome in Sixth Schedule Clauses 14 and 15.	4, 7.5., 7.6, 7.7, 7.8, 10, 12
17.4	An auditable record of soil movement including recovery, stockpiling and reinstatement.	4, 7.2, 7.4, 7.6, 10, 11
17.5	Strategies for the establishment of post mine completion land uses and areas, including the re-establishment of land for agriculture, must be consistent with Section 6.9.3 and 6.9.4 of the Mining Lease Proposal.	4.2, 7.1, 7.5, 7.7, 7.8, 10, Appendix 2
17.6	A plan for establishing appropriate mechanisms to ensure effective transfer of responsibility for any maintenance of the site and control of any future development post completion.	10, 12, plus refer Closure Plan
Soil and Land Disturbance Criteria		
18	The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(d) of the Regulations in relation to impact event Sixth Schedule Clauses 14 and 15:	4, 4.1, 7.1, 7.6
18.1	Baseline data to characterise the pre-mining condition of all soils within the Land.	

Condition	Requirement	Section
Rex Minerals Hillside Mine Extractive Mineral Lease Conditions (EML 6439) Sixth Schedule		
Soil and Land Disturbance Outcome		
6	The Tenement Holder must, in construction, operation and post mine completion, ensure that the existing (pre-mining) soil quality and quantity is maintained.	3, 4, 7, 10, Appendix 2

Condition	Requirement	Section
Rex Minerals Hillside Mine Miscellaneous Purposes Licence Conditions (MPL 146) Second Schedule		
Soil and Land Disturbance		
2	The Tenement Holder must, in construction, operation, and post mine completion, ensure that the existing (pre-mining) soil quality and quantity is maintained.	3, 4, 7, 10, Appendix 2
Rex Minerals Hillside Mine Miscellaneous Purposes Licence Conditions (MPL 146) Sixth Schedule		
Soil and land Disturbance Strategies		
2	The Tenement Holder is required to address the following matters for the purposes of Regulation 65(2)(c) of the Regulations in relation to the Soils Outcome Schedule 2 - Condition 2;	No longer applicable – refer note below
2.1	the location and depth below the natural surface of the concentrate and water pipelines must prevent any foreseeable damage due to accidental	

	excavation or surface disturbance.	
Strategy 2.1 is no longer applicable as Rex Minerals is not pumping concentrate or returning sea water to or from the Ardrossan Port Facility.		

APPENDIX 6 – Correspondence Records

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

Date	Communication with	Action or Outcomes
20/07/2017	DPC	Draft plan sent to DPC.
20/07/2017	HMCV	Draft plan uploaded to the HMCV website.