Procedure

Ground Disturbance and Topsoil Management

Environment

9 August 2024

IO-PR-EN-0010

Rev 1

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1 PURPOSE

The procedure provides detail on the process to undertake ground disturbance to ensure topsoil and cleared vegetation is effectively managed as a resource to be used during rehabilitation and mine closure activities.

1.1 Background

Progressive rehabilitation activities need to be integrated into daily mining operations to ensure availability and volumes of key materials (e.g. topsoil, subsoil and cleared vegetation) required for rehabilitation. These materials should be respread over disturbed areas to aid in regrowth and habitat establishment.

Topsoil refers to the biologically active upper layer of soil depths typically between 0 to 200 mm. Subsoil refers to soil depths between 200 – 1500 mm. Cleared vegetation that is required to be stockpiled include trees and shrubs at heights greater than 2 metres.

Fortescue employees and contractors are obliged to comply with all relevant environmental Commonwealth and State legislation. Legislation directly relevant to ground disturbance and topsoil management in Western Australia is provided in Appendix A.

Definitions of terms and acronyms used throughout this procedure are provided in the *Definitions and Acronyms Guideline* (IO-GU-EN-0002).

1.2 Application

This procedure is required to be followed for ground disturbance and topsoil management that occurs at all Fortescue Iron Ore (WA) Project and Operational Sites.

1.3 Exclusion

Exclusions to the procedure are ground disturbance and topsoil management activities undertaken for exploration purposes. Refer to the *Exploration Environmental Management Plan* (E-PL-EN-0002).

2 PROCEDURE

The procedure below is to be followed to ensure that only essential ground disturbance is undertaken and all available topsoil material is harvested and stockpiled for use during rehabilitation and mine closure activities.

Table 1: Procedure

Responsibility	Steps (tasks)	Refer guideline
LUC Applicant	1. Obtain a LUC prior to ground disturbance in accordance with the *Land Use Certificate Procedure (*100-PR-TA-0001).	-
Site Environment team	2. Assess the LUC for approval in accordance with the *Environmental Approval of Land Use Certificates* (100-PR-EN-1058) and condition the LUC with clearing and topsoil requirements.	-
Mine Planning	3. Where the ground disturbance activity is on a mine site, factor in ground disturbance and topsoil management requirements into the 3 Month Mine Plan.	Section 3.1
Area Supervisor	4. Ensure areas to be cleared are clearly marked by either: a) Machinery fitted with GPS Machine Guidance System (i.e. EEMIS, Mine Star, Jigsaw), Or if machinery is unavailable, b) Engage a Mine Surveyor to physically mark out the LUC boundary with designated flagging tape.	-
Mine Surveyor	If required by 4b) • Physically mark out the LUC boundary. Designated flagging tape must be used (e.g. pink flagging to designate the LUC boundary, white flagging to designate the clearing extents inside the LUC).	Section 3.2
Area Supervisor	5. Implement all other pre-disturbance controls, as described in the LUC.	-
Area Supervisor	6. Ensure ground disturbance is undertaken in accordance with the specified clearing requirements.	Section 3.3
	7. Ensure cleared materials are stockpiled in accordance with the specified stockpiling requirements.	Section 3.4
Area Owner	8. Ensure installation of signage	Section 3.4
LUC Applicant	9. When ground disturbance is complete, undertake the LUC close out process in accordance with the *Land Use Certification Procedure* (100-PR-TA-0001).	Section 3.5
Environment Operations team	10. Undertake onsite monitoring and maintenance of existing stockpiles for site specific criteria in accordance with Undertaking Environmental Inspections (45-PR-EN-0036).	Section 3.6
	11. Assess ongoing compliance with environmental obligations related to ground disturbance and topsoil management in accordance with *Environmental Approval Compliance* (IO-PR-EN-0004).	-
Area Supervisor	12. Report incidents within BMS in accordance with the *Incident Event Management Procedure* (45-PR-SA-0080).	-

3 GUIDELINES

3.1 Mine planning

Where the ground disturbance activity is on a mine site the Mine Planning team must:

- Include soil movement and storage locations in the 3 Month Mine Plan (3MMP).
- Where practicable, plan to return stripped topsoil directly to a rehabilitation area. Where the topsoil must be stockpiled, plan to store the soil for the shortest possible time.
- Define where subsoil is available (detailed within the relevant Mine Closure Plan) and required to be stockpiled separately for use during rehabilitation activities.
- Define where rock is available (detailed in the relevant Mine Closure Plan) and required to be stockpiled separately for use during rehabilitation activities as landform armouring material within the Mine Plan.

3.2 Marking out areas to be cleared

- Ensure any heritage and/or environmental constraints (including conditional mark-ups) shown on the LUC map are identified in the machines guidance system files. If the GPS file does not include all of the relevant constraints or there are further queries on the identified constraints, contact the heritage and/or environmental approver listed on the LUC.
- Where ground disturbance is undertaken by machinery without GPS Machine Guidance System, a Mine Surveyor must be engaged to physically mark out the LUC boundary. Designated flagging tape must be used (e.g. pink flagging to designate the LUC boundary, white flagging to designate the clearing extents inside the LUC). Refer to *Standard Flagging Tape Colours* (CB-PR-SU-0026) for guidance.
- It is recommended that 10 m spacing is used between survey pegs and flags.
- LUC boundaries which intersect an Environmental Restriction Zone should be flagged with Green and White Flagging tape.
- Mark out any areas inside the LUC boundary known to have populations of priority weed species with green and white environment tape to avoid the spread of weeds

3.3 Clearing requirements

- The person undertaking the ground disturbing activity must have a printed copy of the LUC available whilst undertaking the clearing, or must have access to a digital version of the LUC.
- Where ground disturbance is undertaken by machinery without GPS Machine Guidance system, the entire LUC boundary is to be physically inspected to ensure sufficient demarcation of:

- LUC boundary.
- Environmental Restriction Zones (ERZ) that have been excluded from the LUC but are within the overall LUC footprint.

- Ground disturbance must be minimised as much as practical. Mature (habitat) trees and termite mounds must be avoided where possible.
- A minimum of 100 mm of topsoil shall be cleared for use in rehabilitation activities. This includes any areas where plant growth is observed, including rocky soils. Only areas that are entirely comprised of rock with no plant material are exempt from clearing. Alternatively, rocks may be stockpiled where required. Where a site procedure or contract specifies a clearing depth greater than the minimum standard, the site or contract requirement should be adhered to.
- Where the ground disturbance activity includes clearing vegetation that is greater than 2 metres in height, the vegetation should be cleared and stored separately to topsoil.
- Vegetation and soil from weed affected areas should be cleared separately and buried to minimise the occurrence of re-emergence. Where the soil is unable to be buried, it should be managed (e.g. chemical, mechanical, or manual control measures) to minimise the potential spread of weeds.
- If the area to be cleared is on a steep incline and unable to be safely accessed by machinery, clearing should not be undertaken. As general guidance from the DEMIRS Mines Safety Directorate (Our Ref: 661MI-EN-0063), slopes greater than 45° are considered unsafe. When slopes are less than 45°, clearing should be planned to be undertaken unless site specific conditions, such as sandy, slippery soil are assessed as unsafe. The justification and any evidence for not undertaking the clearing activity must be provided to the site Environment team prior to completion of clearing and must also be uploaded in the LUC record when undertaking the LUC close out process.
- Where topsoil cannot be safely collected, update the Scope of Works attached to the LUC and select ‘No topsoil will be disturbed’ in the LUC application.
- Ground disturbance must not be undertaken where adverse weather conditions would result in significant soil losses due to wind, rain or erosion.
- Conduct pre and post clearing inspections to ensure compliance with conditions of the LUC.

3.4 Stockpiling of cleared materials

- During ground disturbance, soil and cleared vegetation shall be stockpiled separately on designated cleared areas inside the LUC boundary.

- Following the clearing activity, any material that is required to be stockpiled, must be stored in designated storage locations covered by an active LUC.
- Topsoil stockpiles should be stored at heights less than 2 metres. Cleared vegetation can be stored on top of topsoil stockpiles for use in rehabilitation activities.
- Where ground disturbance activities include the collection of subsoil (soil depths between 200 – 1500 mm), this should be stockpiled separately to topsoil. Subsoil stockpiles may be stored at heights up to 10 metres.
- Where rock is required for landform armouring materials, it must be stockpiled separately to cleared vegetation, topsoil and subsoil.
- A buffer zone of at least 8 metres wide should be maintained between topsoil/subsoil/vegetation stockpiles and mined areas to allow access to soil and vegetation stockpiles.
- Soil and/or cleared vegetation must not be stored in Creeks or drainage lines.
- Adequate drainage controls should be in place to prevent erosion run-off of topsoil.
- The Area Owner must ensure stockpiles are clearly sign-posted to identify the material in the stockpile.
- Topsoil stockpiles must not be compacted. Vehicles and machinery must not drive over topsoil stockpiles.
- During recovery of topsoil it is preferable for wheel loaders to be used to minimise compaction.

3.5 LUC close out

The LUC should close out in a timely manner following the completion of ground disturbance. When closing out the LUC, the following information should be included:

- The amount of topsoil collected.
- Description on the quality of topsoil collected (e.g. vegetative material, weeds, mixed rock armouring).

3.6 Stockpile management

The onsite monitoring and maintenance of existing stockpiles shall be undertaken in accordance with site specific inspection criteria including:

- Stockpile heights
- Erosion and soil stability
- Signage
- Weed populations
- Stockpile volume calculations
- Spatial data of topsoil stockpiles within Fortescue's GIS systems

4 REFERENCES

This procedure and all internal supporting documents will be managed as per Fortescue Document Governance Standards. These may be read in conjunction with this procedure.

[1] *Environmental Approval of Land Use Certificates* (100-PR-EN-1058)

[2] *Environmental Approval Compliance* (IO-PR-EN-0004)

[3] *Incident Event Management Procedure* (45-PR-SA-0080)

[4] *Land Use Certification* (100-PR-TA-0001)

[5] *Undertaking Environmental Inspections* (45-PR-EN-0036)

[6] *Standard Flagging Tape Colours* (CB-PR-SU-0026)

DOCUMENT CONTROL

Ground Disturbance and Topsoil Management		
Status	IFU - Issued for Use	9-Aug-24
Summary of Changes	Clarity on responsibilities associated with the physical marking of LUC boundary if triggered by Step 4b Addition of LUC close out step	
Author	Jane Humphrey	Signature
Checked or Squad Review# (if applicable)	IR-00250807	Signature
Approved	Todd Edwards	Signature
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APPENDIX A LEGISLATIVE CONTEXT

Act / Regulation / Standards
Environmental Protection Action 1986
Environment Protection and Biodiversity Conservation Act 1999
Mining Act 1978
Biodiversity Conservation Act 2016
Statutory Guidelines for Mine Closure Plans (Department of Mines, Industry Regulation and Safety, 2020)