



Government
of South Australia

Department for
Energy and Mining

Mineral Regulatory
Guidelines

MG47

South Australian rehabilitation liability estimation calculator

USER MANUAL



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South Australian Resources Information Gateway (SARIG)

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Introduction

The Department for Energy and Mining (DEM) is the principal regulator for mining operations under the *Mining Act 1971*. This includes the assessment of mining proposals, approval of mining lease conditions of operation and monitoring of compliance. An approved program for environment protection and rehabilitation (PEPR) sets out the progressive and final rehabilitation strategies for each operation. A requirement of each PEPR is to provide an estimate of the rehabilitation and decommissioning costs at any time during the scope of the operations.

Under section 62 of the Mining Act the holder of a mining tenement may be required to provide a bond as surety for the state should the tenement holder fail to meet the obligation to rehabilitate land disturbed by exploration or mining operations. The bond value should be the maximum rehabilitation and decommissioning costs at any time during the scope of mining operations covered by the PEPR.

The South Australian rehabilitation liability estimation calculator (the calculator) provides a tool for operators to assess the potential maximum

rehabilitation liability for individual exploration and mining operations. It also determines the value of a bond.

Although other calculators and third party assessments can be used, DEM will generally use this calculator to assess rehabilitation liability to provide a consistent approach for determinations.

The assessment calculation is based on the cost of rehabilitating various individual mining project components such as exploration, heap leaching, tailings management and supporting infrastructure. Each component requires a number of activities to be carried out to ensure it is appropriately decommissioned and rehabilitated. Each activity has a unit cost and the operator will need to input the number of units for that activity.

This user manual provides a guide to the operation of the calculator and should be reviewed in conjunction with the current version of the calculator.

[To access the calculator in Excel visit our website.](#)

Using the calculator

PREPARATION

The tenement holder should take care that the quantities, volumes and areas used in the calculation are the same as used elsewhere on maps included in the PEPR, and for each item in the spreadsheet there should be a reference included to the relevant source for the quantum from the PEPR.

The value of unprocessed and processed minerals, and salvaged plant and equipment cannot be deducted due to the likelihood that, as an

unsecured creditor, the government would not be able to access these assets.

The detailed estimate should include, where applicable:

- the decommissioning by operational element
- an estimate of the area, volume, machinery type, personnel, material and/or time (as appropriate) as a measure of the rehabilitation effort required, and how these estimates were derived



- any costs for ongoing maintenance, monitoring and management pre- and post-tenement surrender
- costs for contingency measures in the event of failure of high risk closure strategies
- design and survey of the rehabilitation plan, e.g. assuming no access to data or designs held by the mining operator
- project management by an independent contractor
- administration cost to government to manage the project
- scientific investigations, modelling and closure trials
- provision for normal project variation
- allowance for inflation to review date (note: DEM does not receive any interest on bond lodged, so inflation must be accounted for).

EXCLUSION OF FACILITIES AND INFRASTRUCTURE

Costs for the rehabilitation of all facilities and infrastructure are to be included unless approved to remain on site in the PEPR. For example, formal written acceptance of the mining liability by the landowner where the landowner is not the tenement holder.

Cover sheet

The cover sheet provides a summary of the purpose and components, simplified instructions for use, limitations, and the terms and conditions of use of the calculator.

Input page

Site registration details: The first section of the input page is shown on pg 7 of this document and covers basic contact information and tenement details. The yellow cells are not protected and allow the user to enter data relevant to the operation being assessed.

Site location and details: Allows the user to enter relevant information about the mine's location and current phase, and answer questions about the type of operation using dropdown menus or a value for the distance or years. These responses will impact the final rehabilitation liability value.

Nearest major population centre: This dropdown menu lists the major population centres in South Australia. Initial unit costs of activities are based on prices in Adelaide. Choosing a population centre outside Adelaide usually results in a 5% increase, in recognition of the cost impact of working in regional towns. Kangaroo Island increases the unit cost by 70%.

Distance from major population centre to site: The user must input the distance from the site to the population centre, by road in kilometres. This figure is used in the distance table on the next worksheet in the calculator and impacts the components that make up the unit cost. If the distance is more than 60 km, the labour cost increases to take into account accommodation and meals, as the distance may prevent employees from returning home each night. Other components may also increase according to distance, in addition to the standard 5% variation for a regional centre.

Current project phase: This is for information only and does not affect the assessment.

Type of mine: This is for information only and does not affect the assessment.

Are materials containing sulfides mined or processed on the site? This yes or no answer impacts on the monitoring unit cost in the 'Monitoring and other costs' worksheet. The presence of sulfides introduces a risk of potential acid mine drainage and requires significant monitoring, which incurs higher costs.

Are radioactive materials mined or processed at the site? This yes or no answer impacts on the monitoring unit cost in the 'Monitoring and other costs' worksheet for similar reasons as outlined above.

Number of years to monitor? More years of monitoring result in higher final costs. This figure should come from a study of the risks and outcomes in the PEPR rehabilitation proposal.

Contingencies and level of rehabilitation detail:

This is an indication of how much confidence the regulator can have in the proposed site rehabilitation assessment and is derived from the level of detail in rehabilitation plans and designs.

Activity costs

Each project component has a number of activities to achieve the various rehabilitation outcomes. Each activity is based on unit rates for a volume, area, length or number of items. The unit rates

have been determined based on the equipment, labour and materials required to complete a particular task. These rates have been provided by quantity surveyors, based on third party costs, and assessed for suitability for use in mine rehabilitation applications. The rates and costs used in the calculator are reviewed periodically by the department to account for current industry rates and inflation.

The activity costs are adjusted by two factors, one the population centre itself and secondly the distance from that population centre.

The activity costs worksheet in the calculator provides the breakdown for the calculation of each activity unit cost.

SUMMARY PAGE

The summary page provides the details from the input page and summarises the individual project components to provide a rehabilitation liability estimate for the site and a bond recommendation

for the operation. No user adjustment or input is required on this table. The worksheet has been locked and cannot be edited.

PROJECT COMPONENTS

Worksheets have been provided covering the various domains typically associated with mining operations. Not all project components are applicable for all operations. Where not applicable, the project component can be left blank.

Each worksheet follows the same basic structure. An explanation for the common aspects of the worksheets follows.

Rehabilitation story for this component

An important aspect of each project component worksheet is the rehabilitation work required for each component. A box is provided to describe the outcomes and objectives for the rehabilitation story for each component worksheet. This story is basically a summary of the rehabilitation works


described in the approved PEPR for the operation. It can be useful to provide page number references to the PEPR where appropriate.

Potential issues that may need to be considered

This is a prompt to highlight key issues for each component. It contains a selection of standard issues that might be applicable, and the ability to add additional issues particular to the operation. In this case, a note has been added about a creek crossing.



EXAMPLE OF SUMMARY PAGE



Government of South Australia
Department for Energy and Mining

Office Use only

South Australian Rehabilitation Liability Estimation Calculator
 Revision: 7.00
 Last Updated: 27-Aug-24

Summary Report of Rehabilitation Liability Calculation

Site Name:

Tenement:

Tenement Holder:

Site Operator:

Date: **Prepared and of Operator:**

Start of Mining: **Last Revised:**

Current Security Held:

Requestor's Contact Details

Name: **Any Comments:**

Address:

Phone: **Mobile:**

Email:

Project Component					
Number	Description	Sub-Total	Component Total	% of Total	
1	Exploration		\$		
2	Underground Workings		\$		
3	Open Cut/Extractive Pits	1 \$	-	\$	
		2 \$	-		
4	Waste Rock Dump (incl low grade stockpiles)	1 \$	-	\$	
		2 \$	-		
5	Processing Facilities (incl run-of-mine stockpile)		\$		
6	Tailing Storage Facilities (including slimes pond)	1 \$	-	\$	
		2 \$	-		
7	Heap Leach Ponds	1 \$	-	\$	
		2 \$	-		
8	Rail Facilities		\$		
9	Haul Roads and Access Roads		\$		
10	Administration and Accommodation		\$		
11	Ancillary Areas (eg equipment depots, workshops, lay down areas)		\$		
12	Burrow Pits (ancillary to operations)		\$		
13	Services infrastructure (water storage, power, etc)	1 \$	-		
		2 \$	-		
		3 \$	-		
14	Water Management (eg dams, watercourses, diversions)		\$		
15	Equipment Mobilisation & Demobilisation		\$		

Legend

In each sheet bright yellow cells are used for information that impacts the assessment value. They don't have to be filled for each assessment.

Light yellow cells are generally used for explanations or comments.

Note on 'default rates'

Each sheet contains a note that 'default rates' reflect the expected costs if a third party was doing the work. It also reminds operators that if using their own or alternative unit rates, then supporting documentation must be supplied to justify their use. The government is not obliged to accept them, however, if a reasonable rate is submitted, it has been adopted.

Other activities proposed by the user

Each project component worksheet provides the user with the ability to add activities not covered by the calculator. These activities may be particular to the site to the specific rehabilitation works required. A description of the activity, the proposed unit rate and the quantity is required.

Preliminary assessments

Where the design and methodology for the rehabilitation of a mine feature has not been completed at the time of PEPR approval, the third party costs to complete this work is to be included in the applicable project component worksheet.

Calculations worksheet

A blank worksheet has been included for the user to provide additional detail for the quantities used for activities in individual project components. For example the estimate of the area, volume, machinery type, personnel, material and/or time (as appropriate) to show how these estimates were derived.

The quantity can be listed and totalled here and linked to the applicable cell in the project component worksheet. This will assist the regulator's review of the submitted rehabilitation liability estimate.

Project components included in the calculator

- PC1 Exploration
 - Exploration calculations
- PC2 Underground workings
- PC3 Open cut/extractive pits
- PC4 Waste rock dumps
- PC5 Processing facilities
- PC6 Tailings storage facilities
- PC7 Heap leach facilities
- PC8 Rail facilities
- PC9 Haul and access roads
- PC10 Administration and accommodation
- PC11 Ancillary areas
- PC12 Borrow pits
- PC 13 Services infrastructure
- PC14 Water management
- PC16 Equipment mobilisation and demobilisation

MONITORING, MAINTENANCE AND OTHER INDIRECT COSTS

On the summary page, each project component cost is shown individually and added to provide a sub-total for all the project components. These are considered direct costs for the completion of the rehabilitation works.

Indirect costs associated with the final monitoring, maintenance, project management, government and contingency costs are calculated in the PC 17 monitoring and other cost worksheet.

Monitoring of rehabilitation outcomes (Activity A1020)

This provides a cost estimate for monitoring a site following rehabilitation. The standard cost is \$50,000 per annum and is multiplied by the number of years determined for site monitoring, as entered on the input page.

The amount of \$50,000 per annum may be excessive for simpler sites. However, if the site requires monitoring of water, bores, tailings and waste heaps and involves laboratory testing, as well as ecological monitoring, the amount may in fact be insufficient. Either way, the user can input an alternative rate to appropriately reflect the costs for that particular site and situation.

Maintenance (Activity A1024)

This is a cost estimate of the maintenance that may be required during the monitoring period. Predominantly, maintenance may be required on a failed landform due to geotechnical failure, an environmental event such as a high impact storm, off-site impact post rehabilitation works or revegetation failure. The default is 10% of the total of direct costs. This is a standard percentage. Any alternate percentage will need to be justified.



Government management costs (Activity A1025)

This is an estimate of the direct costs government will incur for managing this project. The standard figure of 7.5% includes costs associated with decommissioning and closure planning process such as tendering, preparation of closure plans, general project management and head office management.

Third party project management costs (Activity A1026)

This provides an estimate of the costs that will be incurred if a third party is responsible for the project management from design to completion including contractor and other stakeholder management, site inspections and auditing of outcomes. The default is 12.5%.

Insurance (Activity A1027)

This provides a cost estimate of insurance for the rehabilitation project. The default value is 1% of the component costs.

Contingencies (Activity A1028)

The contingency percentage from the input page is applied to the component cost subtotal. It can be customised if the user can provide justifiable reasons to alter this figure. The level of contingencies can vary from 30% for conceptual plans to as low as 10% for a fully quoted project. This value range is based on the Australasian Institute of Mining and Metallurgy (AusIMM) cost estimation handbook Monograph 27 - Cost Estimation Handbook (ausimm.com)

The table below shows the contingency level categories and percentages applied to the rehabilitation liability estimate for the site at this time.

Table showing level of certainty and contingency percentage (as at 1 November 2024)

	Contingency levels	
Conceptual/outline of Intentions	30%	Broad concepts with minimal detail
Rehabilitation concept/drawings	25%	Concepts based on designs
Detailed rehabilitation plan	20%	Detailed calculations based on designs
Fully scoped rehabilitation project	15%	Calculations determined near mine closure
Fully quoted project	10%	Quote determined at mine closure

Definitions

DEM Department for Energy and Mining

Calculator South Australian rehabilitation liability estimation calculator

PEPR Program for environment protection and rehabilitation

Project components Operational areas or features within a mining operation which may include exploration, underground workings, open pits, waste rock dumps, tailings storage facilities, heap leach facilities, infrastructure, roads, water management and processing plant.

Acknowledgement of Country

As guests on Aboriginal land, the Department for Energy and Mining (DEM) acknowledges everything this department does impacts on Aboriginal country, the sea, the sky, its people, and the spiritual and cultural connections which have existed since the first sunrise. Our responsibility is to share our collective knowledge, recognise a difficult history, respect the relationships made over time, and create a stronger future. We are ready to walk, learn and work together.

FURTHER INFORMATION

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