



## **1. Scope and purpose**



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## APPENDICES

Appendix 1.1: Ranger 2020 Mine Closure Plan stakeholder feedback form

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Cover photograph: Coonjimba Billabong

## GLOSSARY

Below are key terms that are used in this section.

Key term	Definition
Environmental Requirements	The Ranger Environmental Requirements are attached to the s.41 Authority and set out Primary and Secondary Environmental Objectives, which establish the principles by which the Ranger operation is to be conducted, closed and rehabilitated and the standards that are to be achieved.
WA mine closure guidelines	Guidance documentation provided by the Western Australia Department of Mines, Industry Regulation and Safety for the development of mine closure plans.

## ABBREVIATIONS & ACRONYMS

Below are abbreviations and acronyms that are used in this section.

Abbreviation / Acronym	Description
APR	Annual Plan of Rehabilitation
ER	Environmental Requirements
ERA	Energy Resources of Australia Ltd
GAC	Gundjeihmi Aboriginal Corporation
HDS	High Density Sludge
JTDA	Jabiru Town Development Authority
MCP	Mine Closure Plan
MTC	Minesite Technical Committee
NLC	Northern Land Council
NP	National Park
NT	Northern Territory
RPA	Ranger Project Area
TSF	Tailings Storage Facility
WA	Western Australian

## 1 SCOPE AND PURPOSE

This Mine Closure Plan (MCP) is prepared by Energy Resources of Australia Ltd (ERA) to describe the plan for the Ranger Mine closure as at 30 June 2020 and meet its regulatory obligations and conditions under Annex B.2 of the Ranger Authorisation 0108-18 (Section 3). The MCP is submitted to both the Minister of Resources, Water and Northern Australia (Commonwealth) and the Minister for Mining and Industry (NT) for approval.

### 1.1 Background

The Ranger uranium mine (Ranger Mine) (Figure 1-1) is located within the Ranger Project Area (RPA) adjacent to Jabiru, approximately 260 km east of Darwin in the Alligator Rivers Region of the Northern Territory (Figure 1-2). The RPA (Figure 1-3) is surrounded by Kakadu National Park (NP) and is bounded on the east and north by Magela Creek and its tributaries, and on the west by Gulungul Creek and its tributaries. Access to the mine is via the Arnhem Highway.

ERA has operated the Ranger Mine since the commencement of operations in 1980. ERA has provided international customers with a reliable supply of uranium oxide in the 38 years since production began. The Ranger Mine has produced in excess of 130,000 tonnes of uranium (ERA 2019) to meet the global uranium demand for fuelling nuclear power plants. ERA product is supplied to power utilities in Asia, Europe and North America in accordance with strict international and Australian safeguards. ERA shares are publicly held and traded on the Australian Securities Exchange, with Rio Tinto, a diversified resources group, currently holding 86.3 per cent of ERA shares.

Operations at the Ranger Mine are governed by both Australian and Northern Territory legislation and regulations. Details of the legal obligations of the closure of the Ranger Mine are detailed within Section 3. The key instrument that governs operations at the Ranger Mine on a day-to-day basis is the authority (the Ranger Authorisation) issued under the Northern Territory's *Mining Management Act 2018* (*Mining Management Act*). The main Commonwealth authority issued under section 41 of the *Atomic Energy Act 1953* (Cth) (*Atomic Energy Act*), provides the key tenure and land access approval required for the operations (section 41 of the Authority). The Ranger Environmental Requirements (ERs) are attached to the section 41 Authority and set out environmental objectives which establish the principles by which the Ranger mining operation is to be conducted, closed and rehabilitated and the standards that are to be achieved. The *Mining Management Act* also requires the Ranger Authorisation to incorporate, by reference, the ERs.



Figure 1-1: Oblique view of Ranger Mine 2019

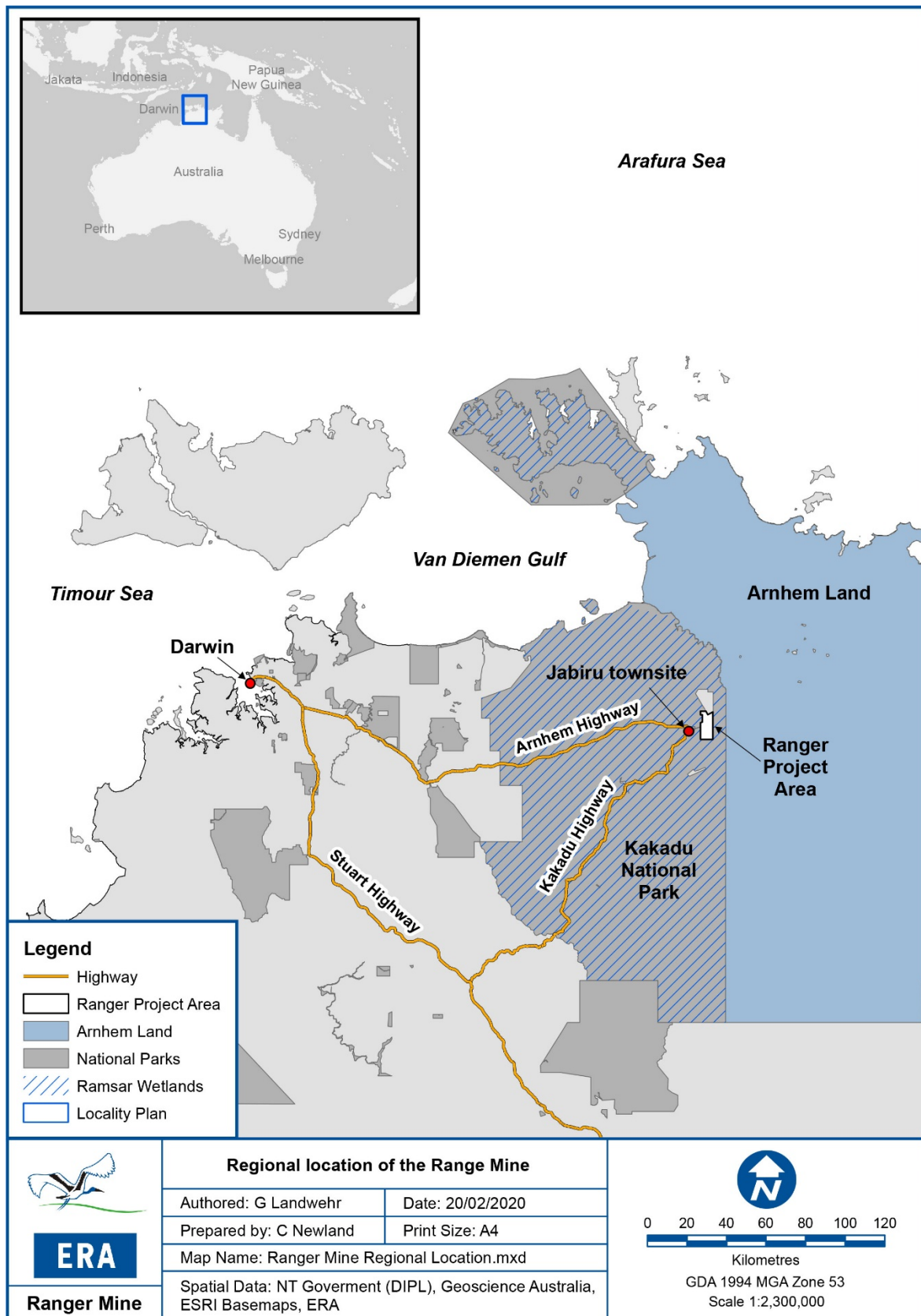
**ERA**

Figure 1-2: Regional location of Ranger Project Area





ERA

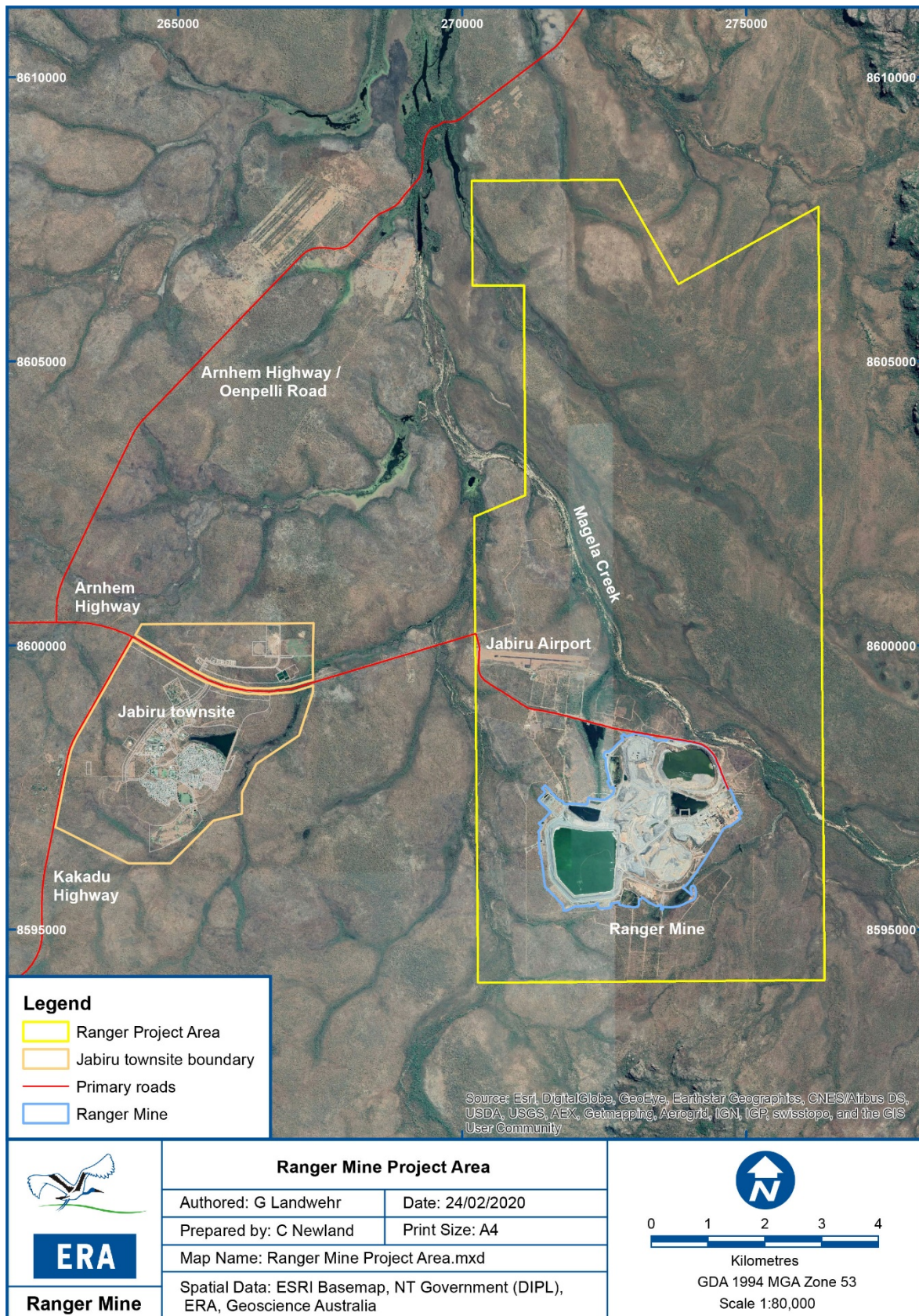


Figure 1-3: Ranger Mine Project Area

## 1.2 Purpose of this MCP

This MCP has been prepared as part of the ERA obligations under the *Ranger Authorisation 0108-18*. It describes the ERA mine closure plan for the Ranger Mine as at 30 June 2020. This plan is the result of the past 40+ years of extensive scientific research, engineering design and stakeholder consultation. This MCP is an updated version of previous iterations presented to stakeholders (e.g. McGovern 2006, Puhlovich & Pugh 2007 and ERA 2019).

The 2019 MCP represented the updated Ranger Mine closure plan following the finalisation of the closure Feasibility Study for the rehabilitation of the RPA in February 2019 (Feasibility Study). ERA, supported by an experienced engineering service provider, undertook the Feasibility Study to further refine scheduled rehabilitation activities and plans. This Feasibility Study, which developed the technical, costing and scheduling aspects of Ranger Mine closure to a very high level of detail, was subject to scrutiny from multiple internal and external reviews, including the Rio Tinto Technical Evaluation Group. The plan has been developed in line with the overall goal for the final land use, as specified in clause 2.1 of the ERs:

*2.1 ... the company must rehabilitate the Ranger Project Area to establish an environment similar to the adjacent areas of Kakadu National Park such that, in the opinion of the Minister with the advice of the Supervising Scientist, the rehabilitated area could be incorporated into the Kakadu National Park.*

As well as providing a concise description of the closure plan, the MCP includes an overview of the rationale and knowledge base used for the development of the document. It is acknowledged that further studies and works are ongoing, and that these will be utilised to feedback and further develop the annual updates of the MCP. The 2020 MCP is an update of the studies and closure planning from the 12 month period from 1 July 2019 to 30 June 2020.

Mine rehabilitation at the Ranger Mine is governed by several statutory approvals, including the Ranger Authorisation, the section 41 Authority and the ERs. Legal requirements for the assessment and approval of rehabilitation plans are prescribed in each of these documents, as well as separate working arrangements and a memorandum of understanding between the Commonwealth and NT Governments.

### 1.2.1 Ranger Authorisation and *Mining Management Act*

A variation of the state issued Authorisation (0108) was issued on 22 June 2018 and included Annex B, which details the process for submission and assessment of the MCP (also referred to as a 'rehabilitation plan') in accordance with Section 34 of the *Mining Management Act*. It is now a requirement that the MCP is reviewed and updated annually with submission to the Commonwealth Minister and the NT Minister due on or before 1 October each year. The MCP must demonstrate closure activities will achieve the relevant ERs and include:

- identification and management of closure issues, in particular, environmental and regulatory risks
- key closure and monitoring activities with indicative timing, and
- summary of closure works undertaken in the previous 12 months.



After the MCP has been received by the Ministers, it is subject to review by the Supervising Scientist, Northern Land Council (NLC) and Gundjeihmi Aboriginal Corporation (GAC) with advice then provided by these stakeholders to both Ministers. The Commonwealth and NT Ministers are then responsible for approving the MCP.

## **1.2.2 Section 41 Authority and ERs**

The ERs are appended to the section 41 Authority. Clause 9.1 of the ERs requires ERA to prepare a 'rehabilitation plan' which 'provides for progressive rehabilitation' and achieves the overall goal of rehabilitation outlined in clause 2.1 and the 'major objectives of rehabilitation' outlined in clause 2.2.

*2.1 Subject to subclauses 2.2 and 2.3, the company must rehabilitate the Ranger Project Area to establish an environment similar to the adjacent areas of Kakadu National Park such that, in the opinion of the Minister with the advice of the Supervising Scientist, the rehabilitated area could be incorporated into the Kakadu National Park.*

*2.2 The major objectives of rehabilitation are:*

- a) revegetation of the disturbed sites of the Ranger Project Area using local native plant species similar in density and abundance to those existing in adjacent areas of Kakadu National Park, to form an ecosystem the long term viability of which would not require a maintenance regime significantly different from that appropriate to adjacent areas of the park;*
- b) stable radiological conditions on areas impacted by mining so that, the health risk to members of the public, including traditional owners, is as low as reasonably achievable; members of the public do not receive a radiation dose which exceeds applicable limits recommended by the most recently published and relevant Australian standards, codes of practice, and guidelines; and there is a minimum of restrictions on the use of the area;*
- c) erosion characteristics which, as far as can reasonably be achieved, do not vary significantly from those of comparable landforms in surrounding undisturbed areas.*

The ERs also provide for infrastructure to remain on the RPA post closure if all stakeholders agree:

*2.3 Where all the major stakeholders agree, a facility connected with Ranger may remain in the Ranger Project Area following the termination of the Authority, provided that adequate provision is made for eventual rehabilitation of the affected area consistent with principles for rehabilitation set out in subclauses 2.1, 2.2 and 3.1.*

The requirements for the rehabilitation plan within the section 41 Authority are more broadly based than those of the Authorisation (discussed in Section 8).

All progressive rehabilitation must also be approved by the Supervising Authority on the advice of the Supervising Scientist and is also subject to the NLC agreeing that the aim and objectives for rehabilitation have been met. The Supervising Authority is the person responsible under an applicable law (with relevance to *Atomic Energy Act 1953, Environment Protection (Alligator*





*Rivers Region) Act 1978, Uranium Mining (Environment Control) Act 1979 etc.) or, where no law applies, the Supervising Scientist.*

The parallel NT and Commonwealth legislative approvals processes that relate to mine closure activities at the Ranger Mine are complex. Section 3 and appendices provide further details on the complexities of the legislative framework.

### **1.2.3 Government agreement**

In addition to the statutory obligations outlined above, and separate to this MCP, each year ERA prepares and submits an annual plan of rehabilitation (APR) to the responsible Commonwealth Minister for assessment and approval in accordance with the Ranger Uranium Project Agreement between ERA and the Commonwealth Government (Government Agreement). The specific purpose of the APR is to determine the securities amount to be held by the Commonwealth Government for Ranger Mine rehabilitation obligations, and these funds are held in the Ranger Rehabilitation Trust Fund. Once the APR is accepted by the Commonwealth Government, the APR is independently assessed and costed and the amount to be provided by ERA into the Ranger Rehabilitation Trust Fund is determined. Section 11 describes the current financial provision for closure.

### **1.3 Scope of this MCP**

This MCP covers the RPA (Figure 1-3), which specifically refers to the following areas and assets:

- Ranger Mine infrastructure, mine pit voids, Tailings Storage Facility (TSF), the exploration decline and all associated utilities within the operational area of the Ranger Mine
- land application areas, wetland filters and other infrastructure associated with the Ranger Mine
- Jabiru Airport and associated infrastructure and utilities: discussions are progressing between ERA, Traditional Owner representatives and relevant government agencies to plan for the retention and transfer of ownership of the airport for future use. These discussions will include resolution of any rehabilitation obligations. However, in the absence of an agreed plan, ERA will begin a process to close the airport some time in 2021 with rehabilitation likely to commence in 2024.

The MCP is prepared in accordance with the obligations and commitments outlined in Section 3. It is also prepared with reference to mine closure standards and guidelines, also included in Section 3.

The following areas and assets are not considered by this MCP:

- the town of Jabiru: The Commonwealth Government's Director of National Parks has leased land for the town to the Jabiru Town Development Authority (JTDA), which has subleased parts of Jabiru to ERA. ERA and the JTDA are also party to a cost sharing

agreement. Under these arrangements, which are due to expire in 2021, ERA has certain obligations to remove town assets and rehabilitate the land, if required. Discussions are underway between ERA, the relevant Commonwealth and NT Government agencies and key stakeholders to retain the existing township and associated infrastructure, given its significance as a tourist and business hub for the surrounding Kakadu National Park.

- the infrastructure located on the RPA immediately south of the Jabiru Airport: identified as the Jabiru field station currently occupied by the Supervising Scientist Branch.

ERA has defined the closure and rehabilitation activities in the phases outlined in Table 1-1. This timeline terminology is used throughout this MCP.

Table 1-1: Timelines of the operations and closure phases of the Ranger Mine

Operations & Closure Phase	Timeline	Closure Related Activities
Operations	Period prior to 8 January 2021	Progressive rehabilitation occurring, and operational, closure & research monitoring
Closure	Period between 8 January 2021 & 8 January 2026	Decommissioning, completion of rehabilitation groundworks & transition of monitoring requirements
Monitoring and maintenance	Period after 8 January 2026	Completion criteria monitoring (and maintenance rehabilitation works if required) [note – arrangements under which ERA has access to the RPA for this period to be finalised]
Relinquishment	Issue of close-out-certificate(s), relinquishment of RPA	Successive close-out certificates may be obtained for areas rather than for the entire RPA at a single point in time

## 1.4 Review and updates

As closure activities progress, and at least annually (in accordance with the Ranger Authorisation), this MCP will be reviewed and updated to reflect changes that have occurred. Where a substantial or material change to the closure strategy described herein is required, ERA will submit a revision to the Commonwealth and NT Ministers.

Subsequent to the distribution of a draft of the MCP to stakeholders in December 2016, several aspects of rehabilitation/closure activities were identified for standalone assessment via the Mine Technical Committee (MTC) and the Commonwealth Minister<sup>2</sup>. These activities were identified during the stakeholder workshop held in May 2017. The remaining applications for assessment and approval are listed Table 1-2.

<sup>2</sup> The functions of the MTC and other ERA key stakeholders are described in Section 5.



The 2019 MCP was subject to stakeholder review and detailed feedback has been considered for the preparation of this document (Appendix A). The 2019 MCP incorporated substantive changes in content compared to the 2018 version. This 2020 update has incorporated any updates to closure activities or operations from the period of July 2019 to June 2020, as outlined in the summary of changes table at the front of this document.

In reviewing this 2020 MCP, stakeholders are requested to utilise the form provided in Appendix 1.1 for feedback for consideration in the next annual review process.





Table 1-2: Future applications to be submitted

APPLICATION TITLE	APPLICATION TYPE	PLANNED SUBMISSION DATE	SCHEDULED APPROVAL DATE	CONTENT
Pit 3 closure	Commonwealth Ministerial approval required	November 2020	September 2021	Detail of planned tailings consolidation and isolation, capping layer, wicking and geotextile, backfill. Include contamination transport modelling, contaminated material placement and update of water inventory model.
Final landform	Commonwealth Ministerial approval required	May 2022	March 2023	Some information will have already been included within the MCP. Thus this application is to include any updates or additional information since July 2021 (MCP 2021).
TSF deconstruction	Commonwealth Ministerial approval required	August 2023	August 2024	Detailed plan of deconstruction of walls, and potential remediation of subfloor.
Completed closure works report	Commonwealth Ministerial approval required	30 June 2026	N/A	Final report detailing all completed closure activities.

## 1.5 Content and structure of this MCP

Clause B6 of the Ranger Authorisation 0108-18 requires that the MCP must be prepared in accordance with mine closure guidelines accepted by the Commonwealth Minister. The currently adopted guidelines are the Western Australian (WA) mine closure guidelines. These guidelines were reviewed and updated in March 2020 (DMIRS 2020) and have been used for reference in the preparation of this MCP. The guidelines provide for a preferred structure, which has been used as the basis for the MCP (with some minor adjustments to suit the unique circumstances of the Ranger Mine). The structure of this MCP, along with an overview of the content of each section, is provided in Table 1-3.

Table 1-3: Structure and content of this MCP

Section	Content
1. Scope and purpose	Introduction to the Ranger Mine, including its location and history, purpose of the document, overview of relevant regulatory requirements of the document and scope of this MCP. Includes details on future standalone closure applications.
2. Project overview	An historical overview of the Ranger Mine ore deposits and mine development, including a description of the current mining operations and major mine components/infrastructure. Land disturbances will be provided within Section 9: Implementation.
3. Closure obligations and commitments	Presents the legal obligations, commitments, standards and guidelines as relevant to the Ranger Mine closure.
4. Stakeholder engagement	Description of the stakeholder engagement process and details of the stakeholder engagement for matters relating to rehabilitation and closure with the stakeholder engagement register provided as an appendix to this chapter.
5. Baseline and closure date, and analysis	Overview of the existing environment of the RPA in relation to the local and regional setting, including the nearby sensitive receptors. Summary of the extensive studies and research that have contributed to the closure risk assessment, closure criteria and proposed closure strategy. A link of studies to Key Knowledge Needs is included as Appendix 5.4.



Section	Content
6. Post-mining land use, closure objectives and closure criteria	<p>Description of the agreed post-mining land use and closure objectives.</p> <p>Description of the closure criteria that will be used to measure rehabilitation success and demonstrate the closure objectives have been met. This section includes an overview of the current status of closure criteria (at 30 June 2020).</p>
7. Best practicable technology	<p>Description of the process and identification of the best practicable technology for the Ranger Mine rehabilitation and closure.</p> <p>Includes details on best practicable technology assessments already undertaken on closure related works.</p>
8. Risk assessment and management	<p>Description and outcomes of the closure risk assessments.</p>
9. Closure implementation	<p>Description of the proposed closure strategy, which was informed by the Feasibility Study, and is aligned with closure domains.</p> <p>Includes details on what has been completed and the proposed schedule for future works.</p>
10. Closure monitoring and maintenance	<p>Description of the monitoring programs currently being undertaken, or proposed, to track the progress of the rehabilitation against the closure criteria. Also describes what maintenance will be required.</p>
11. Financial provision for closure	<p>Provides the rehabilitation provision based on estimates of costs and their timing to rehabilitate and restore disturbed land to original condition.</p>
12. Management of information and data	<p>Description of management strategies, including systems and processes for the retention of mine records relevant to mine closure.</p>
Appendix A:	<p>Responses to stakeholder comments regarding the 2019 MCP.</p>





## 1.6 References

Department of Mines, Industry Regulation and Safety 2020. Statutory Guidelines for Mine Closure Plans, Government of Western Australia, March 2020, p 14

<http://www.dmp.wa.gov.au/Documents/Environment/REC-EC-111D.pdf>

Department of Mines and Petroleum & Environmental Protection Authority. 2015. *Guidelines for Preparing Mine Closure Plans* Government of Western Australia. May 2015, p 100.

Energy Resources of Australia Ltd. 2019. *Annual Report 2019*.

McGovern, E. 2006. *Energy Resources of Australia Ltd Ranger Mine Closure Model- First Pass. (Prepared June 2005 & revised March 2006)*. EWL Sciences Pty Ltd. March 2006, p 220.

Puhalovich, A & Pugh, L. 2007. *ERA Ranger Closure Model 2007*. Report by Energy Resources of Australia Ltd, **Commercial in Confidence**. November 2007, p 137.



## **APPENDIX 1.1: RANGER 2020 MINE CLOSURE PLAN STAKEHOLDER FEEDBACK FORM**

**STAKEHOLDER:** *Insert stakeholder details e.g. Supervising Scientist Branch*

[illegible]