



Department of Energy, Mines,
Industry Regulation and Safety

Mining Rehabilitation Fund

Yearly report 2023–24





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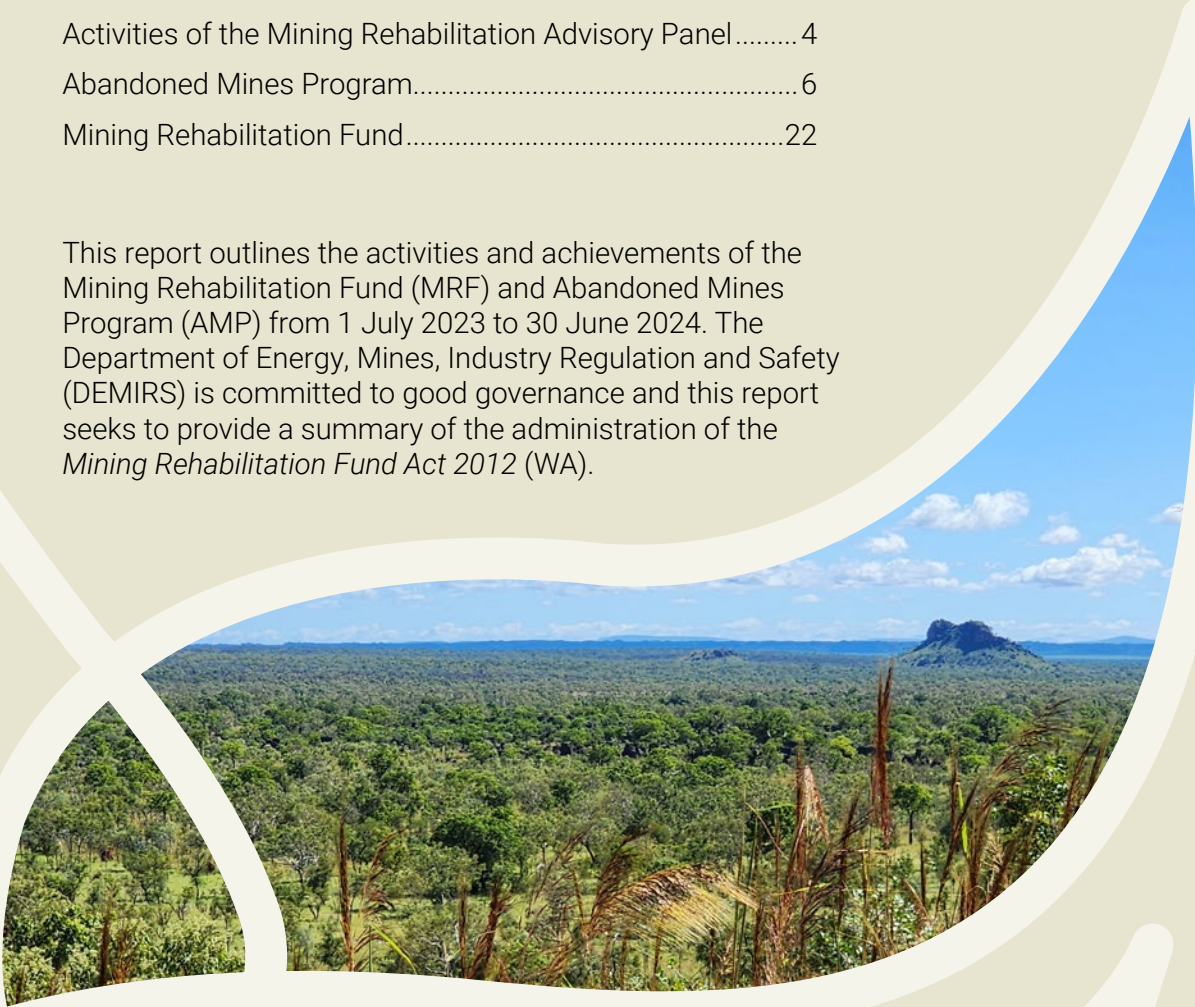
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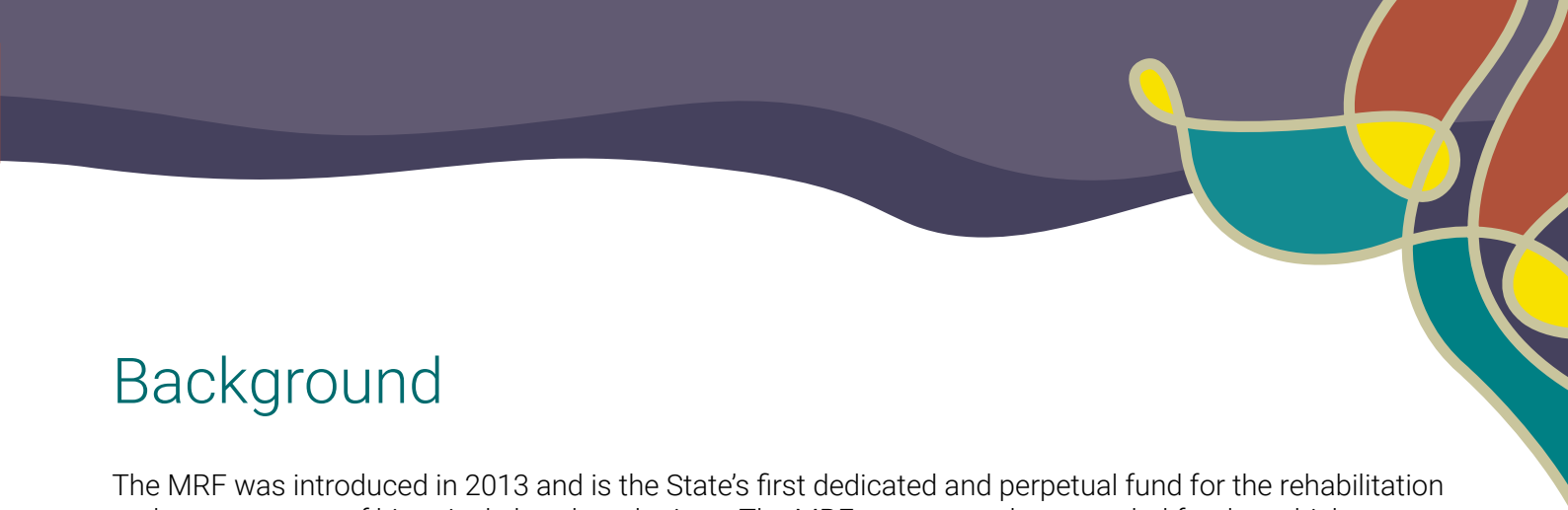
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This report outlines the activities and achievements of the Mining Rehabilitation Fund (MRF) and Abandoned Mines Program (AMP) from 1 July 2023 to 30 June 2024. The Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) is committed to good governance and this report seeks to provide a summary of the administration of the *Mining Rehabilitation Fund Act 2012* (WA).





Background

The MRF was introduced in 2013 and is the State's first dedicated and perpetual fund for the rehabilitation and management of historical abandoned mines. The MRF was created as a pooled fund to which Western Australian mining operators contribute yearly, meaning the WA community is no longer paying for the rehabilitation of abandoned mining operations.

The MRF is administered as a Special Purpose Account under the *Financial Management Act 2006* (WA) and funds must be spent in accordance with the purposes set out in the *Mining Rehabilitation Fund Act 2012* (WA) (MRF Act) for which the Director General of DEMIRS is accountable.

All tenement holders operating on *Mining Act 1978* (WA) (Mining Act) tenure are required to report disturbance data and contribute annually to the fund depending on their level of environmental disturbance on tenements.

Contributions to the MRF are used in circumstances where there are unsuccessful efforts to enforce the obligations of tenement holders/operators to rehabilitate mines. The recovery of costs may still be sought from any former holder/operator that fails to meet their obligations to rehabilitate.

In addition, interest earned on the fund can be used to fund the administration of the MRF and undertake rehabilitation work on legacy abandoned mines throughout the State.

DEMIRS' annual reports provide information on the management of the fund and enable the WA Government to consider and approve the projected revenue and expenditure for the MRF through the State Budget each year.

This report is supplementary to the annual report and presents detailed information of the activities and achievements of the MRF and AMP for 2023–24, as well as indicating future plans for both initiatives.

MRF 10-year legislative review

Under the MRF Act, the Minister for Mines and Petroleum is required to conduct an independent 10-year review of the Act's operation. Marsden Jacob Associates was commissioned by the WA Government to carry out the public consultation and statutory review to assess the Act's effectiveness. The [review](#), tabled in Parliament in April 2024, concluded that the MRF remains an effective strategy for mitigating the environmental, social, and financial risks posed by abandoned mines to the State. The review offered 16 recommendations, which are currently under consideration by the department.

Activities of the Mining Rehabilitation Advisory Panel

The Mining Rehabilitation Advisory Panel (MRAP), as outlined in the Mining Rehabilitation Fund Regulations 2013, provides advice to the Director General of DEMIRS on matters relating to the fund and the associated AMP.

The current members of MRAP (pictured below), appointed for a three-year term from August 2022, are Renee Young (Chairperson), Angela Bishop (Deputy Chairperson), Vern Newton and Naomi Hutchings.



Renee Young

has specialised knowledge in mine site ecological restoration with over 15 years' experience across academia and industry.



Angela Bishop

has over 20 years' experience working for government and industry in an operational and corporate capacity in the environmental sector.



Vern Newton

has worked for construction material and mining companies in senior roles and has also been involved in driving sustainable policies.



Naomi Hutchings

is a senior private practice lawyer with over 20 years' experience in environment planning, land access, native title and heritage law.

The MRAP meets bi-annually to discuss and provide independent advice on a range of matters relating to managing the MRF and work activities associated with the AMP.



DEMIRS would like to acknowledge the considerable contributions of the MRAP members. During the year the panel attended various workshops in addition to the formal MRAP meetings and their additional support was invaluable to further enabling the AMP projects.

In June 2024, Helen Chernoff resigned from MRAP. MRAP members and DEMIRS would like to thank Helen for her contributions to the panel throughout her term.

Due to the vacancy in the panel membership DEMIRS released an Expression of Interest to appoint a new member.

During the 2023–24 year, the MRAP undertook a range of activities including the following:

- Reviewed the recent increase in interest earnings on the MRF enabling planned progression on MRF interest funded projects.
- Provided feedback into the legislated 10-year review of the MRF Act.
- Reviewed the AMP five-year plan and budget in addition to the detailed revision of the AMP Strategy.
- Acknowledged the abandoned Smoke Creek diamond exploration site, located in the East Kimberley, as a new project site.
- Participated in a workshop review of projects being executed through the AMP works program, including highlights on Reid's Ridge, Northampton Shafts, Elverdton, and Ellendale projects, as well as the planning in progress for Safer Shafts for Towns, Smoke Creek and Collieries.
- Endorsed the declaration of Elverdton as an abandoned mine.
- Discussed the development and preliminary results of the Legacy Tailings and Silicate Minerals projects.
- Endorsed the revocation of the Donnybrook Shafts as an abandoned mine, acknowledging the finalisation of this project.

Abandoned Mines Program

Project status

Funds contributed to the MRF can be used to rehabilitate mine sites that have become abandoned by companies that have either previously paid into the MRF or were eligible to pay into the fund, after all other avenues to ensure rehabilitation have been exhausted. Interest generated on the funds contributed to the MRF can be used to rehabilitate those legacy mining features abandoned prior to the introduction of the MRF.

The AMP achieved significant milestones during the 2023–24 financial year with the establishment of the Ellendale Bunuba Trainee Program and an increase of work focused on legacy abandoned mines enabled through the increased MRF earnings over the period. Current projects executed through the AMP are indicated below (Table 1 and Figure 1).



Table 1. AMP Project status

AMP project	MRF funding	Status	 In planning  In progress  No Activity
Ashmore Seppelt <i>Balanggarra</i>	Principal		In planning, pending engagement with Traditional Owners. Deconstruction, clean-up and rehabilitation works program.
Ellendale <i>Bunuba</i>	Principal		Deconstruction and clean-up works program completed. Safety earthworks program in progress with rehabilitation planning underway for landforms with no future mining potential.
Smoke Creek <i>Miriwing Gajerrong</i>	Principal		Deconstruction and clean-up works program in planning pending legal clearance.
Reid's Ridges <i>Badimia</i>	Principal		Deconstruction, clean-up and shafts works program located in Karara Rangeland Park.
Safer Shafts for Towns <i>Nyamal, Wajarri Yamaji, Yugunga-Nya, Yamatji Nation</i>	Interest		Initiated in 2022 with the goal of mitigating safety risks associated with abandoned mine shafts located within 1km of a community. Staged progression to be expanded to other regional areas as funding and resourcing allow.
Northampton Shafts <i>Yamatji Nation</i>	Interest		Collaborative Department of Planning, Lands and Heritage project to mitigate risks associated with legacy mining in the Northampton area.
Bulong TSF <i>Kakarra</i>	Interest + Bond		Tailings storage facility (TSF) on the edge of Lake Yindarlgooda. Project on hold pending resourcing and engagement with Traditional Owners.
Elverdton <i>Wagyl Kaip Southern Noongar</i>	Interest		Detailed site investigation in progress to inform remediation strategies on the uncontained Elverdton tailings.
Collieries <i>Gnaala Karla Boodja</i>	Interest		A project aiming to improve understanding of subsidence and reactive carbonaceous shale risks resulting from historical underground coal workings. Improved understanding will inform appropriate strategies to mitigate risks posed to the public and environment by these legacy mine features in the Collie Basin.
Legacy Tailings	Interest		Trial project investigating the use of new satellite change monitoring technology to identify changes on constructed landform walls across select abandoned mines with TSF.
Silicate Minerals	Interest		Trial project investigating the use of new satellite hyperspectral/ hydrogen gas based technology to determine the abundance and dispersion of crocidolite across old workings or abandoned mines potentially associated with extraction of fibrous minerals.



Figure 1. Abandoned Mines Program – Inventory and project locations

Engagement

Partnerships

The Geological Survey of Western Australia (GSWA) and the Sustainable Minerals Institute at the University of Queensland (UQ) – through the UQ **MIWATCH Mine Waste Transformation through Characterisation program (MIWATCH)** – have recently embarked on a three-year collaborative research project to sample and characterise mine waste across WA.

The aim of this project is to examine mine waste to identify if it is a viable resource of new economy metals (in particular critical metals for example cobalt (Co), indium (In), manganese (Mn), tungsten (W), rare earth elements (REE), gallium (Ga), germanium (Ge)) or to determine if the waste is barren which will allow for a more complete mine rehabilitation plan.

The MIWATCH project team is a world leader in mine waste characterisation, having developed several cutting-edge techniques and applied them to hundreds of sites across eastern and northern Australia. Initially this project will examine mine waste at two sites in the State, the Ellendale and Elverdton abandoned mines, and will gradually be expanded throughout the life of the project.

The project will undertake 'Stream 1' site investigations, which will include routine mineralogical and chemical investigations, and will also investigate the mining technologies and techniques required to recover any metals as part of an economic rehabilitation approach. 'Stream 1' activities will be achieved through robust sampling (in the upper 5m of the sediment package in the case of tailings). The recovered samples will be subjected to chemical assay, mineralogical analysis and mineral chemistry analysis using a range of techniques including bulk X-ray diffraction (XRD), mineral liberation analysis (MLA), portable X-ray fluorescence (pXRF), laser ablation inductively couple plasma mass spectrometry (LA-ICPMS) and micro-XRF to quantify the critical metal content and identify their host minerals.

Knowledge sharing

The AMP shared experiences with the **Australasian Land and Groundwater Association** at the Perth Regional Contaminated Land and Groundwater Conference on the 17 May 2024, presenting on *Interactions with contamination and abandoned mines*.

The AMP was also invited to present at the fourth **National Indigenous Empowerment Summit** held in Brisbane during June 2024. A presentation on 'Enabling opportunities on Country through the Western Australian Abandoned Mines Program' outlined the approach adopted in creating opportunity for Indigenous engagement through legacy mine rehabilitation programs, initiatives implemented through the AMP in remote areas to enable economic opportunities through targeted tender and State Government policy, and skill development for Indigenous individuals, including trainee programs. It concluded with a spotlight on the AMP Ellendale project and the achievements to date through the Buru Rehab contract. Buru Rehab also presented on their approach to engagement with local communities through their contracts, focusing on the Ellendale project as their keystone project.

The AMP Ellendale deconstruction contract was shortlisted as a finalist in the **Institute of Public Administration Australia WA (IPAA) Achievement Awards 2023** under the Best Practice in Procurement category. The nomination covered the development of AMP specific procurement process and tender templates, and included the challenges encountered during the contract execution and the impact of the works undertaken.





Review of the abandoned mines prioritisation methodology

The 10-year review of the MRF Act prompted a review the AMP's prioritisation methodology, which commenced in November 2023. The AMP strategy seeks to establish a leading practice approach to the prioritisation of risks associated with abandoned mines. Therefore, the aim of the review project was to ensure that the prioritisation methodology was fit for purpose and provides leading guidance in the execution of the AMP.

The Abandoned Mines Policy (2016) provides a framework and policy principles for the assessment, prioritisation, management and rehabilitation of abandoned mine sites. While the policy is also scheduled for its own review in 2024–25, the risk-based approach focussed on community safety and environmental impact will continue to form the basis for abandoned mine feature or site prioritisation.

The prioritisation methodology project included a literature review to explore how other Australian states manage their abandoned mine sites to identify similarities and more importantly, potential areas for improvement. Consideration was also given to the alignment of the prioritisation methodology with International Organisation for Standardisation (ISO) 31000:2018 Risk Assessment Guidelines.

The AMP team participated in three workshops and regularly engaged with a consultant to review and validate the proposed methodology that would be used to prioritise abandoned mine features. The nominated assessment criteria and risk-based methodology was further defined throughout this process. A 'living' version of the Abandoned Mines Inventory was developed which allows feature data to be updated as risks are mitigated through the implementation of rehabilitation projects. A Feature Manipulation Engine (FME) workbench integrated with available datasets was prepared, which provides a tool for the assessment of all features in the inventory and can be repeated as required.

Products developed under this project include an AMP Prioritisation Tool, a procedure manual which provides a detailed method to use the tool, a 'living' version of the Abandoned Mines Inventory and a webinar which summarises the methodology and tool outputs. The review of the prioritisation methodology project will be finalised in 2024–25 and will be embedded in the AMP's project identification and prioritisation process.

Ellendale

Located in the West Kimberley region of WA, the former Ellendale diamond mining lease consists of the E4 and E9 pit voids, various stockpiles, waste rock landforms, tailings storage facilities (TSF) and other associated infrastructure. Mining at the Ellendale site commenced in 2002 and continued to 2015, when Kimberley Diamond Company NL (KDC) entered administration in October 2015. Ellendale was declared an abandoned mine site in December 2015.

The Stage 1 Earthworks program is well underway with the successful conclusion of works corresponding with the end of the 2023 dry season, and re-mobilisation back to site at the end of the 2023–24 wet season.

2023 dry season

The first season under the Buru Rehab contract was shortened due to the extensive flooding through the Fitzroy catchment over the 2022–23 wet season. With the works program getting underway in June 2023, a maintenance workshop, camp with capacity for up to 40 personnel, including offices and a full-time paramedic, was established on site as well as refurbishment of the site airstrip.

The first major work was the establishment of a combined 5.4km of safety bunds around the E9 and E4 pit voids to prevent inadvertent access.

Other rehabilitation work included closing the open areas that were the original KDC camp and E9 West processing and maintenance areas, which



Safety bunds established around the pit voids.



E9 Lights Stockpile showing some of the before profile and during works.

were completed through the Ellendale Bunuba Trainee Program. This Indigenous trainee program is delivered by Buru Rehab in partnership with the local community and DEMIRS' AMP.

Stabilisation of constructed landforms experiencing significant erosion and movement of sediment on Country also got underway with extensive works across the E9 Lights Stockpile. As this landform is a low-grade stockpile, it remains a possible resource for the incoming tenement holder. Therefore, the aim is to stabilise the surface from excessive erosion rather than complete rehabilitation. The reprofile designs were informed by material analysis and modelling to determine an appropriate profile suitable for the material within the stockpile.

In September 2023, 12 representatives from the Bunuba Dawangarri Aboriginal Corporation (BDAC) together with senior officers from the department, the AMP team, and Buru Rehab directors and operational team, met on Country to review the progress of the works program and the Ellendale Bunuba Trainee Program.



BDAC representatives on site with Buru Rehab and the AMP.



Les Jones Bunuba Elder and Buru Rehab Trainer Assessor with participants of the Ellendale Bunuba Trainee Program on award night.

The conclusion of the 2023 dry season was celebrated with an awards evening where 11 Indigenous participants of the Ellendale Bunuba Trainee Program received a combined 21 National Certificates of Attainment for a range of heavy vehicle skills. Eight of the participants are from the Kimberley, including five Bunuba people. The trainee program delivered training opportunities for various machinery operations including loader, water cart, excavator, articulated truck, skid steer and grader.

2024 dry season

The Buru Rehab team mobilised back to site in April for the 2024 dry season, including seven Kimberley based trainees onboarding under the Ellendale Bunuba Trainee Program. The works program to stabilise constructed landforms continues across a number of work fronts, with the E4 Lights Stockpile completed to specification.

The trainee program completed the planned rehabilitation of the open areas associated with the bore fields and other light infrastructure sites across the site and is in progress on former exploration areas adjacent the former mining operation.



E9 ROM and Noise Bund landforms – works in progress.

E4 Lights Stockpile – before (right) and after (below).





Ellendale Bunuba Trainee Program participants.

Following 12 months of on grounds works at Ellendale the project is proceeding ahead of schedule, with no injuries or reportable incidents.

Table 2. Ellendale contract achievements

Achievements under the contract	TOTAL June 23 to June 24
Expenditure over the period	\$21,186,110
Local spend - Shire of Derby West Kimberley	\$5,148,938
Other Indigenous contractor spend	\$2,632,678
Indigenous participation	Av. 32%
Total Recordable Injury Frequency Rate	0
Project completion	67%

The AMP continues to work with the Bunuba and other key stakeholders, including tenure interests across the Ellendale area, to minimise the safety, health and environmental risks at the site while ensuring the resource value of the tenements is not diminished.

Smoke Creek

Smoke Creek is a small abandoned diamond exploration operation located in the East Kimberley. The project is adjacent to the sensitive Lake Argyle environment in an area known for tourism including 4WD and camping. A small redundant plant remains with the remnants of the former on-site camp. An initial site visit was conducted in October 2023 and high-resolution aerial imagery was captured in February 2024.

The project is pending a determination on whether the former tenement holder can be held accountable for the clean-up costs or if the MRF will facilitate the required work.



The project is expected to undergo a selective tender process, inviting local East Kimberley based Indigenous businesses, and will be a one-season deconstruction and clean-up project with some rehabilitation earthworks.

Reid's Ridge

Reid's Ridge, previously mined for gold, is located within the Department of Biodiversity, Conservation and Attractions (DBCA) managed Karara Rangeland Park in the Mid West region of WA. The area is a popular tourist destination particularly during the wildflower season. Mining disturbances are considered small and confined to discrete areas. The site includes a 160m main shaft, with subsidence surrounding the shaft, uncontained tailings, waste rock, abandoned dilapidated infrastructure, hydrocarbon and chemical storage vessels, an old camp and general debris. There are also other historical legacy shafts and exploration disturbances.

Initial consultation with land managers and other stakeholders commenced in 2022 and continued throughout the reporting period. This consultation has identified broad support for the removal of the abandoned dilapidated infrastructure and a site wide clean up. Planning is underway for a demolition and site wide clean-up works contract in 2025.



An Aboriginal cultural heritage survey and legacy shaft identification survey were completed by Badimia representatives across the project area in March 2024.

The recommendations from the survey have been incorporated into rehabilitation planning. The site will also require referral for state heritage assessment under the Government Heritage Property Disposal Process.

A geotechnical engineering contract was awarded in November 2023 and the onsite assessments were completed in April 2024. A report on subsidence risk has been drafted. These risks will inform the development of the demolition and site wide clean-up works contract.

Geotechnical assessment reports and rehabilitation options reports will be completed in 2024. Recommendations from those reports will be considered along with consultation with land managers and other stakeholders to develop suitable rehabilitation options for the site.



Yalgoo Primary School engagement.

Safer Shafts for Towns

The Safer Shafts for Towns project intends to mitigate safety risks associated with abandoned mine shafts around regional communities. The project also aims to provide opportunities for both employment of local Aboriginal people and the procurement of Aboriginal businesses through project implementation.

The Abandoned Mines Inventory includes more than 30,000 records of shafts located within 10km of towns and 1km of major roads across WA. These records have been prioritised through the AMP risk assessment and prioritisation process to create a shortlist of highest risk features within proximity of schools. Yalgoo, Cue and Marble Bar were prioritised based on the inherent risk to a single child by the number of shafts that may be located within 1km of a school and are pilot locations for Phase 1 of the project.

Data collected during the 2022 Stage 1 Feature survey and risk assessment was analysed and an updated risk prioritisation of assessed features was prepared to inform the next stage of implementation for the pilot towns. An Aboriginal cultural heritage survey, initiated through the Yamatji Nation Government Standard Heritage Agreement, for the Yalgoo Phase 1 project area was undertaken in June. The Stage 2 Engineering assessment and design is scheduled to commence in Yalgoo in 2024.

Stakeholder engagement during 2023–24 focused on informing the community of the safety risks associated with abandoned mine shaft features within local communities as well as build relationships to identify opportunities to support the local Aboriginal economy through engagement with the project.

The first shaft to be rehabilitated under the project is the Stewart Shaft in Cue. This was urgent work resulting from changed ground conditions following seasonal events, identified through local stakeholder engagement during 2022. The engineering assessment and design recommended backfilling, which was successfully completed by a local earthworks contractor in 2023. The post-works monitoring program is scheduled to be completed in 2024.



Northampton Shafts

Collaboration with the Department of Planning Lands and Heritage (DPLH) Northampton Lead Tailings Project (NLTP) across three historic mining areas: Wheal Ellen, Commonage and Wanerenooka near the Northampton town site in the WA Mid West.

Activity notices under the Yamatji Nation Government Standard Heritage Agreement were submitted in 2023 and Aboriginal cultural heritage surveys have been completed.

The AMP coordinated geotechnical assessments of the Wanerenooka and Commonage sites which have informed the development of a rehabilitation options report for the abandoned shaft features in these areas.

Concurrently DPLH has undertaken contaminated sites investigations. Following the conclusion of the investigation works, significant issues identified from the contaminated site investigations and the shafts rehabilitation options report will be reassessed to inform a risk-based approach to undertaking the next stage of works and enable the safe rehabilitation of the shafts.

The Wanerenooka Mine Site (Place Number 4658) is listed on the State Register of Heritage Places and on the Shire of Northampton's Municipal Heritage Inventory (Place Number 42) under category 1 (Exceptional Significance). During the year, the AMP assisted with the DPLH-commissioned Archaeological Management Plan update. Any remediation or rehabilitation plans will require referral to the Western Australian Heritage Council and Shire of Northampton.

The recommendations of the Aboriginal cultural heritage survey, geotechnical engineering rehabilitation options report, the contaminated sites investigations and the state heritage referrals will be considered along with consultation with land managers and key stakeholders to develop suitable remediation and rehabilitation options.



Shaft at Wanerenooka.



Auger rig at Commonage during geotechnical assessments.



Geotechnical assessment test pits between abandoned shafts.

Elverdton

The historic Elverdton site, situated approximately 10km southeast of Ravensthorpe, has a long history of copper and gold mining, which began in 1899. Significant copper ore production occurred during two major periods, between 1901 and 1918 and 1957 and 1971.

The current project focuses on addressing the environmental impact of tailings material that has migrated downstream from the stockpiles. In 2020, a preliminary site investigation (PSI) was conducted leading to the development of a sampling and analysis quality plan (SAQP), which received endorsement from the Accredited Contaminated Sites Auditor (CSA) in 2021.

A Phytophthora dieback hygiene management plan was developed from the survey completed in 2023 and implemented on all activities undertaken under the Elverdton project.

Elverdton was selected for inclusion in the collaborative research project, by GSWA and UQ MIWATCH, to sample and characterise the legacy tailings and determine its viability as a resource for the new economy metals. The MIWATCH sampling program was completed in October 2023 with the analysis report anticipated in late 2024.

Improvements to MRF interest earnings enabled the planned detailed site investigation (DSI) to progress through procurement, with the DSI contract awarded in December 2023. On ground activities got underway following extensive stakeholder engagement in February 2024.

The DSI will continue to be executed throughout 2024. Works completed through the DSI during the reporting period include installation of water monitoring bores, pXRF sampling, soil and sediment sampling, first flush sampling event in the river headwaters and repeated sampling of water monitoring bores.

Local contractors were engaged to support the execution of the DSI where possible including underground utility locating services, earthworks contractor to enable access for the drill rig and test pitting, and surveyor. The final report for the DSI is anticipated by March 2025.

Stakeholder engagement over the past 12 months has included meetings with the Ravensthorpe Shire, Ravensthorpe Agricultural Initiative Network (RAIN), neighbours, Ravensthorpe Tourist Information Centre, tenement holders and the Wagyl Kaip Southern Noongar Aboriginal Corporation.



Installation of water monitoring bores.



Sample pit in the northern tailings stockpile.

Donnybrook Shafts

A joint DBCA project located in the Boyanup State Forest approximately 2km south of Donnybrook within the Gnaala Karla Booja language region. Between 1897 and 1903 the area was prospected and mined for gold.

Earthworks to rehabilitate eleven shaft features were completed in November 2022. Post earthworks monitoring assessments have been conducted by geotechnical engineers on five separate visits with the final monitoring concluding

“the majority of expected settlement has likely occurred and the backfill within the features can be considered to be stable” and that “no further detailed monitoring of the rehabilitated features is considered warranted.”

A full outline of the completed works program is available in the [2022–23 MRF yearly report](#).

Revocation of the abandoned mine declaration published in the Government Gazette on 14 June 2024.

Collieries

Since the discovery of coal in the Collie Basin in the late 19th century, the resource has been almost continuously mined by underground and open cut methods. This has resulted in a number of abandoned underground mine workings throughout the region. The scale of these workings is extensive, with areas of historical mining now overlain by the towns of Collie, Allanson, Collie Burn and Collie Cardiff.

The Collieries Project intends to develop appropriate strategies to mitigate safety risks to the public and the environment in the Collie region. The project intends to develop an understanding of ground subsidence due to deterioration of historical underground coal mine workings, as well as reactive carbonaceous shale issues in the Collie Basin. Learnings from activities on this project will be shared with other stakeholders to assist in their scoping of other similar works.

With the inception of the Collieries Project in this reporting period, the AMP has engaged with the Shire of Collie, the DBCA and Gnaala Karla Booja Aboriginal Corporation (GKB) as key stakeholders to understand regional safety priorities in the region.



Neath/Cardiff Colliery recent subsidence indications.

The initial focus of the project is to improve understanding of the issues associated with the legacy of coal mining in the Collie Basin and review approaches adopted both within Australia and internationally which may inform potential remedial options.

A geotechnical engineering investigation has been awarded as a pilot project focusing on public land over the Scottish Colliery. The initial desktop assessment will examine the subsidence risks particular to the Collie Basin and inform potential investigation and remedial solutions is in progress.

A separate geochemical investigation is in planning to improve understanding of the risks presented by the presence of reactive shales in the legacy coal mining areas.



Legacy tailings

The Legacy Tailings Storage Facility Trial project was initiated to investigate the use of new satellite change monitoring technology to detect and monitor change (horizontal and vertical movement) of constructed landforms, initially focusing on selected abandoned TSFs.

Given the deterioration of one of the larger Ellendale TSF's over the past two wet seasons, the question was raised about how the condition of other abandoned TSFs across the State might be monitored. Reviewing the challenges relating to remote area access, time required to travel and potential difficulties with vehicle access to areas which may not see regular traffic, the effort required in assessing risk or likelihood associated with these features becomes apparent. These issues contributed to this project being identified as a priority during the revision of the AMP Strategy.

Initially working with Landgate Earth Observations and GSWA the potential of new generation satellite synthetic aperture radar (InSAR) data to detect and monitor change of constructed landforms was investigated, initially focusing on selected abandoned TSFs. The initiation phase of the project provided InSAR data acquisitions via the TerraSAR-X satellite that:

- Achieved at less than \$900 per data set.
- Established change monitoring across three abandoned remote TSF with regular reporting and real time monitoring of status, accessible via online platforms.
- Identified a baseline data set for each TSFs under review.

The trial has proven successful with several vendors now able to provide the requested data, reporting and real time online platform access, and has now moved in-house with DEMIRS following on from the initiation phase with Landgate.

Twelve months of change monitoring data is available for the three selected TSF locations and monthly reporting and analysis has demonstrated seasonal fluctuations in TSF wall movement up to 8mm. Threshold variances have been established for movement criteria with real time notification systems established and enabled.

The next phase of the project will expand coverage to additional sites as well as maintaining the current change monitoring over the existing projects sites.

Silicate minerals

The AMP received a report from a member of the public relating to potential asbestos tailings and old mine workings, prompting a desk top study. The desktop study identified up to 132 suspected historical mine workings which may contain fibrous material associated mineral extraction, the majority in the Pilbara. Joint investigations including support from GSWA identified the potential for crocidolite detection via selective hyperspectral bandwidth analysis.

The Silicate Mineral Trial project was initiated to investigate the use of new satellite hyperspectral/hydrogen gas based technology to determine the abundance and dispersion of crocidolite (also referred to as blue asbestos) across the suspected old workings associated with extraction of fibrous minerals. The intent is to be able to assess potential risks associated with the distribution and extent of fibrous materials by reducing potential for exposure through remote detection techniques.



The AMP plans to utilise several methods of data collection and analysis to enable assessment of the extent and density of crocidolite dispersion in the surrounding environments across the multiple target areas. This new project leverages the 2005 studies conducted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) which utilised the Hymap/PIMA spectrographic systems mounted in light aircraft to provide a proof of concept, with ground-truthed data validation, to identify crocidolite spectral diagnostics in specific Short Wave Infrared (SWIR) bandwidths allowing attributes of crocidolite around the Wittenoom area to be identified and mapped.

The first stage of the Silicate Minerals trial was focused on determining if an appropriate diagnostic technique or algorithm could be defined/refined using readily acquirable hyperspectral data sets to identify and map crocidolite. This involved:

- Determining market maturity of vendors able to supply the product. Initial discussions with Landgate and potential providers defined no provision of supply in Australia at the time and the Canadian based supplier Aster Funds was procured.
- Exploring of new bandwidth acquisitions in recently launched satellites.
- Investigating acquired datasets to demonstrate proof of concept.
- Interrogating data sets to unpack abundance and dispersion profiles for select bandwidths.

Working with Landgate Earth Observations and GSWA, the first stage investigated the use of new hyperspectral satellite platforms (EnMap, HISUI, PRISMA and EMIT) which provide far superior spectral resolution to older systems, such as ASTER, AVIRIS, allowing for better discrimination of spectral mineralogy improving the potential for remotely identifying crocidolite.

The work with Aster Funds demonstrated the technology can remotely identify crocidolite, however it was very difficult on a regional scale to differentiate between naturally occurring and mined material.

The second stage of the trial will investigate the use of high spatial resolution (2m to 5m) hyperspectral data acquired using drones targeting specific hyperspectral bandwidths for which crocidolite is known to occur. Datasets will be analysed and production of a GIS compatible output will enable crocidolite dispersion in and around targeted locations to be quantified.

Mining Rehabilitation Fund

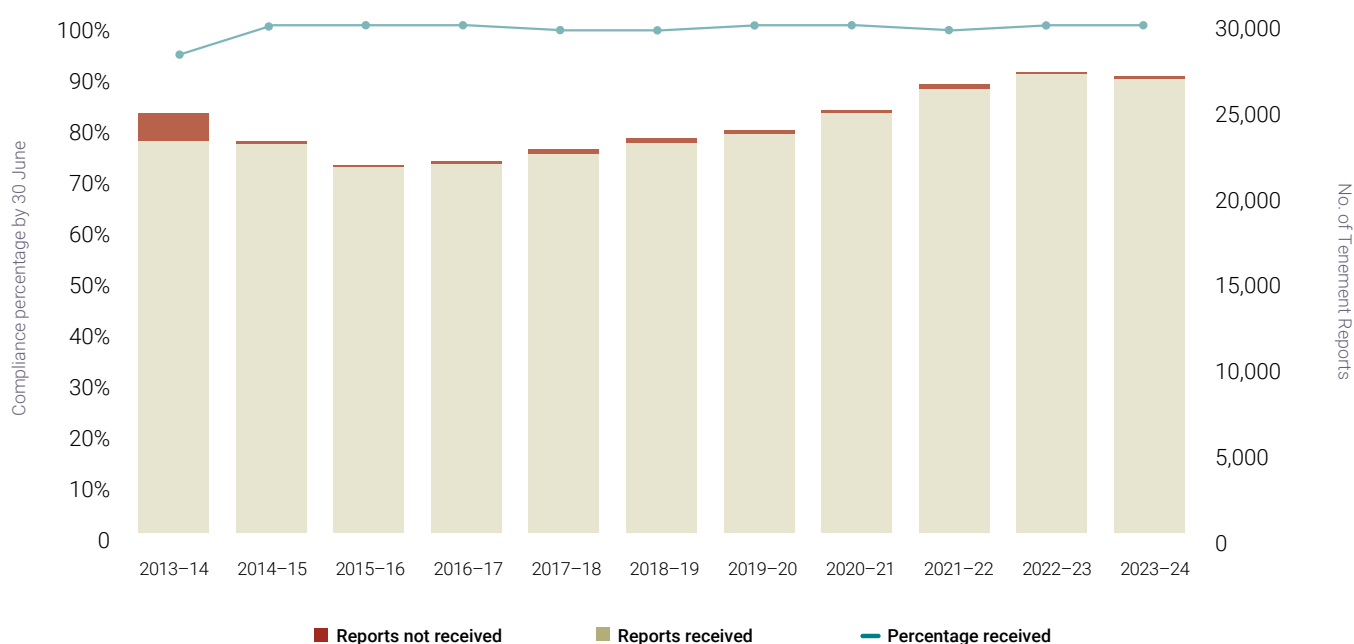
MRF lodgement

In WA, all tenement holders that conduct mining or exploration operations under the Mining Act are required to provide disturbance and rehabilitation information ('assessment information') annually for the purposes of calculating a mining rehabilitation levy. Tenement holders are not required to pay a levy if they have a 'rehabilitation liability estimate' of \$50,000 or less, however, they are still required to lodge an MRF report.

The MRF reporting period is aligned with the 1 July to 30 June financial year but tenement holders are able to submit data at any time during this period, with assessment information reckoned at a date of their own choosing. These reports may then be selected for compliance review to identify any discrepancies in reporting.

In the 2023–24 financial year, 99.36 per cent of reports had been submitted by the due date, in compliance with reporting obligations under the MRF Act (Figure 2). By 31 August 2024, 99.94 per cent had been submitted. For the remainder, levy liability was determined by DEMIRS itself, under the terms of section 16(2) of the MRF Act.

Figure 2. Percentage of tenement reporting obligations met by 30 June for each levy period

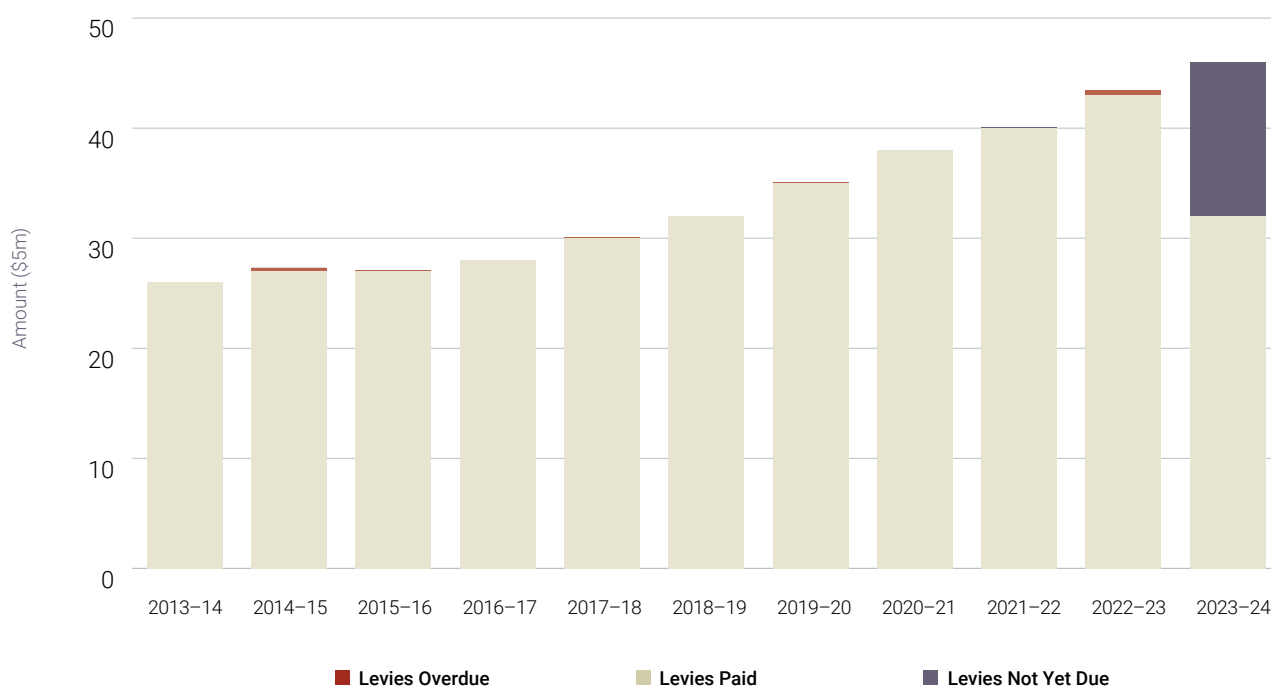


Mining Rehabilitation Levy for the 2023–24 period

Mining rehabilitation levies totalling \$47.1 million have been assessed for the 2023–24 financial year period (Figure 2) based on assessment information provided up to 31 August 2024, in comparison to the \$44 million reported for last year. This represents a 7.1 per cent increase from the 2022–23 period. As at 31 August, 68.5 per cent of these levies had been collected (noting that most were not due for payment before 10 September).

Assessment information can be formally reassessed under the MRF Act for up to two years after the date of the original assessment. This means that the final total levy calculated for a levy period may vary from the amount initially reported.

Figure 3. Levies assessed and paid 2014–2024

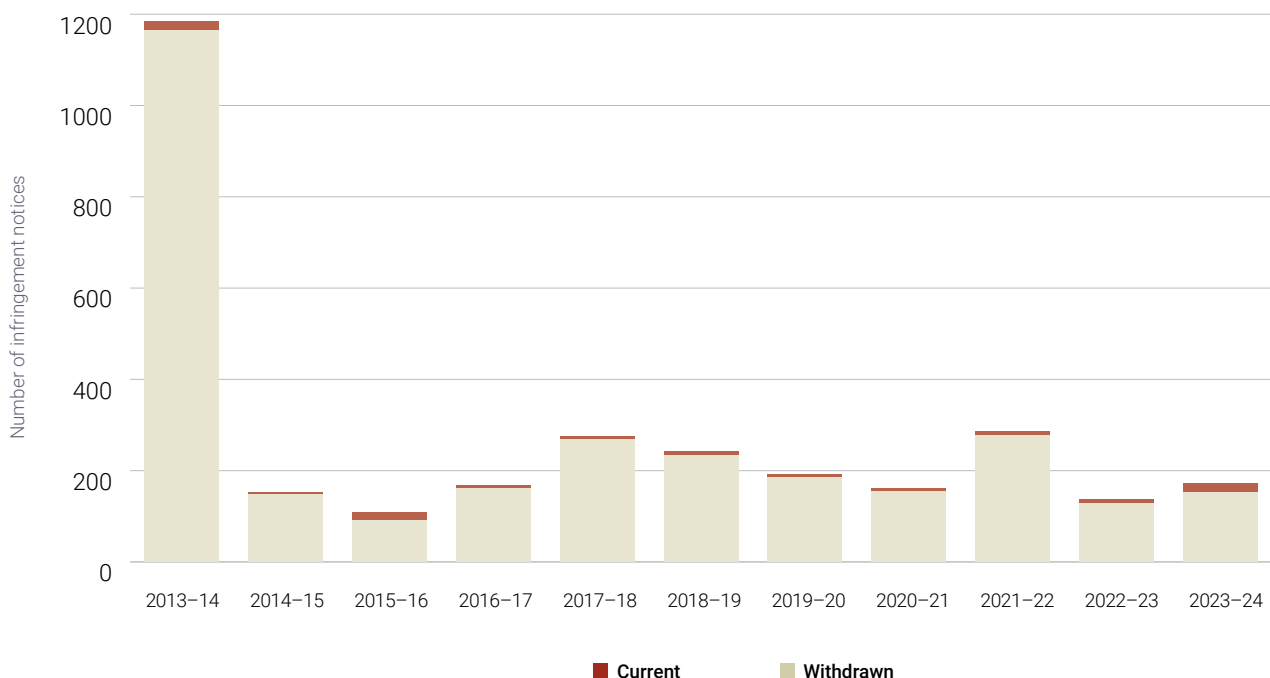


Enforcement

The MRF was first introduced for the period ending 30 June 2013, at which time tenement holders that held Unconditional Performance Bonds (UPB) under the State's former mining securities system were able to apply to participate in the fund voluntarily and to have their UPBs returned. The MRF became mandatory for the period ending 30 June 2014 when DEMIRS began issuing infringement notices to tenement holders who failed to comply with their reporting obligations by 30 June. Under the Criminal Procedure Act 2004 (WA), a modified penalty of \$4,000 (20 per cent of the statutory amount) applies for each tenement.

In the 2023–24 financial year, DEMIRS served 171 infringement notices to tenement holders that failed to submit assessment information by the 30 June 2024 deadline. Most tenement holders that received an infringement notice provided the information before the Final Demand was served – that is, within 28 days of issue – and 153 notices had been withdrawn by 31 August. Any not withdrawn will be referred to the Fines Enforcement Registry.

Figure 4. Infringement notices issued for failure to provide Mining Rehabilitation Fund assessment information



Annual MRF compliance assessment

In the 2023–24 financial year, 1,145 tenements across 43 MRF reports for the 2022–23 levy period were reviewed and 240 were found to have potential discrepancies. Of these, 226 tenements were confirmed to have incorrect assessment that required amendment.

Across the 240 tenements, potential discrepancies were associated with 743 individual features or activities and 689 individual activities were confirmed to have incorrect assessment information which required amendment.

The outcomes of the compliance plan resulted in additional levy payments as of 1 July 2024 of \$386,853.99 and refunds of \$37,667.88, with two additional reports yet to be finalised financially and statistically.

MRF Compliance Outcomes

Figure 5. Types of reporting errors found

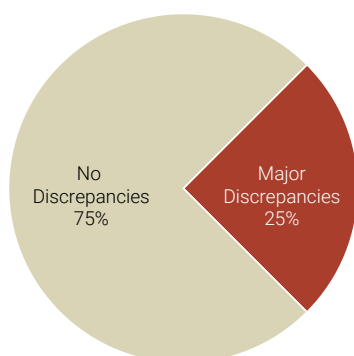
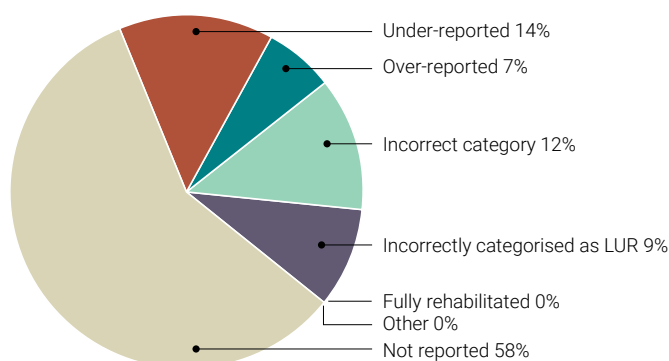


Figure 6. Types of discrepancies for Tenements reviewed



The most common types of errors identified in reporting are summarised below.

There are several different categories for types of errors found in reporting, although there are three main types identified. Not reported, Under reported and Incorrect Category, additionally a sharp increase has occurred in the category of Incorrectly Categorised as LUR.

- Not Reported – Exploration/prospecting operations that did not achieve appropriate rehabilitation standards, was the most common non-reported disturbance. As defined in the MRF regulations, an activity can only be considered as exploration operation if it directly relates to exploration or prospecting for minerals and is the subject of a Programme of Work (PoW). Therefore, if you do not have a current approved PoW you cannot report an activity as Category D – Exploration/prospecting operations in your MRF report.

The non reporting of other cleared land and transport and infrastructure corridors was also identified as a common error in reporting.

- Incorrect Category – Mining voids continued to be the most common incorrectly reported disturbance, followed closely by waste rock dumps.
- Under Reported – Roads/tracks continue to be the most commonly under-reported disturbance.

MRF data for 2023–24 financial year

Each year DEMIRS publishes the MRF Data Release which provides disturbance and rehabilitation data on tenure held under the Mining Act that is subject to the requirements of the MRF Act. It does not include tenure held under State Agreements.

The assessment information submitted under the MRF Act is considered the most comprehensive publicly available dataset of mine site activities in Australia and is available for download through the [DEMIRS website](#)). A summary of this dataset is also provided at the end of this report.

For the 2023–24 financial year, the area of land reported as ‘under rehabilitation’ (that is, where rehabilitation was in progress) reduced by approximately 500ha to 43,511ha, down 1.2 per cent from the previous year. For the same period, the area of ‘active’ disturbance increased by approximately 5,800ha (3.2 per cent) to 187,678ha. Land under rehabilitation therefore represented less than 19 per cent of all disturbed land (that is, including land in the process of being rehabilitated) and occupied an area equivalent to 23 per cent of the area under active development.

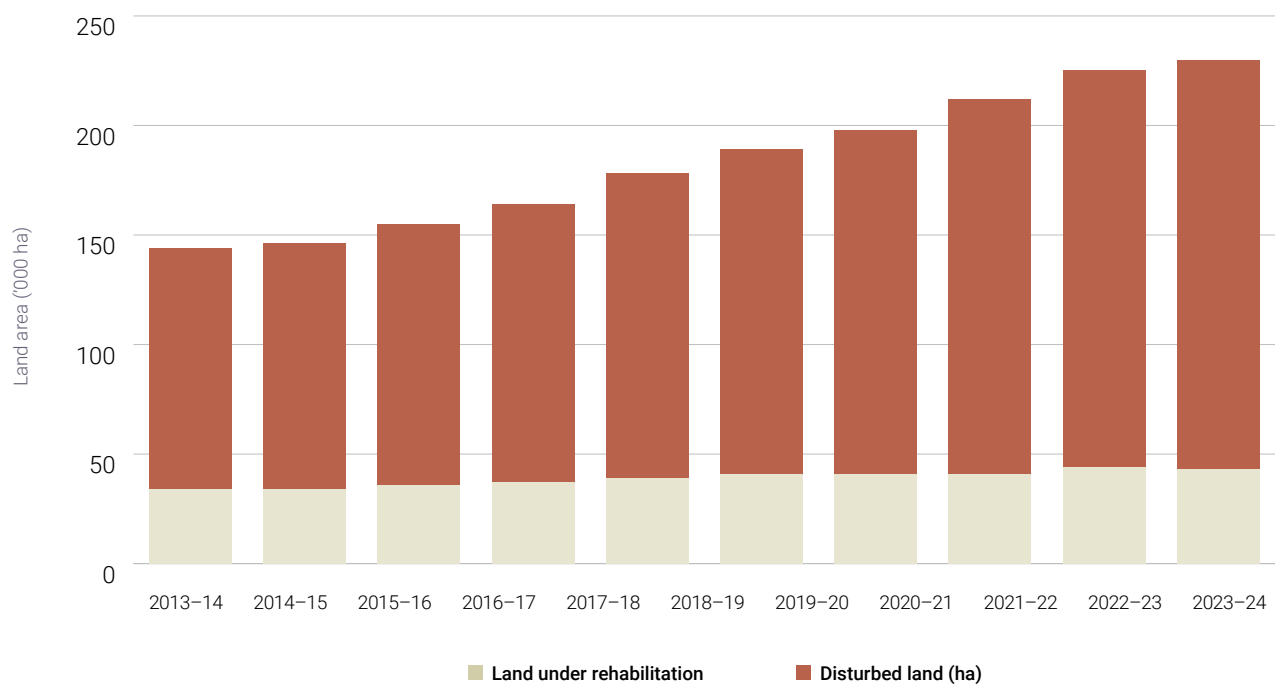
These results (together with Figure 7) suggest that, despite the area of land under rehabilitation being at its second-highest level since 2019–20 (exceeded only in the previous year), the rate of new mining-related disturbance continues to outpace the rate of rehabilitation. It should be noted, however, that these statistics only reflect rehabilitation that is considered to be ‘in progress’. If DEMIRS has signed off on full completion of rehabilitation, it would cease to be reported to the MRF and so would not form part of these statistics.

Table 3. MRF summary data reported for the period through to 2023–24

	Disturbed Land (ha)						Land Under Rehabilitation					
	2021–22	2022–23	2023–24	Change 2021–22 (%)	Change 2022–23 (%)	Change 2023–24 (%)	2021–22	2022–23	2023–24	Change 2021–22 (%)	Change 2022–23 (%)	Change 2023–24 (%)
Exploration Licences	14,748	14,489	13,489	17.8%	-1.8%	-6.9%	26	29	40	16.7%	11.1%	38.4%
General Purpose Leases	4,123	4,398	4,682	13.9%	6.7%	6.5%	915	926	733	1.0%	1.3%	-20.9%
Miscellaneous Licences	18,421	19,191	20,606	9.3%	4.2%	7.4%	2,360	2,657	2,354	6.6%	12.6%	-11.4%
Mining Leases	133,052	142,416	147,579	7.5%	7.0%	3.6%	38,631	40,396	40,359	-0.5%	4.6%	-0.1%
Prospecting Licences	732	714	720	18.8%	-2.4%	0.8%	14	17	25	3.9%	21.1%	44.4%
Retention Leases	605	712	603	166.0%	17.7%	-15.4%	0	0	0			
Total	171,681	181,920	187,678	8.9%	6.0%	3.2%	41,946	44,025	43,511	-0.1%	5.0%	-1.2%
Percentage of Total Area	80.4%	80.5%	81.2%				19.6%	19.5%	18.8%			

Note: Areas reported for previous periods may reflect modified data amended post the initial period.

Figure 7. MRF data reported for land under rehabilitation



Financial summary

The MRF is a Special Purpose Account under Section 18 of the Financial Management Act 2006 (WA) and, in accordance with Section 10 of the MRF Act, principal funds are used to rehabilitate abandoned mine sites after exhausting all other avenues to recover expenses from the tenement holder. Interest generated from the MRF is used to rehabilitate legacy abandoned mine sites (sites that have not had a MRF reporting obligation).

DEMIRS reports on the performance of the MRF in its annual report available on its website. A summary of this information is provided in Table 4. This yearly report is an expanded summary to showcase the activities within the MRF and the AMP.

Table 4. MRF Financial summary

		2018–19 Actual \$'000	2019–20 Actual \$'000	2020–21 Actual \$'000	2021–22 Actual \$'000	2022–23 Actual \$'000	2023–24 Actual \$'000
Opening balance		122,616	150,473	185,237	219,493	253,820	291,189
Add receipts	Contribution from Industry	30,723	33,902	34,677	37,717	41,513	43,195
	Interest Received	3,094	1,644	694	859	5,733	11,866
	Other	–	–	941	–	–	–
	Receipts subtotal	33,817	35,546	36,312	38,576	47,245	55,061
Less payments	Salaries	163	388	620	449	956	1,065
	Operational expenditure	479	94	692	3034	7,694	22,882
	Other	5,318*	300	744	766	1,226	1,546
	Payments subtotal	5,960	782	2,056	4,249	9,876	25,493
Balance at the end of the period		150,473	185,237	219,493	253,820	291,189	320,757

* MRF's Treasury Advance repayment

By 30 June 2024, the net balance of the fund reached nearly \$320.8 million. In 2023–24, \$43.2 million in levy and \$11.9 million interest revenue had been earned on the fund. To facilitate work being carried out by the AMP, \$25.5 million was disbursed within the same period which is working towards achieving improved environmental and community safety outcomes.

Table 5 provides a breakdown of the AMP project expenditure in the 2023–24 financial year.

Table 5. Breakdown of sources and applications of funds for Abandoned Mine projects 2023–24

	2022–23 Expenditure from Principal \$'000	2022–23 Expenditure from Interest \$'000	2023–24 Expenditure from Principal \$'000	2023–24 Expenditure from Interest \$'000
Ashmore	–	–	–	–
Collieries	–	–	–	6
Donnybrook Shafts	–	134	–	11
Ellendale	7,243	–	21,451	–
Elverdton	–	44	–	377
Legacy Tailings	–	–	–	127
Northampton Shafts	–	1	–	280
Reid's Ridge	5	–	171	–
Safer Shafts for Towns	–	266	–	97
Silicate Minerals	–	1	–	70
Smoke Creek	–	–	19	–
Total	7,248	446	21,641	968

Government of Western Australia

**Department of Energy, Mines,
Industry Regulation and Safety**

8.30am – 4.30pm

Mineral House, 100 Plain Street
East Perth, Western Australia 6004
Tel: +61 8 9222 3333
Fax: +61 8 9222 3862

Online

Website: www.demirs.wa.gov.au
Email: REC.Consultation@demirs.wa.gov.au

Mailing address

Locked Bag 100
East Perth WA 6892

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