

WHY WE EXIST - WHAT WE DO - HOW TO HELP

- 1. Organisation Overview
- 2. Lighthouse Projects (LHP) Strategy
- 3. Current Research Activities
 - LHP1 Regulatory & Industry Practices > Legal
 - LHP2 Business Case Methodology > Financial
 - LHP3 Pilot Site Development > Technical
- 4. Supporting New, Innovative and Sustainable Post-Mining Land Use Solutions

Finding Higher Value Post Mining Land Use



Scars from the Past Resource Value Focus



Restore & Return
Environmental Value Focus



Higher Value Land Use
Regional Development Focus







enviroMETS - an independent, industry-led not-for-profit company - an actor for change

To find and implement innovative and sustainable repurposing, recommercialising, and remediation solutions to ensure mining affected land is more valuable and usable to both its current, and future custodians.

Benefiting Queensland's industry, communities, government and METS sector.

Collaborative Capability

285 INNOVATION ECOSYSTEM STAKEHOLDERS



Alternative Post-Mining Land Use Pathways



Building Queensland's PMLU Solutions Strategy

RESEARCH STEPS

Ensure Regulatory Framework Supports Innovative PMLU Opportunities. Approval



Establish Economic Viability of Pilot Project Sites. Financed



Operate Pilot Site to Demonstrate Technologies at Scale. Proved



Develop Global Market Opportunities for PMLU Solutions. Exports

LHP1: Regulatory Enabling Supportive COMPLETING **Environment** Regulatory Industry Started July'23 Final Report Nov'23 Environment **Practices Mapping Project Regional PMLU Planning More Viable** LHP2: Multi-factor KICK OFF **Post-Mining Land Use Opportunities** Jan'24 **Business Case Method** Completion Sep'24 **Site Identification Regional Site Business Case Analysis More Economically Robust LHP3: Investible Business PLANNING** Start Land-use Solutions **Cases for Sandbox Pilot Sites** Jun'24 **Collaborative Ventures within Innovative METS Companies Building Leadership in Economic Post-Mining Land Use Transformation Solutions**

- LHP1:Technical Advisory Group established Confidential whitepaper in progress
- LHP2: Detail scope completed and pending project funding approval

Where are We Now - Innovative PMLU in Qld?

5 OUESTIONS - 31 RESPONSES

CURRENT PMLU EFFECTIVENESS?



PROCESS FLAWS?

Barely used (14)

Challenging but do-able (10)

Adequate for a minority (4)

Effective (0)

Leading (0)

Nothing Good!

Regulatory (9)

Limited Integration & Collaboration (8)

Resource Profit Focus (5)

Land Use Limitations (5)

Limited Incentives (3)

Development Approval Process (1)

IMPROVEMENTS?

Stakeholder Engagement (6)

Diverse PMLU Options (6)

Regulatory (6)

Planning Integration (5)

Investment flexibility (4)

Environmental (3)

Holistic evaluation (3)

PMLU-focused authority (3)

MINE OWNER RESPONSIBILITY?

Sustainable Practices (7)

Compliance Obligations (7)

Stakeholder Engagement (6)

Infrastructure Management (4)

Economic Balance (3)

Hazards & Closure (3)

KEY NEXT STEPS?

Agreed Method of Evaluation (9)

Collaboration & Engagement (7)

More Policy Options for Regulators (5)

Communication & Promotion (3)

What We Learned

PATHWAYS TO INNOVATIVE ALTERNATIVE LAND USE

Feb'23 LHPO Workshop identified Key Challenges that reprioritised three projects

Key Challenges to Consider

- 1st to 6th associated to impact of regulatory framework
- 11th & 12th are technical and non-issues

Priority Outcomes to Address

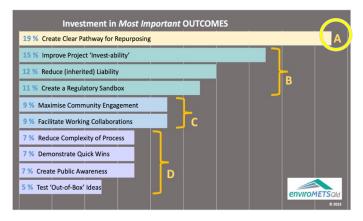
- 1. Identify a clear pathway for innovative repurposing [LHP 1]
- 2. Improve investibility for PLMU [LHP 2]
- 3. Test new ideas in 'sandbox' environment. [LHP 3]

Societal Engagement

- LHP1 Develop understanding that "Policy" and "Strategies" are hitting regulatory roadblocks
- LHP2 Both public and industry investment must be quantified and justified
- LHP3 Showcase innovative repurposing and remediation







Key Outcomes from Lighthouse Projects Workshop – 15 Feb 2023

Lighthouse Project Strategy

3 INTEGRATED PROJECTS

Working with partners in Government, Research and Industry to achieve improved community outcomes on land that was previously set aside for the sole purpose of mining.

LHP 1: Navigating the regulatory framework impacting the economic transformation of mine affected land

✓ Identify and map the regulatory pathways and challenges for repurposing scenarios

✓ Specifically identify the hurdles for establishing 'sandbox' pilot/trial sites

✓ Provide recommendations on solutions to experienced regulatory environment challenges

✓ Provide industry support for reshaping of a future regulatory enabling environment

LHP 2: Develop a reliable, repeatable methodology of assessing 'Net Best Value' of various PMLU options

• Develop a system architecture for quantitative analysis

- Distill viable options from site & regional characterization
- Identify net value (\$ sum) of mineral, new commercial, social, environmental, cultural
- Standardize format to make QLD.gov 'authorization process' comparable and efficient
- Test a 'practitioner toolkit' with five pre-feasibility pilot site regional business cases.

LHP 3: Establish several pilot/test site facilities in QLD where stakeholders can find and prove new innovative economic purposes

- Detailed feasibility studies for open pit / underground, Coal / Metalliferous, Abandoned or Operating
- Establish collaborations of technical viable PMLU options
- Engage investment partners into appropriate governance structures for each site.
- Ensure accessible to METS companies, researchers, entrepreneurs and locals anyone with an idea to test and commercialise.

INDENTIFY SITES & PLANNING













LHPI Find Better Regulatory Outcomes

3 FXIT STRATEGIES

Evolving Community Expectations

- Mining unattractive
- Activism distractive
- Legislative challenges
- Communicate benefits
- Industry behaviour
- Global economics

Refreshing goodwill towards mining desperately needs exemplar projects of good social, environmental, cultural and positive regional economic transformation

Mining Resource Extraction Outcome

In past has led to mining lands unused or abandoned. impacting communities

Dept of Resources

Plus

Manage responsible mining practices to make the best use of resources

and coordinate large-scale infrastructure projects, while ensuring

turn, promote economic and social development in Queensland.

their environmental impacts are properly managed. These projects, in

The **Queensland Mine Rehabilitation Commissioner** advises on mine rehabilitation and management practices, outcomes and policies.

Scars of the Past

Mining lands and their communities abandoned



Environmental Rehabilitation Outcome

Dept of Environment, Science and Innovation

Provides the environmental authority and regulatory oversight of mining impact on the environment. Also, the rehabilitation to its pre-mining state.

Past Vegetation Replacement

Low or negative value outcomes for communities



Regional Economic Development Outcome

Economic Transformation

Securing innovative business PMLU opportunities that support local communities. Provide certainty.

Dept of State Development & Infrastructure Dept of Local Government and Planning The Coordinator-General has wide-ranging powers to plan, deliver

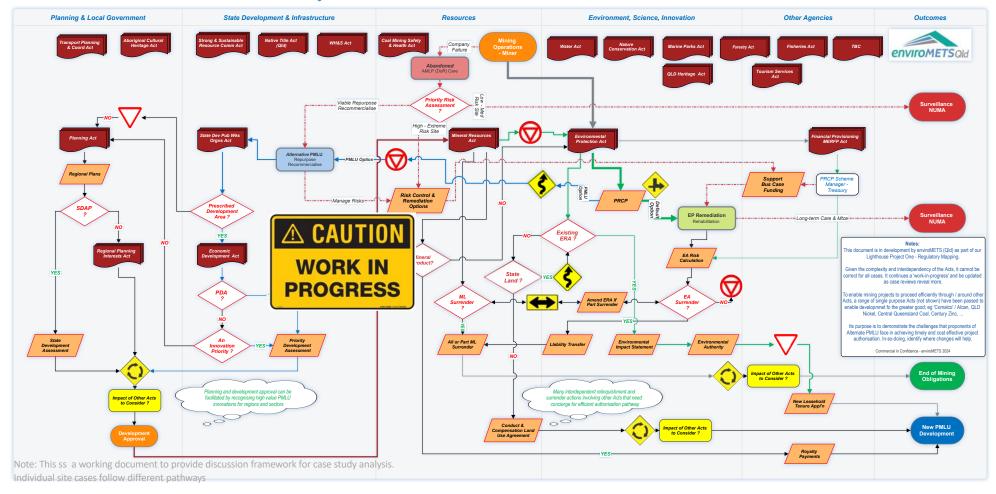
To secure responsible economic development and liveable communities through direction and investment in mining and post-mining opportunities for regions.



LHPI Regulatory Pathway - Concierge?

20+ ACTS TO NAVIGATE





LHP2 Seeking Higher Value Land Use

CREATING NEW VALUE

Creating and Recognising Measurable Value in PMLU

- Mineral Resources
- New Commercial Activities
- Social / Community Uplift
- Environmental Benefits
- Cultural / Heritage Gains

Sustainable mining regional communities relying on development of new PMLU value, (blue triangle)



LHP2 Business Case Methodology

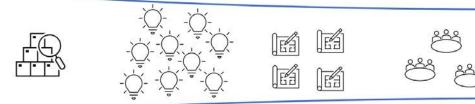
NET BEST VALUE

Establishing an Investible PMLU Business Case

- Regional planning
- Mining operators
- Community participation
- Expert analysis
- Public policy makers
- Innovation investors
- Financial assessment

Design a reliable 'Economic PMLU Options Assessment Process' that identifies viable options that fits the public policy decision-making framework of Queensland to find higher value PMLU options for current and abandoned mine sites.

Economic Options Development



Site Characterisation

Understanding the site characteristics in its strategic regional and community context

- Ownership
- Physical
- Survey
- Geology
- Community
- Environmental
 Available Asset
- Available Assets
- Funding
- Risks

Attract Ideation

Attracting PMLU ideation from as wide an audience as possible, incl outside of mining.

- Remining
- Repurposing
- Remediation

Collaborating proponents

- Miners
- Community/s
- Region
- Government
- Entrepreneurs

Prefeasibility Viability

Evaluating high level viability of the PMLU activity and proponent to shortlist.

- Activities
- Markets
- Costs
- Regional Plan
- Environmental
- Community Support
- Traditional Owners

Project Negotiation

Leading discussions with proponents, miners, government and communities

- Funding structures
- Collaborations
- Long-term Gov't agreements
- Assessment stages
- Development period

Feasibility Business Case

- Quantifying 'Net Best Value' project/s over base case incorporating
- Mineral extraction
- New commercial enterprises
- Social uplift
- Environmental improvement
- Cultural & heritage

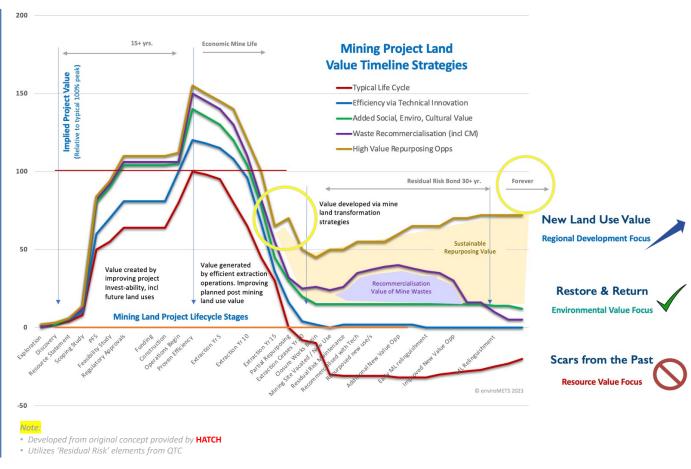
LHP3 Planning for Economic Transition

SOONER THE BETTER

Timing

- Life value of mining is enhanced by earliest planning for economic transition.
- Harder with operating mine and changing economics.
- 'Prescriptive' PRCP and cost of variations reduces incentive to consider options beyond restore to past.
- Implementation on innovative PMLU best done early and while mine is operational.
- Shared use of infrastructure supports future use PMLU start-up.

State / Regional Development is the enabling factor for innovative PMLU. Mining regulators need to accommodate and support the transformation activities.



LHP Timeline

2023

F

M

Completed External DEVELOPMENT PROJECTS TO 'SANDBOX' PILOT SITES In Progress Extended Activities Development Progress @ Feb'24 > Identification of land use options, **METS Companies Develop** stakeholder challenges Capabilities & Export & project prospectus \$?M. Industry Investment and others ONGOING **PLMU Repurposing LHP 2: Site Assessment Business Case Diagnostics Methodology Development & Test Cases** Implementation/s **Scoping** SCOPING & FUNDING Industry Investment and and Research Study other new commercial enterprises W M5 W M4 M1 **Planning** DONE LHP 3: Pilot Site Identification, Appraisal, DONE Further Sites -**LHP 1: Mapping Regulatory Economic Business Case Development & New PMLU Environment Pathways Operating Governance Opportunities** DONE_ Industry Investment and others SITE IDENTIFICATION, SCOPING, PLANNING Align Pilot Site Interest Investor & Community Meetings LHP LHP Physical Delivery LHP Deliverables Update Update of Pilot Sites QME Announced

2024

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Innovative Post-Mining Land Uses

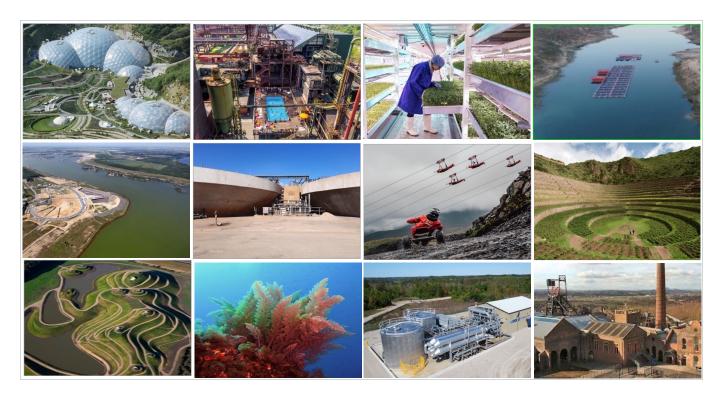
WHAT SUCCESS LOOKS LIKE

Successful Repurposing Projects Require*:

- Visionary leadership
- Engaging communications
- Beneficial knowledge
- Practical research
- Creative ideas
- Cultural connections







^{*} Peter Whitbread-Abrutat. Consultant to enviroMETS and author of "102 Uses for a Hole in the Ground" to be published by the Eden Project, 2023

How to Support our Mission

THINKING DIFFERENTLY ABOUT PMLU

1. Change the Language to "Economic Transformation"

• "Economic Transformation" - NOT "Closure"

2. Find, Clarify and Build our LHP Pathway

- Understand the Regulatory Inhibitors & Enablers
- Build a Standardised Business Case Method
- Develop 'sandbox' Pilot Sites in PMLU regions
- -> Easier Legal Authorisation
- -> Expand Financial Alternatives
- -> Increase Technical Innovation

3. Work Collaboratively - Build Trust - Explore New Ideas

- Policy Makers
- Innovation Investors
- Mining Operators
- Community Advocates



Supported by





Lighthouse Project Partners













It's time to start thinking differently about the future of mining impacted land.

Contact

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