# DAM SAFETY EMERGENCY PLAN

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## Table of Contents

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## 1. Purpose

This Dam Safety Emergency Plan (DSEP) was developed by Manuka Resources to provide information and guidance on the required emergency response in the event of a dam failure due to flooding.

This plan applies to the management of emergencies associated with Manuka Resources, including structures, operations, and communities downstream of the dam. General operation and maintenance relating to Manuka Resources Dams, including access tracks and pathways, are detailed in the Manuka TSF Operations and Maintenance Manual (MRL-ST-TSF-MAN-002). This TSF is a declared dam with the name of **Wonawinta -1 Tailings**.

This plan outlines the required actions of Manuka Resources (and its personnel) in response to possible emergency situations at the dam.

## 2. Dam Information - General

### 2.1 Site Description

The Wonawinta Mine is a silver mine owned by Manuka Resources Limited and is located approximately 85 km south of Cobar adjacent to Bedooba Road, New South Wales. The silver mining operations are situated approximately 9 km upstream of Thule creek with minor tributaries in between the mine and the creek. The TSF is upstream of all operations with the processing facility and the site offices located immediately downstream of the TSF.

Figure 1 shows the location of the TSF in relation to the mining operations and Thule Creek. It is expected that the TSF will be a regulated dam which has been constructed accordingly and operated in accordance with the Environmental Authority (EA) conditions. General TSF information is provided in Table 2.


**Figure 1 - Site Layout and Location**

## 2.2 Tailings Storage Facility

The Tailings Storage facility (TSF) covers an area of approximately 49ha, with a footprint of approximately 700m by 700m and is typically flat with a gentle topographic grade to the southwest. The TSF boundary falls from Reduced Level (RL) 267m in the northeast to RL 251m in the southwest. The entire TSF footprint is underlain by Thule Granite. The existing TSF embankments have been constructed in three phases, namely Stages 1A, 1B and Stage 2.

The Stage 2 augmentation includes an upstream embankment raise together with raising of the central decant access embankment.

The TSF includes the following features:

- Foundation Clay liner, to reduce seepage through the foundation.
- Stage 1A TSF embankment, originally designed to accommodate the first 6 to 8 months of tailings production and commissioned in December 2012.
- Stage 1B TSF embankment (downstream raise) which was subsequently constructed to accommodate tailings production for a further 2 years. Stage 1B TSF was commissioned in November 2013.
- Stage 2 TSF embankment (upstream raise), constructed to accommodate around 18 month of tailings production and commissioned in 2020.
- Gravity decant system, with decant drainage pipe facilitating discharge to outside the TSF for reclamation of decant waters and reuse in the Process Plant as required; and
- Decant access causeway.

The TSF utilises sub-aerial deposition of tailings and the TSF is treated as a typical turkey nest dam although it does not fully enclose the TSF area until future upstream lifts (possibly third upstream lift) are constructed.

The key dimensions of the TSFs are summarised in Table 1 below.

**Table 1 – Key Dimensions of the Stages 1A and 1B, and 2 TSF Embankments**

| Element | Stage 1A | Stage 1B | Stage 2 |
|---|---|---|---|
| Maximum Height from Ground | 8m | 11m | 13m |
| Crest Length | Approximately 1,450m | Approximately 1,905m | Approximately 2,085m |
| Crest Width | 8m | 8m | 8m |
| Upstream Slope | 1V:2.5H | 1V:2.5H | 1V:2.5H |
| Downstream Slope | 1V:2.5H | 1V:2.5H | 1V:3.0H |
| Embankment Crest Level | RL 259m | RL 262.2m | RL 264.2m |
| Decant Causeway Side Slopes | 1V:2H | 1V:2H | 1V:2H |
| Decant Causeway End Slope | 1V:3H | 1V:3H | 1V:3H |
| Approximate Storage Capacity (tailings) | 0.585 $Mm^3$ | 1.4 $Mm^3$ | 1.19 $Mm^3$ (total Volume)<br>0.75 $Mm^3$ (Maximum tailing storage) |
| Construction Date | Jan-Dec 2012 | May-Nov 2013 | May 2020 |

## 3. Summary Information Sheet

This summary sheet is intended to be easily accessed and pull out as a separate one-page section summary for use by emergency agencies and dam staff if needed in an emergency.

**Table 2 – General TSF Information**

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| **General Information** | |
| Name of Dam: | Wonawinta – 1 TSF |
| Owner of Dam: | Manuka Resources Limited |
| Status of Dam: | Existing |
| Description of Surrounding Land: | Grazing / Arid |
| Location of Dam: | -32.23 S, 145.75E |
| Address: | 9674 Bedooba Road, Cobar NSW 2835 |
| Dam Designed By: | AECOM |
| Constructed By: | Neill Earthmoving |
| Year of Construction: | Stage 1A 2012 (Stage 2 lift 2020) |
| Date last failure impact assessment accepted by Chief Executive: | Not Applicable |
| Date last failure impact assessment submitted by Chief Executive: | Not Applicable |
| Name of watercourse(s): | Thule Creek |
| **Catchment Details** | |
| Catchment Area (natural catchment external to TSF): | 540km² |
| Catchment area reporting to TSF: | 485 ha |
| Catchment general description: | Thule Creek is an ephemeral watercourse, with tree vegetation. |
| Average catchment slope: | 0.25% |
| Approximate length from dam outlet to end of model: | 12km |
| Flood Plan Name: | New South Wales State Flood Plan |
| **Dam Failure Information** | |
| Consequence Category: | Significant |
| Population at Risk (PAR) classification: | <10 |
| Potential loss of life (PLL) classification: | <1 |
| Severity of Damage and Loss:<br><br>Total Infrastructure Costs:<br>Impact on dam owners business:<br>Health and social impacts:<br>Environmental Impacts: | Medium<br><br>Minor<br>Minor<br>Minor<br>Medium |
| **Alert Levels** | |
| **White** | • Major mechanical or electrical equipment failure or damage; or<br>• A heavy rainfall event is underway with the dam water level within 1.5m of the crest level and the level is continuing to rise; or<br>• An earthquake is felt; or<br>• Significant incident detected that does not pose immediate danger (including minor slips, cracking, marked increase in turbidity or volume of seepage flow, sudden increase in piezometer pressure, seepage near the outlet pipe); and |

| | |
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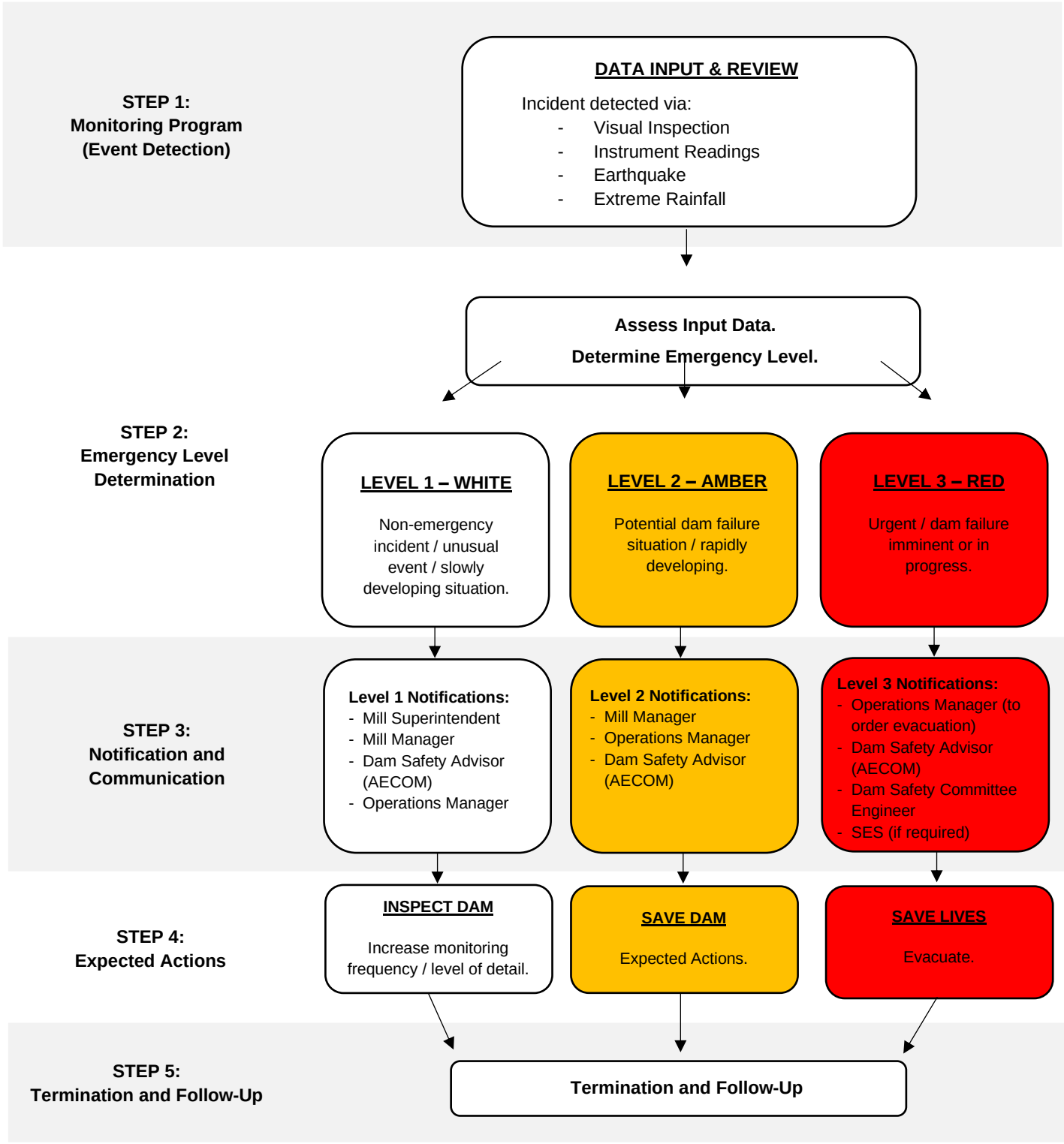
| | • The emergency situation is substantially under control and likely to reduce. |
| **Amber** | • A heavy rainfall event is underway with the decant pond level within 0.25m of the crest level and the level is continuing to rise; or<br>• Dam failure is possible if structural problems are not fixed; or<br>• Dam failure is possible if mechanical problems are not fixed; and<br>• The emergency situation is uncertain. |
| **Red** | • Water has started overtopping the embankment crest; or<br>• The dam has failed and is releasing water/tailings uncontrollable; or<br>• The dam is damaged and the risk of flooding downstream is high; or<br>• The emergency situation is substantially **not under control and is unlikely to reduce.** |

## *4. Responsibilities for Emergency Functions*

Dam Safety Event actions and emergency activation shall involve the necessary parties relevant to the level of risk and the alert levels. The Internal Emergency Management Plan (MRL-COM-PLN-014) will be used as needed and external emergency response will be called upon should the specific type of incident or event warrant such a response (emergency services include the Police, Ambulance, State Emergency Service, and Rural Fire Service).

The five step DESP process shall be in accordance with the flow chart shown below in Figure 2:

**Figure 2 – DESP Process Flow Chart**



## 4.1 Roles and Responsibilities

The DSEP roles and responsibilities shall be in accordance with the Manuka Resources Emergency Response Control Plan (MRL-ST-PLN-002 Emergency Management Plan).

Key personnel involved in the Dam Safety Emergency Response include:

- Control Room Operator (becomes Communications Officer)
- Mill Manager (becomes Response Coordinator)
- Operations Manager
- Dam Engineer
- Manuka Resources Emergency Response Team

**Table 3 – Roles and Responsibilities**

| Role | Responsibility |
|---|---|
| Control Room Operator (Communications Officer) | • Respond to information from Mill Operators or others on site who have observed or reported conditions, incidents, or unusual events to detect if an existing or potential emergency exists.<br>• Communication of information to be prioritised as per the 5-step communication flow-chart (Figure 1).<br>• Support the Mill Manager, Mill Superintendent and Operations Manager in communication between the response team and other parties involved in the emergency event. |
| Mill Manager (Response Coordinator) | • Respond to observed or reported conditions, incidents, or unusual events to detect if an existing or potential emergency exists.<br>• As soon as an emergency event is detected, immediately determine the emergency level.<br>o Level 1 (WHITE): Non-emergency incident; Unusual event; Slowly developing.<br>o Level 2 (AMBER): Potential dam failure situation; Rapidly developing.<br>o Level 3 (RED): Urgent; Dam failure is imminent or in progress .<br>• Immediately notify the personnel in the order shown on the notification lists and flow charts for the appropriate emergency level.<br>• Provide updates of the situation to the Operations Manager, Mill Superintendent and/or Dam Safety consultant to assist them in making timely and accurate decisions regarding warnings and evacuations.<br>• Seek technical advice from the NSW Dam Safety Engineer regarding the nature of the emergency situation, and initiate/coordinate any remedial measures considered safe under the circumstances.<br>• Participate in the annual review and update of the DSEP. |

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| Operations Manager | • Serve as the primary contact person responsible for coordination of all DSEP emergency actions, including the Manuka Resources Emergency Response Team and external emergency services.<br>• Maintain communication with media and the general public, as appropriate, and in accordance with the Manuka Resources policies and procedures.<br>• When a Level 2 (AMBER) situation occurs:<br>  ○ Prepare emergency management personnel (including the Manuka Resources Emergency Response Team) for possible evacuations that may be needed if a Level 3 situation occurs.<br>  ○ Alert all persons in the potential areas of impact, as appropriate.<br>• When a Level 3 (RED) situation occurs:<br>  ○ a. Initiate warnings and order evacuation of people at risk downstream of the dam.<br>  ○ b. Carry out the evacuation of people and close all mine access roads within the evacuation area.<br>  ○ Alert the neighbouring landholders and external emergency services of the emergency.<br>• Decide an appropriate time to terminate the emergency.<br>• Participate in the annual review and update of the DSEP. |
| WHS Manager | • Provide leadership to assure the DSEP is reviewed and updated annually and copies of the revised DSEP are distributed to all who received copies of the original DSEP.<br>• Establish and maintain the site Emergency Response Team to provide adequate coverage across the operation for the potential and expected risk profile of the site, including the potential for a Dam failure event.<br>• Ensure emergency response exercises are held on site annually, to ensure the effectiveness / preparedness of the DSEP as well as other emergency type situations. |
| Dam Engineer (AECOM) | • Provide assistance, recommendations and expertise with technical issues related to dam, the nature of a particular emergency incident, and remedial measures. |
| Emergency Response Team | • The Manuka Resources Emergency Response Team's primary role is the administration of initial lifesaving treatment and first response to emergency rescue. |
| NSW Dams Safety Committee (DSC) | • The DSC has statutory functions to ensure that no Tailings Storage Dam imposes an intolerable level of danger to human life or the community's interests.<br>• Provide additional assistance, recommendations and expertise with technical issues related to TSFs. |

# 5. Dam Failure Scenarios

## 5.1 Dambreak Study

The following scenarios were considered for the failure impact assessment.

- Dam Crest Flood (DCF) failure – Rainy Day Failure; and
- Sunny Day failure (SDF) – Could occur during normal operation of the site.

**Table 4 – Modelled Scenarios – Summary**

| Scenario # | Failure Mode | Embankment Failure Location | Downstream Catchment Flow | Dam Inflow | Breach Calculation Method |
|---|---|---|---|---|---|
| 1 | SDF | Southern Embankment | None | None | Liquefaction or rapid failure |
| 2 | DCF | Southern Embankment | 1% AEP | DCF Event | Overtopping with failure |
| 3 | DCF | None | 1% AEP | ECF Event | Overtopping with no failure |

For the overtopping scenario it was assumed an extreme storm event would trigger this failure mode, to correlate to the proposed spillway design criteria (AECOM, 2020) and associated risk profile.
The SDF scenarios assumed the water level will be considered at the spillway invert level (RL 263.9 m) as the trigger to the rapid failure.

Considering that the embankment is an upstream raise, a foundation failure scenario would likely result in a rapid failure or loss of freeboard causing an overtopping, rather than to embankment cracking resulting in a piping failure. Both of these mechanisms would largely be captured in the extents of our current scenarios and therefore were not considered as a separate case in this analysis. The southern embankment was adopted as the most critical failure location as majority of the mine's operations are located adjacent to the southern embankment. The scenarios assume that full failure of the embankment wall occurs thus including stages 1A and 1B in the failure, thus representing the worst case for the hypothetical dam failure.

A few dwellings have been identified within a 15 km radius of the TSF. However, as the TSF contents is a mud/water mixture, the propagation is fairly limited and thus will not affect these downstream dwellings. However, some impacts to downstream infrastructure (Site office and Process Facility) could occur and are considered as part of this assessment. The locations identified as part of this assessment are shown in Figure 3, with the processing facility and site offices assessed as the at risk locations as part of this study.

**Figure 3 – Key Site Facilities Downstream of Manuka TSF**

## 5.2 Dam Breach Location

The breach location is the location or section of embankment where the failure is most likely to originate from. When undertaking the dam break assessment, the breach location chosen has a direct influence on the potential estimated impact. The following items were considered when selecting appropriate breach locations for the Manuka TSF:

- Maximising of potential outflow volume, i.e. typically equal to the location with the largest outer embankment height.
- Resulting in large failure reach length, i.e. proximity to natural watercourses which would carry the outflow further.
- Population density and degree of environmental significance in expected downstream inundation extent.
- Capturing the ultimate inundation footprint from a dam failure scenario.

For the Manuka TSF Dam Break assessment, the breach location was considered along the TSF embankment, located south of the embankment. The selected breach location (A) is shown in Figure 4.

**Figure 4 – Considered Breach Location**


# 6. Emergency Warning Systems

The primary aims of instrumentation, monitoring and inspections at the Manuka TSF are to:

- Gathering data to confirm that the TSF is operating in accordance with the intent of the design; and
- Gathering data to assess the potential impacts of the TSF on mining operations and the environment.

The gathered data shall be summarised and compared with expected level of performance or with compliance limitations and requirements. The data also forms part of the input for subsequent inspections.

The Manuka TSF monitoring is carried out least once per shift and includes a visual inspection by Mill Operators, as well as one written inspection per shift.

## 6.1 Instrumentation and Monitoring

Instrumentation and monitoring of the Manuka TSF includes the following:

- Monitoring of the tailings surface;
- Piezometric levels in the TSF embankments or the tailings to facilitate slope stability assessments;
- Detection of potential seepage through the embankments; and
- Detection of potential movements in the embankments by monitoring movements of the surface targets

The requirement for monitoring of the TSF are summarised in Table 5.

**Table 5 - Summary of Monitoring Requirements for Manuka TSF Embankments**

| Item | Frequency | Personnel / Organisation | Purpose | Records / Reports* |
|---|---|---|---|---|
| Tailings Surface Level | Weekly | Surveyor / Trained Operations Personnel | Check on rate of rise of tailings | Update tailings level database;<br><br>Compare to previous readings; and<br><br>Maintain an updated copy of all data and reports. |
| Seepage | Weekly | Trained Operations Personnel | Check on clarity and rate of flow | |
| Observation of Decant Water Levels | Weekly | Trained Operations Personnel | Check on volume/level of decant water | |
| Reading of Water Levels in Monitoring Standpipes and Vibrating Wire Piezometers | Monthly | Trained Operations Personnel | Check on piezometric levels within the main embankment | |
| Surface Survey | 6 monthly | Surveyor | Check on settlement and movement within the main embankment | |

### 6.1.1 Piezometers

Piezometers are installed at the following locations.

- Standpipe piezometers on the crest (downstream side) of the main Stage 1B and Stage 2 embankments; and
- Vibrating wire piezometers placed in the tailings material below the footprint of the Stage 2 embankment.

The locations of the monitoring standpipe piezometers are shown on Drawings provided in Appendix A. Piezometers are aimed at monitoring any developing phreatic surface or piezometric levels (including excess pore pressures) within the embankment or the existing tailings placed in the TSF.
The water levels or pore pressures in the monitoring standpipe piezometers shall be read on a monthly basis by suitably qualified and experienced Manuka site personnel as part of the Routine Inspections. Should any undesirable or unexpected trends develop, e.g. rapid increase of water in the standpipe piezometers, this should be reported to the Manuka Operations Manager immediately.

### 6.1.2 Surface Target Markers

Surface target markers are installed at the crest on the downstream side of the TSF embankment and crest. The purpose of the markers is to monitor any settlement or movement in the embankments. The surface markers shall be read on a six-monthly basis by appropriately qualified surveyors.
Should any undesirable or unexpected trends develop, e.g. settlement or heave, this should be reported immediately to the Dams Safety Adviser.

## 6.2 Routine Inspections

Regular inspections are carried out to locate potential sources of damage, so that minor corrections and repairs can be made in a timely manner to prevent more serious integrity issues.

These inspections detect any changes in the conditions of the Manuka TSF which could lead to structural deficiencies, damage, or failure. The three types of inspections which are carried out are presented in Table 6.

**Table 6 – Inspection Types**

| Inspection Type | Required Personnel | Purpose | Frequency |
|---|---|---|---|
| Daily Inspections | Suitably trained site operations personnel | • To confirm that the tailings delivery, deposition and water reclaim systems are performing satisfactorily. The main aim of these inspections is to check that:<br>- There are no leaks or ruptures in the tailings delivery (pipe) systems<br>- The active tailings spigots are not causing erosion of the embankment face<br>- The decant water is directed towards the permanent decant locations and is kept away from the perimeter embankments<br>- Tailings is placed uniformly across the storage areas and it is allowed to consolidate as much as possible before subsequent layers of tailings are deposited<br>- The decant pool is of a size, depth and location such that the quality of decant entering the tower is satisfactory<br>- The decant structure is not obstructed by debris<br>• These inspections are normally be done in association with daily visits to manipulate the spigot valves. | At least once daily whenever the TSF is in operation |
| Weekly Inspections | Suitably trained site operations personnel | • Visual inspection of the TSF embankments and immediate downstream and foundations is carried out weekly.<br>• Recording the general status of the cells.<br>• Observe any previously detected signs of movement, seepage or erosion to check whether they are increasing in size or extent.<br>• Detect any new cracks, slips, slumps, erosion or subsidence of the embankment crest or slopes, or any evidence of seepage not previously observed.<br>• Photographic evidence of conditions.<br>• Providing brief written description of questionable or damaged areas including an accurate location and the type and extend of the issue.<br>• Check the operation of the underdrainage pumping system.<br>• Monitor the development of the tailings beaches.<br>• Monitor the behaviour of the decant pool. | Weekly |
| Comprehensive | Professional Dam Engineer & | • An annual inspection is carried out by a suitably qualified engineer and a report prepared and made available to the Committee, if requested. | On first tailings discharge and then annually |

| | | | |
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| | other Specialists* (if required) | • These annual inspections shall be carried out by the Dams Safety Adviser and other suitably qualified engineers (if needs be).<br>• The key objectives of the annual inspections are:<br>- Identification of deficiencies by a thorough onsite inspection and evaluation of the data gathered by the site operation team; and<br>- Providing recommendations for corrective actions, if needed. | |

## 6.3 Special Inspections

Apart from routine dam inspections, additional inspections may be carried out in response to events and situations that may trigger the need for additional, and often third-party, inspections by the Dams Safety Adviser. These situations are listed in Table 6.

Any of these situations or events should be cause of alarm and may require further action as per this Dam Safety Emergency Plan. The Dams Safety Adviser may draft an action plan for the required preventative/remedial measures.

**Table 7 - Summary of Activities and Defect Identification**

| Situation | General Signs | Potential Cause / details |
|---|---|---|
| Overtopping or excessive volume of water in the storage area | Storage nearly full or extended area decant water over the tailings | • Periods of excessive rainfall or inflow.<br>• Storage full and water level rising. |
| | Loss of ability to draw the water/floods out safely | • Failure of operating equipment (decant pumps, outlet pipes). |
| Seepage | Water seeping out of storage | • Increased groundwater levels near the storage cells.<br>• Environmental changes such as vegetation damage, salt scalds, patches of green grass, etc.<br>• Differential movement or cracking on the crest or embankments. |
| | Internal Erosion or Piping | • Unaccountable increases in seepage flows.<br>• Emission point or patches of dampness or green grass.<br>• Evergreen spots, boggy ground or pools of water.<br>• Cloudy appearance of seepage. |
| Structural | Foundation failure | • Sliding, rotation or settlement of part or entire embankments.<br>• Evidence of foundations movement or displacement. |
| | Toe Erosion caused by extreme rainfall | • Erosion of embankment toe by flows from extreme rainfall events. |
| | Gullying | • Excessive gullying or erosion rills on embankments. |
| | Abnormal instrument readings | • A sudden change in the values of instrument readings (in particular the VWPs). |

## 6.4 Emergency Inspections

Emergency inspections are required to examine the dam integrity after extreme/unexpected natural events such as the following.

- Heavy floods or rainfall;
- Earthquakes; or
- Other unexpected emergency situations.

These inspections are aimed at determining the need for pre-emptive or corrective actions. Emergency inspections shall be carried out by the Dams Safety Adviser and/or other specialists (such as mechanical, electrical or corrosion engineers), if/where required.

Extreme caution should be exercised by anyone working around the pond during emergency conditions. If a developing situation is identified, temporary actions should be implemented immediately, and permanent repairs are to be designed and actioned as soon as possible. The Dams Safety Adviser should be contacted to recommend appropriate permanent remedial measures.

### 6.4.1 Inspection after Extreme Rainfalls

The Manuka TSF has no or very small external catchment (no significant natural inflow) and, as such, there are no additional inspection requirements associated with the filling progress to be carried out in the event of an extreme rainfall. However, a full inspection should be carried out after major rainfall events to confirm the integrity of the drains and embankments. Areas of scouring should be recorded and repaired as soon as practicable after the event has occurred.

### 6.4.2 Inspection after an Earthquake

The Manuka TSF embankment is designed to be extremely robust under earthquake loading. In simplistic terms, an earthquake large enough to potentially cause minor or superficial damage to the embankments would be expected to simultaneously result in substantial damage and disruption at the mine and in the local region generally. An earthquake large enough to cause more than minor damage to the Manuka TSF would therefore cause widespread damage in the surrounding area.

Nevertheless, it is appropriate to take a conservative approach to post-earthquake inspection and monitoring, with the “trigger” for an immediate inspection of the TSF and the site facilities being an event with a local felt intensity of 5 or greater on the Modified Mercalli scale. By using felt intensity as the measure of seismic event, the need to rely on an external seismological monitoring system or service to provide notification is avoided.

Typical indicators of a MM5 seismic event are as follows:

- Felt indoors by practically all, outdoors by many or most: outdoors direction estimated;
- Awakened many, or most;
- Frightened few, slight excitement, a few run outdoors;
- Buildings trembled throughout;
- Broke dishes, glassware to some extent;
- Cracked windows in some cases, but not generally;
- Overturned vases, small or unstable objects in many instances, with occasional falls;
- Hanging objects, doors, swing generally or considerably;
- Knocked pictures against walls, or swung them out of place;
- Opened or closed doors, shutters abruptly.
- Pendulum clocks stopped, started, or ran fast or slow;

- Moved small objects, furnishings, the later to a slight extent;
- Spilled liquids in small amounts from well-filled open containers; and
- Trees, bushes shaken slightly.
- Should such a seismic event be experienced, the following inspection and notification procedures shall apply.
- Geotechnical Engineer to conduct a thorough inspection of the STSF as soon as practicable;
- Report observations to the TSF and Site Manager; and
- If significant changes in the dam's condition are observed, the Dams Safety Adviser should also be notified.

Should a lesser seismic event be experienced, it is quite likely that it may not be noticed by mine personnel (particularly if it occurs during the day, when it could well be mistaken for a pit blast). Notification is more likely to come some time after the event, via media reports of an earthquake in the Cobar area. The likelihood of such an event causing significant damage to the embankment is very low, and it is therefore sufficient to carry out a routine inspection at the first convenient opportunity, being particularly vigilant for changes which the earthquake might have caused.

These may include the following:

- Settlement of the dam crest;
- Cracks in the dam wall, dam crest and/or abutments;
- Changes in seepage and rates;
- Changes in seepage water quality (particularly of turbidity, sediment etc); and
- New seepage.

## *7. Emergency Service Notifications and Alerts*

Any incident which has implications for the safety of the embankment and storage or an environmental impact shall require the initiation of the DSEP.

Any non-routine conditions requiring either a corrective action or additional inspection and evaluation to assess the need for corrective action shall be immediately reported to the Manuka Operation Manager.

Corrective and/or Emergency maintenance activities are determined by the Dams Safety Adviser following an emergency inspection.

### 7.1 Dams Safety NSW notification and involvement

The *Dams Safety Regulation 2019* Clause 19 of the regulation requires that dam owners report incidents to Dams Safety NSW. Consequently, emergency plans need to include provisions for prompt notification to Dams Safety NSW of any actual or potential emergency which may have implications for the safety of the dam.
The contact details for emergency notification are listed on the Dams Safety NSW website. Notification needs to be via telephone and in writing.

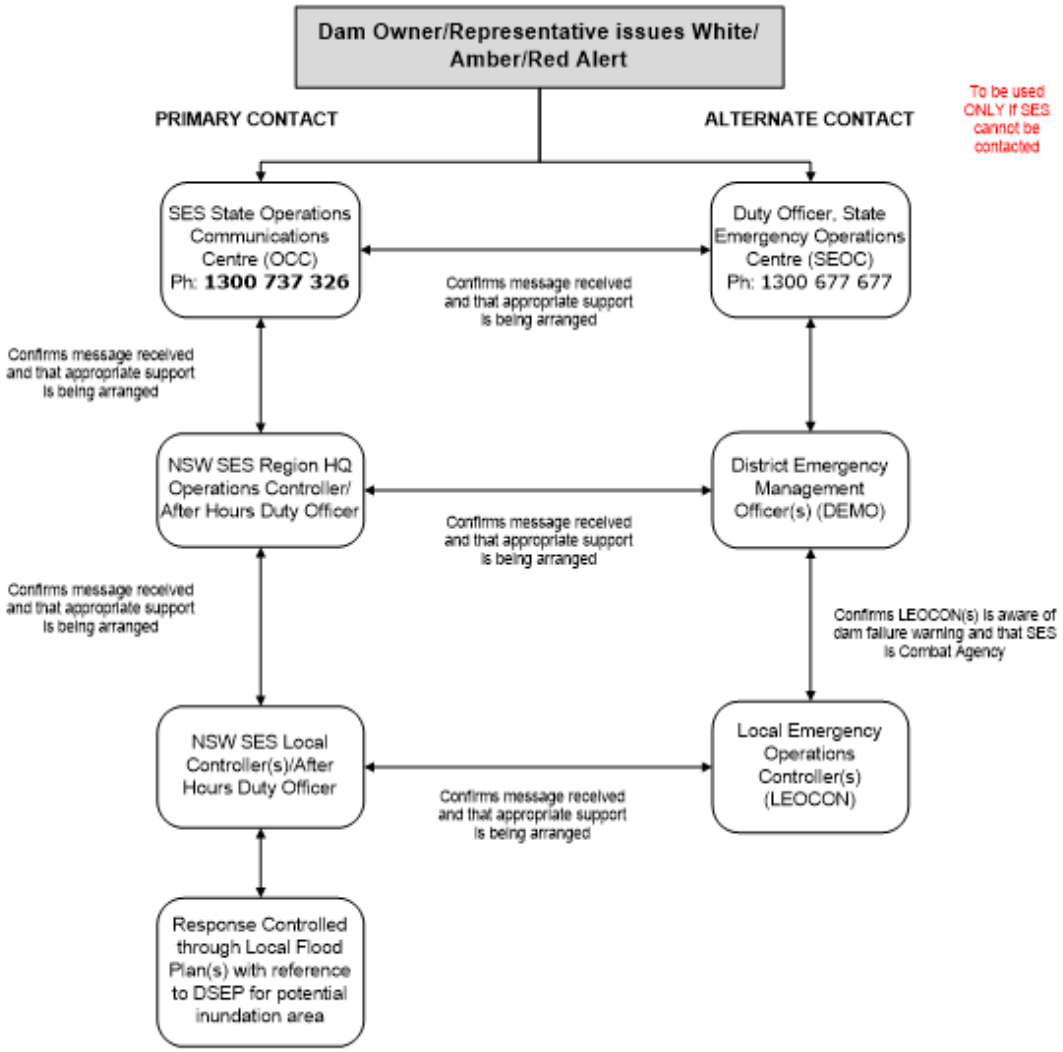
### 7.2 External Emergency Services Notification

The Manuka Emergency Management Plan (MRL-COM-PLN-014) documented procedures are to be followed when the Operations Manager or a site delegate activates the external emergency services due to a potential or imminent failure of the TSF that may endanger lives. The primary contact in the event of alerting emergency services for a dam failure is the State Emergency Service (SES) State Operations Centre. The alert is to be provided

by telephone. The SES can not receive SMS messages and considers it an unreliable technology for life threatening situations. Each alert is communicated to the SES through the State Operations Centre. However, subsequent liaison between the dam owner (Manuka Resources) and an appropriate SES Incident Controller, at an SES Zone or Local Headquarters, will be established to ensure effective communication during an emergency.

The below flow chart provides guidance on the process that will unfold in the event of activating the SES in an event.

**Figure 5 – Emergency Service Notification Flow Chart**




The Manuka site representative is to notify all appropriate staff and agencies, including the SES, when the dam failure emergency is over, or if the dam failure alert was a false alarm.

## 8. Emergency Exercises

### 8.1 Emergency Plan Distribution

Manuka Resources shall provide a copy of this Dam Safety Emergency Plan (DSEP) to:

- Dams Safety NSW and
- the State Emergency Service.

The DSEP will be provided in electronic form, for example in portable document format (PDF) as soon as reasonably practicable after the plan is prepared or updated.

### 8.2 Emergency Exercises

The Manuka Emergency Management Plan details the training requirements and emergency exercises to be undertaken to test the emergency plan for the Manuka operations, including the TSF.

Training and exercises are essential to effectively manage an emergency. All members of the EMT and Manuka staff are required to attend the training programs and participate in exercises. By doing so, team members:

- Satisfy the requirements of government agencies;
- Meet the expectations of potentially affected stakeholders;
- Become familiar with MRL Emergency Management Procedures;
- Learn about common procedures, facilities and systems; and
- Obtain and have an opportunity to demonstrate proficiency in core competencies.

The type of training conducted for Emergency Management Team members includes both desktop (simulation) and mock rehearsal exercises (practical).

Learnings from emergency exercises and incidents are documented and incorporated into revisions of plans and resources.

Guidelines on how to conduct an exercise is sourced from the Australian Institute for Disaster Resilience (AIDR) website at: https://knowledge.aidr.org.au/resources/handbook-3-managing-exercises/

The *Dams Safety Regulation 2019 r*equires exercises to test the DSEP to be undertaken every three years.

An annual review of this DSEP is also conducted with the Mill operators, and all persons with responsibilities outlined in section 4.1 to help maintain familiarisation with the emergency requirements and procedures.

## 9. Monitoring and Evaluation

For the purposes of section 17(3) of the *Dams Safety Act 2015*, the Dam Safety Emergency Plan must be updated at least once every 5 years subject to subclauses (4) and (5).

The emergency plan must be routinely reviewed, at least annually, to ensure that a change to the contact details of a person responsible for exercising functions in the event of an emergency is updated as soon as practicable after the change.

The DSEP must be updated to take account of the following changes within 30 days after the change occurs:

a) a change to the consequence category of the dam,
b) a significant change, since the consequence category of the dam was last determined, to the

number of persons who would be put at risk if there were to be a failure of the dam,

c) a change to the emergency management arrangements.

Manuka Resources must provide a copy of this DSEP to Dams Safety NSW and the State Emergency Service in a form approved by Dams Safety NSW as soon as reasonably practicable after the plan is prepared or updated.

## *10. Definitions*

**Table 8 – Definitions**

| Term | Definition |
|---|---|
| AECOM | AECOM Australia Pty Ltd (TSF Design Consultants) |
| MRL | Manuka Resources Limited |
| TSF | Tailings Storage Facility |
| DS | Dams Safety NSW |
| Manuka TSF Dams Safety Adviser | Alireza Naderian<br>AECOM Australia Pty Ltd<br>Alireza.Naderian@aecom.com<br>Level 8, 540 Wickham Street, PO Box 1307, Fortitude Valley QLD 4006, Australia<br>T +61 7 3553 2000; F +61 7 3553 2050 |
| Incident | An event or series of events that are not part of normal mine operations |

## *11. Document Information*

Relevant legislation, standards and other reference information must be regularly reviewed and monitored for updates and should be included in the site management system. Related documents and reference information in this section provides the linkage and source to develop and maintain site compliance information.

### 11.1 Reference Information

Reference information, listed in the below, is information that is directly related to the development of this document or referenced from within this document.

| Reference | Title |
|---|---|
| Legislation | Dams Safety Act 2015 |
| Legislation | Dams Safety Regulation 2019 |
| Guideline | Dams Safety NSW Guideline - Emergency Plans<br>Published by NSW Department of Planning, Industry and Environment. September 2020 |
| MRL-COM-PLN-014 | Emergency Management Plan |
| MRL-ENV-MAN-001 | Manuka TSF Operations and Maintenance Manual |
| MRL-ENV-PLN-002 | Manuka TSF - Stage 2 - Dambreak Modelling and Consequence Category Assessment |

## 11.2 Change Information

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in the table below.

| Version | Date | Review team (consultation) | Change Summary |
|---|---|---|---|
| 1.0 | 10/01/2021 | T Gilbert, H Lynch, D Power, T Higgins, S King, E Higgins. | New document for inclusion in the Manuka Resources Health & Safety Management System and loaded onto the Manuka HUB. |

## Appendix A *Contact List*

| **Manuka Operations Manager** | |
|---|---|
| Name: | David Power |
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| **Manuka Processing Superintendent** | |
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| **Design Engineer (Dams Safety Adviser)** | |
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| Mobile: | +61 458 400 722 |
| Email: | Alireza.Naderian@aecom.com |
| **Dams Safety NSW Contact** | |
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| Telephone: | (02) 9842 8076 |
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| Email: | heather.middleton@damsafety.nsw.gov.au |
| **NSW Resources Regulator** | |
| Telephone: | 1300 736 122 |
| Email: | minres.webcoordinator@dpi.nsw.gov.au |
| **NSW State Emergency Services** | |
| Telephone: | 000 and request State Emergency Services |
| **Cobar Shire Council Local Emergency Management Officer** | |
| Name: | Peter Vlatko |
| Telephone: | (02) 6836 5888 |
| Mobile: | +61 419 281 115 |
| Email: | Peter.Vlatko@cobar.nsw.gov.au |