

# Targeted assessment program

## Revegetation

### Guidance note

April 2024

**Published by the Department of Regional NSW**

Title: Targeted assessment program - Revegetation

Subtitle: Guidance note

First published: April 2024

Department reference number: RDOC24/44701

Amendment schedule		
Date	Version	Amendment
April 2024	1.0	First published

© State of New South Wales through Regional NSW 2024. You may copy, distribute, display, download and otherwise freely deal with this publication for any purpose, provided that you attribute Regional NSW as the owner. However, you must obtain permission if you wish to charge others for access to the publication (other than at cost); include the publication in advertising or a product for sale; modify the publication; or republish the publication on a website. You may freely link to the publication on a departmental website.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (April 2024) and may not be accurate, current or complete. The State of New South Wales (including Regional NSW), the author and the publisher take no responsibility, and will accept no liability, for the accuracy, currency, reliability or correctness of any information included in the document (including material provided by third parties). Readers should make their own inquiries and rely on their own advice when making decisions related to material contained in this publication.

# Table of Contents

Revegetation .....	1
Guidance note.....	1
Purpose .....	4
Assessment objectives .....	4
Documents and records to be reviewed .....	6
Details of the assessment.....	6
Assessment stages, reporting and feedback to industry.....	12
Stage 1: Pre-arrival arrangements, review and information exchange.....	12
Stage 2: On-site assessment .....	12
Stage 3: Findings, recommendations, follow-up.....	12
What you should do to prepare for a TAP.....	13

## Purpose

**Important:** Information provided here is intended as guidance only and is not intended to be relied upon as a comprehensive list of all controls that may apply to risks associated with mine site rehabilitation. Mine operators must undertake risk assessments and implement controls relevant to the risk profile of their mining operation.

The NSW Resources Regulator manages the risks to rehabilitation as part of a risk-based and outcomes-focused approach to compliance and enforcement. The Regulator's risk-based intervention includes the ongoing identification and verification of risk profiling, incorporating risk control measure verification and targeted assessments focussing on critical risks and the critical controls required to mitigate these risks. Further details are available on our website at [www.resourcesregulator.nsw.gov.au/environment/compliance](http://www.resourcesregulator.nsw.gov.au/environment/compliance)

An important part of the Regulator's compliance and enforcement strategy involves implementing a scheduled and targeted assessment program for mines. The Regulator has developed targeted assessment programs (TAPs) around the identified critical controls.

The primary aim of a TAP is to assist industry with continual improvement in rehabilitation outcomes. The TAPs comprise inspections across the mine sites in NSW to determine whether measures have been identified and implemented to facilitate sustainable rehabilitation outcomes.

The TAPs proactively assess how effectively a mine controls risks and implements the preventative and mitigating controls that are critical in planning for and implementing mine site rehabilitation. Each TAP focuses on the implementation of a specific critical control.

The revegetation TAP comprises a targeted assessment of how a mine site is preparing for and implementing revegetation activities to achieve sustainable rehabilitation outcomes. The TAP involves both documentary and on-site assessment, to draw conclusions and make recommendations for continual improvement.

This guidance note may help mine operators understand the range of issues that are assessed by the Regulator as part of the revegetation TAP.

## Assessment objectives

The standard conditions of mining leases set out in Schedule 8A of the Mining Regulation 2016 require lease holders to rehabilitate 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 key requirements set out in the standard conditions can be summarised as follows:

- To rehabilitate 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 (clause 5).
- To ensure rehabilitation of the mining area achieves the final land use. In other words, rehabilitation achieves the final landform and land use as set out in the rehabilitation objectives

statement, the rehabilitation completion criteria statement and (for large mines) the final landform and rehabilitation plan (clause 6).

- To conduct a rehabilitation risk assessment and implement the identified control measures to eliminate, minimise or mitigate the risks to achieving the final land use (clause 7). This includes undertaking a risk assessment whenever a reasonably foreseeable hazard is identified that would present a risk to achieving the final land use (clause 7(3)(c)).
- To prepare a forward program which includes the requirement that rehabilitation of land and water disturbed by mining activities under the mining lease must occur as soon as reasonably practicable after the disturbance occurs (clause 13(1)(c)).
- To ensure the forward program includes a schedule of mining activities and the spatial progression of rehabilitation through its various phases for the next 3 years (clauses 13(1)(a) and (b)) to prepare a rehabilitation management plan and to implement the matters set out in the rehabilitation management plan, including the timeframes for implementation of these matters (e.g. rehabilitation) as specified in the forward program (clause 10(4)).
- To prepare an annual rehabilitation report that describes the rehabilitation undertaken over the annual reporting period and demonstrates progress made through the phases of rehabilitation provided for in the forward program (clauses 13(2)(a) and (b)).

The TAP comprises a targeted assessment of revegetation to ensure measures have been identified and implemented to facilitate sustainable rehabilitation outcomes. The objectives of the TAP include:

- ensuring the range of risks associated with revegetation are identified and appropriate controls are in place to facilitate sustainable rehabilitation outcomes
- ensuring that growth substrates are developed so the target revegetation outcomes can be sustained in the long term
- ensuring that seed collection, handling, storage and treatment strategies including procurement of seedlings are effectively implemented to provide that the rehabilitation outcome is commensurate with the required target biodiversity values and/or agricultural capability
- ensuring revegetation methodologies are fit-for-purpose and effective in establishing the required rehabilitation outcome
- ensuring control measures are validated via monitoring and inspections are recorded to enable risks to be appropriately addressed
- ensuring effective short and long term rehabilitation monitoring programs are in place to track rehabilitation performance and compliance
- ensuring effective management programs are in place to facilitate that rehabilitation areas are on a trajectory towards meeting the final land use outcome as soon as reasonably practicable
- ensuring the mine site has engaged the appropriate skills and experience in relation to revegetation activities
- ensuring rehabilitation is integrated into mine planning systems
- ensuring compliance with the regulatory obligation to commence rehabilitation as soon as reasonably practicable and the achievement of the final land use.

It should be noted that the specific need to implement the above controls will be based on the risks as well as scope of activities being undertaken on a mine site.

## Documents and records to be reviewed

The documentary assessment component of the TAP will include a review of the following types of documents and records (as relevant). This is not an exhaustive list and other documents for review may be identified during the site inspection.

- rehabilitation risk assessment(s)
- rehabilitation management plan
- annual rehabilitation report
- forward program
- soils and materials characteristic data
- revegetation methodology establishment records
- QA/QC documents such as inspection test plans
- rehabilitation and ecological monitoring reports
- agricultural rehabilitation monitoring reports
- inspection reports
- rehabilitation care and maintenance records
- seed collection and handling strategy records including seed viability testing data
- records of rehabilitation trials and research outcomes
- photographs
- rehabilitation spatial data.

## Details of the assessment

The TAP involves both documentary and on-site assessment. A summary of the assessment objectives and the assessment considerations for the revegetation TAP is provided below. It is relevant to note that not all assessment considerations will be relevant to all mines.

To ensure that the range of risks associated with revegetation are identified and appropriate controls are in place to facilitate sustainable rehabilitation outcomes.

Site-specific rehabilitation risk assessment(s) have been conducted and provide for the following:

- Identify, assess and evaluate the risks that need to be addressed to achieve the rehabilitation outcome documents.
- Identify site-specific risks associated with revegetation.
- Identify suitable controls and strategies to treat the identified risks.
- Is relevant to active mining operations.
- Was produced by a team of appropriately skilled and experienced people from the workforce with responsibilities for mine rehabilitation.
- The controls have been assigned to a responsible and suitably qualified position.
- Where multiple risks assessments have been conducted, there is a centralised document (e.g. risk register) that links all assessments to the Schedule 8A requirements.

### To ensure that revegetation methodologies are developed to address potential geochemical / soil biota constraints/opportunities for rehabilitation

- Characterisation analysis has been conducted and geochemical and soil biota (micro-organisms, soil animals and plants) constraints / opportunities of substrate are understood. This includes the potential contamination of weed sources (e.g. in the seed bank) that may lead to excessive weed cover in the revegetation.
- The results are used to determine specific amelioration techniques (e.g. addition of gypsum, lime, organic matter, fertiliser, biosolids etc.) that will be used to overcome potential limitations as well as promote soil biota to enhance vegetation establishment and growth.
- Appropriate ameliorants (e.g. gypsum, lime) and organic material (e.g. mulch) have been applied based on the outcomes of the characterisation analysis.
- Before revegetation activities, the prepared substrate has been recharacterised to determine whether amelioration measures have been successful.

### To ensure that revegetation methodologies are developed to address potential physical / structural properties of the substrate

- Ameliorants have been applied and incorporated: For example, gypsum, lime, sulfur, dolomite, organic matter (e.g. mulches, biosolids, compost, brush-matting etc.) as per nominated revegetation methodology
- Compaction relief has been undertaken (where relevant) including ripping, discing scarification, harrowing, etc and is undertaken in parallel with the contour to minimise erosion.
- Drainage control such as contour banks, level spreaders, etc are validated to be constructed as per design to prevent erosion prior to revegetation.
- Seeding and or planting is conducted as soon as possible following growth media preparation (e.g. following ripping/scarifying).

- If revegetation is delayed following growth media preparation, an assessment is undertaken to determine whether further preparation is required before applying seed. For example to ensure sufficient surface roughness (e.g. to break up any crusting that may have resulted from rainfall events and or to promote rainfall infiltration).
- Appropriate earthmoving equipment (e.g. not oversized) is used to avoid compaction of the rehabilitation substrate.
- Rock raking is undertaken to ensure suitability for agricultural land use (where applicable).

To ensure that the revegetation strategy includes measures to avoid and or minimise impacts to rehabilitation as a result of adverse seasonal and weather conditions

- Trigger action response plans (or similar) are in place to reschedule revegetation activities to avoid adverse weather conditions such as extreme heat, prolonged rainfall and/or storms.
- Temporary measures have been implemented to protect the substrate where revegetation activities have been delayed (e.g. sown with a sterile cover crop, sediment control fences installed, mulch applied, catch drains and sediment dams) to prevent soil erosion and minimise soil loss).
- Conditions and actions are noted in revegetation methodology establishment records.

Ensure rehabilitation is effectively integrated into mine planning to maximise the utilisation of salvaged biological materials from clearing activities in revegetation activities as well as advance disturbed areas to be available for rehabilitation in optimal seasonal conditions

- Optimal seasonal periods are identified for the mine to target revegetation activities.
- Short to medium term mine planning schedules maximise areas available for revegetation in optimal seasonal conditions.
- Short to medium term mine planning schedules maximise opportunities for direct return of cleared biological resources (e.g. topsoil, vegetative material such as logs, etc).
- Where required, biological materials and or substitutes (e.g. stags, nest boxes, etc) are scheduled for erection (pre-revegetation) to avoid delays to revegetation in optimal seasonal conditions.
- Conditions and actions are noted in revegetation methodology establishment records.

Ensure the integrity of both seed/tubestock quality and type are suitable to achieve the target revegetation outcomes



For a native revegetation final land use outcome the following is relevant:

- Native vegetation activities use local provenance seed for direct seeding and or tubestock propagation (e.g. validated by seed merchant records).
- Seed harvesting and collection of plant material is planned in advance of clearing and in consultation with suitably qualified practitioners (e.g. a 3-year lead time with a rolling collection program).
- A seed collection program is in place to maximise the amount of viable seed of local provenance for use in rehabilitation and revegetation activities. The program includes:
  - 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.

For an agricultural revegetation outcome the following is relevant:

- Suitably qualified expertise (e.g. agronomist) is used in selecting the seed mix, treatment and sowing rates for the target agricultural outcome.
- Agricultural establishment techniques may involve several rounds of sowing over subsequent seasons with different seed mixes to achieve target revegetation outcome.

For all revegetation outcomes the following is relevant:

- Seed stock is purchased from reputable suppliers with quality control processes, including seed viability testing. (Note: 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).
- The above information on seed stock and or tubestock used in each revegetation campaign is included in revegetation methodology record forms and validated as part of QA/QC programs (e.g. inspection test plans).
- Undertake treatment of seed 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.

## Ensure measures are in place to protect and secure substrates and revegetation areas from physical damage

- Appropriately sized earthmoving and revegetation equipment are used to prevent over compaction of the substrate and/or adverse deformation of the profile that leads to erosion from diverted overland flow.

- Plant and soil protection from predatory species (e.g. native fauna, rabbits, goats, pigs, etc) such as barriers (e.g. fencing, tree guards, etc) or control programs such as culling, baiting, etc.
- Wind breaks such as sediment fencing are used (where required) to revegetation areas that are exposed to adverse weather conditions such as prevailing strong winds.
- Rehabilitation areas are sign-posted to avoid unauthorised disturbance activities.
- Rehabilitation areas are appropriately barricaded to avoid unauthorised access (based on risk) and or vandalism (e.g. 4WD or trail bike riders, illegal rubbish dumping, etc).
- Formal bushfire trails are constructed in consultation with the Rural Fire Service to maximise efficiency of bushfire management efforts and minimise fire related impacts to revegetation.

### Appropriate landform aspects and or units have been used to sustain the nominated revegetation outcome

- The grade and or soil capability of the final landform is suitable for the target agricultural land capability (where relevant).
- The aspect and or grade/topography is appropriate to sustain the target native vegetation community (e.g. terrestrial vs riparian; or westerly vs easterly aspects).
- In regard to landform unit (area), areas are graded to be free draining where the target vegetation is not suited to periods of inundation caused by ponded surface water flow.

### Monitoring and correction action processes are in place to identify and respond quickly to potential revegetation failure and or damage to ensure the final land use is achieved as soon as reasonably practicable

The following is relevant to the initial establishment monitoring:

- Revegetation areas are inspected after adverse weather and or seasonal conditions.
- Revegetation areas are inspected on a formal schedule cycle (e.g. 3 to 6 monthly for at least 2 years) to determine:
  - whether target species have emerged or are establishing.
  - if there is evidence of excess weed infestation or feral animal predation.
  - If there is evidence of erosion and or revegetation failure or poor health.
  - actual or emerging issues that have the potential to delay establishment.

The following is relevant to native revegetation:

- Habitat structures are monitored for usage to ensure that they are fit for purpose for the target fauna species and that the integrity of the structure is sound (where relevant).
- Long term rehabilitation monitoring programs have been implemented utilising suitably qualified experts and or industry accepted techniques to track trajectory towards meeting the rehabilitation objectives and rehabilitation completion criteria.

- Suitable analogue and or baseline monitoring points are established and monitored based on the advice of suitably qualified experts.

The following is relevant to agricultural revegetation:

- Long term rehabilitation monitoring programs have been implemented utilising suitably qualified experts and or industry accepted techniques to track trajectory towards meeting the rehabilitation objectives and rehabilitation completion criteria.
- Suitable analogue and or baseline monitoring points are established and monitored based on the advice of suitably qualified experts.
- Monitoring programs include performance and health of livestock using rehabilitation areas.

The following is relevant to research and trials:

- Formal research and trial programs have been implemented and are monitored to address defined knowledge gaps for revegetation establishment.

Ensure that revegetation areas are actively managed based on outcomes of monitoring programs in order to meet Rehabilitation Objectives and Rehabilitation Completion Criteria as soon as reasonably practicable.

- A formal rehabilitation care and maintenance program is in place and is included in the mines annual budget that:
  - is assigned to responsible and suitably qualified personnel and or contractors
  - is implemented, formally tracked and recorded.
- The scope of the rehabilitation care and maintenance and/or adaptive management program is developed in consideration of rehabilitation trigger action response plans and other contingency strategies to address emerging threats to rehabilitation as indicated by monitoring (e.g. management of excessive weed and or cover crops; limited emergence of target species; erosion; poor vegetation health, etc.).
- Agricultural grazing rehabilitation areas are actively managed, including:
  - suitable infrastructure such as fencing, stock watering troughs, cattle loading yards, etc have been incorporated to facilitate rotational grazing,
  - agricultural grazing areas are managed through a cycle of active grazing with periods of resting.
- Agricultural cropping areas are actively managed through a cycle of harvesting followed by sowing with the next target crop.

# Assessment stages, reporting and feedback to industry

TAPs are managed in 3 stages:

## Stage 1: Pre-arrival arrangements, review and information exchange

At least 2 weeks before a TAP, participant sites will receive notification of the forthcoming TAP. This notification will include:

- assessment visit schedules
- assessment team composition
- focus areas for the assessment (e.g. a specific critical control or compliance priority)
- resources required by the assessment team, including the necessary site personnel (e.g. technical experts) that will be required to be interviewed and participate in the site inspection
- tools to be used in the assessment.

## Stage 2: On-site assessment

This site visit will be looking for a demonstration that:

- the range of risks to rehabilitation that have been identified
- the mine site has implemented appropriate systems, procedures and controls to facilitate sustainable rehabilitation outcomes
- systems, procedures and controls are functional in practice and effective at controlling the risks
- the workforce is competent and confident about the risk controls relevant to their area and level of responsibility
- based on monitoring, the effectiveness of controls are evaluated and the risks are reviewed to facilitate continual improvement.

## Stage 3: Findings, recommendations, follow-up

The assessment team will conclude whether, and to what extent, the mine site has demonstrated:

- compliance with legislative requirements
- how relevant components of the rehabilitation management system comply with the minimum legislative requirements
- how well the rehabilitation management and monitoring plans are being implemented
- satisfactory performance in achieving sustainable rehabilitation outcomes on the ground.

The assessment team will debrief site management on their preliminary findings at the completion of the site assessment. An assessment finding letter and/or a notice under section 240 of the Mining Act 1992 may also be issued to the mine following completion of the site assessment.

A report providing an overview of the findings and recommendations of each of the completed TAPs will be prepared and published on our website as a learning resource.

A follow-up site inspection may also be conducted to:

- verify the progress made by the mine on actioning the recommendations outlined at the initial debriefing
- verify progress made on addressing any matters outlined in any assessment finding letter
- verify compliance with any directions outlined in a section 240 notice
- investigate any potential alleged breaches identified as part of the TAP.

## What you should do to prepare for a TAP

Review your strategy and capacity to control risks and managing compliance with the preventative and mitigating controls that are critical in planning for and implementing mine site rehabilitation. Sites should ensure measures have been identified and implemented to facilitate sustainable rehabilitation outcomes and that practices are in line with:

- requirements under the *Mining Act 1992*
- conditions of the mining lease(s), specifically Schedule 8A of Mining Regulation 2016
- conducting rehabilitation progressively, that is, as soon as reasonably practicable following disturbance
- commitments outlined in the forward program and rehabilitation management plan
- achieving the approved final land-use(s)
- available guidance material.