NSW GOVERNMENT

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GUIDELINE

REHABILITATION CONTROLS

NSW Resources Regulator

Document control

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Contents

Purpose of this guideline

Conditions of a mining lease granted under the *Mining Act 1992* require the lease holder to conduct a rehabilitation risk assessment and implement controls (referred to as “measures” in Schedule 8A of the Mining Regulation 2016) to eliminate, minimise or mitigate the risks. *Guideline: Rehabilitation risk assessment* provides further details regarding rehabilitation risk assessments.

The purpose of this guideline is to assist lease holders to identify and evaluate the rehabilitation processes, controls and techniques that should be considered and used by lease holders in rehabilitation planning and implementation to achieve the final land use.

Our role

Rehabilitation processes and controls are reviewed as part of our assessment of whether:

- the lease holder is rehabilitating land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable after the disturbance occurs
- the lease holder is managing the risks to achieving the approved rehabilitation outcomes and the final land use
- the lease holder is achieving the approved rehabilitation outcomes and final land use.

Role of the lease holder

The lease holder is required to identify and implement rehabilitation control measures to eliminate, minimise or mitigate the risks to achieving the final land use. To comply with the requirements of Schedule 8A of the Mining Regulation 2016, the lease holder is **required to**:

1. conduct a rehabilitation risk assessment that identifies the control measures that need to be implemented to eliminate, minimise or mitigate the risks to achieving the final land use (refer to *Guideline: Rehabilitation risk assessments*).
2. implement these control measures.
3. prepare a rehabilitation management plan[1] (for large mines only) which:

[1] See clauses 9 and 10 of Schedule 8A of the Mining Regulation 2016 and *Form and way: Rehabilitation management plan for large mines*.

- incorporates the risk control measures identified in the rehabilitation risk assessment
- identifies triggers and controls/actions to manage/respond to risks to rehabilitation performance and outcomes.

4. keep and maintain risk assessment records, trigger action response plans, and records on the effectiveness of mitigations and management controls (refer to *Guideline: Rehabilitation records*).
5. ensure that the effectiveness of the rehabilitation risk assessment and controls adopted in the life of mine progressive rehabilitation schedule and rehabilitation phases are routinely evaluated throughout the life cycle of a project. An updated/new rehabilitation risk assessment and associated control measures will be required whenever any foreseeable hazard is identified that presents a risk to achieving the rehabilitation objectives, the rehabilitation completion criteria and, for large mines, the final landform and rehabilitation plan.

Table 1 sets out a non-exhaustive list of issues and rehabilitation processes, controls and techniques, that should be considered and, where relevant, could be used by lease holders for inclusion in a rehabilitation management plan and implementation of progressive rehabilitation in accordance with a forward program. The applicability of controls is based on the nature, scale and risks associated with a specific mine site. As such, not all of the controls included in Table 1 may be relevant to a particular mine site.

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Table 1: Example rehabilitation controls checklist

PHASE: ACTIVE MINING (LAND CLEARANCE)

CONTROLS	CHECK
Baseline monitoring	
Establish existing environmental baselines, which are to be used as the basis for rehabilitation completion criteria. A risk assessment process may need to be undertaken to determine what baseline data is needed. This should also include consideration of development consent requirements and other relevant documentation including environmental assessments, environmental impact statements, existing management plans. Key aspects that may require baseline monitoring include: ■ surface and groundwater studies ■ flora/fauna studies (e.g. that may include studies on key local threatened species or communities) ■ soil surveys ■ archaeological studies ■ survey records, photos, topographic plans ■ contamination assessments ■ agricultural land capability.	☐
Before ground disturbance works	
Implement programs to maintain/improve the biodiversity value of an area to be cleared to maximise opportunities for salvage of biological and habitat resources, such as: ■ exclusion of grazing, considering plant species in the area (e.g. weeds) ■ weed and feral animal control ■ appropriate fire management.	☐
Undertake assessment of soils (e.g. to assess the suitability, thickness and quality of the topsoil and subsoil resource, including soil texture, fertility, presence of organic matter, presence and abundance of weed species, and chemical analyses) in any areas to be stripped. This will assist in determining and addressing potential risks to achieving the approved rehabilitation outcomes and final land use.	☐

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CONTROLS	CHECK
Ensure mine planning systems provide sufficient time for the implementation of pre-clearance procedures to facilitate biological and habitat resources being appropriately identified and salvaged to minimise environmental impacts and maximise the viability for use in rehabilitation.	☐
Native revegetation activities in rehabilitation areas should use local provenance seed for direct seeding or tube stock propagation. Where permissible, should adverse seasonal conditions (e.g. drought) affect the availability of local provenance seed, supplementation with non-local provenance seed may be required.	☐
Identify sufficient pre-disturbance and surrounding areas that can be used as seed or propagation resources.	☐
Define key plant species and targeted vegetation communities (e.g. plant community types) that would comprise the framework of the rehabilitation program.	☐
Identify techniques to establish key species – seed, asexual propagation, transplant, topsoil seed, specialist propagation. This should include quantifying the requirements for seed and plant material for use in rehabilitation, or identifying threatened plants to be translocated, and areas where they may be moved.	☐
Plan seed harvesting and collection of plant material in advance of clearing and in consultation with suitably qualified practitioners (e.g. a 3-year lead time with a rolling collection program).	☐
Develop a seed collection program to maximise the amount of viable seed of local provenance for use in rehabilitation and revegetation activities. The program should include: ▪ a seed calendar that contains information relating to fruiting and seed collection times for key native species ▪ data on seed collection including species, collection location and date of collection ▪ seed assessment of native vegetation within the proposed disturbance areas to allow for seed collection prior to or immediately following clearing ▪ required volumes of seed to be collected to enable adequate supply of native seed for reuse ▪ appropriate treatment and storage to maintain viability	☐

CONTROLS	CHECK
▪ suitably qualified and experienced selectors ▪ using record sheets and a geographic information system (GIS) database to track collection, storage and use of the seed resource.	
The salvage of hollow bearing trees, hollow logs, fallen timber and boulders should be undertaken, where practical, shortly before or during the clearing process. The relocation of such habitat resources into post-mining rehabilitation areas and offset and conservation areas (where deemed to be appropriate) is aimed at increasing habitat complexity in these areas, to make them more habitable for native species, particularly key threatened species.	☐
Include soil seed bank evaluation as part of the topsoil characterisation process where native vegetation is being cleared to maximise opportunities for salvage or identify need for supplementation – to include native and weed species.	☐
During ground disturbance works	
The extent of clearing and disturbed land is to be minimised to the greatest extent practicable at any given time.	☐
Clearing, including pre-clearance surveys and clearance and biological resource handling and storage procedures are to be designed to minimise impacts to flora and fauna as well as maximise the use of felled timber, habitat structures, soil and soil seedbank resources for use in rehabilitation (e.g. hollows/stags). This should include opportunities for translocation of key species.	☐
Undertake topsoil and subsoil stripping when soils are moist (e.g. not saturated nor dry).	☐
Strip topsoil and subsoil using appropriate equipment to the appropriate depths as identified through the soil characterisation assessment.	☐
Based on outcomes of seed bank analysis, develop and implement stripping techniques to maximise integrity of seed bank for use in rehabilitation.	☐
Exploration or other temporary disturbance activities - set equipment blades above ground level to minimise disturbance to topsoil, rootstock and the topsoil seed bank in areas where total clearing and/or stripping is not required (e.g. where the proposed activities are limited to the storage of materials, placement of demountable buildings and surface tanks).	☐

CONTROLS	CHECK
Wherever practicable, prioritise opportunities for topsoil to be transferred directly from the stripping location to areas that have been reshaped for rehabilitation and aligned to the target vegetation community (e.g. plant community type), eliminating the need for storage and re-handling and maximising the viability of seed bank and topsoil resources (including soil biota).	☐
Strip and stockpile topsoil and subsoil layers separately so they can be returned in sequential order as part of rehabilitation.	☐
Salvage and retain cleared vegetative materials (e.g. logs, branches and chipped material) for use in native rehabilitation, temporary groundcover or incorporation back into soils.	☐
Prioritise opportunities for direct return of topsoil to rehabilitation areas to maximise viability of seed bank and topsoil resource (including soil biota).	☐

PHASE: ACTIVE MINING (PRODUCTION)

CONTROLS	CHECK
Soil and materials management	
Develop and maintain a materials and soils balance and database to include the following information: ■ volume of inert capping material, topsoil and subsoil stockpiled ■ location, age and quality of stockpiles ■ chronology of treatments (e.g. weed control, application of cover crop) undertaken on the stockpile ■ volume of material, topsoil and subsoil required for application to current and future disturbance areas (e.g. capping material for tailings dams, reject emplacement areas) ■ an estimate of the volume of suitable alternative material required to be imported onto site to supplement potential material, topsoil and subsoil deficits ■ record data on the location of the stockpiled material including date stripped, source area, indicative volume, pre-strip plant community type.	☐

CONTROLS	CHECK
Information is to be stored using site-based GIS.	
Locate soil stockpiles away from traffic areas and at an appropriate distance from watercourses.	☐
Locate soil stockpiles on level or gently sloping areas to minimise the potential for erosion and soil loss.	☐
Manage soil stockpiles to maximise surface exposure and biological activity (e.g. set out in windrows and limit height).	☐
Implement measures to reduce compacted soil stockpiles (e.g. matting and geofabric material).	☐
Install appropriate erosion, dust and sediment controls around soil stockpiles to reduce the potential for soil loss.	☐
Establish a cover of stockpiles to reduce soil loss and reduce the potential for weed infestation. Vegetate stockpiled material with a mix of fast germinating and growing sterile cover crop to assist in erosion control and or fast germinating and growing natives aligned to the plant community type or target agricultural pasture mix to assist with maintaining the biological health of the stockpile.	☐
Appropriately sign-post soil stockpiles to identify the area and minimise the potential for unauthorised use or disturbance.	☐
Monitor and control weed growth on soil stockpiles.	☐
Materials handling	
Develop specific strategies (e.g. selective handling, management and placement) for mine materials management to address potential geochemical and geotechnical constraints for rehabilitation as follows: ▪ adopt an appropriate geological model (typically block model for metalliferous mines) to determine source of problematic material ▪ continued sampling and testing of overburden/interburden materials during operations to confirm the potential geochemical constraints across the deposit (e.g. spontaneous combustion, acid mine drainage, sodicity).	☐

CONTROLS	CHECK
■ continued sampling to ensure materials are understood (e.g. particle size distribution) and to identify potential changes in material properties. ■ development of a procedure/strategy for selective handling and management of materials (e.g. potentially acid forming and non-acid forming, inert material). ■ continued sampling and testing of the beneficiation waste stream.	
Seek specialist advice (as relevant) to develop effective mitigation strategies to minimise any potential interference to rehabilitation establishment or downstream pollution because of the exposure of adverse geochemical material. A key objective is to ensure that placing material does not adversely impact rehabilitation outcomes.	☐
Develop and implement an operational and rehabilitation program for reject emplacement areas (e.g. tailings) to ensure geochemical and geotechnical long-term stability (e.g. capping, capillary breaks, dewatering and filling technique, stabilisation of dam wall buttress). This program may need to be developed and supervised by suitably qualified experts.	☐
Develop and maintain a register of contaminated sites, waste landfill sites and bioremediation areas and where they are located.	☐
Environmental monitoring	
Develop, maintain and document an environmental monitoring program that includes (as relevant): ■ surface and groundwater ■ flora/fauna ■ pasture monitoring and or agricultural capacity (e.g. stock carrying capacities) ■ land contamination ■ archaeology/heritage ■ soil and land capability.	☐

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PHASE: DECOMMISSIONING

CONTROLS	CHECK
Management of potential heritage issues	
Before demolition activities, undertake (or review existing) assessments to determine potential heritage approvals and or management measures that may be required (e.g. heritage management plans, retention/restoration of buildings, archival recording, dilapidation studies, etc).	☐
Site services	
Electricity services to any infrastructure scheduled for demolition will be removed before the start of building demolition works.	☐
Telecommunications, water supply and other services will also be disconnected and removed where practical.	☐
Where services are buried (e.g. pipelines, cables) and their retrieval may lead to further disturbance, the infrastructure may be left in situ (subject to any necessary approvals or agreements) if they don’t pose constraints to the final land use. In this situation, the location of the services will be surveyed and marked on the site plan and a suitable caveat developed to provide that they are readily identifiable for future land holders.	☐
Before demolition, the infrastructure should be evaluated in terms of the presence of hazardous substances (e.g. asbestos, radiation devices and sources) and appropriate management strategies developed to protect employees, the public and minimise potential environmental harm. This includes the identification of the various waste streams and development of management strategies in accordance with the appropriate waste legislation.	☐
All buildings, fixed plant and other infrastructure that are not required as part of the final land use will be demolished and removed. Demolition will be carried out in accordance with the relevant Australian Standard.	☐
Remaining structures will be surveyed and recorded on a plan, with a suitable caveat developed to provide that they are readily identifiable for future land holders (as appropriate).	☐

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CONTROLS	CHECK
Buildings and fixed plant to be retained	
Where infrastructure is approved to remain as part of the final land use, a structural assessment should be prepared by a suitably qualified person to: ■ determine the structural integrity of the structure ■ identify the associated short and long-term risks to public safety and the environment from the infrastructure remaining in situ, which should identify potential modes of failure. Based on assessment, identify and implement controls to address any potential residual risks and modes of failure.	☐
Rail loop and rail siding (if not required as part of the final land use)	
Where rail infrastructure is not required as part of the final land use, the infrastructure will be decommissioned and removed (subject to necessary approvals and agreements). This will involve the removal of all railway sleepers and ballast material, which depending on their condition, may be reused or disposed of in accordance with the appropriate waste legislation	☐
The rail siding and loop will be reshaped and revegetated as part of rehabilitation activities.	☐
Spillages of potential carbonaceous or contaminated material will be managed as per below.	☐
Equipment storage areas, hardstand areas, roadways, sealed and unsealed roads and car parks	
Any redundant plant or equipment will either be sold for reuse, recycled (e.g. scrap metal) or disposed of at an authorised landfill facility.	☐
Removal of ore spillages and hazardous materials.	☐
Storage areas and hardstands will be assessed for potential contamination (e.g. hydrocarbons, salt accumulation) and remediation undertaken as required.	☐

CONTROLS	CHECK
Waste material (e.g. bitumen, concrete, ore) generated as part of the removal of car parks and hardstands is to be managed in accordance with relevant guidelines under the *Protection of the Environment Operations Act 1991*. The relevant guidelines can be found on the Environment Protection Authority's website. Where authorised to dispose of on the site, waste material must be buried at depth or suitably capped to ensure that it does not compromise the final land use.	☐
Management of carbonaceous/contaminated material	
Excess ore material remaining at closure will be scraped up and either reprocessed or disposed of within the reject emplacement areas or in accordance with the appropriate waste legislation.	☐
Any remaining carbonaceous material (e.g. coal reject) on the base of stockpile areas will be either suitably capped to support the final land use, or scraped up and removed to the reject emplacement area and subsequently rehabilitated.	☐
Any contaminated material should be managed in accordance with relevant guidelines under the *Contaminated Land Management Act 1997*. Records will need to be retained to validate that contamination has been remediated or managed effectively to meet the final land use rehabilitation objectives and rehabilitation completion criteria.	☐
Hazardous materials management	
All remaining hydrocarbons such as diesel and lubricants and other hazardous materials will be either used or discarded by an authorised waste contractor.	☐
Removal of any oily water treatment system, following the demolition of the workshop and associated facilities.	☐
Removal of sewage treatments systems and associated sewerage network.	☐
Storage tanks of hazardous materials will be removed and, depending on their condition, either sold or disposed at an authorised facility.	☐
Specific consideration should be given to managing asbestos materials, radiation devices, hydrocarbon as well as other contaminated substances/materials/soils in accordance with relevant guidelines that can be found on the Environment Protection Authority's website.	☐

CONTROLS	CHECK
Underground infrastructure	
Removal of remote equipment (e.g. powerlines to remote shafts, ventilation infrastructure, PED lines, services boreholes, pipeline).	☐
Decommission and rehabilitate any remote access tracks that are not to be used as part of the final land use.	☐
Following the completion of measurable subsidence and in accordance with any approvals required under the *Surveying and Spatial Information Act 2002*, remove subsidence survey pegs to minimise hazards to the public.	☐
Seal mine openings (e.g. shafts, adits, drifts) and boreholes to address risks associated with public safety and access, exposure of hazardous mine gases and interference with groundwater aquifers. The seals should be designed, supervised and verified by a suitably qualified expert in consideration of relevant guidelines.	☐
Prepare as-constructed drawings to verify that mine seals have been constructed in accordance with design.	☐
Undertake a hydrological assessment and develop a groundwater management strategy where there is the potential for future post-mining discharges from the underground workings. This may require the development of water treatment strategies and subsequent approvals from relevant agencies.	☐
The timing of construction of the seals will need to consider the outcomes of groundwater monitoring and modelling and whether any approvals are required for any future post-mining discharges.	☐
At the completion of exploration activity	
Remove and lawfully dispose of all grid pegs, tags, sample bags, flagging tape, drill chips and other waste.	☐
Remove all drill cores.	☐
Survey, seal and rehabilitate all boreholes and petroleum wells.	☐
Remove and lawfully dispose of all plant and equipment (including surface pipelines) and imported fill material.	☐

CONTROLS	CHECK
Removal of concrete and footings.	☐
Undertake a visual contamination assessment where potential pollution generation activities have occurred (e.g. hazardous substance storage, saline water storage) to identify potential signs of contamination. Where contamination is present, develop and implement a contamination remediation program to ensure that the rehabilitation objectives and rehabilitation completion criteria for the intended post-exploration land use are met.	☐

PHASE: LANDFORM ESTABLISHMENT

CONTROLS	CHECK
Characterisation of waste materials (geochemical and geotechnical)	
Characterisation analysis is conducted and geochemical and physical properties of waste materials are understood. Consideration should be given to the following as relevant: ■ adopt an appropriate geological model (typically block model for metalliferous mines) to determine source of problematic material ■ collect rehabilitation material erosion data for calibration of landform stability models ■ establish an ongoing sampling program to identify potential changes in material properties ■ develop a strategy / procedure/ management plan for selective handling and management of problematic materials (e.g. potential acid forming material, spontaneous combustion) ■ ensure material handling field practices are in accordance with relevant plan/procedure.	☐
Emplacement areas	
For emplacement areas that have a drainage system (seepage collection/control) specified as a requirement (for example to collect seepage from an AMD waste rock emplacement) the following issues should be considered:	☐

CONTROLS	CHECK
■ emplacement drainage requirements and performance criteria are identified ■ collection and treatment system (if applicable) for the drainage is specified ■ a monitoring program is in place to determine drainage system effectiveness, including a trigger action response plan (TARP) to rapidly address matters identified as part of the monitoring ■ a drainage system is installed in accordance with requirements specified.	
For emplacement areas that have a liner (either geomembrane or modified soil/ clay), the liner performance and design criteria must be understood (type, lifespan, thickness, area of placement) to minimise environmental impacts. A monitoring program should be in place to determine if the liner has been compromised and a trigger action response plan (TARP) developed to address any issues.	☐
The geotechnical stability of the emplacement areas during construction must be understood and a strategy implemented to ensure: ■ location of waste/reject emplacement areas are clearly defined ■ emplacement dimensions (e.g. height – RL) are consistent with those approved by the development consent ■ consideration is given to geotechnical stability during placement, including methods to promote compaction/consolidation during construction ■ consideration is given to material selection and treatment (e.g. handling low strength or dispersive/sodic soils) ■ material handling field practices are in accordance with defined management practices – location, dump process, lift heights, compaction/consolidation treatment.	☐
A strategy should be developed to manage any geochemically unstable materials (e.g. acid mine drainage or spontaneous combustion) with consideration of the following: ■ emplacement construction design should utilise modelling to optimise design considering the need to limit gas transport (air ingress) and resulting acidity production (if relevant)	☐

CONTROLS	CHECK
- placement methods should reduce the likelihood of depositional layering or high permeability zone 'rubble zone' (e.g. base-up via 'paddock dump' rather than 'end tipping') - treatment during placement to reduce gas transport/oxygen supply (engineered layers – vertical gas management, encapsulation, oxygen consuming materials, sulphide passivation) - monitoring to determine emplacement strategy effectiveness, including a trigger action response plan (TARP) - ensuring material handling field practices are in accordance with defined management practices – placement method, lift height, treatment.	
An emplacement capping strategy should be developed and implemented to ensure the performance requirements of the cap are understood. Consideration should be given to the following: - the emplacement capping function is identified (e.g. 'rainfall shedding', 'store and release') and the design takes into account the final land use - including vegetation requirements or exclusion - the capping design is defined (e.g. materials and thickness) based on site specific geochemical and physical constraints in order to sustain the final land use outcomes - engineering requirements are understood (e.g. requirements for capillary break) - performance requirements of the cap to control gas (oxygen flux) and seepage are identified and measured - use of water balance modelling to determine likely seepage post closure - ensuring capping construction is consistent with design (material type, thickness, capillary break).	☐
The emplacement capping strategy should ensure that the capping material type, source and quantity has been identified and assessed as suitable for the final land use (e.g. does not become a source of contamination). Methods to quarantine adequate quantities of capping material should be specified and implemented.	☐

CONTROLS	CHECK
Reject emplacement areas and tailings dams (general controls)	
Reject emplacement areas and tailings dams are to be rehabilitated to a condition/ capability that supports the final land use and are safe, stable and non-polluting. The design and construction of the final landform for these facilities should consider the following issues: - adequate definition of the final land use for the reject emplacement areas and tailings dams (including vegetation requirements or exclusion) - long-term geotechnical stability and structural integrity, including ongoing settlement - long-term geochemical stability of emplaced material and its potential to create long-term liability issues (e.g. acid/saline drainage, negative impacts on revegetation works through plant root interactions with adverse materials) - capping and cover types and the likely source of materials for construction, which should be designed and constructed to encapsulate reject materials - erosional stability - surface water drainage - groundwater seepage - the need to licence water within final voids, farm dams in perpetuity (e.g. under the *Water Management Act 2000*) - measures to exclude future incompatible land uses. Guidance on best practice rehabilitation of emplacement areas and tailings dams includes but is not limited to: - *Global Industry Standard on Tailings Management,* International Council on Mining and Metals (ICMM), August 2020 - ANCOLD (2019) *Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure* - Australian Government, Department of Industry, Innovation and Science (2016) *Leading Practice Sustainable Development Program for the Mining Industry – Tailings Management*.	☐

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CONTROLS	CHECK
Tailings dams	
A final landform design for long-term stability of the tailings facility post closure should be nominated, which includes consideration of the following: ■ how the design has been determined ■ ANCOLDs closure requirements (e.g. 1,000-year notional post-closure life for all consequence categories) ■ surface water management in the final landform, including consideration of spillway in final landform requirement ■ long-term settlement of tailings.	☐
Testing should be undertaken to verify tailings have sufficient bearing capacity to allow capping placement. This should involve in-situ geotechnical testing (e.g. cone penetration testing, shear vane tests) to determine strength profile at depth.	☐
Performance requirements of capping of the tailings facility should be understood, including consideration of the following: ■ principle function of capping has been identified (e.g. 'rainfall shedding', 'store and release') ■ performance requirements have been identified for capping of tailings with low strength (bearing capacity) if identified as a consideration. This should include consideration of the following: □ use of geotextiles and other engineering materials nominated (if required) and the installation process documented □ thickness of capping specified to reach strength performance nominated. ■ performance requirements for capping to reduce permeability and seepage into tailings – if identified as a consideration. This should include consideration of the following: □ post closure water balance when determining likely seepage □ consideration of oxygen flux in capping for geochemically unstable tailings.	☐

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CONTROLS	CHECK
▪ performance requirements for capping taking into account final land use. This should include consideration of the following: □ capping thickness to support final land use (in particular vegetation) □ consideration of capping surcharge to offset expected settlement of tailings □ phytotoxicity associated with tailings. Consideration of vegetation mortality on capping performance (e.g. tree death and fall, material removed with root ball exposing tailings) □ the nature of materials proposed for use in capping and the potential to impact upon the ability to sustain the approved final land use (e.g. potential acid forming material or other contaminants of concern that may present phytotoxicity risks or be a source for contamination) □ capping performance to address any potential combustibility issues (typically associated with coal).	
Tailings capping material type, source and quantity is known to ensure suitable capping material has been identified. Methods to quarantine adequate quantities of capping material should be specified and implemented.	☐
Final landform (including capping) is to be constructed in accordance with design specifications. This should include a construction quality assurance program and survey controls to verify final landform, capping and water management structure and include: ▪ testing of the capping material should be undertaken to verify it meets performance criteria (e.g. geotechnical testing supervision, contamination testing) ▪ a groundwater monitoring program should be implemented to verify water balance modelling as well as performance requirements for permeability have been achieved ▪ settlement monitoring following installation should be implemented.	☐

CONTROLS	CHECK
Landform design/shape	
The final landform design should build on the minimum requirements of the development consent and, wherever practicable, take into account the following: ■ a landform that is commensurate with surrounding natural landform and, where appropriate, incorporates geomorphic design principles ■ appropriate use of landform design stability principles of reduced slope length and surface water management structures ■ where relevant (large complex landscapes and/or high-risk emplacements) the utilisation of erosion modelling (including Landform Evolution Modelling - LEM) to demonstrate the long-term stability of the landform ■ use of erosion models to optimise the landform design and to show where high-risk erosion areas are likely to occur (and to nominate how risk controls will be incorporated into the final landform design to appropriately treat these risks) ■ use of erosion modelling and/or hydrological projections to demonstrate the long-term competency of the capping of problematic material emplacement (e.g. acid mine drainage waste rock emplacements and tailings) ■ use of appropriate parameter model inputs – preferably field parameter data collected from the materials to be used in rehabilitation ■ potential for settlement and how this will be accounted for in the design (especially differential settlement). ■ long-term stability of voids/pit walls and steep slopes, including determination of engineering treatments required for walls/ steep slopes.	☐
Develop specific strategies (e.g. selective handling and placement) for mine materials management to address potential geochemical constraints for rehabilitation (e.g. acid rock drainage, spontaneous combustion, saline and sodic materials) based on sampling and testing of overburden/interburden materials used to construct the final landform.	☐
Develop specific strategies (e.g. selective handling and placement) to address any potential geotechnical issues associated with the final landform, including seepage	☐

<table>
<tr><th>CONTROLS</th><th>CHECK</th></tr>
<tr><td>pathways into groundwater and surface waters, for example saline seepage. Based on risk, these strategies may need to be developed in consideration of geotechnical studies.</td><td></td></tr>
<tr><td colspan="2">Final voids</td></tr>
<tr><td>Where a final void is approved to remain as part of the final landform (e.g. by the development consent), the design and construction should be developed in accordance with the minimum requirements of the development consent, associated environmental assessments/environmental impact statements and in consideration of the following:

a constraints and opportunities analysis of final void options (including backfilling or partial backfilling) to identify and implement the most feasible and environmentally sustainable option (where this option is not inconsistent with the development consent) to minimise the sterilisation of land post-mining.
a geotechnical assessment should be undertaken to determine the likely long-term stability risks associated with the proposed final landform, including any remaining highwalls or low walls (if any). Based on the outcome of this assessment, suitable measures (e.g. bunding and highwall fences) are to be implemented to minimise potential risks to public safety as well as support the final land use(s).
any exposed adverse materials (e.g. coal seams) are effectively covered to prevent pollution or risks to public safety.
updated surface and groundwater assessments should be undertaken in relation to the likely final water level in the void and post mining water take (groundwater inflows into the void and surface water capture). This should include an assessment of the potential for fill and spill, along with measures required to be implemented to minimise associated impacts to the environment and downstream water users.
</td><td>☐</td></tr>
<tr><td>The final void must address any relevant approval requirements of regulatory authorities and demonstrate the satisfaction of licensing requirements under the relevant legislation (e.g. Water Management Act 2000).

This should include whether sufficient licence shares are available in the water source(s) to account for the water inflow into the final void(s).</td><td>☐</td></tr>
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CONTROLS	CHECK
The final stabilisation and revegetation strategy associated with the final void should be designed and implemented based on the outcomes of the above assessments.	☐
Water management infrastructure	
Depending on the final land use, issues that should be addressed as part of the post-mining water management system may include: ▪ removal of excess sediment (e.g. saline sediment) from the surface dams for future use by the subsequent land owner or alternatively filling or removing the dams if they are no longer required ▪ reshaping dams (where required) in accordance with their intended use. This may involve resizing, facilitating stock access (if required) or reshaping to enhance habitat functionality for specific fauna species ▪ where dams are to be retained, design drainage structures to capture runoff from sufficient catchment area so that the dam can be used for its intended use ▪ the installation of appropriate sediment and erosion control measures ▪ water within final voids, farm dams is appropriately licensed in perpetuity (e.g. under the *Water Management Act 2000*).	☐
Sediment material extracted from surface dams should be analysed to determine the potential for contamination and, if present, must be appropriately managed as identified above (refer to *Management of carbonaceous/contaminated material* above).	☐
Construction of creek/river diversion works	
Where practicable, similar characteristics and natural features as evident in upstream and downstream sections should be incorporated into the design of a creek or river that is to be constructed or re-established (e.g. pool and riffle sequences, low flow channels, high flow channels, log jams). This should be based on detailed geomorphological and hydraulic modelling to determine whether these key features can be adapted to the materials as well as water flows associated with creek restoration/re-establishment/ diversions works.	☐
Where engineering structures are required (e.g. drop structures, rock armoured banks, rock groins), they are to be designed and constructed in consideration of hydraulic assessments to ensure the long-term integrity and sustainability of the creek. These	☐

CONTROLS	CHECK
structures should also be designed to ensure that fish passage has not been compromised as part of the creek/river diversion works, and that fish passage is incorporated into the final landform (*Policy and guidelines for fish habitat conservation and management*, NSW Department of Primary Industries (Update 2013)).	
The final stabilisation and revegetation strategy associated with creek remediation/ rehabilitation works should be designed and implemented based on the outcomes of the above assessments as well as ecological assessments. Refer to *Policy and guidelines for fish habitat conservation and management*, NSW Department of Primary Industries, (Update 2013).	☐
Managing subsidence-affected areas	
A subsidence monitoring program will continue until it has been demonstrated that all measurable subsidence has ceased.	☐
To minimise the risk to public safety, the subsidence pegs may need to be either removed or cut off below ground level. Before removing the subsidence pegs, the lease holder will need to ensure that all subsidence monitoring works are completed to the satisfaction of relevant regulators and that approval under the *Surveying Act 2002* is granted for the removal of survey marks.	☐
Rehabilitation of subsidence-affected areas should be undertaken to implement the requirements and performance measures of the development consent and extraction/subsidence management plan requirements, including addressing the following issues (where applicable): ■ subsidence cracking ■ remediation of creeks to address potential issues of erosion, scouring, accelerated head-cut, sediment build-up and out-of-channel ponding which affect long-term viability of creek ■ loss of water flow in creeks or a loss of water in swamps/dams due to cracking – this may involve the injection of inert grout or fill material ■ vegetation dieback.	☐

CONTROLS	CHECK
As-constructed drawings	
Prepare 'as-constructed' drawings to verify that drainage and landform have been completed in accordance with design before 'growth medium development' phase.	☐

PHASE: GROWTH MEDIUM DEVELOPMENT

CONTROLS	CHECK
Before commencing rehabilitation (substrate preparation)	
Develop rehabilitation methodologies in consideration of site-specific constraints (e.g. topsoil and subsoil availability and quality, presence of contamination) required to achieve the approved, or if not yet approved, proposed rehabilitation objectives and rehabilitation completion criteria.	☐
Where revegetation is required, analyse representative samples to characterise the nature of the substrate (e.g. sodicity, acid-generating potential, particle size distribution, nutrient levels for planting) and determine any potential limitations to rehabilitation and sustainable plant growth. Immediately prior to application, collect and analyse samples of topsoil stockpiles to characterise material to determine any potential impacts to vegetation (e.g. sodicity, limited microbial activity, nutrients, organic matter). Use the results to determine specific amelioration techniques (e.g. addition of gypsum, lime, organic matter, fertiliser) that will be used to overcome potential limitations to landform stability, vegetation establishment and growth. Apply ameliorants (e.g. gypsum or lime) and organic material (e.g. mulch) based on the outcomes of the substrate characterisation analysis (as appropriate to address limitations in the revegetation substrate). Before revegetation activities, analyse the prepared substrate to determine whether amelioration measures have been successful.	☐
Implement suitable erosion control measures (e.g. catch drains, sediments dams, silt fences, mulches, cover crops) to minimise soil loss from areas undergoing rehabilitation.	☐

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CONTROLS	CHECK
During rehabilitation (general timing of rehabilitation activities)	
Preferentially schedule and undertake revegetation activities in or just before suitable seasonal conditions.	☐
Where permissible, should revegetation be delayed due to unsuitable seasonal conditions, undertake temporary stabilisation measures (e.g. sterile cover crops, erosion and sediment controls) to avoid erosion and further land degradation.	☐
Return topsoil and subsoil layers in sequential order, assuming suitability of material for the final land use.	☐
During rehabilitation (general methodologies)	
Use appropriate earthmoving equipment to avoid compacting the rehabilitation substrate.	☐
Restore soil structure by scarifying or ripping (if soil compaction or erosion has occurred) in parallel with the contour. Apply soil ameliorants (where required) such as fertiliser to the substrate before the start of revegetation activities.	☐
Implement erosion and sediment controls in accordance with Managing Urban Stormwater: Soils and Construction Volume 2E, Mines and Quarries (DECC 2008b).	☐
Where direct seeding is planned, rip final surfaces parallel with the contour before the application of seed to provide for an adequate seed bed.	☐
Where access tracks are to be removed (e.g. not to be left as part of the final land use as defined by rehabilitation objectives and rehabilitation completion criteria), remove imported fill material (where used) and reprofile the disturbance area to the pre-existing landform.	☐
Topsoil shortages are to be supplemented with suitable alternatives such as biosolids, organic growth medium or another substitute, if required. However, the risk of introducing hazards to the establishment of the preferred plant community type (e.g. non-native species, elevated nutrient levels through the application of soil ameliorants) should be evaluated.	☐
Identify key habitat requirements for key fauna species.	☐

CONTROLS	CHECK
Use structures such as tree hollows, logs and other woody debris, rock material to augment the target habitat value of native rehabilitation (if appropriate, in consideration of bushfire risks).	☐

PHASE: ECOSYSTEM AND LAND USE ESTABLISHMENT

CONTROLS	CHECK
During rehabilitation (revegetation – native ecosystem)	
Native revegetation activities in rehabilitation areas should preferentially use local provenance seed for direct seeding or tube stock propagation.	☐
Use of seed orchards or onsite nurseries should be considered to ensure an appropriate stock is maintained for rehabilitation works.	☐
Consider techniques such as brush-matting where disturbed areas are situated directly adjacent to mature native ecosystems/area of clearing associated with mining that provide a good source of local seed, to stabilise the site while natural recruitment occurs.	☐
Where adverse seasonal conditions (e.g. drought) or other factors affect the availability of local provenance seed and supplementary non-local provenance seed is required, seed stock should be purchased from reputable suppliers with quality control processes including seed viability testing. (It is good practice to record the name of the supplier and batch of seed being applied. Recording such details may assist in prevention/management of misidentified seeds).	☐
If revegetation is delayed due to unsuitable seasonal conditions, undertake temporary stabilisation measures (e.g. sterile cover crops, erosion and sediment controls) to avoid erosion and further land degradation.	☐
Undertake treatment of seed in terms to address issues such as seed dormancy and insect predation. Timing of treatment is to be aligned to timing of application with a focus on reducing the storage time of treated seed.	☐
Confirm the availability of seed and plant material and amend the seed mix or schedule of revegetation based on material supply.	☐
Spread seed as soon as possible following ripping/scarifying. If seeding is delayed following ripping/scarifying, undertake an assessment to determine whether further re-	☐

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CONTROLS	CHECK
ripping/tilling is required before applying seed to ensure sufficient surface roughness (e.g. to break up any crusting that may have resulted from rainfall events).	
Develop a bushfire management plan (having regard to relevant ecological considerations and species fire tolerance) in consultation with NSW Rural Fire Service. Bushfire considerations should be factored into rehabilitation design (e.g. access tracks).	☐
Revegetation mix to capture species of all strata aligned to the plant community type. (If foundation species are being used, ensure that they do not compromise the attainment of the targeted plant community types).	☐
Use appropriate earthmoving equipment to avoid compacting the rehabilitation substrate.	☐
Weed/pathogen control on equipment for sensitive sites to prevent the spread of pathogens.	☐
Rehabilitation can include direct seeding and/or tube stock planting. Seed germination and seeding/seedling rate records are to be retained so that future rates can be assessed to ensure that target densities are achieved.	☐
Tree guards should be considered for tube stock planting. This may be species-specific.	☐
Where appropriate, legumes should be seeded/planted to improve soil fertility (e.g. nitrogen fixing).	☐
Where direct seeding is to be used, consider inclusion of a sterile and non-invasive cover crop to establish a temporary ground cover to minimise the potential for erosion, maintain soil moisture and protect native germinants.	☐
Maximise the number of target species (groundcover, mid-story and canopy) within the first round of revegetation activities to facilitate species richness. If the target plant community type requires a staged seeding approach to achieve the species mix, underrepresented species may be prioritised in subsequent revegetation rounds.	☐
Augment habitat to encourage initial colonisation of target fauna species is to be considered within rehabilitation works. Habitat may include, but not limited to: ■ specifically designed nest boxes ■ stag trees and salvaged hollows	☐

CONTROLS	CHECK
■ den sites (e.g. logs, rocks) ■ habitat ponds.	
Stock control fencing should be erected where required to protect ecological rehabilitation areas.	☐
During rehabilitation (revegetation – agricultural land use)	
Implement revegetation techniques for establishing grazing and cropping areas consistent with local agricultural practices (e.g. sowing with grasses and legumes appropriate to the district and recognised as suitable for grazing).	☐
Rehabilitation establishment inspections	
Conduct an initial establishment inspection no later than three months following the completion of each rehabilitation campaign to determine whether performance issues have occurred or are emerging, which have the potential to delay revegetation establishment.	☐
Conduct regular site inspections (e.g. at least quarterly) to assess soil conditions and erosion, drainage and sediment control structures, runoff water quality, revegetation germination rates, plant health and weed infestation, until vegetation has become well established and the site can be considered stable.	☐
Where possible, use drones or LiDAR to conduct additional inspections and analysis of developing rehabilitation.	☐
Record outcomes of inspections and implement any required intervention/adaptive management actions as soon as practicable after a monitoring program indicates that rehabilitation performance is unsatisfactory as part of the rehabilitation management and maintenance program.	☐
Rehabilitation monitoring program	
Implement long-term rehabilitation monitoring program and evaluate trajectory of rehabilitation against achieving rehabilitation objectives and rehabilitation completion criteria.	☐
Broadly, the scope of the ecosystem rehabilitation monitoring program will be required to include indicators that measure site condition, vegetation composition and vegetation	☐

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CONTROLS	CHECK
structure and ecosystem function. The range of indices should directly relate to the rehabilitation objectives and rehabilitation completion criteria identified for the specific ecological outcome. While the program should be designed to be comparable between monitoring periods, the program will also need to be flexible to enable incorporating evolving best practice in monitoring techniques.	
For areas rehabilitated to an agricultural land use, include surveys to assess the quality and health of soils and pasture/crop species along with stock carrying capacity (where required) and crop yields in rehabilitation monitoring programs.	☐
Include the monitoring and control of changes to surface and groundwater quality over time.	☐
The scope of the monitoring program should usually include photographic monitoring from fixed points.	☐
Rehabilitation management and maintenance program	
Develop and implement a rehabilitation management and maintenance program based on the needs identified in the rehabilitation monitoring program. Examples of what this program may include are as follows: ▪ weed and feral animal control ▪ erosion and drainage control works ▪ monitoring and control of changes to surface and groundwater quality over time ▪ reseeding/planting of failed rehabilitation areas (e.g. through lack of germination, high plant mortality rate) ▪ repairing fence lines, access tracks and other general related land management activities ▪ regular site inspections to assess rehabilitation performance. The objective of this program is to facilitate rehabilitation progressing towards achieving the rehabilitation objectives and rehabilitation completion criteria in accordance with an approved progressive rehabilitation schedule (forward program).	☐

PHASE: ECOSYSTEM AND LAND USE DEVELOPMENT (MANAGEMENT OF REHABILITATED LANDS)

CONTROLS	CHECK
Rehabilitation management and maintenance program	
Continue rehabilitation management and maintenance program (refer to Ecosystem Establishment Phase) until rehabilitation can be demonstrated to have achieved the approved rehabilitation objectives, rehabilitation completion criteria and (for large mines) the final landform and rehabilitation plan.	☐
Continue rehabilitation monitoring programs (refer to Ecosystem Establishment Phase) until rehabilitation can be demonstrated to have achieved the approved rehabilitation objectives, rehabilitation completion criteria and (for large mines) the final landform and rehabilitation plan.	☐
Actively manage rehabilitated lands to achieve the approved final land use(s). For example, where the intended final land use is for agricultural purposes: ▪ install infrastructure (e.g. fences, stock watering equipment, irrigation network) ▪ implement grazing trials (where practical) to demonstrate stock carrying capacity of land ▪ commence cropping to demonstrate capacity of rehabilitated lands in terms of yields.	☐

Glossary

TERM	DEFINITION
Active	In the context of rehabilitation, land associated with mining domains is considered 'active' for the period following disturbance until the commencement of rehabilitation.
Active mining phase of rehabilitation	In the context of rehabilitation, the active mining phase of rehabilitation constitutes the rehabilitation activities undertaken during mining operations such as land clearing, salvaging and managing soil resources, salvaging habitat resources, and native seed collection. This phase also includes management actions taken during operations to manage risks to rehabilitation and enhance rehabilitation outcomes such as selective handling of waste rock and management of tailings emplacements.
Annual rehabilitation report	As outlined in the Mining Regulation 2016.
Biological resources	In biology and ecology, a substance that is required by an organism for normal growth, maintenance or reproduction. In the context of rehabilitation, biological resources are those materials salvaged from the land, or sourced externally, that are used to enhance the biological and ecological functioning of a rehabilitated site. This includes topsoil and subsoils, woody or vegetative materials, rocks and nesting structures.
Decommissioning	The process of removing mining infrastructure and removing contaminants and hazardous materials.
Decommissioning phase of rehabilitation	Activities associated with the removal of mining infrastructure and removal and/or remediation of contaminants and hazardous materials. In the context of the rehabilitation management plan (for large mines only) this phase of rehabilitation may also include studies and assessments associated with decommissioning and demolition of infrastructure or works carried out to make safe or 'fit for purpose' built infrastructure to be retained for future use(s) following lease relinquishment.
Department	Department of Regional NSW.
Disturbance	See Surface Disturbance.

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TERM	DEFINITION
Disturbance area	An area that has been disturbed and that requires rehabilitation. This may include areas such as exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped), and areas requiring rehabilitation that are temporarily stabilised (e.g. managed to minimise dust generation and/or erosion).
Domain	An area (or areas) of the land that has been disturbed by mining and has a specific operational use (mining domain) or specific final land use (final land use domain). Land within a domain typically has similar geochemical and/or geophysical characteristics and therefore requires specific rehabilitation activities to achieve the associated final land use.
Ecosystem and land use development	This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved or, if not yet approved, the proposed – ▪ rehabilitation objectives, and ▪ rehabilitation completion criteria, and ▪ for large mines – final landform and rehabilitation plan. For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile. This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.
Ecosystem and land use establishment	This phase of rehabilitation consists of the processes to establish the approved final land use following construction of the final landform (as per the approved final landform and rehabilitation plan for large mines). For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control. This phase of

TERM	DEFINITION
	rehabilitation may also include habitat augmentation such as installation of nest boxes.
Exploration	Has the same meaning as that term under the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.
Final landform and rehabilitation plan	As defined in the Mining Regulation 2016.
Final land use	As defined in the Mining Regulation 2016.
Final land use domain	A land management unit with a final land use. A mining lease may have one final land use (e.g. returning the entire mining lease to native vegetation) or several final land use units (e.g. a mix of pasture areas and native ecosystems). Each final land use unit represents a separate final land use domain.
Forward program	As defined in the Mining Regulation 2016.
Growth medium development	This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short lived pioneer species) to ensure achievement of the approved or, if not yet approved, the proposed – ■ rehabilitation objectives, and ■ rehabilitation completion criteria, and ■ for large mines – final landform and rehabilitation plan. This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.
Habitat	Has the same meaning as that term under the *Biodiversity Conservation Act 2016* and the *Fisheries Management Act 1994* (as relevant).

TERM	DEFINITION
Indicator	An attribute of the biophysical environment (e.g. pH, topsoil depth, biomass) that can be used to approximate the progression of a biophysical process. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion (e.g. defined end point). It may be aligned to an established protocol and used to evaluate changes in a system.
Land	As defined in the *Mining Act 1992.*
Landform establishment	This phase of rehabilitation consists of the processes and activities required to construct the approved final landform (as per the development consent and, for large mines, the approved final landform and rehabilitation plan). In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (that is, rock raking or ameliorating sodic materials).
Large mine	As defined in the Mining Regulation 2016.
Lease holder	The holder of a mining lease.
Life of mine	The timeframe of how long a mine is approved to mine, from commencement to closure.
Mining area	As defined in the *Mining Act 1992*.
Mining domain	A land management unit with a discrete operational function (for example, overburden emplacement), and therefore similar geophysical characteristics, that will require specific rehabilitation treatments to achieve the final land use(s).
Mining lease	As defined in the *Mining Act 1992*.
Overburden	Material overlying coal or a mineral deposit.

TERM	DEFINITION
Phases of rehabilitation	The stages and sequences of actions required to rehabilitate disturbed land to achieve the final land use. The phases of rehabilitation are: ■ active mining ■ decommissioning ■ landform establishment ■ growth medium development ■ ecosystem and land use establishment ■ ecosystem and land use development ■ rehabilitation completion (sign-off).
Progressive rehabilitation	The progress of rehabilitation towards achieving the approved or, if not yet approved, the proposed – ■ rehabilitation objectives, and ■ rehabilitation completion criteria, and ■ for large mines – final landform and rehabilitation plan This may be described in terms of domains, phases, performance indicators and rehabilitation completion criteria.
Rehabilitation	As defined in the *Mining Act 1992*.
Rehabilitation completion	The final phase of rehabilitation when a rehabilitation area has achieved the final land use for the mining area: ■ as stated in the approved rehabilitation objectives and the approved rehabilitation completion criteria, and ■ for large mines – as spatially depicted in the approved final landform and rehabilitation plan. Rehabilitation areas may be classified as complete when the NSW Resources Regulator has determined in writing that rehabilitation has achieved the final land use following submission of the relevant application by the lease holder.

TERM	DEFINITION
Rehabilitation completion criteria	Rehabilitation completion criteria set out the criteria the achievement of which will demonstrate the achievement of the rehabilitation objectives.
Rehabilitation management plan	As defined in the Mining Regulation 2016.
Rehabilitation objectives	Means the rehabilitation objectives required to achieve the final land use for the mining area.
Rehabilitation outcomes	Means the final land use for the mining area as stated in the approved rehabilitation objectives, the approved rehabilitation completion criteria and (for large mines only) the approved final landform and rehabilitation plan.
Rehabilitation outcome documents	As defined in the Mining Regulation 2016.
Rehabilitation risk assessment	As defined in the Mining Regulation 2016.
Rehabilitation schedule	The defined timeframes for progressive rehabilitation set out in the forward program.
Risk	The effect of uncertainty on objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2018).
Secretary	The Secretary of the Department.
Small mine	As defined in the Mining Regulation 2016.
State significant development (SSD)	Has the same meaning as that term under the *Environmental Planning and Assessment Act 1979*. Note: Schedules 1 and 2 of *State Environmental Planning Policy (State and Regional Development) 2011* provide a full list of SSD types and identified sites. Large mining and extraction operations (including all coal mines) are identified as SSD.
Surface disturbance	Includes activities that disturb the surface of the mining area, including mining operations, ancillary mining activities and exploration.

TERM	DEFINITION
Tailings	A combination of the fine-grained (typically silt-sized, in the range from 0.001 to 0.6 mm) solid materials remaining after the recoverable metals and minerals have been extracted from mined ore, together with the water used in the recovery process[2].
Temporary stabilisation	The short-term stabilisation and vegetation of an area that is intended to be used in the future as an active mine area. It is to be treated as an active mine site for reporting purposes.
Waste	Has the same meaning as that term under the *Protection of the Environment Operations Act 1997*.

[2] *Tailings Management: Leading Practice Sustainable Development Program for the Mining Industry*, Commonwealth of Australia (2016).

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Department guidance

- Form and way: Rehabilitation objectives and rehabilitation completion criteria for small mines
- Form and way: Rehabilitation objectives, rehabilitation completion criteria and final landform and rehabilitation plan for large mines
- Form and way: Rehabilitation management plan for large mines
- Form and way: Annual rehabilitation report and forward program for small mines
- Form and way: Annual rehabilitation report and forward program for large mines
- Guideline: Rehabilitation risk assessment
- Guideline: Rehabilitation records
- Guideline: Rehabilitation controls
- Guideline: Mine rehabilitation portal
- Guideline: Rehabilitation objectives and rehabilitation completion criteria
- Guideline: Achieving rehabilitation completion (sign-off)

The above resources are located on our website.