4 WE MINIMISE OUR IMPACT

At MMG we are committed to minimising our environmental footprint through the efficient use of natural resources, management of waste produced and effective life-cycle management.

WE MINIMISE OUR IMPACT

We are focused on managing our impacts and align our environmental and biodiversity activities with our life-of-asset plans.

In late 2020, mining activity was temporarily suspended at Kinsevere. This suspension coincided with the upcoming wet season, which typically impacts mining volumes. While this decision did not impact ore processing volumes, due to significant stockpiles on hand to maintain a steady feed to the mill, the suspension did reduce the sites production of waste rock, energy consumption and emissions.

WATER ACCESS AND USE

OUR WATER MANAGEMENT APPROACH

We use water in both our mining and extraction processes, as well as for use by our people at our operations. Therefore, we need to secure water for the efficient and consistent performance of our operations. We regularly monitor and actively manage the quantity and quality of the water we use and discharge. We are particularly mindful about using water resources that are required for maintenance of environmental ecosystems and that are shared by surrounding communities.

In supporting the ICMM Position Statement on Water Stewardship, we commit to supporting water stewardship initiatives that promote better water use, effective catchment management and contribute to improved water security and sanitation for surrounding communities. We have a company-wide objective to effectively manage our water intake, inventory and discharge to minimise our impacts on other users within the catchment, including upstream and downstream communities and the environment. Targets tailored to site-specific requirements and risks are set against these objectives. In August 2021, ICMM released their Water Reporting Good Practice Guide. All operations have commenced a gap analysis in order to develop an implementation plan to meet ICMM water reporting requirements, to be completed by mid-2022. Reporting on compliance progress will begin in 2023.

We uphold commitments to apply strong transparent water governance, manage water at our operations effectively and efficiently, and collaborate with our communities to achieve responsible and sustainable water use.

We have different strategies for managing water, depending on our site requirements. Some of our operations are located in areas with high seasonal rainfall and abundant water resources, and others are located in areas where securing water can be more challenging.

Each of our site-specific water balance models predicts water inputs, use and outputs to inform our management of water-related risks. We are increasingly integrating our water balance models and our life-of-asset plans to make structured investment decisions regarding infrastructure, and to align water supply with processing demands and community requirements.

We have established clear accountabilities for regularly reviewing our water balance models and measuring the effectiveness of our critical water management controls.

We report our water inputs, outputs and diversions in line with the Minerals Council of Australia (MCA) Water Accounting Framework.

WATER BALANCE AND MANAGEMENT OF WATER RISKS

We proactively manage water quantity and quality to reduce potential socio-environmental impacts and realise opportunities whilst implementing our mine dewatering plan that is needed to safely operate.

There are several factors that have led to changes in our water balance over the past year, mainly related to operational improvements as well as extreme weather events.

Our Las Bambas mine is our largest asset and it continued to improve its water management approach during 2021. Our staff have worked diligently to improve the operational efficiency of the process water system and increase the volume of water drawn from the TSF for operations by 17%. As a result of this, the volume of raw water drawn from the Challhuahuacho River to top up operations reduced by 66% compared to 2020.

This reduced consumption was due to:

- Clean-up works in the clarification dam for sediment control and ongoing clean-up of the four check dams in the wet season, as well as the addition of flocculant to improve water quality.
- Improvements in the freshwater circuit at the concentrator plant led to more efficient use of water.
- The reduction of the intake from the Challhuahuacho River.

The increased consumption of reclaimed water was on account of:

- The use of thickener which increased the percentage of discharge solids
- Increased recovery of tailings dam water, due to the reduction of water stored in the dam
- Increased reclaimed water use for the grinding and flotation processes required in 2021.

Due to the major water infrastructure program, the generation of suspended sediment loadings ("dirty water") has reduced significantly, providing both improved water quality and a more natural flow regime to the downstream ecosystem. This led to achieving discharges resulting from a catchment runoff volume of 10,456 Mm^3, higher than the prior year, reflecting an efficient management and use of the resource. This increase was due to an annual cumulative precipitation of 1,234 mm higher than that of previous years. Precipitation-runoff and river-creek input volumes increased in accordance with the increase in the annual precipitation. We have ongoing programs to find opportunities for improvements in catchment management at all our operations.

To efficiently manage water resources, solids handling infrastructure must be managed to ensure the quality of the downstream natural ecosystems. To control this risk, 44% of the sedimentation dam at Las Bambas was cleaned in 2021 as well as sediments cleaned from the components of the clarification dams - 100% of Pond D, 50% of Pond C, and 51% of pond B.

Our Dugald River site is located in an area of Australia where the climate is typically characterised by two seasonal extremes, the wet season and the dry season. Each season brings a unique set of operational challenges in managing water across the site. The site's water management structures are designed to manage the high intensity flow events of the wet season through defined catchment zones and appropriately designed dams. Throughout the dry season an emphasis is placed on balancing water conservation while optimising reuse. In 2021 the TSF return water system was upgraded with more fit for purpose pumping systems.

Our Rosebery mine in Tasmania has been operating since 1936, and the site is therefore affected by a number of historical legacy issues. One of these is the collection and treatment of seepage from historic mining activities. As part of the comprehensive closure studies being undertaken on site, an additional groundwater well was constructed at the Bobadil TSF.

CASE STUDY

WATER MANAGEMENT AT LAS BAMBAS

At MMG we use water in both our mining and extraction processes and therefore need to secure water for the efficient and consistent performance of our operations. We regularly monitor and actively manage the quantity and quality of the water we use and discharge.

During 2021 Las Bambas undertook a water management review on site and implemented a series of improvements, to help the site better understand, manage and mitigate any water issues on site.

As a result of this review, the site made a series of improvements to its water management processes, including digitalising daily inspection reports of all dams, reinforced masonry and concrete to improve embankment stability and the development of an improved surface water management plan in the pit and dump to more efficiently direct run offs resulting from rainfall, reducing the suspended solids and improving downstream water quality.

Las Bambas also worked to install a new flow and rainfall measurement state to enable the site to improve the quantification of the water resources in the catchment.

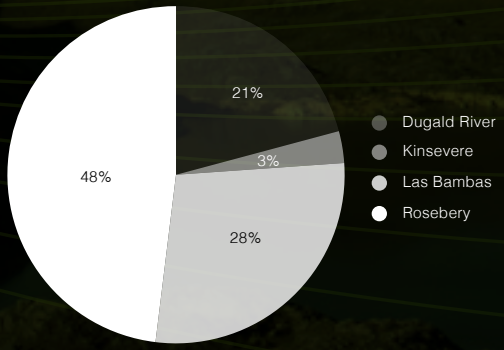
WE MINIMISE OUR IMPACT

2021 WATER BALANCE

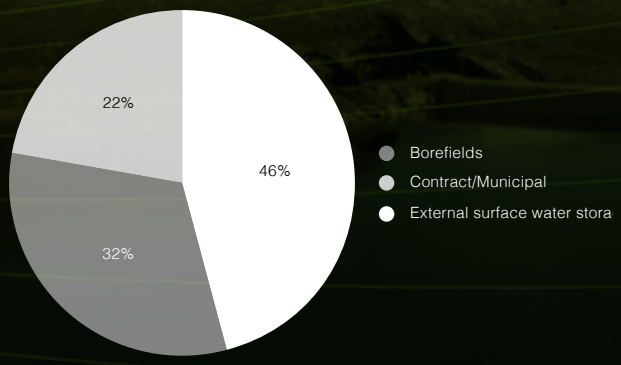
	ML	(%)
DIVERTED WATER	**26,575**	
WATER INPUTS	**39,613**	
Borefields	2,654	7%
Precipitation and runoff	15,303	37%
Rivers and creeks	7,896	20%
Aquifer interception	5,178	13%
External surface water storages	4,173	11%
Entrained in ore that is processed	2,608	7%
Contract/municipal	1,801	5%
Third party wastewater	0	0%
WATER CONSUMPTION	**20,109**	**50.76%**

	ML	(%)
DIVERTED WATER	**43,822**	
WATER OUTPUTS	**30,326**	
Evaporation	7,291	24%
Entrainment	14,537	48%
Discharge to surface water	5,751	19%
Seepage	1,047	3%
Supply to third party	43	0%
Other	1,657	6%

FRESHWATER (CAT 1) INPUTS BY SITE



FRESHWATER (CAT 1) INPUTS BY SOURCE



In 2021 the filter plant project at Rosebery was completed resulting in a significant increase in capacity for collection and pumping of storm water from the site's disturbed areas back to the Effluent Treatment Plant. The Pieman Pump pipeline upgrade was also completed for water being transferred from Lake Pieman to the Pieman Water Supply Tank. The old line is now available as a contingency in the unlikely event of any line failure. The 2/5 dam is currently operated as a sub-aerial dam, requiring changes in the inventory of water on the dam. Additional water was decanted to change the dam level in order to allow sub-aerial deposition and formation of the tailings beach.

This water was treated through the normal processes at the Effluent Treatment Plant, on the Bobadil Dam and through the polishing ponds.

Our Kinsevere operation in the DRC is located in an area with a high-water table and, as mining progresses and the pit floor lowers, we are managing increasing volumes of water from our dewatering program. This water is either used onsite or released into the river system after appropriate quality testing.

The surface water management system initiated at Kinsevere in 2018 is ongoing. This has been delivering improvements in water quality, reduction in nuisance flooding, diverting water away from entering the pits or recharging local ground water, as well as operational benefits such as reduced risk of geotechnical failure. As part of this project, we have upgraded pit sumps, installed rock tuff pumps and drilled new dewatering boreholes to support pit dewatering. We continued to drill additional production boreholes to reinforce system capacity and provide additional clean water on site in 2021.

We have continued to work with Kinsevere local communities to ensure the supply of clean drinking water and to minimise the risks from waterborne diseases. We now work with 25 different village water management committees, training people to manage and monitor key water projects in their local communities.

MMG does not use seawater at any of its operations. It also does not operate in any areas with water stress, and where water stress is a risk there are plans in place to manage this. For example, Dugald River water purchase is based on water availability, so if there is stress, we do not receive water.

CASE STUDY

NEW TAILINGS MANAGEMENT STANDARD AT MMG

Tailings management is crucial given inadequate management can lead to safety, health and environmental hazards at our sites and in our community. As signatories to the ICMM Tailings Management Standard, MMG works to comply with strict global safety standards and state laws when constructing and managing TSFs. In 2021, MMG introduced and adopted a new MMG Tailings Storage Facilities and Water Storage Dam Standard, based on the requirements of the ANCOLD guidelines and the intent of the ICMM Global Industry Standard on Tailings Management (GISTM). The standard covers all stages of a TSF from design, construction, operation and closure.

WE MINIMISE OUR IMPACT

At Las Bambas, our environmental permit only allows us to withdraw water when the environmental baseflow requirements in the waterways allow us to do so (during the wet season), and our water management improvements and reuse of water prevent the need for water use during periods of potential water stress.

In line with our ICMM commitments regarding water, we ensure all employees have access to clean drinking water, gender-appropriate sanitation facilities and hygiene across all operations.

WASTE ROCK MANAGEMENT

Our mining and processing activities generate significant quantities of mineral waste. Our aim is to minimise our impacts by managing our waste safely and appropriately, reducing our overall footprint of disturbed land and supporting long-term closure planning.

We utilise appropriate waste rock in the construction of surface containment facilities; for example, at our open pit mines we develop engineered waste rock facilities and, where possible, we place waste into mined-out areas such as at our underground operations. For Rosebery, this ensures that for the remainder of current mine life, all waste rock will remain underground as part of the mining process. At Las Bambas we construct landforms in accordance with engineering designs based on MMG standards, guidelines and work quality requirements (WQR). The waste rock containment facilities are designed for appropriate engineering performance of the slopes and geochemical performance of the materials. As our Kinsevere mine has been in care and maintenance in 2021 with mining mainly from stockpiles or third-party ore, no potentially acid forming (PAF) waste rock or non-acid forming (NAF) waste rock has been added to our dumps.

In implementing our mineral waste controls, we focus on characterising mineral waste and managing storage to limit environmental impact and minimise operating and closure costs. For example, at Dugald River we use tailings materials to create paste backfill that is re-injected into underground voids.

Some of this mineral waste is chemically reactive, with the potential to form acid and metalliferous drainage (AMD). Geochemical characterisation studies inform site-specific definitions for potentially acid forming (PAF) waste rock and non-acid forming (NAF) waste rock. These classifications enable us to identify, schedule and appropriately encapsulate PAF waste rock to mitigate the generation of AMD and reduce environmental and closure liabilities.

CASE STUDY

ROSEBERY PLANNING WORKS FOR PROPOSED NEW TSF

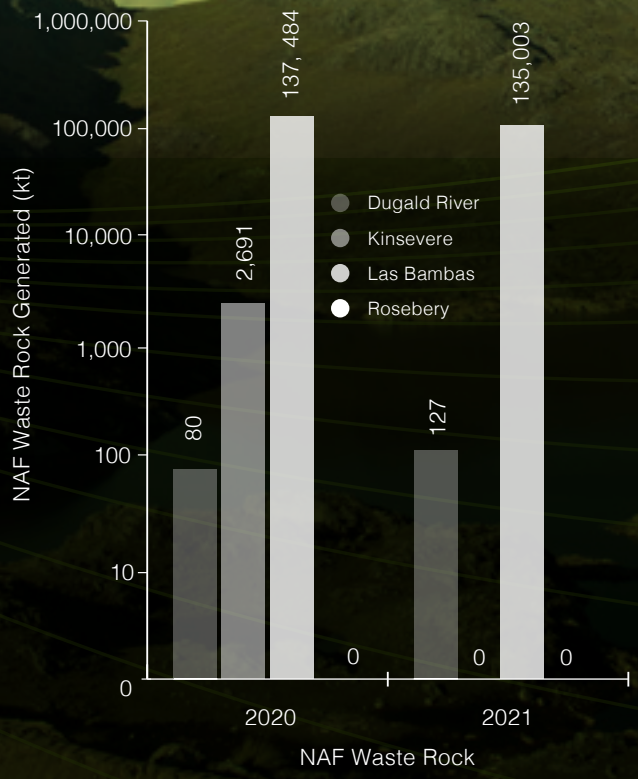
Over the past year Rosebery has worked in consultation with the Department, the Tasmanian Government and our local community to ensure works to determine the location for a new TSF meets all regulatory, environmental and community expectations.

The site requires a new TSF to continue operations beyond 2024. Rosebery has conducted studies for over a decade to choose the best site that balances biodiversity values with geotechnical and environmental considerations of the local area. The result of these works currently indicates that the South Marianoak site offers the best balance of factors to support a TSF, while minimising environmental and biodiversity impacts.

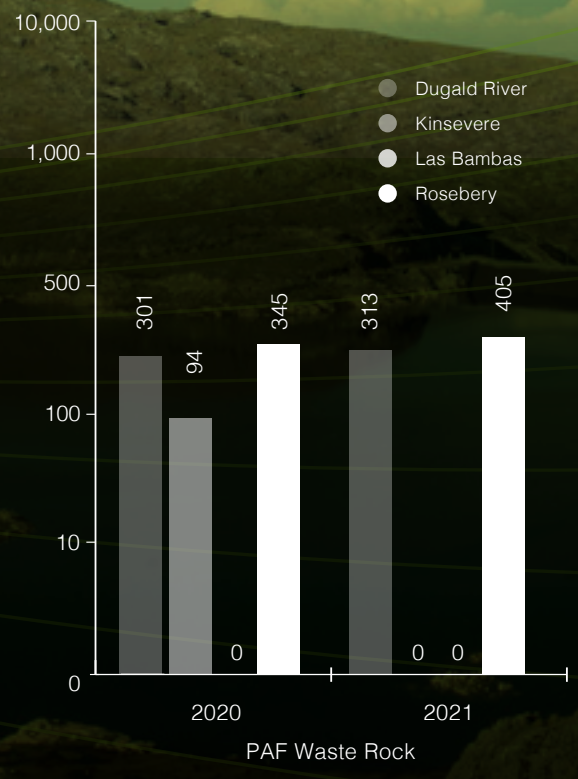
The proposed site is an area of mixed conservation values, including parts that have been extensively logged, it has a large powerline corridor and fire break in the area and there are also parts of old-growth forest. MMG plans to conduct preliminary environmental baseline and geotechnical investigations work in 2022 prior to making a final decision.

All investigative and development works will be conducted within rigid safety, environmental and biodiversity protection controls. MMG also continues to actively investigate environment and biodiversity rehabilitation and protection projects with a target of no net loss of biodiversity for this important region.

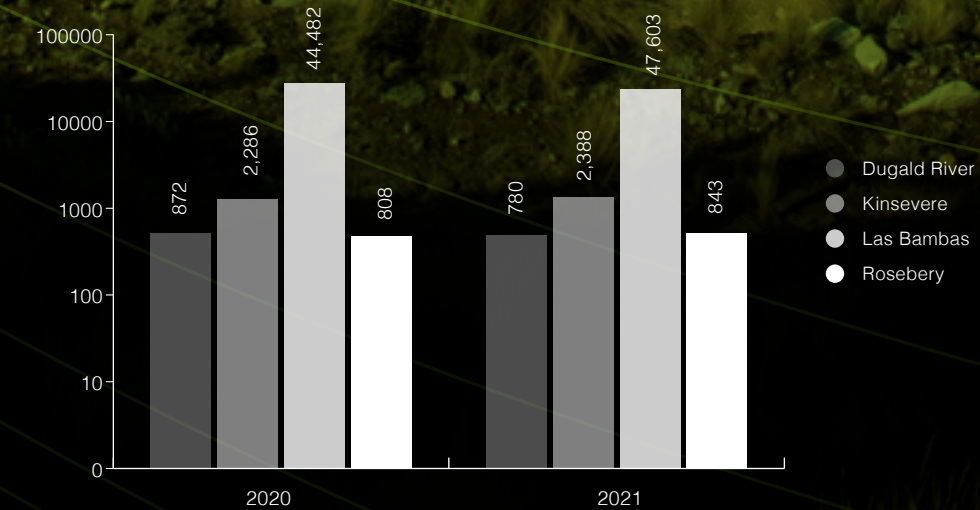
NAF WASTE ROCK GENERATED ('000 TONNES)



PAF WASTE ROCK GENERATED ('000 TONNES)



TAILINGS GENERATED



WE MINIMISE OUR IMPACT

TAILINGS STORAGE

At MMG we treat the management of our TSFs as a key material issue and a material risk that requires ongoing, rigorous risk management. Our approach includes mandating the minimum requirements for all sites to employ which cover the life cycle of tailings facilities and dams from strategic planning, design, operations, maintenance, inspections, emergency response and closure. The protection of life and the environment is mandated in our Tailings Storage Facilities and Water Storage Dam Standard.

Our approach to these minimum requirements has been developed using internal and external subject matter experts and aligning it to the requirements of the Australian National Committee on Large Dams (ANCOLD), Canadian Dam Association (CDA), the Mining Association of Canada (MAC) and the Global International Standard on Tailings Management (GISTM). Our approach meets or exceeds the regulatory requirements in each of the jurisdictions in which we operate.

MMG applies critical design and execution requirements that are based on a risk assessment process, which is reviewed annually. These aspects focus on operating and non-operating TSFs and seek to minimise environmental and community impacts with a secondary objective to maximise operational efficiency. The risk management and control execution measures are subject to internal, external and independent audit.

There has been increased scrutiny of TSF integrity from both within the industry and from external stakeholders. Recent failures of large upstream constructed dams have been the primary driver for this concern. The majority of MMG's TSFs, including Las Bambas, are engineered rock and earth fill structures constructed using downstream construction methods. We have smaller facilities at our Rosebery operation in Australia that incorporates upstream construction methods in a portion of the containment dams.

2021 MMG TSF SUMMARY

TSF	Type (ground, valley, mountain or other)	Dam raising type	ANCOLD dam failure consequence rating	Total designed height	Total designed capacity	TSF service life		Most recent expert review date
						Came into service	End of service	
Las Bambas TSF1	Valley	Downstream	Extreme	280m	477Mm^3	2015	2029	Jan-21
Dugald River TSF1	Valley	Downstream	High C	37m	8.7Mm^3	2018	2039	Dec-21
Kinsevere TSF1	Side valley	Upstream	High C	~10	1.1Mm^3	2006	2010	Apr-21
Kinsevere TSF2	Paddock	Downstream	High A	38m	23Mt	2011	2023	Apr-21
Rosebery 2/5 Dam	Side valley	Upstream/ downstream	High A	26m	5Mt (plus unknown existing)	2018	2024	Jan-21
Rosebery Bobadil	Side valley	Upstream/ downstream	High C	37m	18.9Mt	1974	2024	Jan-21

Mm^3 = Millions of cubic metres

Mt = Million metric tonnes

Note:

- The ANCOLD dam failure consequence rating is based on the potential impacts of a failure in a TSF. Refer to definition on page 82 for the consequence table.
- For more information about our TSFs, visit www.mmg.com.

In 2016, the ICMM issued a position statement on preventing catastrophic failure of TSFs. MMG's approach to the governance of TSFs fully aligns to this framework, including the use of an Independent Dam Review Committee and Engineer of Record at each of our TSFs.

MMG has a strong commitment from our Board and Executive Management Team to provide the necessary governance and resources to protect safety and the environment. We work towards continuous improvement to further refine and strengthen our TSF controls, benchmarking them with the input from the dam safety committee reviews and annual performance audits as defined by ANCOLD.

In 2020, the ICMM, in conjunction with the United Nations Environment Program (UNEP) and the Principles for Responsible Investment (PRI), released the new Global Industry Standard on Tailings Management (GISTM), of which MMG contributed the design through our ICMM membership.

MMG is working through an extensive gap analysis to inform actions required at each site to ensure compliance against the standard. We support the ICMM's compliance timeline, with all MMG facilities with 'Extreme' or 'Very high' potential consequences of failure, as defined by the GISTM, to be in conformance with the Standard by August 2023, and all other facilities within five years.

In 2021, at our Las Bambas operation, the annual Dam Committee, including the External Advisor Panel, convened remotely for a second year due to COVID-19 restrictions. The committee reviewed the results of the 2020 third-party TSF design review, ongoing operations and studies as well as planned development for ongoing storage of tailings. The committee confirmed the TSF is designed and operated appropriately for the geological setting and for the projected tailings production. We also continued with studies for the optimisation of our strategic tailings storage requirements and recognise the need for further tailings capacity for any growth potential. Studies are progressing to identify the options available.

During 2021, our Rosebery site continued studies to develop additional tailings capacity using our existing facilities, as well as investigating a new facility, consistent with ANCOLD guidelines and the requirements of the GISTM.

An Emergency Dam Break drill took place at Rosebery in 2021 involving MMG as well as contractors due to the continuation of COVID-19 restrictions. Planning for another drill including the relevant authorities, Tasmanian Emergency Services and the community is underway to occur early 2022.

Rosebery synchronously operates two tailings storage facilities. Current approved projects provide tailings storage until 2024. Feasibility studies are ongoing into projects that will extend existing facilities end of service to 2028.

Kinsevere and Dugald River tailings operations continued as usual with capital improvements including a TSF raise construction at Kinsevere. Dugald River completed projects to improve tailing delivery, water reclamation and access to the TSF and also obtained regulatory approval for an additional discharge location for construction in 2022, which will improve tailings deposition.

CLIMATE CHANGE

MMG recognises the impacts of human-induced climate change on the environment, the economy and communities. We are dedicated to being part of the global solution through the provision of minerals and metals required in a low carbon future and taking actions to reduce emissions, committing to net zero emissions by 2050.

Extreme weather events continue to intensify globally and inform our need to assess and build the resilience of our business to respond to a changing climate.

Variables including too much, or too little water and extreme heat have become increasingly important to consider in the context of mine plans, infrastructure and landform design, logistics routes, supply chains and throughout the whole life of mine cycle. We recognise the need to clearly define our climate change exposures, review opportunities for mitigation and adaptation, stress test these under a range of climate scenarios, and communicate our greenhouse gas emissions strategy and performance.

In addition to our goal of net zero carbon emissions by 2050, we have now set an interim target of reducing operational greenhouse gas emissions (Scope 1 and Scope 2 from our operated assets)

MMG recognises the impacts of human-induced climate change on the environment, the economy and communities.

WE MINIMISE OUR IMPACT

by 40% by 2030, from a 2020 baseline. This interim target aligns with science-based methodologies to help reduce global warming to 1.5°C, as per ambitions of the Paris Agreement. We will also drive reductions in our value chain emissions (Scope 3) firstly by initial measurement and disclosure by end of 2023, followed by target setting and working with our supply chain partners on emissions reduction opportunities.

We welcome efforts made by governments to cooperatively reach the Paris Agreement and support long-term global climate goals that balance greenhouse gas reductions with economic development.

CASE STUDY

MMG DUGALD RIVER GOES SOLAR

In 2021 MMG's Dugald River mine commissioned a renewable energy study aimed at reducing its Scope 2 emissions.

As a result of this study, Dugald River entered into a long-term solar offtake agreement with energy provider, APAGroup. The solar agreement will supply 44MW of solar energy capacity to the Dugald River mine to reduce its carbon footprint and provide immediate energy cost savings once operational in early 2023. The new agreement further supports MMG's commitment to supporting the global transition to a low carbon economy with the company's key products, copper and zinc, playing a critical role in the development of sustainable technologies such as solar panels, wind turbines, electric vehicles and batteries.

For more information visit: **wemineforprogress.com**

AIR QUALITY MANAGEMENT

At MMG we strive to be as efficient as possible in our combustion of fuel to preserve a healthy working environment for our people (particularly those working underground) and manage costs. We consider environmental and health implications in our supply contracts for equipment, electricity and fuel via our procurement processes.
The bulk of our emissions to air are generated by heavy mobile equipment used for mining, product transport, primary crushing and onsite power generation. Our emission reduction strategy is discussed in more detail in the Climate Change section of this report, page 69.

We continually improve our management of dust generated by our activities. This includes watering heavy haul and logistics as well using bischofite as a suppressant to keep dust to a minimum for surrounding communities and, in Peru, supporting the government in the progressive sealing of roads.

Rosebery's dust mitigation plan includes triggers set up on all live weather stations with alerts sent via email and text message when conditions are conducive to increased dust pick up activating automatic responses such as sprinklers. The manual sprinkler program underground is also transitioning to timers, ensuring more consistent and even water coverage.

Dugald River's approved Air Quality Monitoring Program proactively managers ambient air quality around the mine on a daily basis. Air quality indicators arsenic, cadmium, copper and lead are monitored at locations surrounding the residence of our nearest sensitive receptor. Dugald River remained compliant with all air quality monitoring requirements during 2021. The site plans to continue improving dust mitigation practices around the ROM and is currently investigating water curtains that will further reduce fugitive emissions to environment.

At the Las Bambas Ferrobamba pit, water cranes have been installed on the access roads as well as 8,600 meters of sprinkler system at the Pit. 2,700 metres of sprinkler system has been installed on the access road to the Chalcobamba Pit. Along the Southern Road Corridor, the roads are watered and dust suppressants applied, using tanker trucks hired from local businesses.

In 2021, additional monitoring stations have been installed ensuring real-time monitoring of conditions along the Southern Road Corridor as well as improving reporting frequency. More information about the air monitoring at Las Bambas is available at wemineforprogress.com.

We report our emissions in accordance with the Australian Government's National Pollutant Inventory emission estimation techniques and our materiality-based sustainability reporting processes.

BIODIVERSITY

MMG recognises that compared with many other land uses, the direct impacts of mining on biodiversity and ecosystem services are usually small, due to the relatively small area of land disturbance. At the same time, we recognise that this disturbance is often very significant on a local scale and may be globally significant where limited populations of threatened or vulnerable endemic species may be exposed to risk of disturbance.

Our operations are managed to identify potential impacts to biodiversity and to implement mitigation strategies to avoid or offset these impacts. This management includes:

- using environmental assessments and strategic regional assessments prior to the commencement of mining, or disturbance activities, to identify potential biodiversity impacts;
- ensuring the effective application of the mitigation hierarchy in relation to any proposed land clearance activities onsite, with avoidance being the preferred option where practicable; and
- planning for closure in a way that focuses, not only on the re-establishment of vegetation cover but, more broadly, on opportunities to develop self-sustaining ecosystems that support the social, cultural, environmental and economic objectives of our host communities and the surrounding landscape.

We actively manage our land holdings over the life of the operation and seek to protect biodiversity and future land use options. Some of the management actions actively used at our operations focus on:

- implementing low or no disturbance areas that may form future conservation reserves;
- controlling invasive species;
- restoring degraded ecosystems; and translocating endangered plants and supporting the breeding requirements of vulnerable animals.

MMG recognises that by consistently evaluating our approach to land use planning at our operations, we can account for the environmental value of ecosystem services and deliver continual improvements in our management of land and biodiversity.

As a member of the ICMM, we act in accordance with the ICMM's Mining and Protected Areas Position Statement.

The lease of our Dugald River operation is home to the Petrogale purpureicollis (Purple-necked rock-wallaby) protected species. MMG undertakes bi-annual monitoring to collect data on the species and its use of habitat.

CASE STUDY

MMG'S COMMITMENT TO A LOW CARBON FUTURE

In pursuit of a low carbon future, MMG has joined with hundreds of global companies and world leaders announcing net zero plans at the United Nations climate change forum. Along with our fellow ICMM members we have pledged to support measures that will limit global warming, targeting net zero emissions by mid-century.

We are committed to this because we recognise the impacts of human-induced climate change on our environment, economy and communities. MMG wants to play our part in addressing this global challenge by taking appropriate actions that will reduce our direct and indirect emissions, and source key minerals and metals required to help develop a low-carbon future.

As part of our climate change strategy we have committed to a goal of net zero carbon emissions by 2050. To help us achieve this goal we have now set an interim target of reducing operational greenhouse gas (GHG) emissions by 40%, from our 2020 baseline by 2030.

We want to make climate considerations a focus for our business going forward and will be integrating climate resilience and decarbonisation pathways into our key business processes, project designs, ongoing mine planning and M&A due diligence.

To achieve this MMG has developed a company-wide climate resilience strategy spanning energy solutions together with mitigation measures that have informed our 2030 targets and support our 2050 goal.

MMG's climate resilience strategy covers energy mix, technologies, efficiencies, community resilience and mitigation measures.

WE MINIMISE OUR IMPACT

This provides an understanding of rehabilitation success and changes to the populations over time. There has been no change in population in 2021 and ongoing monitoring will help develop future biodiversity and rehabilitation activities.

MMG Dugald River has been working with the University of Sunshine Coast (USC) and Queensland University of Technology (QUT) researching the Carpentarian Pseudantechinus (Pseudantechinus mimulus), a small carnivorous native mouse-like marsupial.

Over the past five years the project has gathered information on the distribution, habitat preferences, ecology and taxonomy of the Carpentarian Pseudantechinus with MMG contributing over $300,000 to the cause.

Dugald River also commissioned a team of ecologists to conduct a flora study focused on refining the current broad scale regional ecosystem mapping. This has provided the site with more detailed maps and a better understanding of the unique regional ecosystems in which it operates, enabling operations to take place without impacting on sensitive regional ecosystems. This study will contribute to determining future rehabilitation success criteria and rehabilitation plans.

Las Bambas is dedicated to the conservation of biodiversity, with this commitment embedded into its environmental management plans. Las Bambas has developed rescue and relocation protocols for amphibians and rodent species, which help protect conservation and biodiversity. Las Bambas has proudly pioneered this initiative in Peru. In 2021 the Forestry and Wild Fauna Service (SERFOR) granted Las Bambas approval to relocate the following species:

- Dark field mouse (Akodon subfuscus)
- Painted big-eared mouse (Auliscomys pictus)
- Aquatic frog (Telmatobius jelskii)
- Warty toad (Rhinella spinulos)
- Marsupial frog (Gastrotheca marsupiata)
- Marbled frog (Pleurodema marmoratum)

All rellocation activities were executed in compliance with SERFOR's Wild Fauna Management Regulation, and IUCN's criteria for translocations for conservation purposes.

MINE CLOSURE, REHABILITATION AND LAND MANAGEMENT

Effective closure planning and site rehabilitation are important priorities for MMG. We have an integrated approach to planning the closure, social transitioning and relinquishment of our assets, commencing from the development stage and continuing throughout the asset life cycle. All four (100%) of our operating assets have closure plans in place.

Minor amounts of progressive rehabilitation are currently undertaken by our operations as disturbed areas are largely limited to operational areas that continue to be in use or will be used in the future. This is driven largely by the ore body location and mining method, with underground mines in particular, having limited opportunities for rehabilitation prior to the end of mine life. To this end we have not set annual rehabilitation targets, but instead build allowances into our closure plans and operational budgets where there are opportunities to progressively rehabilitate areas that are no longer required for operational purposes. These are reviewed annually.

In 2021 we retired our Progressive Rehabilitation and Closure Standard, and embedded closure planning, risk assessment and liability estimation within the MMG Integrated Business Planning Framework. This improvement allows greater visibility and enhanced understanding of closure liabilities and opportunities, when operational and business decisions are to be made. It still provides a consistent approach to closure and progressive rehabilitation across all of our global operations. MMG actively contributes to the ICMM Mine Closure Working Group and leverages the participation of peer companies to continually benchmark our own internal processes and improve our performance on mine closure.

In 2021, MMG continued our major industry sponsorship of the Cooperative Research Centre for Transitions in Mining Economies (CRC TiME). The CRC is a ten year, $130 million research initiative between the Australian Government, industry and academia, focussed on delivering resilient post mining futures.

One CRC TiME project was completed at Rosebery on understanding local readiness for closure, via initiation of an ongoing multi-stakeholder participatory approach. And a second CRC TiME project at Rosebery also began on improved prediction, remediation and closure of acid and neutral metalliferous drainage (AMD/NMD) sites, in collaboration with several other industry peers.

At Dugald River, technical studies were completed on landform flooding potential and ecological rehabilitation in order to inform the submission of the Progressive Rehabilitation and Closure Plan for the Regulator.

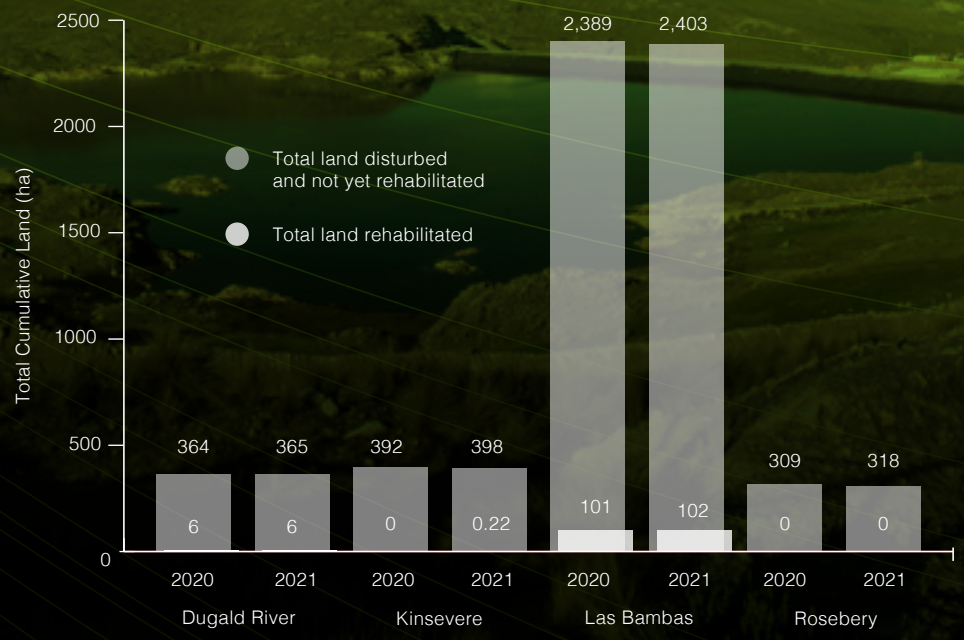
Similarly, Las Bambas completed a major review and update of their Closure Plan which was submitted to the Regulator mid-year. At Kinsevere during 2021, some rehabilitation liability reduction occurred through reclaiming and reprocessing a portion of the tailings from TSF1. The remainder of these tails will be mined and reprocessed progressively, fully removing this hazard and allowing for the footprint to then be revegetated.

Closure prefeasibility studies continued in 2021 for the Hercules legacy and Rosebery operational mine sites in Tasmania which, when complete, will allow an evaluation of all credible closure scenarios to select the best option(s), in consultation with the community and other external stakeholders. A large scale (~10ha) TSF closure cover was installed and a trial plot area was fully instrumented at Rosebery.

2021 LAND STATISTICS FOR MMG

2021 Land statistics for MMG (ha)	
Area of land managed at end of 2021	285,990.62 ha
Area of land managed by our operating sites at end of 2021	17,220 ha
Area disturbed and not yet rehabilitated at end of 2020 (opening balance	3,454 ha
- New disturbance in 2021	29.6 ha
- Disturbed areas rehabilitated in 2021	0.9 ha
- Rehabilitated areas redisturbed in 2021	0.0 ha
Area disturbed and not yet rehabilitated at end of 2021 (closing balance)	3,483.6 ha

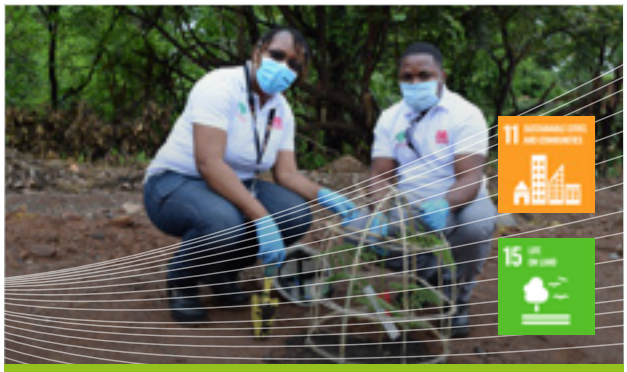
CUMULATIVE LAND DISTURBANCE AND REHABILITATION AT OUR OPERATIONS (ha)



WE MINIMISE OUR IMPACT

The data obtained from the trial over several years will allow for validation of the cover system design and inform the final closure designs for all of the site TSFs.

These studies will provide more definitive information to support MMG closure planning and closure cost estimation, but also inform stakeholder discussions with community and government. The current financial provision for closure of all MMG operations (including TSFs) is reported in our Annual Report which can be found at www.mmg.com and has been externally audited.



CASE STUDY

FOREST RESTORATION IN THE DRC

Each year the DRC celebrates Tree Day on 5 December.

To help support this important initiative, the team in the DRC planted more than 80,000 trees for the 2021-2022 campaign with five different tree species. In consultation with our local communities, other sites will be selected to contribute to ongoing the restoration of forests around the operation.

Kinsevere also worked closely with community members to provide over 15,000 seedlings, including 4,000 for the tree planting event and 3,500 for local school yards, as part of our ongoing commitment to maximising the revegetation process by inviting each school child to plant a tree.

To learn more about this important initiative visit **wemineforprogress.com**.

CASE STUDY

FUTURE PLANNING AT MMG ROSEBERY

In 2021, MMG completed the first of a series of planned mine closure planning workshops with potential future land users and the local community. The workshops were designed to strengthen the sites understanding of the socio-economic impacts of any future mine closure on the Rosebery town and, more broadly, the West Coast Region and the state. Facilitated by the University of Queensland's Sustainable Minerals Institute, the workshops fostered a dialogue around the potential future of Rosebery, beyond mine closure. This included discussions around infrastructure, services, land use, economic vitality and social well-being of the community, and the current role the mine plays.

These workshops form part of MMG's closure planning framework which involves establishing a closure vision that considers the end land uses and land users, setting objectives that support the vision, developing completion criteria and putting in place work programs to rehabilitate the site to meet the objectives. Further closure visioning workshops are planned for 2022 in collaboration with the West Coast Council.