Clearing and Soil Management Procedure
Environment

1 Purpose and scope

This procedure specifies the operational environmental requirements relating to clearing and soil management at the Roy Hill Project. This procedure applies to all personnel involved in activities at the Mine, Rail and Port operations that affect clearing and soil management.

2 Procedure

2.1 Management Actions

2.1.1 Planning for clearing

1. No ground disturbance (as defined in the Ground Disturbance Permit Procedure OP-PRO-00193) shall be undertaken without an approved Ground Disturbance Permit (GDP).
2. All ground disturbance activities must comply with the GDP Procedure (OP-PRO-00193) and GDP conditions, unless written approval is given by the Superintendent Environment.
3. All GDP boundaries are to be surveyed, pegged and flagged in accordance with the GDP Procedure (OP-PRO-00193).
4. The requirements outlined in Table 1 must be followed for all clearing works.
5. Weed risk areas (areas with greater than 25% weed cover) are to be pegged by a surveyor so that topsoil within the weed risk areas can be treated separately from the unaffected areas. Weed risk areas will be highlighted on GDP maps.
6. All topsoil stripped from weed risk areas should be treated as waste unless otherwise specified in the GDP conditions or by the Superintendent Environment Mine. The topsoil is not to be sent to permanent topsoil stockpile locations and is not to be temporarily stored within non-weed infested areas.
7. Arrangements must be made for a Spotter to be present during all clearing works where clearing is being conducted within 10 m of any of the following:
   - A GDP boundary;
   - A heritage, environmental avoidance site; or
   - A tenement boundary (avoidance areas).

   The Spotter must have direct contact with the Operator at all times.
8. Clearing and topsoil stripping areas should be left to dry out (1-2 days), where possible, after a major rainfall event (>15 mm), prior to disturbance activities commencing. This is to prevent hard-setting of soils resulting in damage to the soil structure.

Flagging Colour		Required Action
	blue and white as 2 strands	GDP boundaries must be pegged for all clearing works.
	red and yellow as 2 strands	Environmental Restricted Area must be avoided at all times.
	blue and yellow as 2 strands	Priority Flora must be avoided if required by GDP conditions.
	pink and black striped tape, or pink and black as 2 strands	Aboriginal heritage restricted area must be avoided at all times.
	yellow strands	Clearing boundaries to define the extent of areas to be cleared within a GDP boundary

Table 1: Roy Hill field flagging colours and definitions

9. All topsoil, except for topsoil removed for temporary tracks, permanent water pipelines, drill pads and sumps, must be removed and stockpiled in accordance with this procedure and must be stockpiled in approved topsoil stockpile locations as outlined in the mine General Arrangement unless otherwise requested by the Superintendent Environment Mine, Superintendent Environment Port or Superintendent Rehabilitation.
10. Topsoil from temporary tracks, permanent water pipelines, drill pads and sumps must still be stripped and windrowed adjacent to the infrastructure and stockpiled in a way that does not block natural drainage lines.
11. A separate GDP must be obtained for storage of topsoil or other special storage areas (i.e. rock, capping material) within approved stockpile locations as outlined in the Mine General Arrangement.

2.1.2 Stripping / materials recovery

1. Burning of cleared vegetation is prohibited at all times (unless it is part of an approved rehabilitation trial, and written approval is given by the Superintendent Rehabilitation).
2. Stripping of topsoil must be conducted in accordance with this procedure, unless written approval is given by the Superintendent Environment or specific GDP conditions state otherwise.
3. Topsoil from different Soil Management Areas (SMAs) must be stockpiled separately. See Attachment 1 for details of SMA locations and associated SMA topsoil stockpiles for the Roy Hill Mine Project Area.
4. Topsoil must be used for rehabilitation within the SMA from which it was removed or as directed by the Superintendent Rehabilitation.

5. Topsoil must always be stripped at 200mm and stockpiled unless otherwise advised by the Superintendent Environment.
6. Segregate topsoil within weed risk areas (during clearing and stockpiling) and mine as waste.
7. Weed infested areas should be stripped after stripping non-infested areas, when possible.
8. Vegetation is to be mixed and stockpiled with topsoil (larger trees/logs can still be separated if required) unless otherwise specified in the GDP conditions or by the Superintendent Rehabilitation
9. Stockpile/store each soil resource type adjacent to disturbance area in temporary windrows prior to transportation for stockpiling or direct return to rehabilitation areas.
10. The Environment and Mine Operations Teams must assess the quantities of rocky material including riverbed rock required for use in rock armouring, rehabilitation/erosion control and develop removal, storage and stockpiling procedures.

2.1.2.1 Fugitive Dust Management

1. Do not use water for dust suppression on topsoil (including during clearing). This is to prevent hard-setting of soils resulting in damage to the soil structure.
2. Removal of topsoil should be avoided during high wind conditions (winds over 50km/hr or 14m/sec), where practicable, to minimise dust lift off, loss of resource and seed bank.
3. Removing topsoil from an area should occur as quickly as possible to minimising ongoing generation of significant quantities of dust.
4. Minimise vehicle traffic speed on cleared areas and comply with speed limits outlined in relevant site Traffic Management Plans.

2.1.3 Direct Return of soil

1. Topsoil shall be reused in rehabilitation immediately where practicable. Where stockpiling is required the location of the stockpile shall be planned sufficiently such that the stockpile will not have to be moved again until required for rehabilitation.

2.1.4 Stockpile Requirements

1. Topsoil will be used directly for rehabilitation activities unless otherwise directed by the Superintendent Rehabilitation.
2. Topsoil stockpiles will be paddock dumped (as illustrated below) to increase surface to volume ratio and allow infiltration of rainfall in between stockpiles.

Topsoil stockpile heights are restricted to no more than 3m.

3. Stormwater control infrastructure must be installed, such as bunding or diversion drains, to minimise topsoil loss through water erosion.

2.1.4.1 Stockpile Signage Management

1. Signs shall be placed on topsoil stockpiles and is the responsibility of the Superintendent Mining (or delegate). The signs shall be as follows:
    - Black lettering on a white background, with a lettering size that can be clearly seen from a vehicle at 10 m away;
    - Size of the sign should be at least 400 mm by 400 mm;
    - Wording on the sign should say:
        - "TOPSOIL STOCKPILE" – large letters
        - "Identification Number"* – small letters
        - " Date Established" – small letters
        - " Source Location" – small letters
            - 'SMA Type' – small letters
        - "KEEP OFF" – large letters

* Identification numbers are assigned to each stockpile and will be shown on applicable GDPs.

2. Signs are checked and maintained, especially post cyclone events, annually by the Superintendent Rehabilitation (or delegate).

2.2 Training and Awareness

1. Site inductions must include information on land disturbance and GDP procedures.
2. Supervisors and other relevant personnel shall complete GDP training.
3. Toolbox talks highlighting Clearing and Soil Management Procedures will be conducted periodically by the Superintendent Environment or Rehabilitation (or delegates).

2.3 Monitoring Actions

1. The Superintendent Rehabilitation (or delegate) shall ensure :
    a. Inspect topsoil stockpiles immediately after being constructed using the Stockpile Inspection/Monitoring Form (OP-FRM-00018).
    b. Active topsoil stockpiles are to be inspected every 6 months using the Stockpile Inspection/Monitoring Form (OP-PRO-00018). Visual inspections to be undertaken on all inactive topsoil stockpiles every six months. Where weed infestations are identified then control measures must be implemented to maintain the integrity of the topsoil.

2.4 Incidents, Audits and Inspections

1. Compliance audits and inspections shall be performed against this procedure in accordance with the Environment Audit Procedure (OP-PRO-00018).
2. All non-compliances with this procedure are to be reported as an incident in accordance with the Incident Reporting and Investigation Procedure (100RH-0000-HS-PRO-2004).

2.5 Contingency Actions

1. Weed control must be implemented on stockpiles if weeds are found on stockpiles, in consultation with the Superintendent Rehabilitation.

2. Contingency actions relating to clearing and soil management identified during inspections, audits and incident reporting must be implemented.

2.6 Reporting Requirements

1. Incidents and audit findings must be reported and closed out (including GDP boundary breaches) in accordance with the Incident Reporting and Investigation Procedure (100RH-0000-HS-PRO-2004).
2. Complete all reporting required by GDP conditions.
3. Complete all reporting required within the Contractor Environmental Report (CER) (OP-FRM-00305).
4. Complete Topsoil Tracking Form (OP-FRM-00044) once topsoil and/or subsoil has been stripped and stockpiled. This must be uploaded onto SageSurpass within 21 days.
5. Reports/updates of stockpiles via Stockpile Inspection/Monitoring Form (OP-FRM-00119) are made every 6 months by the Superintendent Rehabilitation (or delegate).
6. Training records of personnel, including site inductions and GDP training, shall be updated on Learning Management System as training occurs (with the exception of toolbox talks).

3 Accountabilities

Unless otherwise specified, the following roles are accountable or responsible for the activities outlined in this procedure.

Role	Responsibility
General Managers	Accountable for ensuring that resources are available to support the implementation of this procedure where it is relevant to their area of responsibility
Managers	Accountable for the implementation of this procedure where it is relevant to their area of responsibility
Superintendents	Responsible for the implementation of this procedure where it is relevant to their area of responsibility
Environment Team	Responsible for review and update of this procedure

Table 2: Accountabilities

4 Abbreviations

Abbreviation	Definition
CER	Contractor Environmental Report
GDP	Ground Disturbance Permit
GIS	Geospatial Information Systems
SMA	Soil Management Area

Table 3: Abbreviations

5 Definitions

Term	Definition
Ground disturbance	Work that will in any way cause any change or disturbance to the ground surface including (but not limited to): clearing of vegetation, placement of survey pegs, placement of water bore lines, excavations, geotechnical investigations, water bore drilling and release of water, bulk earthworks installation of buildings and infrastructure, construction of roads, access tracks, laydown areas and any work associated with the construction and operation of the project.
Operational Environmental Requirements	A plan, procedure or work instruction that must be complied with.
Operator	Personnel who drives and is qualified and deemed competent to operate a machine or vehicle
Soil Management Area	The type of soil characterised across the Roy Hill project, considering volume of topsoil available, the density of seed, and the composition and diversity of species contained within the topsoil. The management of each SMA may different according to the soil properties. See Clearing and Soil Management Plan (OP-PLN-00051) for details.
Soil resource type	Type of soil or cleared substrate, e.g. vegetation , topsoil or subsoil
Spotter	Personnel who advise Operators on the current position of their machine with regards to distance to boundaries and avoidance areas; from the ground
Superintendent Environment	The Superintendent of The Roy Hill Environment Team
Superintendent Rehabilitation	The Superintendent of The Roy Hill Rehabilitation Team
Topsoil	The top layer (100-200 mm) of the soil profile that is the most important for rehabilitation. It contains a seed bank and has a higher nutrient content than the layers below.
Weed risk areas	The locations where the number or species (severity/rating) of weed species is greater than 25%; these areas are mapped on the GIS database and are included on GDPs.

Table 4: Definitions

6 References

Document number	Title
OP-PLN-00051	Clearing and Soil Management Plan
000RH-0000-EN-PLN-0003	Rehabilitation Plan
OP-FRM-00305	Contractor Environment Report
OP-PRO-00101	Rehabilitation Management Procedure
OP-FRM-00119	Stockpile Inspection/Monitoring Form
Op-FRM-00044	Topsoil and Subsoil Tracking Form
OP-PRO-00018	Environmental Audit Procedure
OP-PRO-00193	Ground Disturbance Permit Procedure
100RH-0000-HS-PRO-2004	Incident Reporting and Investigation Procedure

Table 5: References

Note that up-to-date environmental documents should be accessed from the e-Care Roy Hill intranet portal to ensure that the current version is being used.

7 Review

This Procedure is to be reviewed as follows:

- Following the grant of or modification to relevant approvals;
- Annually; or
- As a result of findings or actions identified through inspections, audits and incident reporting.

Reviews are to examine the appropriateness of this Procedure, taking into consideration corporate, system and compliance requirement changes since the last review was undertaken.

Attachment 1

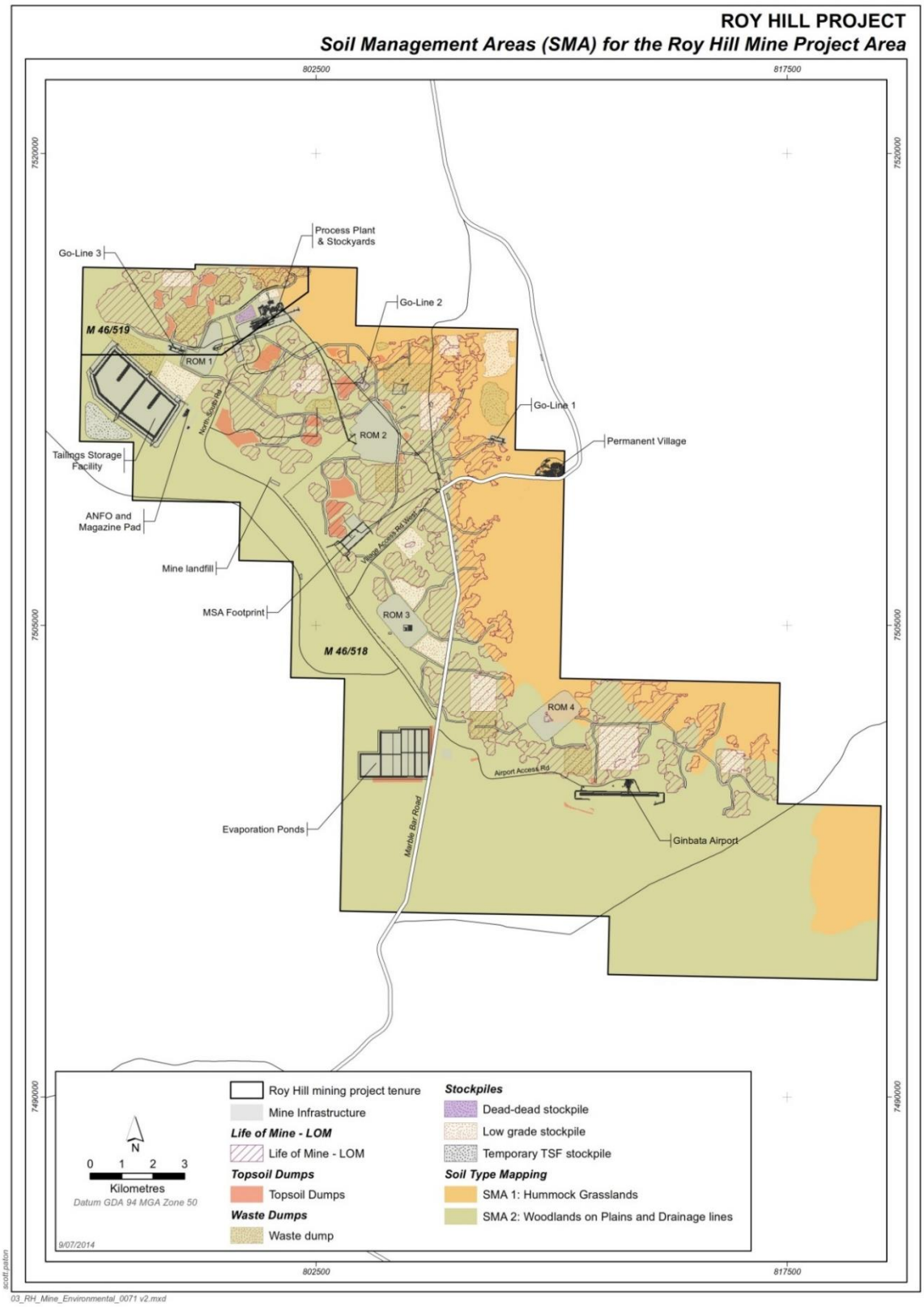

Figure 1: Soil Management Areas (SMA) for the Roy Hill Mine Project Area