Reimagine Rehab

A prospectus for advocacy and investment in transformative rehabilitation and post-mining land uses in the Greater Whitsunday Region

JULY 2025

Disclaimer

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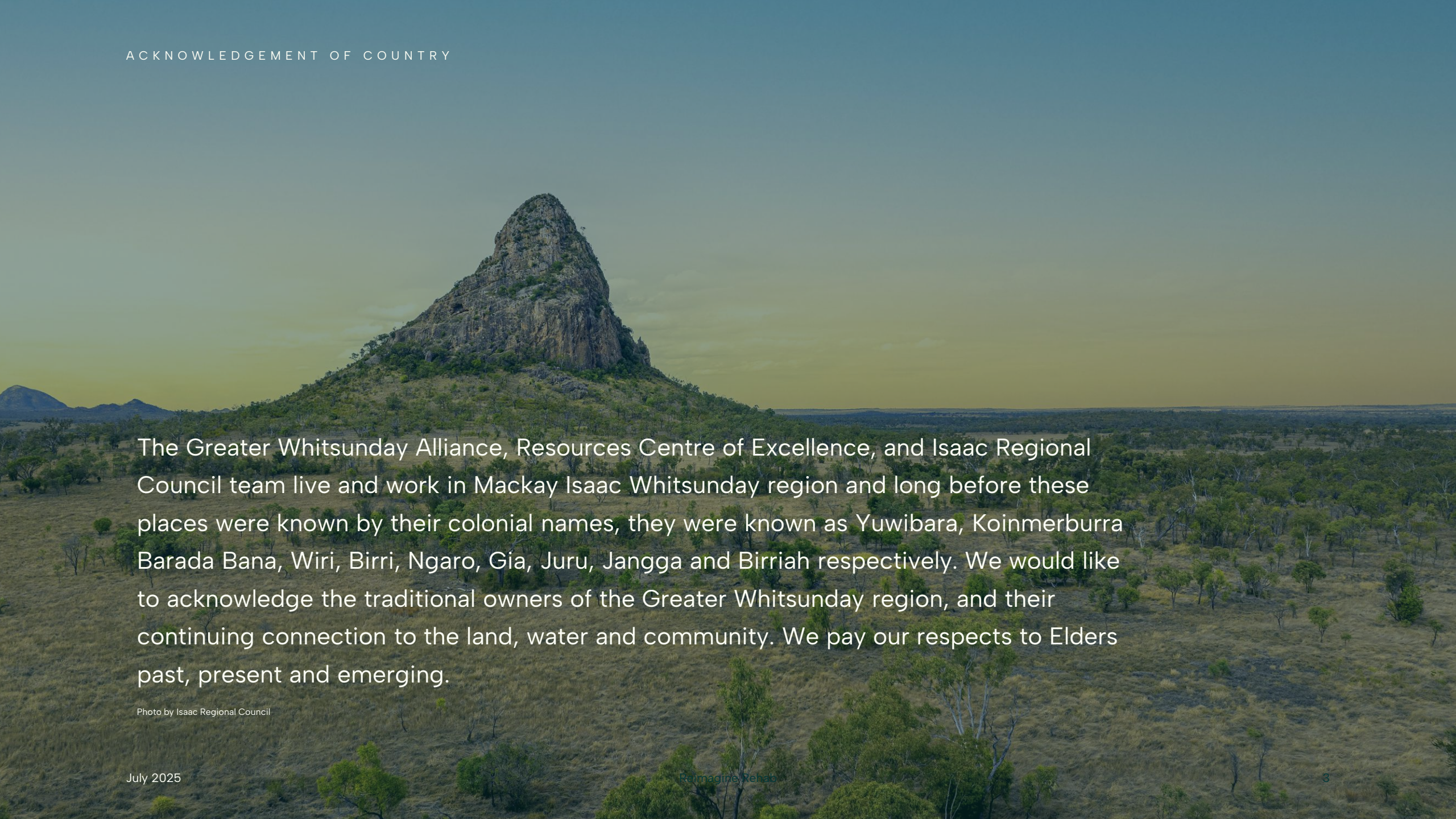
We have considered and relied upon publicly available communication and documentation along with materials provided by Greater Whitsunday Alliance, which we believe to be reliable, complete and not misleading. Nothing in this Prospectus should be taken to imply that we have verified any information supplied to us or carried out an audit of any information supplied to us other than as expressly stated in the Prospectus.

Nothing in this Prospectus represents legal or tax advice, or advice on compliance with applicable regulation. Greater Whitsunday Alliance will be responsible for seeking its own legal, tax and regulatory advice should it decide to adopt and implement any of the recommendations set out in this Prospectus.

This Prospectus is based solely on the information provided to us as at 12 June 2025. We reserve the right to amend the contents of this Prospectus (if necessary), should any further relevant information become available.



The Greater Whitsunday Alliance, Resources Centre of Excellence, and Isaac Regional Council team live and work in Mackay Isaac Whitsunday region and long before these places were known by their colonial names, they were known as Yuwibara, Koinmerburra Barada Bana, Wiri, Birri, Ngaro, Gia, Juru, Jangga and Birriah respectively. We would like to acknowledge the traditional owners of the Greater Whitsunday region, and their continuing connection to the land, water and community. We pay our respects to Elders past, present and emerging.

Photo by Isaac Regional Council

CONTENTS

This Prospectus aims to describe the immense opportunity for transformative rehab in the region, and key next steps to deliver these opportunities

What is the purpose of this Prospectus?

The Greater Whitsunday region has long been engaged in meaningful dialogue around post-mining land use and the potential to unlock new value from our mining legacy.

This has been shaped through the Working Group's active involvement in initiatives such as the CRC TiME Bowen Basin Hub, our support for EnviroMETS Lighthouse Projects 1 and 2, and the collaborative development of the Mackay Isaac Whitsunday Regional Water Strategy. Together, these efforts have begun to form a picture of how we might transition legacy mining lands into productive, sustainable assets. However, these efforts have largely developed in parallel, and a cohesive regional vision has yet to be fully realised.

In alignment with the "Greater Whitsunday METS Sector: A Revenue Diversification Strategy," this prospectus seeks to consolidate these regional insights and identify actionable pathways forward.

The Isaac Resources Excellence Precinct presents a unique opportunity to anchor and accelerate these efforts. However, to fully realise the potential of post-mining land use, we must now focus on integrating these initiatives, clarifying our strategic priorities, and directing attention to the areas with the greatest potential for impact.

About the Working Group

Greater Whitsunday Alliance (GW3) is the peak independent, economic development organisation for the Mackay, Isaac, Whitsunday LGAs. GW3 works with a range of stakeholders to ensure the region has the strategies in place to meet the demand of existing and emerging industry needs.

The **Resources Centre of Excellence** is a world-class facility located in the Greater Whitsunday region that is driving cutting-edge research, technology, education, and industry collaboration to accelerate innovation and shape the industries of the future.

Isaac Regional Council services 17 unique communities, with over 22,000 permanent residents and a non-permanent population of over 13,000. Council is focused on delivering on its vision of "Helping to energise the world. A region that feeds, powers and builds communities, now and for the future."

Our vision is to **Reimagine Rehab:** leveraging our region's mining areas to catalyse growth, innovation, and limitless futures for our community.

What does this mean?

Recognising the burning platform and the significant potential value locked in mine site rehabilitation, the Working Group wants to unlock this value to support communities in the region to continue to evolve and innovate – diversifying our economy and continuing our prosperous legacy.

The vision is underpinned by the following **Principles** that represent the core pillars of the vision and the desired outcome:

Community-driven

Continuing the legacy of the community – experience, skills, infrastructure, relationships – to enable the growth and evolution of the region.

Future-focused

Recognising the need to adapt to a changing world - embracing innovation, technology, and diversification into future industries.

Sustainable

Sustainability and decarbonisation remain foundational to the region and PMLU opportunities.

Practical

Aligned to the characteristics and features of the region and community, and able to be feasibly implemented.

Why now?

Our region is a global mining powerhouse, providing ~30% of the worlds metallurgical coal in 2023 alone. With key closure periods earmarked for 2040 and 2070 we have an opportunity to embrace transformative and innovative rehabilitation and post-mining land uses (PMLU) to generate value, sustainable outcomes, and continued prosperity for our communities.

Size of the opportunity

$8 billion is estimated to be spent on mine closure Australia-wide in 2030.

>$1 billion estimated value of transformative & innovative rehabilitation in Queensland.

585% growth in estimated rehabilitation liability in Queensland over the past two decades.

2040 peak mine closure period

This is a significant opportunity for transformative rehabilitation.

There are a plethora of opportunities that could deliver value to our community – we will work with our stakeholders to unlock this value

What could transformative rehabilitation and PMLU look like?

Even with recent progressive rehabilitation requirements in Queensland, mine rehabilitation and the associated liability largely remains an exercise of returning land to previous condition.

We aim to support stakeholders to consider transformative uses (beyond just mining-adjacent uses) that add value, are sustainable, and allow continued productive use.

There are a plethora of opportunities – ensuring they are fit for purpose for our region and leave a sustainable legacy will be key to success. For example:

- Water-reuse
- Bio manufacture
- Tourism
- Tailings processing
- Advanced manufacturing
- Carbon capture
- Mixed use precincts
- Education
- Renewables
- Aquaculture / agriculture
- Biodiversity and ecological restoration
- Housing

What's next?

This is the start of the journey for some, and an ongoing passion and vision for others. We want to ensure all stakeholders are brought along on the journey to reimagine rehab together.

The Working Group, together with our partners (such as CRC Time, EnviroMETS), passionate community, and wider stakeholders, aims to:

- Conduct detailed and extensive stakeholder engagement (including but not limited to community, Government, and mining companies) to align the vision, garner support and understand the key barriers and opportunities.
- Undertake long- and short-listing of opportunities in close consultation with stakeholders to identify and prioritise opportunities in the region.
- Identify a pathway to development of priority opportunities – including unlocking funding, removing regulatory barriers, connecting key stakeholders, etc.
- And most importantly – **secure your commitment to engagement, action, and participation in solutions.**

The vision

Why now, and what are we trying to achieve?

Our region is home to prosperous communities that help to power the world, though our heavy reliance on mining exposes us to sectoral risks

Queensland is a global mining powerhouse, with the Bowen Basin as its engine

46% of global metallurgical coal was exported from Queensland in 2023 - (higher than Russia, U.S. and Canada combined).[1]

... where in the Isaac region alone:

67% of Queensland's **met coal** is produced[2]

58% of the 25,000 regional **jobs** are in mining[3]

89% of regional **output** is from mining[4]

With decades of reserves at some mines, and new sites likely to open over time the resources sector will continue to be a lifeblood for the region. Metallurgical coal is expected across many forecasts to maintain it's demand for decades, due in part to the high quality and significant volumes of regional Queensland coal.[5]

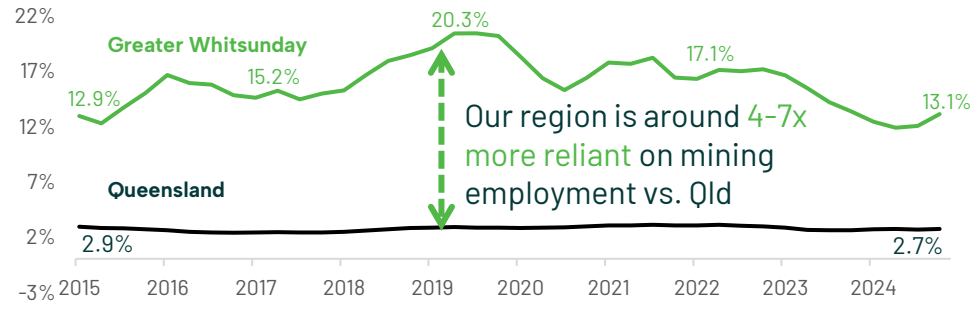
Much of our region is therefore heavily entrenched in the mining sector (particularly our mining equipment, technology and services (METS) businesses). Mining, for example, employs 4 – 7x more people in our region than the Queensland average (see Figure 1).[6]

Reliance on the resources sector exposes the region to the inherent risks and opportunities

The Greater Whitsunday region's strong reliance on the resources sector has underpinned economic growth for decades. However, this reliance also exposes the region to the inherent risks of global commodity cycles and market fluctuations. To build long-term economic resilience, it is essential to explore complementary opportunities that can diversify revenue streams and reduce vulnerability to sector-specific downturns.

Fortunately, the region is well-positioned to do so. The infrastructure, expertise, and workforce developed through decades of mining activity provide a solid foundation for new industries and land uses. By reimagining how mining lands and associated assets can be repurposed—whether through innovation, environmental restoration, or emerging sectors—we can unlock new value and strengthen the region's economic future.

Figure 1: Mining employment as a proportion of Greater Whitsunday and Queensland (%)



Source: Create Advisory analysis of Australian Bureau of Statistics (2025) Employed persons by Industry division data

Upcoming mine closures present an opportunity to leave a positive legacy

Several mines in the region are reaching end of life over the coming decades

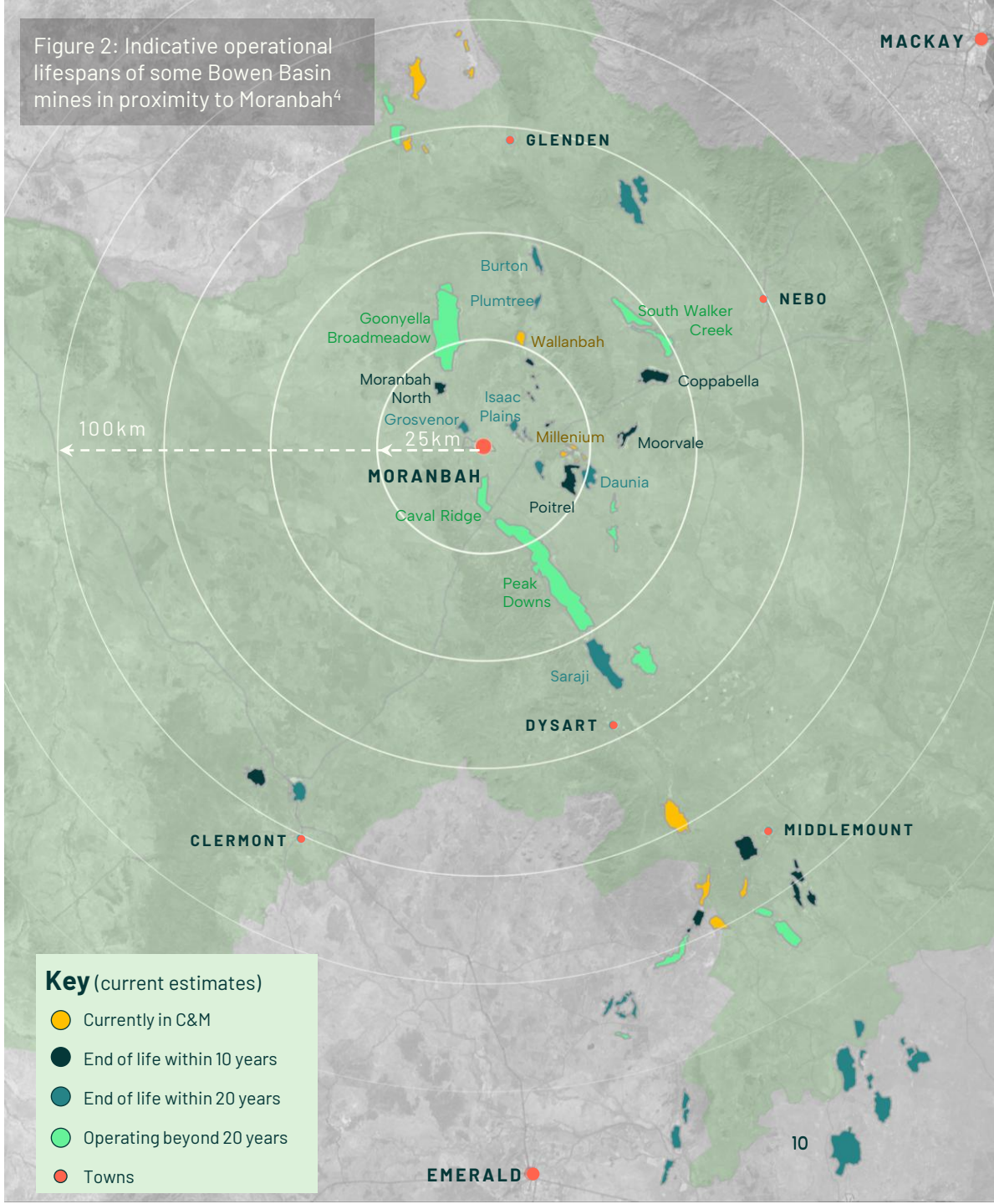
Peak mine closure in the region is anticipated to occur around 2040 and 2070.[1] Many of these mines requiring rehabilitation are near Moranbah as outlined in Figure 2, highlighting a significant opportunity for the region to drive innovation in this space.

The introduction of a new life-of-mine planning instrument (Progressive Rehabilitation and Closure Plan or PRCP) in 2019[2], alongside the impending mine closures, is pushing investors and community toward seeking more proactive initiatives on mine rehabilitation and closure.

This highlights the opportunity for community, businesses and governments to be involved alongside the mining sector in the co-creation of value-generating opportunities whilst mine sites are still in operation.

> Peak mine closure in the Bowen Basin is anticipated to occur in two peaks around 2040 and 2070.
>
> *– CRC TiME, 2022[1]*

Figure 2: Indicative operational lifespans of some Bowen Basin mines in proximity to Moranbah[4]



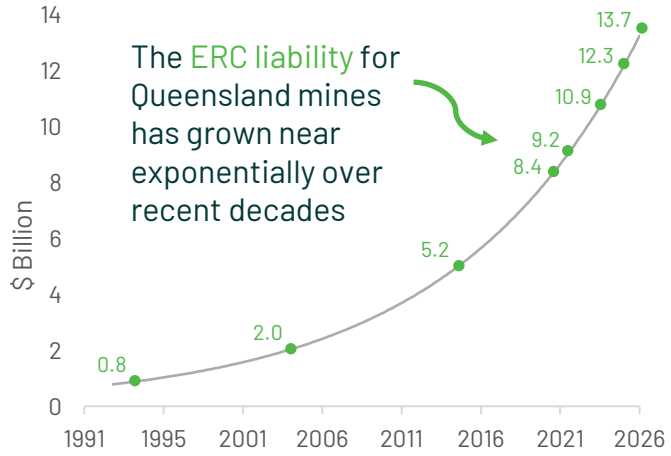
Transformative rehab is estimated to be worth over one billion dollars per annum for Queensland[1]

Our region has an opportunity to embrace transformative and innovative rehabilitation and PMLU approaches to generate significant value, sustainable outcomes, and continued prosperity for our communities.

The Queensland Mine Rehabilitation Commissioner examined 207 mines across the sector subject to progressive rehabilitation and closure requirements.

Over the last 30 years, the estimated rehabilitation cost (ERC) liability for all resource activities has grown to exceed $13.7 billion.[2]

Figure 3: ERC liability (estimated) in Queensland 1994–2024

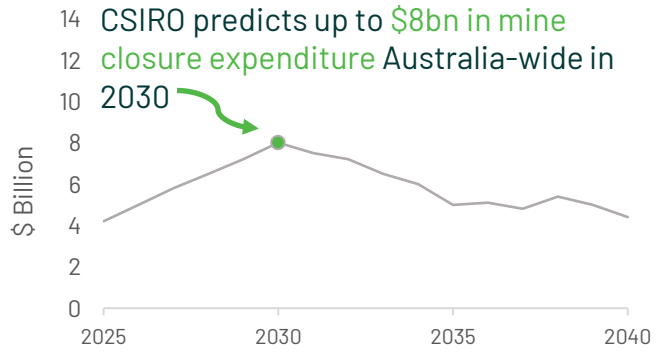


Source: Adapted from Queensland Mine Rehabilitation Commissioner (2024), *2023–24 Report*.

Australia's existing $100 billion Mining Equipment, Technology, and Services (METS) industry supports mine closure activities, with approximately a quarter of its companies offering some closure and remediation solutions.

The CSIRO estimates that expenditure on mine rehabilitation and closure activities Australia-wide could exceed $4 billion each year.[3]

Figure 4: Projected mine closure expenditure



Source: CSIRO (2023) *Enabling mine closure and transitions: Opportunities for Australian industry*.

Our vision is to **Reimagine Rehab**: Leveraging our region's mining areas to catalyse growth, innovation, and limitless futures for our community

What does this mean?

Recognising the burning platform and the significant potential value locked in mine site rehabilitation, the Working Group wants to unlock this value to support communities in the region to continue to evolve and innovate – diversifying our economy and continuing our prosperous legacy.

The vision is underpinned by the following **principles** that represent the core pillars of the vision and the desired outcome:

Community-driven

Continuing the legacy of the community – experience, skills, infrastructure, relationships – to enable the growth and evolution of the region.

Why? Leverage our world-class expertise and experience to continue the prosperity of our region, retaining our workers and our community.

Future-focused

Recognising the need to adapt to a changing world - embracing innovation, technology, and diversification into future industries.

Why? To ensure the resilience and adaptability of community and industry as we continue to evolve – remaining leaders of growing industries in Australia for decades to come.

Sustainable

Sustainability and decarbonisation remain foundational to the region and PMLU opportunities.

Why? Ensuring our region remains a positive partner for the planet and leaves a sustainable legacy.

Practical

Aligned to the characteristics and features of the region and community, and able to be feasibly implemented.

Why? Because we want to ensure opportunities are realised quickly and efficiently, in a way that is complementary to our strengths as a region.

Taking advantage of the opportunities associated with reimagining rehab are expected to provide substantial benefit to a range of stakeholders

Benefits

Local Community

- Economic diversification that ensures the impacts of economic cycles are guarded against, enabling long-term regional resilience.
- Continued growth and prosperity, attracting new industries and people to the region.
- Opportunities for local skill development, especially through attraction of educational institutions.

Mining companies

- Continuation of the immense legacy of the mining sector, with more productive and sustainable use of post-mining land.
- The investment required to rehabilitate land can be allocated to higher-value, revenue generating initiatives.

Local businesses

- Alignment between the capability of local businesses and rehabilitation requirements (e.g. earthmoving, equipment supply, engineering) can stimulate business growth.
- Any new mining land uses will require ongoing support in operations, maintenance and across the supply chain.

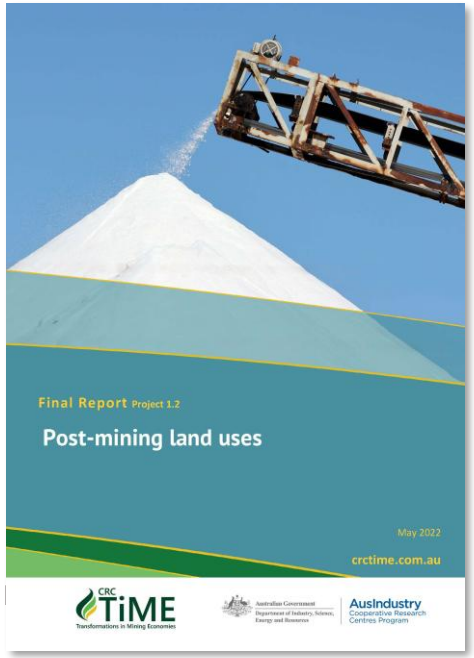
State and Local Government

- Ensures advancement of State Government priorities for regional development which include fostering economic growth through expanding business and growing industry.
- Additional investment in the region will support sustainability and liveability, and diversify revenue sources for local governments.

New Industry

- The implementation of new operations of mined land can attract new industry, businesses and investment into the region, whilst existing infrastructure can be leveraged to reduce barriers to entry.
- Opportunities for new projects to contribute further towards decarbonisation aspirations.

A significant body of knowledge and many completed projects by our partners showcase several opportunities for our region, for example…

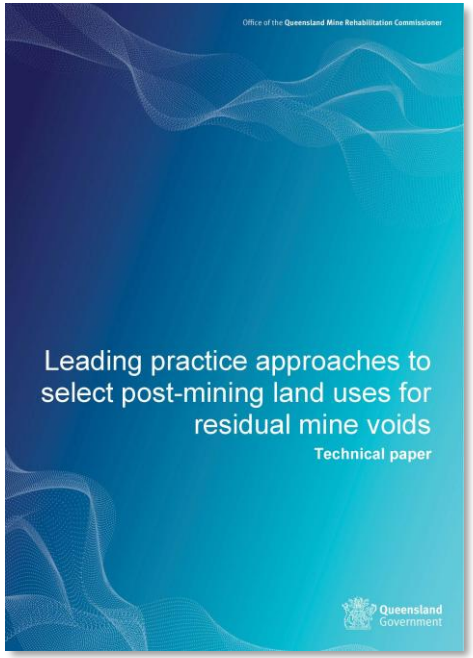


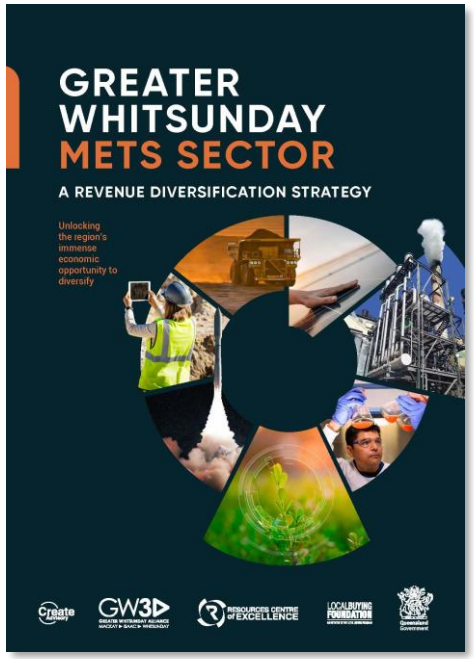
Cooperative Research Centre for Transformations in Mining Economies

Examining the experiences of several Australian mine sites that have undergone or are currently pursuing mine repurposing.[1]

Government, including the Qld Mine Rehabilitation Commissioner

Providing advice on leading practice in rehabilitation of land impacted by resource activities and report on trends.[2]



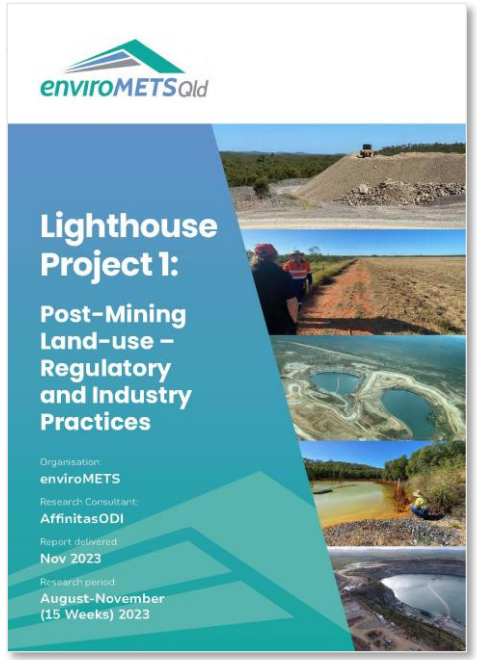


Greater Whitsunday Alliance

Identifying priority sectors that deliver significant growth opportunities and require the existing skills and expertise of the METS sector.[3]

EnviroMETS Qld

Undertaking rapid analysis of regulatory and industry practices impacting on PMLU outcomes in Queensland and barriers and enablers to promoting positive PMLU outcomes.[4]



Identified examples

What does transformative rehabilitation look like?

EXAMPLES

There are a plethora of opportunities – ensuring they are fit for purpose for our region and leave a sustainable legacy will be key to success

For example, the following are areas of interest for our region...

Minerals reprocessing to extract valuable residual minerals from waste / tailings.

Renewable energy particularly in solar, wind, battery, and pumped hydro, and connection to nearby REZs.

Tourism and recreation, transforming sites into attractions and publicly usable space.

Housing particularly where sites are located near existing townships or employment centres.

Multi-use Industrial Precinct, connecting and enabling multiple uses and infrastructure.

Industrial / commercial, supporting the growth and diversification of our METS sectors.

Carbon capture and the generation of carbon credits as we seek to continue to decarbonise.

Education and research particularly as we evolve our community and industry to new areas.

Water re-use and storage for a wide variety of uses, and as an enabler of other opportunities.

Modern agriculture / aquaculture leveraging the strength of our agriculture industry.

Biodiversity and ecological restoration including providing habitats and reserves for flora and fauna.

Biomanufacturing and energy leveraging nearby agriculture and infrastructure to grow bio-related industry.

These opportunities are explored further on the following pages

We've highlighted three key examples of opportunities that are directly applicable to the strengths of our region, to showcase what could be possible

Finding the right opportunities for our region

There are a wide variety of transformative and innovative ways to rehabilitate and use mining land during and after core mining operations, and a large body of knowledge and case studies is continuing to be built to back these up globally.

Part of the ongoing effort for the Working Group and regional partners is to identify and progress those opportunities that are **directly relevant and feasible for our mining land**.

We look forward to working with you and the wider stakeholder base to identify, enable, support, unlock funding for, and help deliver these opportunities.

Showcasing key examples

This Prospectus does not aim to identify all the opportunities, nor prosecute their value or feasibility. Instead we aim to stimulate our stakeholders' imagination for what could be possible in the region through some case studies provided on the following pages – including:

- Tailings reprocessing facility
- Multi-use industrial precinct
- Water re-use scheme.

Minerals reprocessing: The are a number of tailings facilities across the Isaac region, with most storing coal tailings and reject materials. Reprocessing of tailings can create value from products such as critical minerals, road subbase aggregates or agricultural soil conditioner

Multi-use industrial precinct: The collocation of available land and infrastructure on mine sites offers a strong platform for innovation and collaboration, with opportunities in autonomous systems, robotics, and emerging technologies across sectors including resources, agriculture, and logistics.

Mine water storage and re-use: Our mines have the potential to hold and redistribute a large volume of water for productive uses in our region, such as agriculture and renewable energy, as well as to provide drought resilience to offset climate change.

EXAMPLES

Overview of minerals reprocessing

Recent advancements have made tailings processing more commercially feasible, with potential returns in the billions[1]

Tailings are the mineral waste remaining after the processing. Generally, mining processes that involve extraction from ore results in mine tailings, including the major coal mining operations in the Bowen Basin and extraction of critical minerals for emerging energy technologies.

Why it works in our region

17 tailings waste facilities

(in use and currently not in use) across the Isaac region.[1]

8 Abandoned major mines across the Isaac region

of the 120 complex abandoned sites managed by Department.[2]

6,500ha

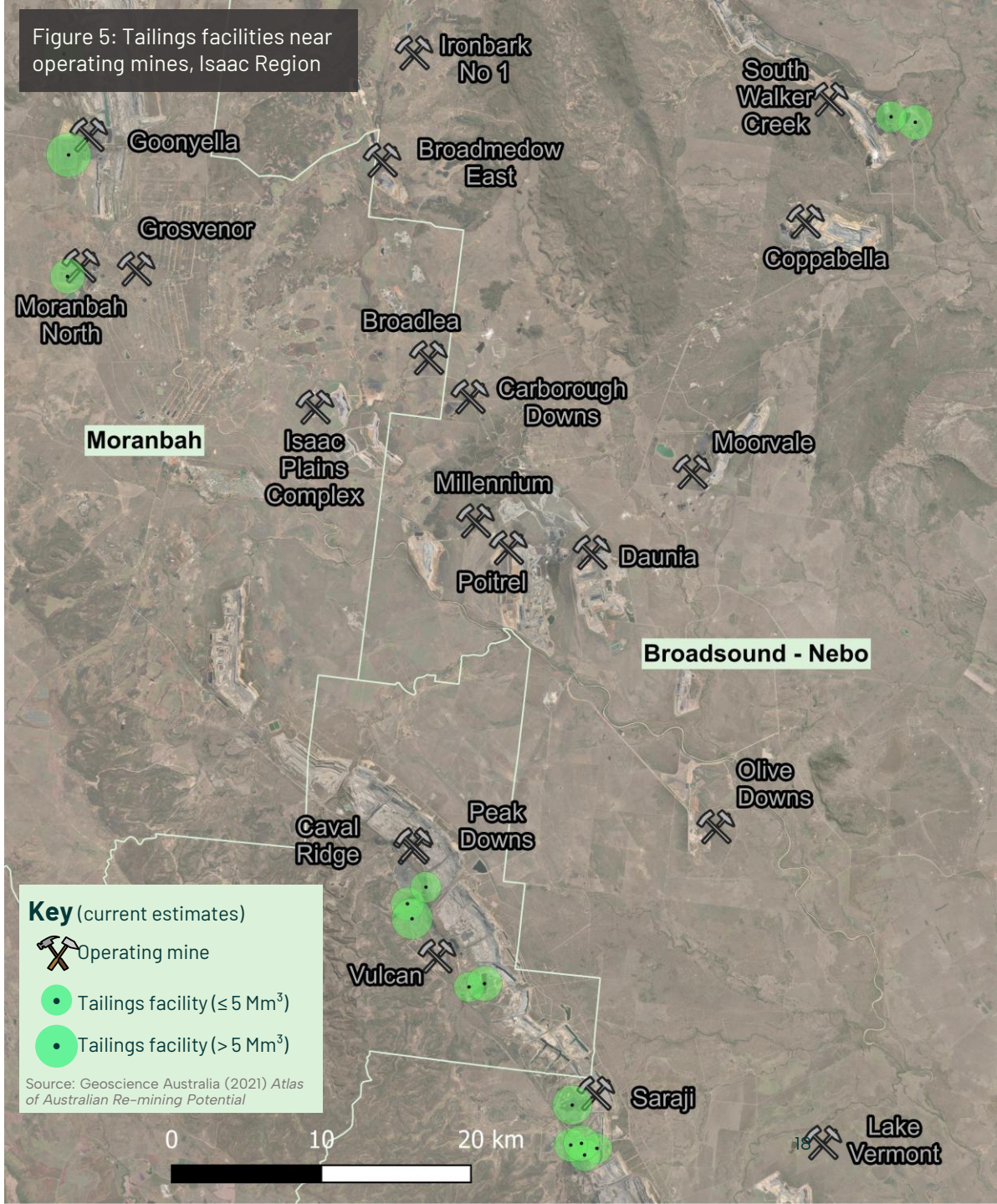
of land in Queensland utilised for coal mine tailings storage.[3]

20% – 50%

total carbon soil conditioning material in coal wastes.[4]

- **Modern recovery techniques:** Technology such as hydrometallurgical processes can lead to effective recovery of strategically important critical minerals from low-grade sources such as mine tailings.[5]

Figure 5: Tailings facilities near operating mines, Isaac Region



Minerals reprocessing – regional leading indicators

Minerals and tailings reprocessing has significant momentum in the Greater Whitsunday region

Future Industries Flexi-Lab Pilot Processing Plant

The Future Industries Hub pilot processing plant is a commercial common-user facility, helping to transition and support the emerging new economy minerals sector, generating jobs for the future and our regional economy.

The pilot plant will support the development of new and improved methods for processing minerals, enabling the pilot-scale demonstration of new technologies and assisting companies to increase mining yields and decrease associated costs.[1]

A $12 million facility funded by QLD State Government and Mackay Regional Council.

20+ users in project pipeline for critical mineral pilot processing plant.

Workshops, events and training attracting visitation from investors, industry and all levels of government.

Pit to Port

The Resources Centre for Excellence (RCOE), in partnership with BHP Mitsubishi Alliance (BMA), has launched a pilot project to explore how circular economy principles can be integrated across the entire value chain—from pit to port. This initiative aims to deliver enhanced organisational, environmental, and social outcomes.

The "Pit to Port" project lays the groundwork for applying these principles at a regional scale. It envisions a symbiotic network of Bowen Basin sectors, businesses, and communities working together to optimise service delivery, improve material flows, and regenerate natural and social systems through coordinated, sustainable practices.[2]

RESOURCES CENTRE of EXCELLENCE · BMA BHP Mitsubishi Alliance · Coreo · METABOLIC

Example

Tailings reprocessing facility

EXAMPLE

Hellyer Gold Mines tailings reprocessing

LOCATION

Tasmania

In 2019, Northern Queensland Minerals (NQ Minerals) successfully commissioned the Hellyer Gold Mines tailings reprocessing facility on Tasmania's west coast. In February, subsidiary Hellyer Gold Mines (HGM), shipped its first consignment of reprocessed silver-lead-gold concentrate from the port of Burnie.[1]

Building on the success of that project, in 2021 HGM signed an agreement to add mineral processing technology operated by EnviroGold Global to its facility.[3]

VALUE

The Hellyer Tailings Retreatment project has a 10-year mine life and a projected revenue of US $706m in 2019, with an EBITDA of US $28m.

It's estimated at least 55 people are employed at HGM full-time.

In return for applying its proprietary processing technology to various tailings deposits, the company is entitled to 50% of the pre-tax cashflows from the up to US $24 million per year.

BENEFITS FOR ...

Community – ongoing employment opportunities based in highly-skilled mining and resources industry.

Mining companies – ability to leverage existing infrastructure, create additional revenue streams and manage liabilities.

Local business – continued demand for services through construction, operations, and maintenance.

Government – helps ensures mining companies meet or exceed environmental regulations, reducing monitoring costs

New industries – secondary source of critical minerals and development of products for construction and agriculture

KEY TAKEAWAYS

Innovative tailings management presents a major opportunity for the Isaac Region to unlock new value from existing mine sites and highly-trained workforce —supporting resource recovery, job creation, and local manufacturing while positioning the region as a leader in circular mining practices.

Overview of multi-use industrial precincts

Multi-Use industrial precincts are emerging as key enablers of regional economic development – designed to support diverse industries, from advanced manufacturing to sustainable agriculture, fostering innovation and investment

While early activities in these precincts are likely to relate to opportunities in resources, regional strengths in growth sectors such as agriculture and aquaculture can drive additional high-value diversification opportunities.

Leveraging existing infrastructure and connectivity

The collocation of available land and existing infrastructure on mine sites presents a valuable opportunity for intensive agriculture, including livestock operations, feedlots, and horticulture.[1] For instance, greenhouses could be established, or buildings could be repurposed as controlled-environment facilities to support year-round food production.[2] Site proximity to electricity transmission networks, and integration with roads, rail, ports and airports offer significant supply chain advantages, ensuring rapid delivery of products to domestic and export markets. Driving additional high-value agriculture and aquaculture uses is dependent on the characteristics of each mine site.[3]

Supporting a wide range of agricultural and industrial activities

Repurposing former mine sites as these precincts unlocks new infrastructure potential to support a range of agricultural and industrial activities.[4] These precincts can host high-efficiency crop production, value-added food manufacturing, carbon capture techniques, logistics, and applied research, as well as integrating robotics and automation in real-world conditions. By fostering collaboration and innovation, they can catalyse economic diversification across regional communities.[5,6]

Why it works in our region

#1 Home to Paget, the largest mining services industrial precinct in the southern hemisphere.[7]

4.4x greater share of mechanical engineer trade workers than Queensland.[7]

10% of Qld agricultural production, whilst comprising only 5% of the state's land.[8]

56% of Qld economic value from aquaculture is produced in the region.[9]

- **Existing proof cases** particularly in the success of the Regional Centre of Excellence, Paget Industrial Estate, and other precincts / center of excellence (e.g. agriculture and aquaculture).
- **Platform for growth** with a wide array of current and future industries (such as critical minerals, agriculture, renewable energy, biomanufacturing) ready to benefit from common user facilities and colocation with enabling services and infrastructure.[10]

Multi-use industrial precincts – regional leading indicators

The Greater Whitsunday region is already well advanced with developing multi-user industrial precincts as vehicles to drive new economic activity across key sectors.

Resources Centre of Excellence

Located in Mackay are the Resources Centre of Excellence (Stage 1) and Future Industries Hub (Stage 2) whilst planning for Stage 3, the Isaac Resources Excellence Precinct in Moranbah is well advanced.

Through the Resource Centre of Excellence (RCOE) and Future Industries Hub, the precincts are reshaping the future of the mining and other emerging industries by connecting innovation, research and technology with industry.[1]

Stage 1 RCOE foundation site

Bringing together innovators and collaborators across research, technology, education and METS to shape the future resources industry

Stage 2 Future Industries Hub

Due to open in 2025, the Future Industries Hub will include a pilot processing plant focused on critical mineral and reprocessing of tailings.

Stage 3 Resource Excellence Precinct

The proposed REP will establish a RCOE presence in the Isaac region and seek to build out a range of capabilities and offerings in coming years...

Agriculture Centre of Excellence & Aquaculture Centre of Excellence, TAFE Queensland Bowen and Cannonvale

The Agriculture Centre of Excellence at the TAFE Queensland Bowen campus and the Aquaculture Centre of Excellence at the TAFE Queensland Cannonvale campus offers exciting learning opportunities, skills and pathways for the regional communities helping to drive the state's $23.5 billion agriculture and aquaculture industry.

The Agriculture Centre of Excellence offers specialist training to cater for emerging technologies in the agriculture industry. The Aquaculture Centre of Excellence focuses on providing job readiness in fish farming, hatchery, and pond management.

The Agriculture Centre of Excellence includes technologies such as a smart centre for data analysation, laboratories for testing, growing pods and a farm bot for robotics, nutrition, soil science, biology and coding.[2,3,4]

Example

Multi-use industrial precinct

EXAMPLE

Australian Automation and Robotics Precinct

LOCATION

Perth

Opened in 2024, the Australian Automation and Robotics Precinct (AARP) is a collaborative innovation hub and Australia's largest test and development site supporting the advancement of automation, robotics, remote operations and zero emissions technologies.[1]

Launching initially with a strong focus on the mining sector, the AARP's facilities provide organisations with access to multi-purpose test beds to allow for the development of robotics and autonomous equipment in real-world conditions.

VALUE

Developed with a $28m WA Government investment, the WA Government estimates the AARP could contribute between $450m and $600m to the economy in the five years to 2030.[2]

The AARP is focused on leveraging WA's expertise and strength in resources and mining automation to drive innovation across other sectors.

The facility benefits from the collocation of tier 1 operators, mid-tier, and junior miners alongside the METS supply chain, startups and research institutions.

BENEFITS FOR ...

Community – employment and training opportunities in an industry where demand is growing.

Mining companies – ability to leverage existing infrastructure and connection to supply chains to diversify revenue.

Local business – continued demand for services through construction, operations, and maintenance.

Government – aligns to goals of State's Regional Growth Framework to support industry development in the regions.[3]

New industries – attracting innovative businesses to the region (e.g. automation, robotics, agtech, aquaculture)

KEY TAKEAWAYS

Multi-Use industrial precincts provide diverse industries substantial opportunity to leverage existing infrastructure in the region to encourage collaboration and innovation. Given the growing global demand for food, fuel and fibre, there is substantial opportunity to leverage existing infrastructure in the region to implement high-value agricultural uses on mine sites.

Overview of mine water storage and re-use

Circular economy principles on mine sites, particularly for water and waste, are not new concepts and could generate significant value for our mines and community

Water is a precious resource particularly in regional Queensland where water use is high for industrial and agricultural purposes, though supply becomes difficult due to the remote locale and relatively arid areas.

Mine sites use and capture significant amounts of water

Mine sites are typically geographically isolated, with limited access to advanced water processing facilities and sewerage systems. Like other industrial activity, mines also consume significant amounts of water in operations. Storm water and processing waste water become significant liabilities for many mine owners that must adhere to strict requirements for the management and treatment of water.

Water as an enabler for key current and future industries – renewables, agriculture, critical minerals mining, and more

Increasing water availability through mine water re-use / recycling would act as an enabler for a wide range of regional economic development. Particularly in the Greater Whitsunday region where population and tourism growth, untapped agricultural development, and several PHES projects sites, and a move to regional data centre development, will require significant volumes of water over and above existing use.

Why it works in our region

186+ gigalitres of water stored across our mine sites.[1]

25+ mine reservoirs identified as suitable candidates for PHES.[2]

46x more water used in processing copper than in coal.[3]

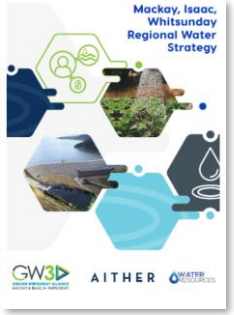
20,000 megalitres of high priority water is needed by 2040 to support mining alone[4]

- **Significant supply potential** - As of 30 June 2020, 185,570 ML was reported as being stored at 31 mine sites within the region, equivalent to 125% of the capacity of Teemburra Dam.[5]
- **Agriculture and aquaculture** – including for Greater Whitsunday's acquaculture development areas, the potential for a Collinsville agriculture precinct, and the need to grow the Bowen Basin food bowl.
- **PHES and other renewables** – located near a REZ and with many PHES sites identified.
- **Coal and critical minerals mining** – coal will continue to be mined in the region, as well as an expected increased in the extraction of critical minerals (particularly copper) from our region – all requiring water.[6]

Mine water storage and re-use – regional leading indicators

Many projects and reports have identified opportunities related to mine water in the Greater Whitsunday region

Greater Whitsunday Regional Water Strategy



The Strategy positions the region as a national thought leader in sustainable water management, particularly in the re-use and repurposing of water infrastructure, including that associated with mining. By recognising the latent potential of these assets, the Strategy promotes innovative approaches to water capture, treatment, and redistribution—supporting agricultural productivity, industrial growth, and environmental resilience.

Through collaborative planning and stakeholder engagement, the strategy identifies opportunities to transform legacy water systems into multi-use assets. These systems can underpin emerging industries, enhance drought resilience, and contribute to ecological restoration, while also enabling research and innovation in water technologies. This forward-thinking approach maximises existing infrastructure and aligns with circular economy principles and long-term regional sustainability.

The report also outlines a range of economic enablers and strategic actions to support growth through improved access to water, while identifying key barriers that must be addressed to unlock this potential. Among the most promising opportunities is the strategic use of regional water infrastructure to support development.

This includes enabling the creation of new agricultural precincts, expanding aquaculture operations, and fostering collaboration to support both existing and emerging industries. While some of these opportunities are still in development, they reflect active regional thinking around infrastructure reuse, integrated planning, and economic diversification.

Unlocking Aquaculture Potential Through Mine Site Water Reuse

As technologies for the safe and effective treatment of mine site water evolve, opportunities are emerging to repurpose these legacy assets for high-value, sustainable industries. One such opportunity is aquaculture, including algae cultivation, which can thrive in controlled water environments and contribute to both economic diversification and environmental outcomes.

Genesis Australia, based in Bowen, is demonstrating the viability of this approach in the region, using algae-based systems to produce organic stockfeed supplements and bio-fertilisers that reduce methane emissions and improve soil health. Their success highlights the potential for integrating similar systems into rehabilitated mine sites, transforming water liabilities into productive, regenerative assets that support innovation, circularity, and regional growth.

Example

Water re-use scheme

EXAMPLE

Hunter Lakes Scheme

LOCATION

Hunter Valley

Use existing and new open cut coal mine voids in the Upper Hunter Valley to re-use and capture for water storage.[1]

The proposal includes the creation of interconnected lakes stretching from Muswellbrook in the north to Broke southwest of Singleton to provide Water Security to the region, including "drought proofing" a large area of NSW. The Hunter Lakes Scheme aims to underpin all economic activity envisaged for the Hunter Valley - hydrogen, renewables, agriculture, tourism.[2]

VALUE

Though no specific estimates are currently available for the value of the available water, let alone the economic benefits of enabling a wide variety of productive uses, the potential benefits are significant.

Opening a new bulk water source in a remote regional area is a important enabler for a wide variety of uses – and could even catalyse investment in additional mining in surrounding areas (as well as agriculture and renewables).

BENEFITS FOR …

Community – access to new local water supply and recreation sites, as well as jobs / employment and tourism.

Mining companies – valuable allocation of rehab liability, with potential to commercialise water supply or land sale.

Local business – continued demand for services through construction, operations, and maintenance.

Government – firms regional water supply and enables productive industries in regional areas.

New industries – particularly as an enabler for renewable energy (i.e. hydrogen and PHES) and agriculture.

KEY TAKEAWAYS

Water is a precious resource, particularly in our regions, and an enabler to a wide array of activities. Reusing and recycling the water retained in our mine sites should be explored further as a significant opportunity to create new economic outcomes in mining communities.

Next steps

How do we work together to deliver the vision?

Engagement to unlock barriers and deliver opportunities

What's next?

This is the start of the journey for some, and an ongoing passion and vision for others. We want to ensure all stakeholders are brought along on the journey to reimagine rehab together.

The Working Group, together with our partners (such as CRC TiME and EnviroMETS), passionate community, and wider stakeholders, aims to:

- Conduct detailed and extensive stakeholder engagement (including but not limited to community, Government, and mining companies) to align the vision, garner support and understand the key barriers and opportunities.
- Undertake long- and short-listing of opportunities in close consultation with stakeholders to identify and prioritise opportunities in the region.
- Identify a pathway to development of priority opportunities – including unlocking funding, removing regulatory barriers, connecting key stakeholders, etc.

And most importantly – **secure your commitment to engagement, action, and participation in solutions.**


Photo by Eden Project

References

References (1 of 3)

Page 9

1. Department of Industry, Science and Resources (2025) Resources and Energy Quarterly – March 2025. Available: industry.gov.au
2. Isaac Regional Council (2025) Innovation in the Isaac Region. Available: australianminingreview.com.au
3. REMPLAN (2025) Isaac – Employment. Available: remplan.com.au
4. REMPLAN (2025) Isaac - Output. Available: remplan.com.au
5. Department of Industry, Science and Resources (2025), Resources and Energy Quarterly – March 2025. Available: industry.gov.au
6. Australian Bureau of Statistics (2025) ABS 6291.0.55.001 RQ1 - Employed persons by Industry division of main job (ANZSIC), Labour market region (ASGS), April 2025. Available: abs.gov.au

Page 10

1. CRCTiME (2022) Post-mining land uses. p. 26. Available: crctime.com.au
2. Queensland Government (2025) Progressive rehabilitation and closure plan for mined land. Available: business.qld.gov.au

Page 11

1. EnviroMETS (2025) Multi-criteria Business Case Strategic Summary. p. 1. Available: enviromets.net.au
2. Queensland Mine Rehabilitation Commissioner (2024) 2023–24 Report. p. 12. Available: qmrc.qld.gov.au
3. CSIRO (2023) Enabling mine closure and transitions: Opportunities for Australian industry. p. vii. Available: csiro.au

Page 14

1. CRCTiME (2022) Post-mining land uses. Available: crctime.com.au
2. Queensland Mine Rehabilitation Commissioner (2024) Post-mining land uses. p. 12. Available: qmrc.qld.gov.au
3. Greater Whitsunday Alliance (2024) Greater Whitsunday METS Sector – A Revenue Diversification Strategy. Available: greaterwhitsundayalliance.com.au
4. EnviroMETS (2025) Lighthouse Project 1. Available: enviromets.net.au

Page 18

1. Northern Australia Infrastructure Facility (2022) Mount Morgan Tailings and Rehabilitation Project. Available: naif.gov.au
2. Australian Coal Association Research Program (2022) Value-Added Products from Coal Tailings. Available: acarp.com.au

Page 19

1. Resources Centre of Excellence (2025) Future Industries Hub. Available: rcoe.com.au
2. Resources Centre of Excellence (2025) Pit to Port. Available: rcoe.com.au

References (2 of 3)

Page 20

1. Commonwealth of Australia (Geoscience Australia) 2021, Atlas of Australian Re-mining Potential. Available: portal.ga.gov.au
2. State of Queensland, 2022, Queensland Resources Industry Development Plan.
3. Kate Baker and James Purtill (August 2023), qmrc.qld.gov.au
4. Yong, MT., Babla, M., Karan, S. et al. Coal tailings as a soil conditioner: evaluation of tailing properties and effect on tomato plants. Plant Growth Regul 98, 439–450 (2022).
5. Australian Coal Association Research Program (2022) Value-Added Products from Coal Tailings. Available: acarp.com.au

Page 21

1. Worden, S. et al. (2024) Regional post-mining land use assessment: An interdisciplinary and multi-stakeholder approach. Available: sciencedirect.com
2. Queensland Mine Rehabilitation Commissioner (2023) Leading practice approaches to select post-mining land uses for residual mine voids. Available: qmrc.qld.gov.au
3. Queensland Mine Rehabilitation Commissioner (2024) Aquatic ecosystems in post-mining landscapes. Available: qmrc.qld.gov.au
4. Rolfe et al. (2023) Processes to transfer post-mining lands to agricultural uses in the Bowen Basin: Review, economics and analysis. cqu.edu.au
5. Development WA (2023) Australian Automation and Robotics Precinct – Industry Prospectus. Available: theaarp.com.au
6. Queensland Government Coordinator-General (2025) Scenic Rim Agricultural Industrial Precinct Project - Coordinator-General's evaluation report on the impact assessment report. Available: qld.gov.au
7. Greater Whitsunday Alliance (2024) Greater Whitsunday METS Sector – A Revenue Diversification Strategy. Available: greaterwhitsundayalliance.com.au
8. Greater Whitsunday Alliance (2025) Agriculture. Available: greaterwhitsundayalliance.com.au
9. Fisheries Queensland (2025) Aquaculture production summary for Queensland 2023–24. p. 8. Available: qld.gov.au
10. Greater Whitsunday Alliance (2025) Biomanufacturing Blueprint. Available: greaterwhitsundayalliance.com.au

Page 22

1. Resources Centre of Excellence (2025) About. Available: rcoe.com.au
2. TAFE Queensland (2025) Agriculture Centre of Excellence in Bowen. Available: tafeqld.edu.au
3. Queensland Government (2023) $2 million Aquaculture Centre of Excellence a catch for Whitsunday region. Available: qld.gov.au
4. Greater Whitsunday Alliance (2025) Aquaculture. Available: greaterwhitsundayalliance.com.au

References (3 of 3)

Page 23

1. Development WA (2023) Australian Automation and Robotics Precinct – Industry Prospectus. Available: theaarp.com.au
2. Western Australia Government (2024) Australia's biggest robotics and automation precinct opens in WA. Available: wa.gov.au
3. Queensland Government (2025) Queensland's Regions. Available: qld.gov.au

Page 24

1. Greater Whitsunday Alliance (2021) Mackay, Isaac, Whitsunday Regional Water Strategy. Available: greaterwhitsundayalliance.com.au
2. University of Queensland Sustainable Minerals Institute (2022) Post-mining land use. Available: uq.edu.au
3. Veolia (2024) Woodlawn Eco Precinct. Available: veolia.com

Page 25

1. Greater Whitsunday Alliance (2021) Mackay, Isaac, Whitsunday Regional Water Strategy. Available: greaterwhitsundayalliance.com.au
2. Greater Whitsunday Alliance (2022) Greater Whitsunday Algae farm named AgTech Global Finalist. Available: greaterwhitsundayalliance.com.au

Page 26

1. Hunter Lakes Corporation (2025) The Hunter Water Bank. Available: hunterlakes.com
2. Hunter Lakes Corporation (2025) Inquiry into Beneficial and Productive Post-mining Land Use. Available: parliament.nsw.gov.au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