



# MIW METS Industry Capability and Supply Chain Study

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*Prepared for the MIW METS Export Hub by Lytton Advisory Pty Ltd*

*September 2020*



## Acknowledgments

Lytton Advisory acknowledges the assistance of Dean Kirkwood, MIW METS Export Hub Manager at RIN, and feedback from the Project Advisory Group.

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## Document Control

Version	Date Approved	Approved By	Description
1.0	30/06/2020	Craig Lawrence	Draft report
2.0	05/08/2020	Craig Lawrence	Draft final report
2.1	01/09/2020	Craig Lawrence	Final report

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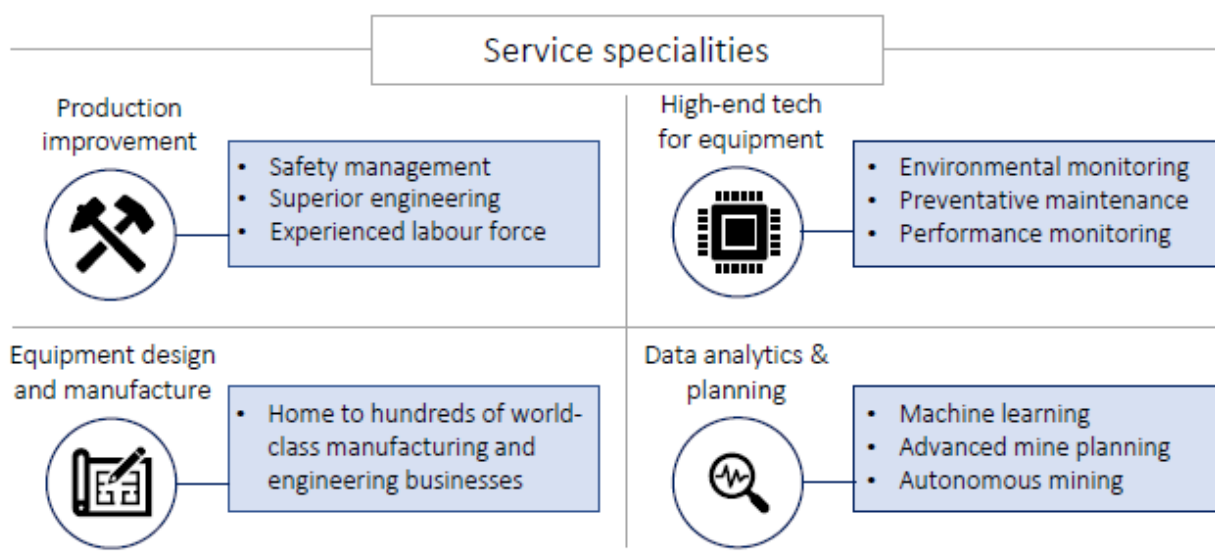
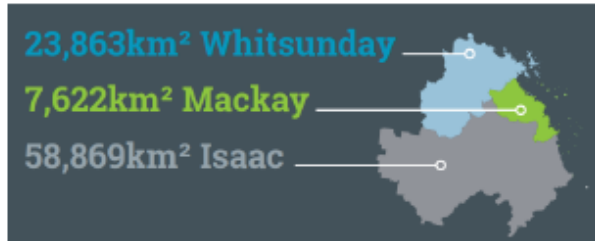
## Abbreviations

ABS	Australian Bureau of Statistics
CSG	Coal Seam Gas
FIFO	Fly In Fly Out
FTA	Free Trade Agreement
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GSP	Gross State Product
GVA	Gross Value Added
GW3	Greater Whitsunday Alliance
IAQ	Infrastructure Association of Queensland
IP	Intellectual Property
KPI	Key Performance Indicator
LGA	Local Government Area
METS	Mining Equipment, Technology and Services
MIW	Mackay-Isaac-Whitsunday
MSS	Mining Supply and Services
NBN	National Broadband Network
OEM	Original Equipment Manufacturer
PAG	Project Advisory Group
QGSO	Queensland Government Statistician's Office
QMCA	Queensland Major Contractors Association
QRC	Queensland Resources Council
RBA	Reserve Bank of Australia
RIN	Resource Industry Network
SME	Small and Medium Enterprise(s)
R&D	Research and Development

# Mackay Isaac Whitsunday Region METS Sector

The resources sector, which METS firms support, provides a significant contribution to the MIW community and economy. As of 2019, contribution included:

- 19.5% of total jobs;
- 46.3% of total economic output;
- 2,137 businesses in the supply chain.



## The MIW METS sector benefits from rich nearby coal deposits and world-class infrastructure networks

### The MIW is the gateway to rich coal deposits in the Bowen and Galilee Basins

- The Bowen Basin contains most of the State's high-quality metallurgical and thermal coal reserves
- The Carmichael mine in the Galilee Basin is set to become Australia's largest thermal coal mine.

### The MIW has a highly-skilled workforce and strong, sector-specific education resources

- Highly regarded universities and technical and vocational education institutes offer mining- focused study and skills development



### Well-connected infrastructure allows for pit-to-port operations

- The Port of Hay Point is one of the largest coal export ports in the world
- The Port of Abbot Point is one of Australia's most important emerging bulk ports.
- The Port of Mackay is now able to handle break bulk METS imports following recent upgrades

### Supported by well-managed institutions

- The highly collaborative supply chain is provided with forums and resources designed to promote private enterprises in the METS sector



## Executive Summary

The Resource Industry Network (RIN) through the MIW METS Export Hub commissioned Lytton Advisory (LA) to undertake industry capability analysis and supply chain mapping for the Mining Equipment, Technology and Services (METS) in the Mackay Isaac Whitsunday (MIW) region in Queensland (see Scope of Work in Appendix 1).

The research project comprises desktop analysis, stakeholder consultations, and an online survey of industry participants. The online survey was developed during February and March 2020 in consultation with the Project Advisory Group (PAG) and was tested in a pilot phase.

This report includes a summary of desktop analysis and stakeholder consultations as well as a summary of findings from the online survey.

### Relevance to the MIW region

Across a range of metrics, the resource industry sector is providing a significant contribution to the MIW community and economy. The sector makes the greatest contribution to economic output in the region. Key statistics on this contribution to the MIW region in 2019 include:

- 2,137 businesses in the supply chain;<sup>1</sup>
- 16,591 jobs (19.5% of total) providing \$1,955 million in wages and salaries;
- \$19,441 million in output (46.3% of total) and \$18,249 million in exports; and
- \$12,328 million in valued add (54.3% of total).<sup>2</sup>

As a result, there is a significant reliance on a profitable and healthy resources sector for business opportunity, livelihoods, and standard of living. The general health of the resources sector is regarded as being positive following a downturn between 2013 and 2018.

### Capabilities of the MIW METS sector

#### Overview

The MIW METS sector is very well positioned to develop commercially viable products, processes and services to respond to the current and emerging requirements of the Queensland and international resources sector. Desktop research, industry consultations and survey findings indicate that the MIW region is home to proven specialists in the following areas:

- Equipment design and manufacture – especially in the areas of bulk/materials handling and state of the art underground equipment;
- Production Improvement Consulting and Services – underground and open cut;

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<sup>1</sup> Queensland Resources Council (2019) *Local Government Areas Resources Contribution*. [online] Available at: <https://www.qrc.org.au/contributiontoqueensland/local-government-areas/>

<sup>2</sup> Remplan (2020) *GW3 Economy Profile*. [online] Available at: <https://app.remplan.com.au/greaterwhitsundayalliance/economy/summary?state=PRKLCbXEgFqdzeLHKoJYbZfGIbI8ZX>

- Safety and Training Consulting and Services – underground and open cut;
- High End Technology for Equipment for Safety and Productivity Improvement (Data Analytics & Automation); and
- Data analytics, including forecasting, planning and scheduling.

MIW's strategic role as a key hub/logistic and export/support service centre for the resource-rich deposits, and projects across the Bowen and Galilee basins, has provided the region a competitive edge due to its excellent track record, established infrastructure, facilities, business and knowledge and skill base.

### Accumulated knowledge

Stakeholder consultation and supplementary research indicated that the single greatest strength of the sector is the knowledge the METS has accumulated and its potential application to other countries and/or industries. MIW has a highly skilled and productive workforce and strong, sector-specific education infrastructure. Its world-class education and training facilities include highly regarded universities and technical and vocational education institutes that offer mining and energy-focused study and skills development. The 'Resources Centre of Excellence' in Mackay will provide a range of training facilities and research laboratories to further the region's expertise in the mining and METS sector. Other examples include the Mackay Institute of Research and Innovation interlinked with both Central Queensland University and James Cook University, and the Central Queensland University Chair of Automation and Future Work Skills.

### Supporting networks and infrastructure

Further capabilities include:

- Networks of workers with long-term technical expertise and experience in the Bowen Basin. Local mining contractor services, such as G&S Engineering, WorkPac and Mastermyne, specialise in recruitment for resource jobs and labour hire and have a proven track record for servicing the region's resource sector with skilled employees;
- The connections between the companies, suppliers and institutions have resulted in the development of a cluster of expertise. This MIW cluster forms the basis for building collaborative partnerships and developing innovative products and services, leading to increased growth and employment. The Paget Industrial Estate METS Cluster is an example and is a catalyst for R&D, innovation and collaboration. It is understood among stakeholders that Paget has the most patents per square metre in Australia, largely owing to the large number of world class manufacturing and engineering capabilities all situated in the one area. Remplan data shows that 121 businesses from the mining, construction, and professional, scientific & technical services sectors call Paget home, a figure which is believed to be largely made up of METS firms. Moranbah and Collinsville are two examples of specialised workforce training clusters. Furthermore, there is the emergent leadership and coordination by Resources Industry Network (RIN);
- Infrastructure – The MIW region has suitable coal rail and loaders, ports, easy access to coalfields and liveability;

- Collaboration between government and non-government organisations – RIN, GW3 and Mackay Regional Council, Isaac Regional Council and Whitsunday Regional Council;
- METS sector is known for its cutting-edge, innovative solutions, products, processes and services. METS sector products, services and skills are highly transferable to other industry sectors and markets in other locations; and
- Queensland has high levels of environmental protection requirements and workplace safety regulations. As a result, METS companies are world leaders in the development of products, processes and services to reduce the environmental impacts of operations and improve workplace safety systems.

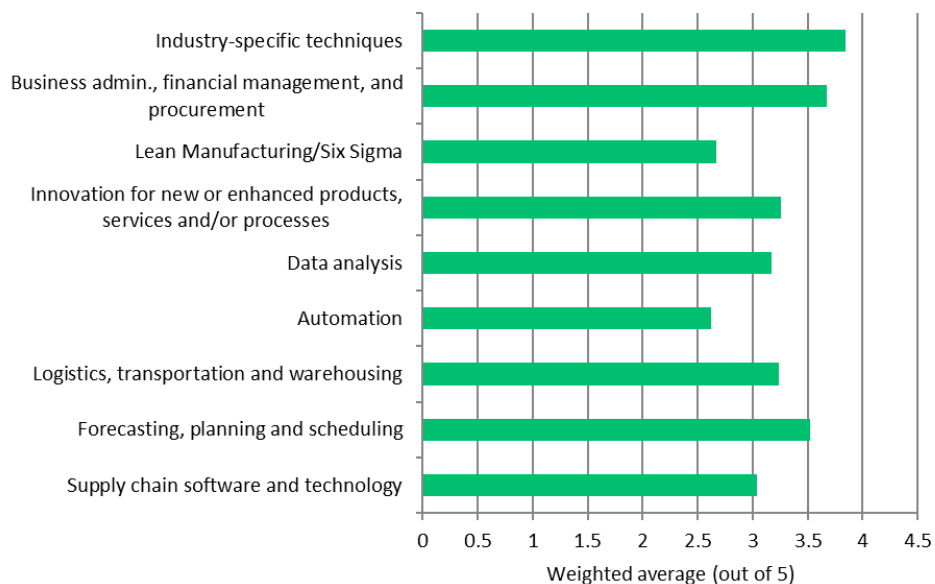
### Highly specialised businesses

The MIW METS sector is comprised of highly specialised businesses that cover the full range of services needed by the mining sector. Surveys conducted for this survey indicate that MIW businesses are broadly confident about their current stages of development across a wide range of functions. The lowest weighted average scores out of 5 were reported in lean manufacturing/six sigma and automation, which were still in healthy positions above 2.5 (Figure 1). Areas that respondents considered were nearly or fully developed (with ratings of 4 or 5) were:

- industry specific techniques (59%);
- business administration and finance (54%);
- forecasting, planning and scheduling (46%); and
- data analysis (41%).

The perceived strength of industry-specific techniques speaks to the high degree of innovation, development and specialisation present in the MIW METS sector.

**Figure 1. Please rate your company’s current stage of development for each of the following business functions**

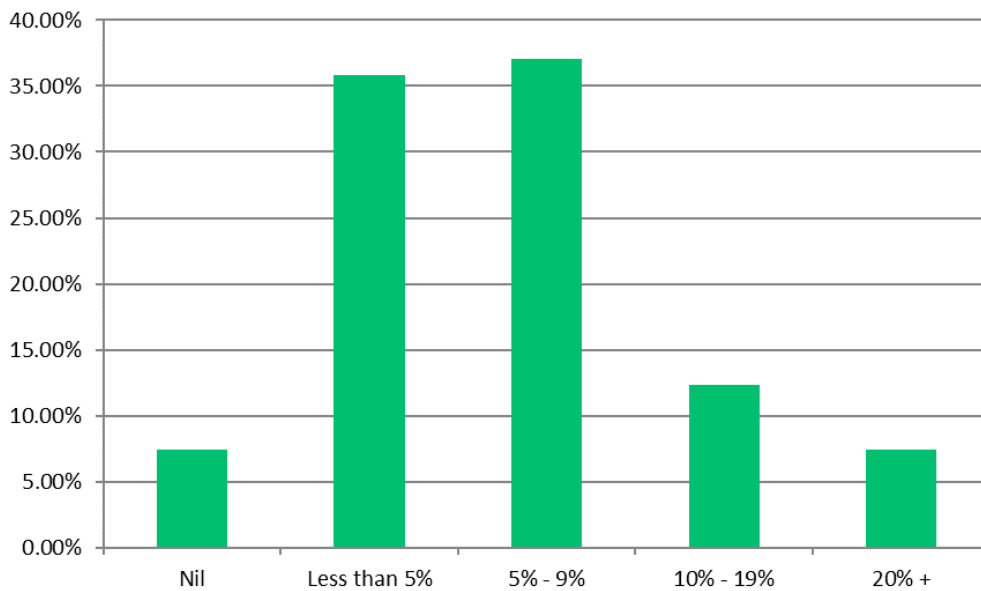


Source: MIW METS Survey, 2020.

## Commitment to R&D

A forward-facing and broad commitment to R&D was also revealed by the survey, which found that nine in ten METS businesses invest in research and development of new products, services or processes (Figure 2). A small number, one in fourteen, make significant investments of more than 20% of their annual business costs. One in two spend between 5% and 19% on research and development. This strongly suggests that businesses in the sector are aware of the significance of R&D on their operations.

**Figure 2. In the current financial year (2019-20), approximately what percentage of your business costs will be directed to the research and development of new products, services or processes?**



Source: MIW METS Survey, 2020.

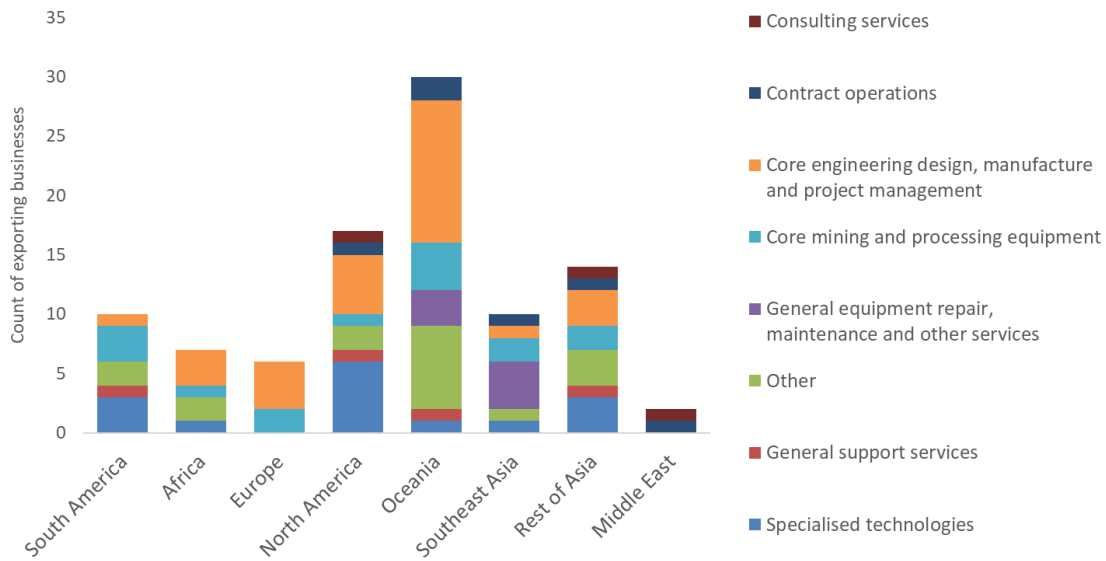
## Broad export base with a focus on core engineering design, manufacturing, and project management

The MIW METS sector exports a range of services to many parts of the globe (Figure 3). The survey indicated that the Oceania region (Fiji, New Caledonia, Pacific Islands, Papua New Guinea, South Sea Islands, Fiji) was the most popular export destination for MIW METS firms, with 60 survey respondents conducting business within the region. Papua New Guinea and the United States were the most popular export destinations at the national level, receiving services from 13 and 12 MIW METS firms, respectively.

29 core engineering design, manufacturing, and project management firms exported their services, making them more connected with overseas partners than any other nature of business. Firms delivering core mining and processing equipment, specialised technologies and other services were also highly represented in this regard with 15, 15 and 17 MIW firms exporting their services.



**Figure 3. Export destinations by type of services**



Source: MIW METS Survey, 2020.

Note: Regions are made-up of varying numbers of export destinations. For a detailed breakdown of regions see Appendix 6.

### Examples of innovative METS businesses with niche capabilities

As part of this assignment, Lytton Advisory prepared several case studies of innovative businesses that highlight the niche services/capabilities of MIW METS businesses and the immense potential for exports.

#### Mastermyne

Mastermyne was founded in Mackay in 1996 and today is one of Australian mining’s most trusted contractors. Mastermyne has been listed on the ASX since 2010 and grown year on year to now be a business that generates annual turnovers above \$250 million and employing over 1,000 people. Strategic growth and diversification over the years now means Mastermyne provides an extensive suite of underground services and products supported by a large fleet of mining equipment. The full coverage of Mastermyne’s services is listed below.

- New mine development and mine operation and all mine support services such as roadway construction, ventilation, conveyors, longwall relocations and application of polymeric strata support.
- Production & Ancillary Equipment.
- Operational products at competitive pricing.
- Mine studies, mine optimisation, technical services and initiatives to extend current contracts and scopes.
- Accredited training and mine inductions.

## 4PS Software

4PS Software was developed in 2008 by Michael Storch who is founder and Managing Director of Mackay Safety after identifying a market gap for SMEs to be able to meet their duty of care obligations as well as better run their business in an affordable, accessible and easy to use manner. Developed over almost 20 years in the heavily compliance-driven mining industry, 4PS software is easily transferrable and relevant for any industry. It excels especially in industries with strict compliance needs including mining, agriculture, manufacturing, construction, defence, recruitment and many more. Broadly 4PS and the 4P Mobile app provides:

- all employee records via a secure cloud-based system;
- paperless digital forms that can be digitally stored;
- equipment maintenance and safety compliance; and
- Up-to-date information for monitoring operational matters.

## Linked Group Services

Linked Group Services commenced operations in 2010 when Chief Executive Officer Peter Shaw and Managing Director Jason Sharam recognised a gap in the commercial market and began providing electrical contractors to mining companies throughout Australia. Linked Group Services capabilities include:

- specialist trade services; electrical and mechanical projects; fabrication, engineering and drafting; fleet and equipment; and mining products.
- mechanical, fabrication, automotive (light and heavy), drafting and engineering – electrical.
- labour hire for all trades, services and administration – ongoing and shift relief; supervision and project management; maintenance and shutdowns; planning and scheduling; grid connect and standalone solar design and installation, mechanical and electrical design and engineering, flexible support contracts, power quality audits and turnkey projects (design, build, operations, maintenance and end of life)
- The EcoSkid is a Hybrid Power Supply, EnviroSkid, and EcoPort.

## Desktop Analysis

### Industry Literature Review

A review of METS industry literature has highlighted several key points to be tested further in the MIW region including:

- Coal supply chain participants do not perceive adequate incentive to cooperate;
- Industry participants are not well aligned to optimise supply chain performance;
- Information gaps impede planning and operations;
- Incomplete contracts leave important aspects of relationships undocumented;
- Collaboration between regional councils, inter-governmental agencies and through mining company innovation can be strengthened;

- Compared to overseas peers, local supply chains are more fragmented and more upstream;
- Technology adoption faces several challenges;
- Opportunities exist to merge around common themes (critical business drivers, data-driven, evidence-based analysis, improved collaboration between contracting tiers);
- This is offset by a strong culture of company independence, a lack of long-term capital, low international market knowledge, and a small number of innovative and capable firms;
- Automation will increase productivity, driving down costs to enable expanded resource activity. Unemployment and workforce requirement changes are concerns;
- High and rising infrastructure costs may challenge further resource development; and
- Australia's resources workforce covers a range of scientific fields and professional occupations. It employs a higher share of apprentices than the national average.

## Infrastructure

Desktop analysis and stakeholder consultations suggest improvements to regional infrastructure may be required, particularly for road, port, and telecommunications infrastructure.

### Roads

The regional road network is critical to the economic development of the MIW region as it facilitates the transport of export goods to market and enables the movement of critical materials and technology across the region (fuel; mining equipment etc). However, at present all MET SMEs are required to travel using the Peak Downs Highway that has large stretches of single carriageway. The Peak Downs Highway is a key transport route connecting the regional city of Mackay to the mining and agricultural areas of Central Queensland. The highway's adequacy is not only an efficiency and capacity issue but a road safety issue consistent with each METS duty of care towards their employees.

It should be acknowledged that the Queensland Government is aware of the importance of Peak Downs Highway, and is currently undertaking the Eton Range Realignment Project, involving upgrading the existing range crossing to four lanes, adding a split carriageway for part of the range, and reducing the grade for safety and efficiency reasons. This \$189 million project is being funded by the Australian Government with a \$166 million contribution and the Queensland Government with a \$23 million contribution.

### Port

Stakeholder feedback indicated a historical lack of intermodal competition between the Port of Mackay and road freight that has now been addressed. This previously limited METS to the installation and service of equipment, and not the supply of broader-based vertical solutions that could be imported through the port. However, it is noted that the Port of Mackay has recently made significant investments to provide for additional capacity.

On 1 March 2019, NQ Bulk Ports reported that “In the past 18 months, we have invested almost \$10 million in infrastructure upgrades at the Port of Mackay”.<sup>3</sup> The new investment has allowed roll-on roll-off (RORO) ships to berth at the Port of Mackay. The first ship berthed in August 2018, the first RORO ship berthed, delivering four Caterpillar 794AC mining trucks.<sup>4</sup> The arrival of METS sector equipment is reflected in rising throughput of break bulk cargo to the Port of Mackay.

This recent infrastructure investment should provide an opportunity for increased sourcing, provision and assembly of components and equipment in the MIW region as opposed to being road freighted from Brisbane which was previously the norm.

### *Telecommunications*

Stakeholder consultation indicated a perceived urgent need for high-speed internet telecommunications infrastructure and digital networks to take advantage of the increasing adoption of technology and automation of the resources sector. METS businesses are increasingly needing to work remotely and are requiring greater access range, volume of data and speed. The NBN rollout in Mackay although an early regional rollout is considered by some as successful, but with the caveat that heavy investments will be required so that digital workforces are not located in State capitals.

The Mackay Isaac Whitsunday Region Digital Infrastructure Study (2019) for GW3 ultimately found that there is no large-scale public investment currently required in the MIW region.<sup>5</sup> However, it identified opportunities for targeted investments which should largely address stakeholder concerns. It identified that:

- local councils could investigate whether they could expand their own fibre optic networks;
- MIW regional councils, community groups, and industry could lobby for the acceleration of the 4G and 5G technology rollout by telecommunications companies, possibly supported by the Mobile Blackspots program;
- there is an opportunity to develop an open Internet of Things Low Power Wide Area Network (LPWAN) using Council owned or operated networks in urban areas; and
- public wi-fi could be introduced at strategic tourist locations and via the eduRoam wi-fi network, an international network for higher education students and staff, could be expanded in the region.<sup>6</sup>

Capitalising on these opportunities in telecommunications would no doubt benefit the MIW METS sector as well as the broader regional economy.

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<sup>3</sup> North Queensland Bulk Ports Corporation, 2019, *Super-sized RORO vessel set for grand entrance at Port of Mackay*, website post.

<sup>4</sup> North Queensland Bulk Ports Corporation, 2018, *First RORO ship arrives in Mackay*, website post.

<sup>5</sup> Aurecon (2019) *Mackay Isaac Whitsunday region Report*, Commissioned by GW3, Mackay.

<sup>6</sup> *Ibid.*, p. IV.

## International Market Opportunities

MIW METS businesses appear to have a lot of potential to capitalise on international opportunities. For example, a review of the Canadian METS sector revealed that Australia is not considered a viable export market for Canadian firms due to the experience and capabilities of Australian METS businesses.<sup>7</sup>

The global market for mining equipment, not including mining services and technology development, is expected to reach revenue of US\$150 billion by 2022, growing at a compound annual rate of 7.9% from 2016-2022.<sup>8</sup> The Asia-Pacific is becoming the largest market for mining equipment globally.

Australia now has Free Trade Agreements (FTAs) with almost all major trading partners. Australia's mining and METS sectors have a long history of strong performance. The 2015 Austmine *METS National Survey* found that 66% of METS suppliers export globally, up from 55% in 2013.<sup>9</sup> This figure is considerably higher than the 26% of METS firms in the MIW region that indicated they were engaging in exporting operations (see Figure 15). This disparity may suggest that MIW METS firms are overly focussed on their local supply chains compared to METS firms belonging to other geographical regions in Australia. It is also possible that a more expansive definition of "METS" led to a broader survey response (e.g. included mining companies), but there is extremely limited information on Austmine's scope for the survey so this assertion cannot be verified.

Austrade has identified the strongest international opportunities for Australian METS firms in Latin America, China, India, Russia, New Caledonia, Papua New Guinea, Africa, Indonesia and Mongolia. These opportunities are said to exist right across the supply chain, including:

- Capital equipment;
- Contract mining;
- Exploration;
- Mining consumables;
- Professional services including engineering and consulting;
- Software and advanced technologies – Australian suppliers have an international reputation for innovative solutions; and
- Equipment supply – a range of mining equipment is in short supply at present including the supply of tyres.

Key export opportunities for MIW METS companies may include the following:

- Providing services to support data-driven mining decisions;

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<sup>7</sup> PWC (2019) *Canada's Mining Supply and Services Ecosystem and Exports*. [online] Available at: [https://mineconnect.com/wp-content/uploads/2019/05/PwC\\_MSS-Report-FINAL.pdf](https://mineconnect.com/wp-content/uploads/2019/05/PwC_MSS-Report-FINAL.pdf)

<sup>8</sup> CSIRO (2017) *Mining Equipment, Technology and Services: A Roadmap for unlocking future growth opportunities for Australia*. [online] Available at: <https://www.csiro.au/~media/Do-Business/Files/Futures/METSroadmap.pdf?la=en&hash=DDDDFFA37409C84571F22DA3FED16EA66C346C816>

<sup>9</sup> Austmine (2013 & 2015) *Australian Mining Equipment, Technology and Services (METS) National Survey*.

- Supporting mining automation and robotics;
- Offering advanced extraction technologies and methods;
- Providing equipment and services to support mining exploration companies;
- Helping companies address social and environmental sustainability as a critical element of the social licence to operate; and
- Providing innovation that delivers cost reductions and improves mine competitiveness.

### Industry Resilience in the long term from COVID-19 Pandemic

Resources demand from China is forecast to return to normal broadly in the second half of 2020 and current resource project production and output remain relatively unchanged despite the materialisation of COVID-19. Accordingly, there exists a continuing demand for Queensland coal.<sup>10</sup>

Stakeholder consultation indicated there are large component inputs from China, Korea and Japan that are experiencing some delays in shipping with logistics companies largely unsure of new timeframes.

A survey of Queensland resources companies by the Queensland Resources Council (QRC) taken during the COVID-19 outbreak has found that 58 percent of companies were maintaining or planning to grow current workforce numbers over the June quarter 2020 and only 21 percent or 1 in 5 expected a decrease.<sup>11</sup> The results indicate that at the time of writing COVID-19 was having only minimal impact on the output and jobs in the sector. However, concerns weighing on the sector include contractions in the global economy, raising capital and the health impacts of the coronavirus around the world.

It is anticipated that the spill over impact on the MIW METS sector will be limited to the short to medium term. There does, however, remain a large amount of uncertainty regarding this, given the ever-evolving situation with COVID-19.

### Stakeholder Consultations

Stakeholder consultations highlighted the continuing difficulty of METS SMEs engaging in the procurement process of large resource companies although there has been considerable improvement recently. These issues included:

- The information gap that exists between small and very large companies;
- The perceived lack of capacity in small enterprises;
- Disincentives created by global supply chain management trends; and

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<sup>10</sup> Australian Department of Industry, Innovation and Science: Office of Chief Economist, Industry (2020) Resources and Energy Quarterly [online] Available at: <https://publications.industry.gov.au/publications/resourcesandenergyquarterlymarch2020/documents/Resources-and-Energy-Quarterly-March-2020.pdf>

<sup>11</sup> Queensland Resources Council (2020) *Miners to play major role in Queensland COVID-19 job recovery*. [online] Available at: <https://www.qrc.org.au/media-releases/miners-to-play-major-role-in-queensland-covid-19-job-recovery/>

- Barriers arising from corporate policies and systems.

Stakeholder consultation also indicated several assets and capabilities necessary for the strategic development of the MIW METS sector that do not currently exist, including:

- Business management and planning skills;
- The established METS sector is reluctant to trial or adapt to new technology and instead waits for concepts or commercialisation to be proven elsewhere;
- Many METS rely on machinery sourced elsewhere and the knowledge of that machinery;
- There may exist capability but not necessarily capacity that influences the extent of competition and accordingly price;
- Specialist service gaps includes machining in the MIW region and corrosion protection with only one organisation providing these services;
- Specialist skills gaps include shortages in diesel fitters, electricians, freight and logistics; and
- A medium to communicate what the region has to offer and link opportunities to capability. Many SME METS do not have an online presence and their presence is often unknown and not advertised in the digital space. Consultation has revealed that the Queensland Department of State Development's METS Sector team is currently looking to develop a program that addresses this issue by providing insight for firms on how to develop digital capabilities such as an effective website and search engine optimisation.

Consultation also exposed some challenges to be addressed to reach the vision of a thriving hub of innovation, commercialisation and growth, including:

- Reliance on a single commodity – coal;
- Competition with the resources sector for the right skilled employees;
- Geographical locations of some METS firms limits the resource projects that they can feasibly service;
- Commercial secrecy and lack of collaboration is a barrier;
- Affordable flights impede development of business;
- Access to investment capital: METS have traditionally had to self-fund their R&D and are solely carrying the risk of commercialisation;
- Business costs such as labour, transport, regulatory and energy costs are higher than other competitor countries. Red tape and regulation costs were identified as significant;
- While the Australian dollar has improved the attractiveness of Australian products to world markets, METS companies need to innovate and add value to their products, processes and services to ensure they are not competing on price alone;
- The conversation about coal needs to be changed to differentiate between metallurgical coal and thermal coal. Some skills shortages, particularly in engineering degrees, could be solved by addressing a prevailing vilification of the industry; and
- Multiple inductions required for site access including vehicle registration, individual induction, and company and industry certification.

## Findings

### Desktop analysis and pilot survey

Qualitative feedback from the pilot survey confirms the issues and opportunities identified in the desktop review.

Respondents have identified the following issues and concerns for the MIW region as:

- Availability of a skilled workforce; this appears to be underpinned with the fundamental instability of this workforce which is subject to the boom/bust cycle associated with the coal industry;
- Poor quality connectivity via the NBN and 5G networks;
- Inefficient port facilities which leads to double handling of freight from Townsville and Brisbane ports; and
- The poor-quality road network including the Peak Downs Highway and Bruce Highway which are deemed unsuitable for heavy freight movement.

Export opportunities focus on technology and skills related to mining productivity, processing and operational improvements and training and systems associated with safety standards. Particular mention was made of the world-class safety standards which underpin the human capital in the Australian mining industry.

A lack of or poor collaboration between coal supply chain participants and the sector at large has been identified in several reports reviewed for the desktop study. It is worth noting that 88% of respondents rated their “*willingness to collaborate with other companies to develop regional capabilities*” as either a 4 or 5 on a scale of 1 to 5 where 1 is not willing under any circumstances and 5 is very willing and ready to act.

### Survey findings

The top 10 findings from the survey are summarised below:

1. **High willingness of participating companies to collaborate and develop regional capabilities:** on a scale of 1 (not willing under any circumstances) to 5 (very willing and ready to act), the weighted average score of all respondents was 4.25. This supports the desktop analysis finding that opportunities to merge around common themes exist.
2. **Broad commitment to Indigenous employment and apprentices and trainees:** three in five businesses have indigenous employees and more than 75% offer apprenticeships and traineeships.
3. **High proportion of non-exporting firms:** Nearly three quarters of survey respondents are not currently exporting to other countries (Figure 15) and half of respondents currently do not plan to export in the next three years (Figure 19). A further 22% do not currently export but intend to export within that time frame. The remaining 28% of respondents are exporting and expect to continue .
4. **Barriers to exports:** Market access issues and protecting intellectual property were the top responses (Figure 31). Navigating foreign government systems was next. Currency volatility, local competition and partner identification also featured prominently.



5. **Firms are committing relatively low amounts of resources to developing export opportunities:** The majority of METS exporters committed less than 5% of annual turnover to developing export opportunities (Figure 30). Almost one in four spent between 5% and 10% of turnover on export development, and one in six were not spending anything.
6. **Skills training seen as the leading soft infrastructure issue:** Almost half (47%) view skill straining as the most significant issue facing METS SMEs in the Mackay Whitsunday Isaac region (Figure 23). The issue appears to be driven by a lack of skilled workers that want to move into regional centres and the inconsistent nature of mining work.
7. **Roads, digital network and port ranked similarly as the most crucial hard infrastructure issues** (Figure 23).
8. **Liveability of local regions:** the stability of the workforce requires “people to live in the region and not the south-east corner”. Another respondent noted that “there is a failure to attract additional industries to the local area”.
9. **Access to mining companies viewed as most critical barriers:** this issue crosses several dimensions, including the cost of training employees in workplace health and safety regulations that are often unique to the site in question, tendency of companies to disregard local companies, resistance to change, inaccessibility of large mining houses, and awareness of business opportunities.
10. **Shift in perceived threats from the Pilot Survey conducted in March 2020 to the operational survey, reflecting impacts posed by COVID-19:** the main threat identified by businesses, as specific to their business in the Pilot Survey was the security of their own supply chains. There was a dependency on China and the issue of local companies not always carrying stock and relying on freight from SE Queensland or interstate. The recent survey found that businesses viewed the pandemic and its associated economic downturn as the largest threat to the sector. Notwithstanding economic uncertainty, 22% of responses relate to issues about the workforce (Figure 26).

## Recommendations

**Recommendation 1: Continue the focus on the importance of embracing innovation and technology to maximise the regional METS competitive advantage.** Initiatives to be considered include:

- refining the Innovation Accelerator Program (Innovation and commercialisation) through METS Ignited and identifying other grant opportunities in this space; and
- establishing a MIW METS business incubator that helps create and feed start-ups directly into the MIW METS supply chain, connecting them with major resource companies and tier 1 contractors.

**Recommendation 2: Identify key specialist clusters which have export potential and create working groups to examine opportunities to collaborate on greater efficiency in use of inputs by businesses in this segment.** Suggested cluster working groups include:

- data collection, reporting, and analytics, especially regarding safety and health systems and services;
- architectural, engineering, and other technical services; and
- conveyer technologies.

**Recommendation 3: Promote export potential and enhance capability and collaboration through MIW METS Export Hub activities and initiatives such as the following.**

- Regular MIW METS Export Hub Export Readiness Programs. These programs will help participants how to identify and allocate resources necessary to be able to expand into overseas markets.
- Regular presentations providing exposure to other METS related emerging industries in the region including defence, bio-futures, ag-tech, aerospace, and aviation.
- Collaboration workshops and information sessions, given the strong interested in collaboration among METS businesses.

To enable this recommendation, long-term funding commitments for the Export Hub (beyond the current program) should be prioritised.

**Recommendation 4: The METS Export Hub use the outputs of GW3’s Future Employment Study to work with the Queensland Government Department of Employment, Small Business and Training (DEBST) and other training and education providers to assess the supply of and future demand for skilled METS labour in the region to identify gaps and maximise output from MIW METS sectors.** This will be cognisant of current efforts to develop relevant qualifications, skill sets, and micro-credentials relating to the growing demand for skills in the broad field of autonomous technologies, including Program Logic Controllers and SCADA systems, data analysis and management, fault finding, networks, and cyber-security, among others.

**Recommendation 5: Continue to advocate for a clearly prioritised investment in roads, port, and rail infrastructure.** Industry participants emphasised the importance of these infrastructure assets. It is essential for METS sector representatives to liaise closely with other key industry users (particularly agriculture and defence) to maximise efficiencies.

**Recommendation 6: Prioritise the need for continual investment in digital infrastructure and connectivity.** GW3’s MIW Digital Infrastructure Study states that large scale, public investment in digital connectivity enhancements is not likely in the short-term. However, industry participants acknowledge that industry growth will be driven largely by the adoption of digital technology. Therefore, the METS sector must collaborate and develop business cases for telecommunications companies, government, and other communications providers to enhance localised digital infrastructure.

# 1. Introduction

## 1.1 Scope of work

The Resource Industry Network (RIN) through the MIW METS Export Hub commissioned Lytton Advisory (LA) to undertake industry capability analysis and supply chain mapping for the Mining Equipment, Technology and Services (METS) in the Mackay Isaac Whitsunday (MIW) region in Queensland.

Lytton Advisory understands that the MIW METS Export Hub Project Advisory Group (PAG) require analysis that :

- is specific to the unique capabilities of the METS businesses in MIW region;
- provides understanding of domestic and global industry trends and innovation within the resource and METS sectors; and
- will support the development of a regional METS Export Strategy.

The research project comprises desktop analysis, stakeholder consultations, and an online survey of industry participants. The online survey was developed over February and March 2020 in consultation with the PAG and has been tested in a pilot phase. The survey was run over May and early June 2020.

## 1.2 Alignment with the scope of work

The desktop analysis, stakeholder consultation, and survey development have been aligned with the scope of work provided by RIN (see Appendix). An overview is provided in Table 1 below.

**Table 1. Alignment of project work with the scope of work**

<i>Element of scope of work</i>	<i>Project work aligned with elements of the scope of work</i>
<p>a) Profile the capabilities and capacity of existing METS business within the MIW region:</p> <ul style="list-style-type: none"> <li>• Identification of METS businesses in the region</li> <li>• Product/service range within the region</li> <li>• Turnover range and employment levels</li> <li>• Expertise and skill levels, including best practice and innovation</li> <li>• Value of industry to the region</li> <li>• Current levels of export activity – including quantity exported, percentage exported, types of products/services, port of export/entry, destination markets and businesses, etc.</li> <li>• Key areas of strengths and weaknesses, opportunities and threats within the regional METS offering.</li> </ul>	<p>The survey contains a range of questions responding to these requirements. See the questions under the headings:</p> <ul style="list-style-type: none"> <li>• Mining Sector (re. turnover)</li> <li>• Industry</li> <li>• Business structure (including information on employees)</li> <li>• Exporters – business activity</li> <li>• Business activity</li> <li>• Collaboration</li> <li>• Current business evaluation</li> <li>• Opportunities and obstacles</li> </ul> <p>The survey has been developed in consultation with the PAG.</p>

<i>Element of scope of work</i>	<i>Project work aligned with elements of the scope of work</i>
<p>b) Conduct an analysis of existing supply chains across the domestic resource sector, identifying:</p> <ul style="list-style-type: none"> <li>• Current and future needs of domestic mining companies (inside and outside of the MIW region) concerning METS products and services. (Note, research should be based on interviews with OEMs and large primes to understand their supply chains.)</li> <li>• Critical gaps and potential barriers to MIW METS entry into domestic supply chain – external and internal</li> <li>• Opportunities for the MIW METS sector to meet current and future supply needs.</li> </ul>	<p>This research is based on consultations that are underway. Our current findings are presented in this report. For example, see the following sections:</p> <ul style="list-style-type: none"> <li>• Section 3.1 on current and future needs</li> <li>• Section 3.3 on critical gaps and potential barriers to expansion</li> <li>• Section 3.2 on issues and opportunities for the METS sector</li> </ul>
<p>c) Conduct an analysis of key international opportunities and markets complementary to MIW METS sector capabilities. (Note, PAG recognises further international in-market demand analysis will be needed post this project in this area).</p>	<p>See Section 3.4 on international opportunities</p>
<p>d) Identify soft and hard infrastructure required to underpin future growth within MIW METS sector – e.g. including skills, best practice, quality, and innovation and technology.</p>	<p>See Section 3.5 on soft and hard infrastructure issues</p>
<p>e) Prepare a report with analysis and recommendations that optimises the region’s capability and capacity to supply domestic and international markets.</p>	<p>This report meets this requirement.</p>
<p>f) Prepare a list of barriers to export for the region listing them in priority order including recommendations for removing these barriers and measures of success.</p>	<p>In Question 4 in the Barriers to Export section of the survey, we ask businesses to identify their top five barriers to export from a list provided by the Export Council of Australia. There is also a free form response box to capture barriers not listed.</p>

Source: Lytton Advisory, 2020.

### 1.3 Structure of the report

The report is structured as follows:

- Section 2 presents background information on the region, the regional economy, and the METS sector's contribution;
- Section 3 summarises our findings from the desktop review and stakeholder consultations on issues affecting the sector;
- Section 4 outlines the survey we have developed based on the Scope of Work and review and consultations presented in Section 3;
- Section 5 presents survey findings;
- Section 6 presents case studies of successful METS businesses in the MIW region; and
- Section 7 presents a summary of the findings and recommendations to optimise capability and export readiness of MIW METS businesses.

## 2. Background

### 2.1 Overview of the MIW region

The MIW region spans an area of 90,354 km<sup>2</sup> from St Lawrence in the south, to Bowen in the north and beyond Clermont in the west. Its unique location means that the region has a thriving and diverse export market in resources, energy, agriculture, and tourism (See Figure 6).

#### Mackay

Mackay is an hour's flight from Brisbane and is home to a diverse and vibrant community with rural and coastal living opportunities in 30 townships, small rural settlements and rural residential areas. The Mackay regional local government area is one of the fastest economic growth regions in Queensland and has a population of more than 116,000 people. Whilst experiencing recent static population growth, the region's prosperous economy is expected to continue to drive population growth over the next 20 years. Its location adjacent to the Bowen Basin leads Mackay to be a services hub for the resource sector and its coastal location is complemented by a spectacular natural environment contributing to tourism.<sup>12</sup>

#### Isaac

The Isaac local government area spans an area of 58,869 km<sup>2</sup> in Central Queensland, from the coast area to the coalfields. Located 1,000km north-west of Brisbane and 900km south of Cairns, with access to world class export infrastructure, the area is strategically placed to capitalise on the economic opportunities associated with the resources sector and the rise of Asia. The estimated resident population is 20,941, although with an additional 15,734 resource sector workers housed in temporary accommodation at any one time, the full-time equivalent population is estimated at 36,675. The Isaac LGA hosts 25 operating coal mines, with a further two under construction and 27 in advanced development phase. Agriculture is also another key industry for the region, with a growing livestock sector.<sup>13</sup>

#### Whitsunday

The Whitsunday region encompasses a total land area of 23,863 km<sup>2</sup> and includes the major townships of Airlie Beach, Bowen, Cannonvale, Collinsville and Proserpine and is home to approximately 35,500 permanent residents. The area is the gateway to the Great Barrier Reef and the Whitsunday Islands. It provides a strong and diverse economy driven by the agriculture, construction, mining, and tourism industries.<sup>14</sup>

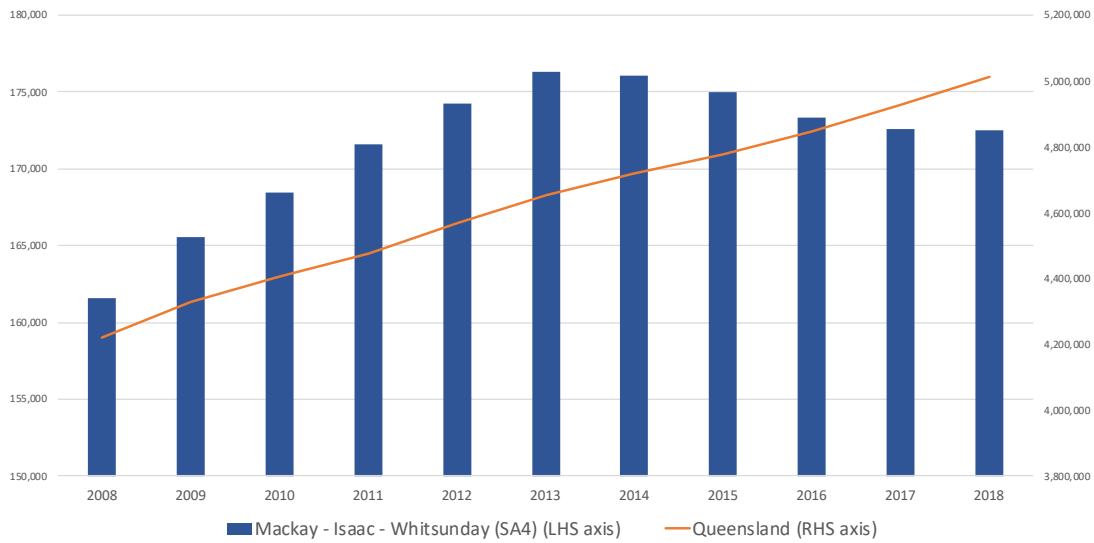
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<sup>12</sup> GW3 Alliance (2020) *About the Region*. [online] Available at: <http://www.greaterwhitsundayalliance.com.au/about-the-region>.

<sup>13</sup> Ibid

<sup>14</sup> Ibid

**Figure 4: Mackay, Isaac and Whitsunday Population**



Source: Remplan (2020) *GW3 Economy Profile*. [online] Available at: <https://app.remplan.com.au/greaterwhitsundayalliance/economy/summary?state=PRKLCbXEgFqdzeLHKoJYbZfGIbI8ZX> & Lytton Advisory, 2020

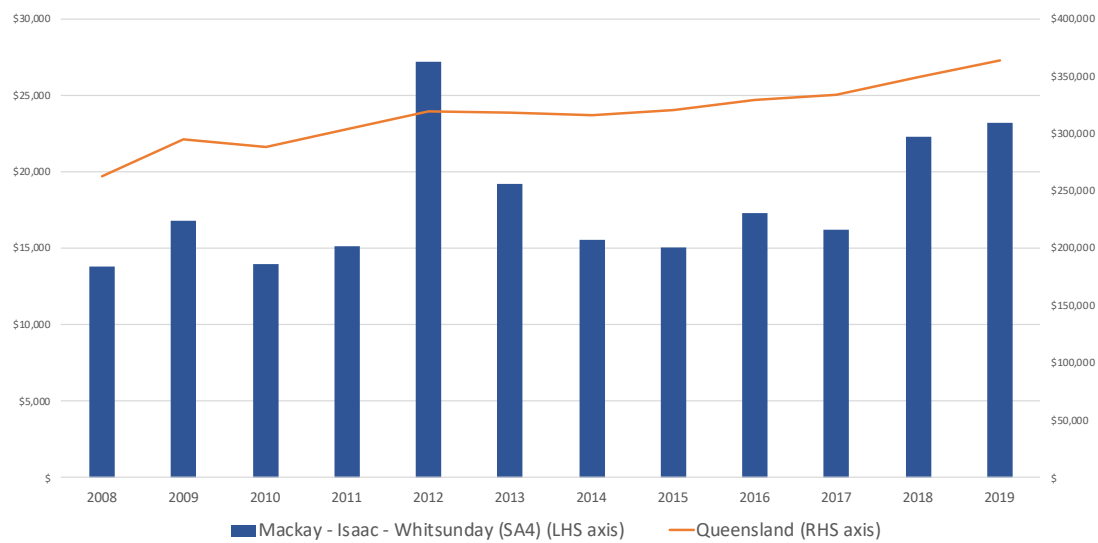
## 2.2 The Mackay, Isaac and Whitsunday Economy

The MIW region has experienced the most prolonged period of growth in its recent history which has been fuelled by the strength of its diversified economy, led by a globally recognised resource and engineering sector, resurging agribusiness, and growth in construction, education, logistics and tourism.

Mackay, as the gateway to the rich coal deposits in the Bowen and Galilee Basins, is one of the largest sugar-producing regions in Australia and hosts much of the engineering, manufacturing and resources services industries supporting the wider MIW economy.

The region’s expanding employment, investment and development opportunities, buoyant economy and lifestyle attributes are some of the many positive aspects that encourage people to live and work in the MIW region.

**Figure 5: Real Gross Regional Product - \$ millions (June 2018 prices)**



Source: Remplan (2020)<sup>15</sup>

The total population of the MIW region is 169,688 people and it has 15,364 operating businesses and a gross regional product of \$23.6 billion. The MIW region in February 2020 had an unemployment rate of 5.8% compared to Queensland’s average unemployment rate of 6.2%.<sup>16</sup>

The Isaac region is home to the Bowen Basin, housing the largest coal mining deposits in Australia. Most of Queensland’s prime coking coal reserves are mined here, including the highest-grade metallurgical coal in the world. Mackay is the centre of one of Australia’s most developed Mining Equipment, Technology and Service (METS) industries and the Whitsundays is a world-class tourism destination attracting more than a million visitors annually. The Greater Whitsunday region also boasts a strong agribusiness sector and is one of the nation’s largest sugar and bio commodity producers.

There are five solar energy projects recently completed or nearing completion across the region: Collinsville Solar Photovoltaic Project (RATCH-Australia Corporation) and Daydream and Hayman Solar Farms (Edify Energy); and Clermont Solar Farm (WIRSOL Energy, 2018) and Rugby Run Solar Farm (Adani Australia, 2018) in Isaac LGA.

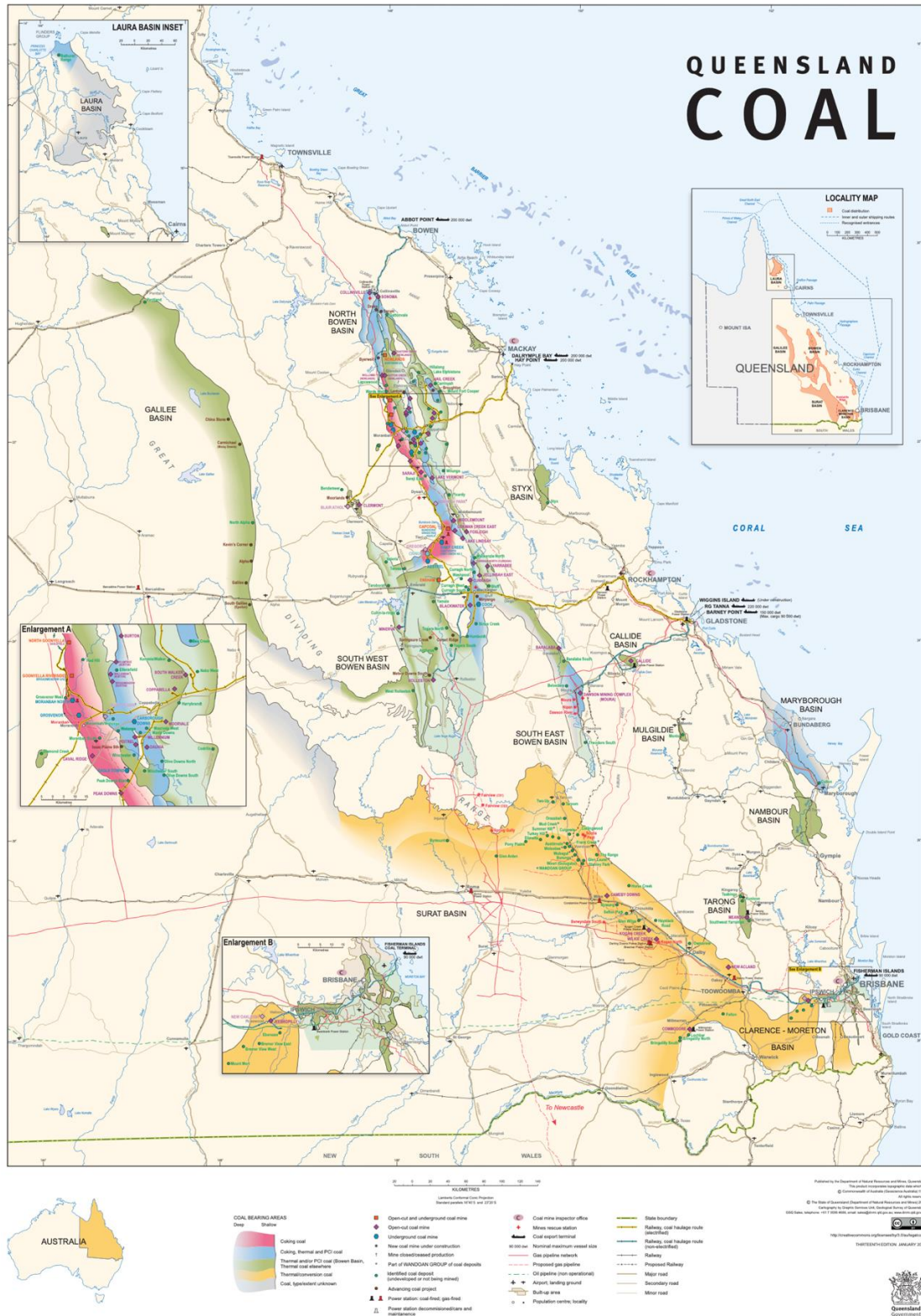
In summary, there exists a healthy MIW economy that has rebounded from the resources downturn between 2013 and 2018 that is now providing significant opportunity for the METS sector.

<sup>15</sup> Remplan (2020) *GW3 Economy Profile*. [online] Available at: <https://app.remplan.com.au/greaterwhitsundayalliance/economy/summary?state=PRKLCbXEgFqdzeLHkoJYbZfGib8ZX>

<sup>16</sup> Ibid.



Figure 6: Mackay, Isaac and Whitsunday Resources Sector & Associated Infrastructure



Source: Queensland Government Statistician's Office (2018) *Bowen Basin Population Report, 2018*. [online] Available at: <https://www.qgso.qld.gov.au/issues/3366/bowen-basin-population-report-2018.pdf>

## 2.3 Resources sector in Queensland and the MIW region

### Overview

The MIW region's proximity to the Galilee, Bowen and Surat Basins makes it one of Queensland's largest areas of coal, energy and gas production. The region's mining and resource activity includes underground and open-cut thermal and metallurgical, minerals and coal seam gas (CSG).

The Bowen Basin in Central Queensland contains most of the State's high quality metallurgical (coking and pulverised coal injection) coal reserves, as well as significant deposits of thermal coal. The Bowen Basin extends over approximately 60,000 square kilometres of central Queensland (Figure 6). As of June 2018, there were 44 coal mining operations and two metalliferous mines located in the region, along with coal seam gas (CSG) operations and other resource industry related infrastructure.<sup>17</sup>

The Carmichael coal mine project in the north Galilee Basin is set to become Australia's largest thermal coal mine. The Carmichael project will be built on the world's largest single coal tenement, with the capacity to produce up to 60 million tonnes per annum at full production. It is scheduled to make its first coal shipment by early 2021<sup>18</sup>. The project will be linked by a new 388-kilometre standard gauge rail line to Abbot Point Port near Bowen.

The Port of Hay Point is one of the largest coal export ports in the world and is situated about 40 kilometres south of Mackay. The port comprises two separate coal export terminals with a combined capacity of 140 million tonnes per annum. Mines are linked to the port terminals through an integrated rail port network.

The Goonyella railway line, with a capacity of 11 million tonnes per annum, is the main route for exports out of Hay Point. Coal is also exported from the Port of Gladstone, which has three multi-user terminals with a combined capacity of 100 million tonnes per annum.

The Port of Abbot Point, located 25 kilometres north of Bowen, is one of Australia's most important emerging bulk ports. It is undergoing a major transformation into a port precinct of global importance. The port has a nominal export capacity of 50 million tonnes per annum. It comprises rail in-loading facilities, coal-handling and stockpiling areas. A single trestle jetty and conveyor connect to two offshore berths and two ship loaders, all 2.8 kilometres offshore.

### Significance of METS to Queensland coal industry and wider state economy

According to Deloitte Access Economics, the economic output of the Australian mining and METS sector (excluding oil and gas) is worth around \$236 billion a year – or 15% of the

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<sup>17</sup> Queensland Government Statistician's Office (2018) *Bowen Basin Population Report, 2018*. [online] Available at: <https://www.qgso.qld.gov.au/issues/3366/bowen-basin-population-report-2018.pdf>

<sup>18</sup> Adani (2019) *Carmichael Rail Network*. [online] Available at: [https://www.adaniaustralia.com/media/Project/Australia/Fact-sheets/ADI0018\\_MarketingBrochure\\_Rail\\_v513.pdf](https://www.adaniaustralia.com/media/Project/Australia/Fact-sheets/ADI0018_MarketingBrochure_Rail_v513.pdf)

Australian economy.<sup>19</sup> Deloitte estimated that the mining and METS sector together support 1.1 million workers (484,100 employed directly, 655,700 indirectly) or approximately 10% of jobs in Australia.<sup>20</sup>

In Queensland, 2016-17 data indicates the resources sector contributed \$55.1 billion to the state's economy. This included \$16.4 billion in purchases from more than 16,400 Queensland businesses and support for 910 community organisations. The industry paid \$5.1 billion in wages to 38,150 direct employees. In 2016-17, the Queensland METS sector employed 20,000 people with \$7 billion revenue and \$2.5 billion in value added.<sup>21</sup>

### Significance to the MIW region

Across a range of metrics, the resource industry sector is providing a significant contribution to the MIW community and economy. The sector makes the greatest contribution to economic output in the region (see Figure 7). Key statistics on this contribution to the MIW region in 2019 include:

- 16,591 jobs (19.5% of total) providing \$1,955 million in wages and salaries;
- 150 companies supporting 2,137 businesses in the supply chain;
- \$19,441 million in output (46.3% of total) and \$18,249 million in exports; and
- \$12,328 million in valued add (54.3% of total).<sup>22</sup>

There is a significant reliance on a profitable and healthy resources sector for business opportunity, livelihoods and standard of living. The general health of the resources sector is regarded as being positive.

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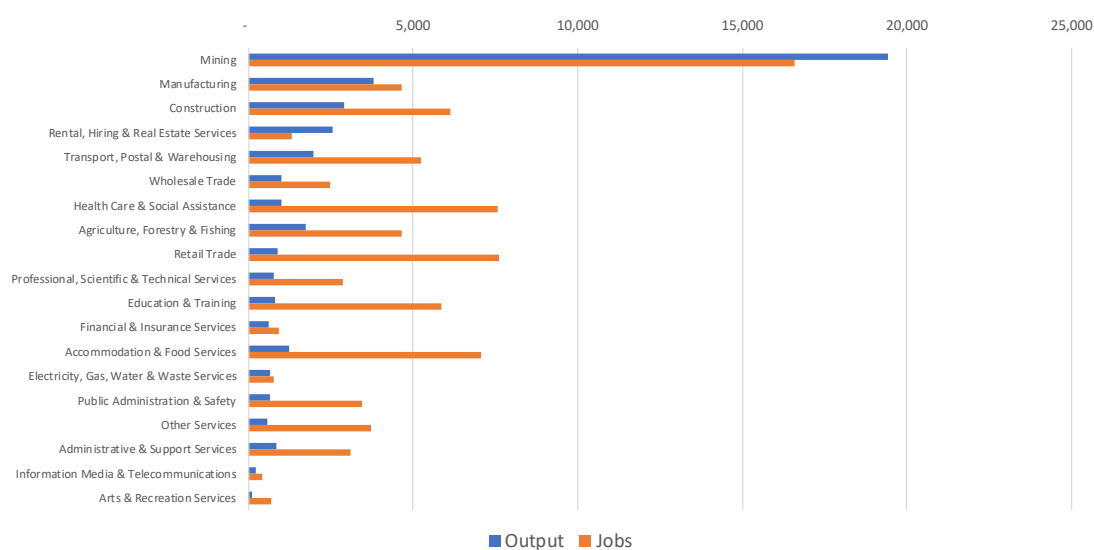
<sup>19</sup> Deloitte Access Economics (2017) *Mining and METS: engines of economic growth and prosperity for Australians* [online] Available at: <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-mining-mets-economic-growth-prosperity-engines-170317.pdf>

<sup>20</sup> Ibid.

<sup>21</sup> Ibid.

<sup>22</sup> Remplan (2020) *GW3 Economy Profile*. [online] Available at: <https://app.remplan.com.au/greaterwhitsundayalliance/economy/summary?state=PRKLCbXEgFqdzLHkoJYbZfGIbI8ZX>

**Figure 7: Mackay, Isaac and Whitsunday Industry Output - \$ millions**



Source: Remplan (2020) *GW3 Economy Profile*. [online] Available at: <https://app.remplan.com.au/greaterwhitsundayalliance/economy/summary?state=PRKLCbXEgFqdzeLHKoJYbZfGIB18ZX> & Lytton Advisory, 2020

Whether small businesses know it or not, most SMEs in MIW are interlinked with the resources sector and its importance has steadily increased over the past decade. Many MIW businesses recognise that the economic fortunes of the resources sector and the region’s business community are intertwined. What impacts on the resources sector will ultimately impact on them.

The resources sector has not only been critical in supporting local businesses, but the community had benefited as well due to employment and stimulus across the value chain. The resources sector has a significant value-chain both upstream and downstream and a vibrant and competitive resources sector is crucial to the prosperity and growth of the MIW region.

MIW’s resources sector has provided the basis for many value-adding industries that underpin much of the region’s prosperity particularly in the METS sector. The contribution is not only the economic importance of the resource sector but also how it acts as a foundation for prosperity across the community. Irrigated agriculture has been a large part of many MIW residents’ lives and a major contributor to the city. Stakeholder consultation indicated that the resources sector had been hugely important to the fabric of the area because of the history and tradition through considerable family linkages.

In addition to its direct economic contribution, the mining industry provides an indirect contribution through purchases from its supply chain, which includes the METS sector. According to REMPLAN estimates provided by Mackay Regional Council, the mining industry purchased \$611 million in goods and services locally in the Mackay LGA in 2019 (Table 2). This includes purchases by mining businesses from other mining businesses and from businesses in other industries—e.g. transport, manufacturing, construction, etc.

**Table 2. Local purchases of the mining industry by industry, Mackay LGA, 2019**

<i>Industry</i>	<i>\$ million</i>
Mining	101.5
Transport, Postal & Warehousing	88.3
Manufacturing	80.4
Construction	60.0
Professional, Scientific & Technical Services	57.4
Financial & Insurance Services	35.5
Wholesale Trade	34.9
Other Services	30.1
Rental, Hiring & Real Estate Services	28.3
Accommodation & Food Services	20.9
Employment, Travel Agency and Other Administrative Services	20.9
Public Administration & Safety	17.0
Electricity, Gas, Water & Waste Services	15.5
Retail Trade	13.1
Information Media & Telecommunications	2.8
Arts & Recreation Services	1.8
Agriculture, Forestry & Fishing	1.3
Education & Training	0.9
Building Cleaning, Pest Control and Other Support Services	0.3
Health Care & Social Assistance	0.0
Total local expenditure	610.7

Source: Remplan (2020) data provided by Mackay Regional Council.

### Outlook for the mining sector

Global economic activity has been affected by the outbreak of COVID-19 which does have profound implications for the resources sector and in turn the MIW region and the METS sector. Originating in China, at the time of writing the viral outbreak has spread globally and has not been contained.

Assuming the impact of the COVID-19 outbreak has passed by the second half of 2020, it is expected that annual growth in the Chinese economy will be lower over the outlook period but remain above 5% per annum. However, this still implies enormous commodity demand in absolute terms. Strong growth in emerging Asia is likely to partially compensate for the impact of slower Chinese growth.

According to the Office of the Chief Economist, metallurgical coal export volumes are forecast to grow from 184 million tonnes in 2018–19 to reach 205 million tonnes in 2024–25 which is

particularly important for the MIW Region and the METS sector.<sup>23</sup> This reflects the ramp up of new mines and increased output at existing operations, partly offset by the impact of the depletion of resources at several other mines.

Australia's thermal coal export volumes are also forecast to grow from 210 million tonnes in 2018–19 to 224 million tonnes by 2024–25, as a number of mines ramp up production.<sup>24</sup> The continued shift in world coal trade towards the Asia-Pacific should favour Australia's thermal coal exporters over competitors like the United States and Colombia.

Lytton Advisory believe the Office of the Chief Economist's forecasts for the value, volume and price of Australia's major resources and energy commodity exports may be overly optimistic and that these forecasts may be adjusted down in the short term at least due to COVID-19. Unavoidably, the spread of COVID-19 will have some effect on forecasts. It is assumed that this event will have an impact on Chinese and global GDP across 2020. Having said this, the medium to long term forecasts in the project team's assessment continue to reflect a positive future in our view.

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<sup>23</sup> Ibid.

<sup>24</sup> Ibid.

## MIW Resources Sector Outlook

There are several major resource projects (Table 3) in the pipeline that will continue to increase the importance of the resources sector to the MIW region.

**Table 3: MIW Resource Sector Pipeline**

Project Description	Sponsor	Total Value (\$m)	Status
Byerwen Coal Project – Sedgman Contract	Qcoal	200	Completed
Carmichael Coal Mine Project (Stage 1)	Adani	1150	Announced
Eagle Downs Coking Coal	South 32	1250	Prospective
Grosvenor Underground Stage 2	Anglo Coal	500	Credibly Proposed
Middlemount coking coal mine stage 2	Peabody / Yancoal	325	Prospective
Millennium Expansion	Peabody	400	Credibly Proposed
Moranbah North	Anglo	500	Credibly Proposed
Olive Downs	Pembroke Resources	1000	Credibly Proposed
Peak Downs Expansion	BHP Billiton Mitsubishi Alliance (BMA)	460	Prospective
Saraji East	BHP Billiton Mitsubishi Alliance (BMA)	2400	Credibly Proposed
South Walker Creek	BHP / Mitsui	150	Under Procurement
Winchester South	Whitehaven Coal	1000	Prospective

Source: Queensland Major Contractors Association (2020) *Queensland Major Projects Pipeline Report*. [online] Available at: <https://qmca.com.au/2020-major-projects-pipeline-report/>

## Summary

New projects proposed for MIW as referenced above will continue to provide significant opportunities for the METS sector. The region’s METS sector is well placed to meet this demand. Its reputation for meeting and exceeding the needs of energy and resource companies is a key element in the value proposition offered by METS companies, and makes it well placed to capitalise on emerging opportunities.



## 2.4 METS in the coal sector

### Overview

MIW is home to one of Australia's most advanced METS sectors. Most METS businesses are located in Mackay however there are others located at Bowen, Glenden, Nebo, Coppabella, Moranbah, St Lawrence, Middlemount, Dysart and Clermont. METS will often be temporarily located at mine camps and motels and other local accommodation options working from mobile workshops and vehicles.

The region's METS sector is a world class leader and supplier of equipment, technical, safety and other services to both the mining and oil and gas industries. It has a proven track record of successfully delivering a broad range of significant goods and services to resource projects including:

- Plant hire and equipment;
- Materials;
- Earthmoving;
- Explosives and blasting services;
- Tools, workshops and overhaul services;
- Education;
- Health, safety and environmental management systems;
- Site closures and mine rehabilitation;
- Mining technologies;
- Contract service provision (e.g. scientific, technical and professional services);
- Research and development;
- Project construction and operations;
- Minerals processing; and
- Various other goods and services.

The sector is highly diverse, ranging from large contract mining companies capable of designing and building whole mine sites, to small firms that design and produce specialised equipment tailored to specific operations.<sup>25</sup> While MIW's METS sector is highly diverse in both size and scope, it is linked by core competencies in coal, oil, gas and minerals.

MIW has many METS companies leading their respective fields internationally in the development and commercialisation of new processes, technologies and products for the energy and resources industry. Growth in this sector has the potential to create new job opportunities for many residents and others across Queensland.

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<sup>25</sup> Queensland Mining Equipment, Technology and Services (2017) *10-Year Roadmap and Action Plan*. [online] Available at: <https://www.statedevelopment.qld.gov.au/resources/plan/eid/mets-10-year-roadmap-and-action-plan.pdf>



## Strengths

Queensland's abundant natural resources have underpinned the development and growth of a world-class resources industry that has served as an impetus for growth in the METS sector. MIW's strategic role as a key hub/logistic and export/ support service centre for the resource-rich deposits, and projects across the Bowen and Galilee basins, has provided the region a competitive edge due to its excellent track record, established infrastructure, facilities, business and knowledge and skill base.

Stakeholder consultation and supplementary research indicated that the single greatest strength of the sector is the knowledge the METS has accumulated and its potential application to other countries and/or industries. An example was cited of the ability to minimise the downtime of a shutdown for maintenance of a drag line bucket overhaul. Typically, it takes 12 – 14 weeks to overhaul and service a drag line but with the expertise established in the Bowen Basin by METS it means it can be completed within 6 weeks providing up to \$1 million in savings to foregone production each day for the resources company.

Stakeholder consultation revealed MIW's METS sector has several other competitive advantages and strengths to increase economic activity and employment. These include the following competitive advantages.<sup>26,27</sup>

- Proximity to the world's largest and highest quality deposits of metallurgical coal and Queensland's ideal position as the gateway to the Asia-Pacific markets;
- MIW has a highly skilled and productive workforce and strong, sector-specific education infrastructure. Its world-class education and training facilities include highly regarded universities and technical and vocational education institutes that offer mining and energy-focused study and skills development. The 'Resources Centre of Excellence' will provide a range of training facilities and research laboratories to further the region's expertise in the mining and METS sector. Other examples include the Mackay Institute of Research and Innovation interlinked with both Central Queensland University and James Cook University, and the Central Queensland University Chair of Automation and Future Work Skills;
- Networks of workers with long-term technical expertise and experience in the Bowen Basin. Local mining contractor services, such as G&S Engineering, WorkPac and Mastermyne, specialise in recruitment for resource jobs and labour hire and have a proven track record for servicing the region's resource sector with skilled employees;
- The connections between the companies, suppliers and institutions have resulted in the development of a cluster of expertise. This MIW cluster forms the basis for building collaborative partnerships and developing innovative products and services, leading to increased growth and employment. The Paget Industrial Estate METS Cluster is an example and is a catalyst for R&D, innovation and collaboration. It is understood

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<sup>26</sup> Queensland Mining Equipment, Technology and Services (2017) *10-Year Roadmap and Action Plan*. [online] Available at: <https://www.statedevelopment.qld.gov.au/resources/plan/eid/mets-10-year-roadmap-and-action-plan.pdf>

<sup>27</sup> Centre for METS Business Innovation (2019) *Challenges and Successes*. [online] Available at: <https://research.qut.edu.au/cmbi/wp-content/uploads/sites/216/2019/10/Bowen-Basin-final.pdf>

among stakeholders that Paget has the most patents per square metre in Australia, largely owing to the large number of world class manufacturing and engineering capabilities all situated in the one area. Remplan data shows that 121 businesses from the mining, construction, and professional, scientific & technical services sectors call Paget home, a figure which is believed to be largely made up of METS firms. Moranbah and Collinsville are two examples of specialised workforce training clusters. Furthermore, there is the emergent leadership and coordination by Resources Industry Network (RIN);

- Infrastructure – The MIW region has suitable coal rail and loaders, ports, easy access to coalfields and liveability;
- Collaboration between government and non-government organisations – RIN, GW3 and Mackay Regional Council, Isaac Regional Council and Whitsunday Regional Council;
- METS sector is known for its cutting-edge, innovative solutions, products, processes and services. METS sector products, services and skills are highly transferable to other industry sectors and markets in other locations;
- Queensland has high levels of environmental protection requirements and workplace safety regulations. As a result, METS companies are world leaders in the development of products, processes and services to reduce the environmental impacts of operations and improve workplace safety systems; and
- The MIW region offers an enviable lifestyle: fresh air; stunning natural attractions and a thriving cultural scene to ensure suitable future supply of workers. Despite this, the liveability of the MIW region has not been effectively communicated to prospective employees.

## Summary

The MIW METS sector is very well positioned to develop commercially viable products, processes and services to respond to the emerging requirement of the Queensland and international resources sector.

## 3. Critical issues identified in desktop review and stakeholder consultations

### 3.1 Current and future needs of the industry based on initial desktop review

The Australian coal supply chain requires further alignment between participants and industry organisations, more efficient adoption of developing technologies to maintain global competitiveness, and social and environmental sustainability.

A review of the literature reveals many explanations as to why cooperative practices between coal mining supply chain participants do not currently exist (Table 4). For instance, Synergies Economic Consulting conclude that information gaps, pervasive externalities and incomplete contractual relationships and hold up concerns are at the root of this issue. The firm has formulated an extensive list of policy recommendations addressing these issues, which focuses on defining the role of government in the supply chain and emphasising the importance of independent accountability (Synergies). Other papers have identified the need for collaborative efforts to optimise material and equipment flow between firms, maintain up-to-date databases, and encourage technology advancements.

In 2017, Deloitte conducted an analysis of ten case studies (Newcrest, Peabody, BHP Billiton, Rio Tinto, Glencore, Hedweld Engineering, MICROMINE, Maptek, Orica, Donhad) and concluded that innovation had been implemented through a variety of approaches.<sup>28</sup> These included:

- The creation of new technologies that improve efficiencies in the production process;
- Applying existing technologies in new ways to realise additional productivity gains;
- Collaborating with academic institutions and scientific research bodies to develop and integrate research ideas with industry applications;
- Pre-competitive technological collaboration between companies in the same industry to realise benefits across all stakeholders;
- Collaboration between producers and suppliers to increase efficiency throughout the supply chain; and
- Improving company processes by using the knowledge and experience of workers to drive innovative activities.

Although the Australian coal mining supply chain is a global leader, peak bodies, industry organisations and supply chain participants are concerned about losing competitiveness if the sector is unable to efficiently adopt developing technologies. The need for innovative and creative solutions has become especially prominent with the decline of commodity prices, ore

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<sup>28</sup> Deloitte Access Economics (2017) *Mining and METS: engines of economic growth and prosperity for Australians* [online] Available at: <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-mining-mets-economic-growth-prosperity-engines-170317.pdf>

grades and productivity, and the simultaneous rise of business operational costs.<sup>29</sup> Further innovation could come from advanced digital technologies to inform data driven mining decisions, mining automation and robotics, advanced extraction, and simulation modelling and business optimisation software. In the case of automation, AlphaBeta has estimated the benefits of successful adoption at \$65 billion.<sup>30</sup> Conversely the losses of unsuccessful adoption have been priced at a \$27 billion loss through compromised employment, construction projects and other technological synergies.

The Australian mining industry must weave environmental accountability and social responsibility into their enduring commercial success. Growing societal concern about the impact of mining on the environment is already affecting the industry’s ability to find adequately skilled employees and to acquire working permits.

Specific to the MIW region, the Centre for METS Business Innovation acknowledged that the level of collaboration between regional councils, inter-governmental departments and mining company innovation should be improved to facilitate the adoption of new technologies.<sup>31</sup>

**Table 4: METS industry literature review**

<i>Report details</i>	<i>Key findings</i>
Synergies Economic Consulting, <i>Review of Coal Supply Chains</i> (March 2009)	<p>Coal supply chain participants do not currently perceive adequate incentive to co-operate. From consultation, the following issues were identified:</p> <ul style="list-style-type: none"> <li>- Different views on the deliverable capacity of individual firms within the supply chain, and the supply chain as a whole;</li> <li>- Fundamental contractual mismatches, including: <ul style="list-style-type: none"> <li>o Different underlying assumptions on key aspects such as capacity;</li> <li>o Incompatible terms and conditions in contracts;</li> </ul> </li> <li>- Short-term operational failures spilling over to adversely affect other firms within the supply chain;</li> <li>- No holistic view on long-term planning; and</li> <li>- Sub-optimal risk management (parties bearing risk that could be better shared with, or borne by, other parties in the chain (p. 23)</li> </ul> <p>The following underlying causes of failure in QLD coal supply chain were identified:</p> <ul style="list-style-type: none"> <li>- A lack of alignment between participants in relation to optimising supply chain performance;</li> <li>- Information gaps, which impede planning and operations (p. 5);</li> </ul>

<sup>29</sup> CSIRO (2019) *Mining Equipment, Technology and Services*. [online] Available at: <https://www.csiro.au/~media/Do-Business/Files/Futures/METSRoadmap.pdf?la=en&hash=DDDDFFA37409C84571F22DA3FED16EA66C346C816>

<sup>30</sup> AlphaBeta (2019) *Staying Ahead of the Game*. [online] Available at: <https://metsignited.org/wp-content/uploads/2019/11/Staying-Ahead-of-the-Game-Final-Report-WEB.pdf>

<sup>31</sup> Centre for METS Business Innovation (2019) *Challenges and Successes*. [online] Available at: <https://research.qut.edu.au/cmbi/wp-content/uploads/sites/216/2019/10/Bowen-Basin-final.pdf>

	<ul style="list-style-type: none"> <li>- Pervasive externalities that encourage game instead of cooperative behaviour;</li> <li>- Incomplete contracts that leave important relationships without any documented framework (particularly between below-rail and the port);</li> <li>- Complements and substitutes (creating winners and losers);</li> <li>- Hold up concerns.</li> </ul> <p>There is and has always been considerable diversity in the ownership of coal mining tenements in each major coal mining region because it is not realistic to have full vertical integration of the coal supply chains from mine to port. Firms are seeking to improve their own performance during the entire supply chain.</p> <p>Common ownership is not required, but in lieu of this a common purpose of participants in the supply chain must be established.</p>
Centre for METS business innovation (CMBI), <i>METS challenges and successes</i> (no date)	<p>Collaboration between Paget Industrial Estate METS Cluster, expert networks, and government and non-government organisations (RIN, GW3 and Mackay Regional Council, Isaac Regional Council and Whitsunday Regional Council) recognised as a strength of the Bowen Basin’s development.</p> <p>Collaboration between regional councils, inter-governmental departments and mining company innovation acknowledged as a weakness.</p>
Department of Industry, Innovation and Science: Office of Chief Economist, <i>Industry Insights: Globalising Australia</i> (February 2018)	<p>Increase in trade of intermediate goods allowing for greater specialisation across countries and global supply chains. Trade has become more fragmented across borders as each stage of the global supply chain now produces a smaller share of the final product’s value.</p> <p>By international standards, Australian supply chains are highly fragmented (large number of production process stages) and relatively upstream (number of stages away from the finished product) (RBA, 2014). Two reasons for this:</p> <ul style="list-style-type: none"> <li>- the domestic value-added content of Australian exports remains the second highest in the world. 80% of Australia’s value-added content is domestic while the international average is 61.5%. This explains high degree of fragmentation; and</li> <li>- 25% of exports compared to the global average of 57% came from the manufacturing industry in Australia while Australia was also the second highest exporter of resources, with 61.5%. This explains Australia’s upstream supply chain contribution.</li> </ul>
METS Ignited, Mining Innovation: Key Mining Challenges (June 2017)	<p>The following challenges with regard to technology adoption were identified:</p> <ol style="list-style-type: none"> <li>1. Resource base maintenance: software providers have made efforts to create deeper and more updated versions of the resource base (such as CSIRO, Curtin University), but there are gaps in “closing the loop” as data from drills, processing plants and logistics are often not linked to the software. Advancements in this area will enable miners to deal with different planning and execution stages in a far more cohesive way and may assist by identifying previously “hidden” opportunities.</li> <li>2. IoT, harm reduction, selective mining, novel mining and environmental concerns are all areas of the mining supply chain that require technology development. Impacts include boost to productivity</li> </ol>

	<p>and maintenance performance, which will influence both cost and revenue of mining processes. Identified as potential area for prominence in Australia, given our existing strong domain knowledge within the mining sector.</p> <p>3. Optimising material and equipment flow, towards a continuous mining and processing mindset. The issue of mindset and culture change are not being adequately facilitated.</p>
<p>Department of Industry Innovation and Science: METS (2019) <i>Sector Competitiveness Plan Update</i></p>	<p>The development and publication of “METS Roadmaps” by various Government and Non-Government bodies, alongside various published KPIs that continue to merge around common themes suggests growth in terms of aligned strategy.</p> <ul style="list-style-type: none"> <li>- Crowdsourcing methods for mining roadmaps and critical business drivers</li> <li>- Mining operators integrating data-driven and evidence-based decision-making</li> <li>- Tier 1 and Upper Tier 2 firms have shown signs of improved collaboration to overcome technical challenges</li> <li>- Key integration between mining, construction and educational sectors</li> </ul> <p>Weaknesses in sector:</p> <ul style="list-style-type: none"> <li>- Culture of independence that has limited ability to collaborate and increase addressable market and research issues</li> <li>- Access to patient (long-term) capital for start-ups and especially scale-ups (SME growth and innovation)</li> <li>- Low international market knowledge</li> <li>- Small number of innovative and capable firms that can manage the changes and opportunities facing the sector</li> </ul> <p>Enabling initiatives:</p> <ul style="list-style-type: none"> <li>- Marketing and communication efforts to communicate previously noted challenges and best methods to approach them;</li> <li>- Sector competitiveness plan updates to keep Australian mining globally competitive;</li> <li>- Industry knowledge priorities refinement to foster valuable skills. Educating school leavers on career pathways in METS and partnerships with industry organisations for capability development programs are seen as hopeful ways forward;</li> <li>- Internal skills and organisation.</li> </ul>
<p>AlphaBeta (2019) <i>Staying Ahead of the Game</i></p>	<p>Successful adoption of automation (potential for \$65 billion) will generate two conflicting dynamics within the supply chain (p. 25 of the report):</p> <ul style="list-style-type: none"> <li>- Reduction of value in the supply chain because a more productive mining sector requires fewer intermediate good inputs;</li> <li>- Increases in supply chain value because companies require more intermediate goods and machinery/equipment to produce more output in response to enhanced global competitiveness (p. 28)</li> </ul>

	<p>If Australian supply chains fail to adapt to mining automation (failure to train workforce to assist in automation effort), loss in employment could result in \$27 billion loss of benefits. Up to 220,000 new jobs can be made from mining automation (p. 32).</p> <ul style="list-style-type: none"> <li>- Main fear is loss of employment as primary firms will use overseas suppliers instead of Australian firms</li> <li>- Building successful technology clusters is key to maximising benefits to the local supply chain</li> </ul> <p>Automation technologies in supply chain are well coordinated with educational institutions and large mining, oil and gas companies. However, industry representatives indicated that there is a lack of government and non-government coordination to channel efforts (p. 37).</p> <p>Employment growth in the supply chain could more than compensate for employment changes due to automation.</p>
<p>Minerals Council of Australia (2018) <i>Inquiry into how the mining sector can support businesses in regional economics</i></p>	<p>The mining industry supports a large supply chain of professional services providers, construction companies, logistics systems and equipment manufacturers often known as the Mining Equipment, Technology and Services (METS) sector. Australia's resources workforce covers a range of scientific fields and professional occupations. The composition of Australia's resources workforce includes:</p> <ul style="list-style-type: none"> <li>- More geologists, geophysicists, metallurgists and physicists than any other industry</li> <li>- The third largest number of chemical, material, industrial and mechanical engineers and environmental scientists.</li> </ul> <p>The minerals industry also employs a higher share of apprentices than all-industry averages. Apprentices make up 4% of Australia's resources workforce compared to the national industry average of 2.1% with 35% of apprenticeships in highly sought after electrical, automotive and construction trades.</p>
<p>Deloitte Access Economics (2017) <i>Mining and METS: engines of economic growth and prosperity for Australians</i></p>	<p>According to Deloitte Access Economics, the economic output of the mining and METS sector (excluding oil and gas) is worth around \$236 billion a year – or 15% of the Australian economy.</p> <p>Deloitte also estimated that the mining and mining and METS sector together support 1.1 million workers (484,100 employed directly, 655,700 indirectly) or approximately 10% of jobs in Australia.</p> <p>Includes ten case studies (Newcrest, Peabody, BHP Billiton, Rio Tinto, Glencore, Hedweld Engineering, MICROMINE, Maptek, Orica, Donhad) that show innovation has been implemented through a diverse range of approaches, which include:</p> <ul style="list-style-type: none"> <li>- The creation of new technologies that improve efficiencies in the production process;</li> <li>- Adopting existing technologies for new applications to realise additional productivity gains;</li> </ul>

	<ul style="list-style-type: none"> <li>- Collaborating with academic institutions and scientific research bodies in order to develop and integrate research ideas with industry applications;</li> <li>- Pre-competitive technological collaboration between companies in the same industry to realise benefits across all stakeholders;</li> <li>- Collaboration between producers and suppliers in order to increase efficiency throughout the supply chain; and</li> <li>- Improving company processes by using the knowledge and experience of workers to drive innovative activities.</li> </ul>
<p>Austrade, (2018) <i>Industries: Mining equipment, technology and services.</i></p>	<p>Because of the strength of the market, Australian METS firms have overseas opportunities right across the supply chain. This includes:</p> <ul style="list-style-type: none"> <li>- Capital equipment</li> <li>- Contract mining</li> <li>- Exploration</li> <li>- Mining consumables</li> <li>- Professional services including engineering and consulting</li> <li>- Software and advanced technologies – Australian suppliers have an international reputation for innovative solutions</li> <li>- Equipment supply – a range of mining equipment is in short supply at present including the supply of tyres</li> </ul>
<p>Esteves, Ana et al. (2009) <i>Local SME Participation in the Supply Chains of Australian Mining, Oil and Gas Companies</i></p>	<p>Interview participants (Bechtel, BHP Billiton, Newmont, Rio Tinto and Santos) identified four key barriers to the incorporation of local small businesses into the supply chains of major mining, oil and gas companies. These were:</p> <ul style="list-style-type: none"> <li>- the information gap that exists between small and very large companies,</li> <li>- the perceived lack of capacity in small enterprises,</li> <li>- disincentives created by global supply chain management trends, and</li> <li>- barriers arising from corporate policies and systems.</li> </ul> <p>The following elements of good practice were also identified:</p> <ul style="list-style-type: none"> <li>- a sound business case for optimising local SME participation,</li> <li>- an optimal corporate structure to support local procurement including individual incentives or performance metrics,</li> <li>- an understanding of the local market, and ensuring the local market understands the company’s demand for goods and services and requirements for participation,</li> <li>- alignment between procurement strategy and the corporate-community context, including commitments to specific targets groups and benefits agreements with Traditional Owners,</li> <li>- an understanding of the barriers and gaps within the existing supply chain preventing local</li> <li>- SME participation, developing a Local SME Participation Plan, including setting goals and targets;</li> <li>- Selecting appropriate procurement strategies; and</li> <li>- facilitating new business ventures, alignment of systems and processes</li> </ul>



<p>CSIRO (2019) <i>Mining Equipment, Technology and Services</i></p>	<p>Megatrends: how is the sector changing?</p> <ul style="list-style-type: none"> <li>- Discovery rates for accessible ores are declining and not keeping pace with depletion.</li> <li>- Skills, services and technologies are needed for efficient exploitation of mineral reserves in emerging economies continue while adoption of specialised digital technologies is resulting in fierce competition for talent in advanced economies.</li> <li>- Urbanisation and development of emerging economies will continue to spur demand for mineral resources. Rapid adoption of consumer technologies is also changing demand for high-value, low-volume metals and minerals.</li> <li>- Mining companies must foster accountability and environmental support from the public.</li> <li>- Digital technologies, analytics, automation, mobile technologies and connectivity are creating exciting opportunities for the mining industry.</li> <li>- Declining commodity prices, ore grades and productivity, together with rising costs are compelling the mining industry to focus on operational improvements.</li> </ul> <p>Challenges:</p> <ul style="list-style-type: none"> <li>- High rates of digital and technological change in the mining sector reduce the, once high, barrier to entry for METS companies, resulting in greater competition for equipment and services.</li> <li>- The cyclical nature of the mining industry.</li> <li>- Low levels of industry collaboration, with relationships between METS, mining and research sectors.</li> <li>- Weak translation of mining research into commercial outcomes and innovation.</li> </ul> <p>Future growth?</p> <ul style="list-style-type: none"> <li>- Social and environmental sustainability</li> <li>- Data driven mining decisions</li> <li>- Mining automation and robotics</li> <li>- Advanced extraction</li> <li>- Deep mining exploration.</li> </ul>
<p>Department of State Development, (2017) <i>Queensland Mining Equipment, Technology and Services: 10-Year Roadmap and Action Plan</i></p>	<p>Industry challenges:</p> <ul style="list-style-type: none"> <li>- Access to investment capital</li> <li>- Levels of collaboration</li> <li>- Links to technology drivers</li> <li>- Business capability improvements</li> <li>- Cost of doing business</li> </ul> <p>Strategies to ensure future growth:</p> <ul style="list-style-type: none"> <li>- Increase innovation and commercialisation</li> <li>- Increase collaborative business opportunities</li> <li>- Develop sector capabilities</li> </ul>

	- Promote sector capabilities
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Source: Lytton Advisory, 2020.

### 3.2 Issues and opportunities for the METS sector in MIW region

For the METS sector to meet the current and future needs of the region, the pressing infrastructure issues that cause bottlenecks need addressing. The need for infrastructure to be in place for those companies involved in or envisaging exporting was alluded to earlier in this report. The general conclusion is that the major centres have the required infrastructure, but, in some cases, it may be under strain.

That said, the mechanisms are in place and well advanced to act as the conduit for the METS to not only continue but to grow in a more aggressive manner through the opportunities at the local level and well beyond.

#### Opportunities for local METS SMEs in the region to export goods and services

To remain globally competitive the Queensland resources industry will need to continue to develop and apply solutions to customer requirements driven by new technologies including advanced machinery, remote applications, advanced system mining, data analytics, automation, robotics, artificial intelligence and digital technology. The experience gained in the Queensland resources sector is in turn creating opportunities in other industries and countries. The MIW METS sector is poised to take advantage of these emerging opportunities and continue to calculate how it can get at the front of this trend.

Key opportunities for METS companies are outlined in the sub-sections below.

#### Data driven mining decisions

Rapidly evolving digital technologies are providing opportunities to enable better and faster decisions by making relevant data available anywhere and just-in-time. The future data driven mine will optimise mining operations and reduce timeframes for making high value decisions. It will maximise the value of new and existing data, supervisory control and data acquisition (SCADA) systems, and external market information, enabling decisions based on near real-time information (hours or days) instead of using information that is months or years old. Data will be used throughout the mining lifecycle to draw insights and optimise recommendations via sensors deployed throughout a mining operation, a key enabler to many more opportunities. Long-term benefits of collecting and using mining data include<sup>32</sup>:

- Predictive maintenance – increasing asset integrity by analysing and predicting failures based on structured data (e.g. SCADA), unstructured data (e.g. maintenance and operator logs) and contextual data (e.g. weather);
- Improved decision making – providing real-time access to data, reduced timeframes for decision making and increasing efficiency;

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<sup>32</sup> CSIRO (2017) *Mining Equipment, Technology and Services: A Roadmap for unlocking future growth opportunities for Australia*. [online] Available at: <https://www.csiro.au/~media/Do-Business/Files/Futures/METSRoadmap.pdf?la=en&hash=DDDDFFA37409C84571F22DA3FED16EA66C346C816>

- Operational gains – increasing yield and throughput, optimising use of raw materials by using data insights to break down operational silos and where appropriate embedding market-driven (e.g. commodity spot price) flexibility into operations (from quarterly to shift production schedules);
- Greater transparency – anonymising operational data for benchmarking to improve community and shareholder / investor engagement; and
- Improved safety – tracking of people and assets to proactively identify hazards and prevent incidents.

MIW METS businesses will play a key role in the deployment and commercialisation of various secure digital technologies for the mining sector, including new sensors and digitally connected, communicative equipment. METS businesses will also assist mining operators with the development of new platforms and the integration of data and information systems to support real-time decision making, driving ongoing optimisation through remote monitoring solutions and new service models. To achieve this, METS businesses may need to work with the tertiary education sector to ensure they have enough skilled employees.

### Mining automation and robotics

Recent technology cost and performance breakthroughs in robotics, automation, artificial intelligence, data communications and vision systems are enabling safer and more efficient operations. The future of mining automation and robotics are systems and machines that are more agile, can learn and adapt to changes in their environment and can carry out necessary actions without intervention. Advanced automation is suited to large-volume production tasks, while robotics is better suited to lower volume, customised activities. Although these technologies will eventually be applied across the mining lifecycle, this opportunity is focused on mineral extraction to<sup>33</sup>:

- Improve safety – removing the need for humans to be in dangerous environments;
- Increase productivity – improving throughput, consistency, continuity and predictability while reducing human error;
- Enhance sustainability – reducing waste and optimising consumables and energy inputs for extraction and processing; and
- Improve recovery – applying small-scale robotics to assist in the recovery of previously inaccessible resources.

Opportunities exist for MIW METS businesses to develop integrated equipment and componentry, such as advanced sensors and control systems for use within automation and robotic systems. METS companies could also provide change management and other ongoing services to help mining operators adopt these technologies.

### Advanced extraction

Deeper, more complex and lower grade deposits combined with the need for a lower environmental footprint will drive the development of advanced methods of extraction.

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<sup>33</sup> Ibid

Australia's long history of mining activity has left many lower grade, stranded, remote and otherwise marginal materials in the ground. Development and commercialisation of advanced extraction technologies may lead to a step change in extraction economics that may result in a large increase in the exploitable reserves for Australia. MIW METS businesses will continue to play key roles in developing advanced drilling, processing and monitoring technologies; and providing consulting and other services to help operators adopt new methods and technologies. In the long term, these technologies will increasingly be standardised, integrated and designed to be modular and transportable.

## Exploration

Worldwide the majority of near-surface, high quality mineral deposits have already been identified and developed, requiring new technologies to identify new reserves deeper underground. Queensland's unique geography tends to limit the application of many techniques used in Europe and North America, therefore locally developed improvements in technology and innovative solutions will continue to be required.

The METS sector has a key role to play in developing and commercialising the necessary equipment and services required by explorers. With only approximately 25% of Australian METS organisations operating in exploration<sup>34</sup>, there is room for more METS companies to expand focus into this area and take advantage of the increasingly data driven nature of exploration. Examples of product and service solutions include: developing new geophysical sensors for airborne, ground and UAV surveying; geochemical detection tools, sampling methods and hand-held instrumentation; small-scale but widely deployed passive sensor systems; data management, integration, analytics and delivery methods; and new simulation and prediction services and platforms.

## Social and environmental sustainability

Growing societal concern about the impacts of mining will drive the development of new processes and technologies to improve social wellbeing, environmental performance and economic prosperity. The resources industry will concurrently pursue triple bottom line outcomes; meeting evolving community and shareholder expectations, and policies related to environmental and social responsibility, while maximising profits. Focus will increase on ensuring mines operate with improved measurable social and environmental outcomes across the life of the mine and mining value chain. Accountability will be shared across the mining ecosystem – miners, explorers, governments, communities, researchers and METS businesses. This is expected to become more important as regulations on mining operations become increasingly tightened.

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<sup>34</sup> CSIRO (2017) *Mining Equipment, Technology and Services: A Roadmap for unlocking future growth opportunities for Australia*. [online] Available at: <https://www.csiro.au/~media/Do-Business/Files/Futures/METSRoadmap.pdf?la=en&hash=DDDDFFA37409C84571F22DA3FED16EA66C346C816>

From a financial perspective, benefits to mining companies in pursuing social and environmental sustainability include<sup>35</sup>:

- Reduced development and production delays – streamlining engagement and relationships by aligning values and being transparent with traditional land owners, community, government and shareholders;
- Increased margins – minimising energy, waste, water, fuel and material inputs through process optimisation, re-use and recycling;
- Additional value streams – using the entire resource and existing waste streams to generate new sources of value;
- Reduced risk and environmental liabilities – using proactive management and mitigation to reduce remediation requirements and improve health and safety outcomes; and
- Minimised workforce shortfalls – proactively developing skills and regional economies.

MIW is home to many mature mining operators that exhibit high standards of self-regulation within a well-established national regulatory system. METS companies have a key role to play in helping these mature mining operators develop innovative solutions that allow continued extraction of minerals with a lower impact on the environment and positive community outcomes.

#### Innovation delivering cost reductions

Industry competitiveness is compelling the mining industry to focus on operational costs. The resources industry requires creative and innovative solutions to become more productive, sustainable and maintain financial growth. A new wave of digital technologies and their subsequent integration are expected to play a major role in enabling greater levels of automation, remote operation and optimisation across the value chain. At the same time, growing energy costs and competing water demands will necessitate more sustainable processes and technologies, including the adoption of renewables across the mining life cycle and value chain. MIW METS businesses will be instrumental in delivering costs saving to the Queensland resources sector.

#### Training and Knowledge Exports

As requirements change in the resources industry, reskilling of current employees and upcoming generations will need to be a priority. The workforce will need to be comfortable with digital technologies and there will be increasing demand for more fundamental data science expertise, such as those with abilities to translate large amounts of data into trends to derive insights and high-value business related questions. The increasing shift towards automation, data and digital technologies will require training of entire workforces potentially from MIW METS businesses.

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<sup>35</sup> CSIRO (2017) *Mining Equipment, Technology and Services: A Roadmap for unlocking future growth opportunities for Australia*. [online] Available at: <https://www.csiro.au/~media/Do-Business/Files/Futures/METSRoadmap.pdf?la=en&hash=DDDDFFA37409C84571F22DA3FED16EA66C346C816>

In addition, many important mining countries are emerging economies. These economies often do not have well-developed practices, reliable geological information, skilled workers and sufficient infrastructure to support growth, and frequently face challenges in turning deposits into producing mines. A knowledge-demand gap is being created—one that creates opportunities for suppliers in the METS sector. Queensland’s METS and mining sectors can harness its deep mining knowledge and expertise to position itself as a key driver and facilitator in the rapidly changing global mining environment.

## New Markets

Stakeholder feedback indicated several MIW METS businesses with the products, knowledge and capability are seeking out opportunities in other locations including the Hunter Valley, Pilbara, South Africa, India, Indonesia, Russia, Canada, and Papua New Guinea (PNG). MIW METS are providing goods and services to other industry sectors which rely on conveyors, construction, water plants and power generation where fundamental skills and services and project management capability are transferrable.

## Domestic supply opportunities

Australian METS firms can offer high-quality goods and services across the entire coal supply chain, including in:

- Exploration;
- Mine development – design, construction and operation of underground and open-cut coal mines;
- Engineering;
- Mineral processing;
- Rail transport, pit-to-port handling and logistics;
- Port operations;
- Power generation;
- Technical support and project management;
- Safety;
- Environmental management;
- Community management;
- Research and development (R&D);
- Education and training; and
- Automation and digital solutions.<sup>36</sup>

Queensland METS Ignited has identified domestic supply opportunities in terms of aligned business strategy and technological innovation and commercialisation. Primarily, METS Ignited has aimed to capitalise on these growth prospects by facilitating the development of

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<sup>36</sup> Australian Trade and Investment Commission (2018) *Australian Capability Across the Coal Supply Chain* [online] Available at: <https://www.austrade.gov.au/ArticleDocuments/2814/Coal-supply-chain-icr.pdf.aspx>

technology cluster initiatives, crowd sourcing methods and further integration throughout the whole supply chain.<sup>37</sup>

### International opportunities

The global market for mining equipment is expected to reach revenue of US\$150 billion by 2022, growing at a compound annual rate of 7.9% from 2016-2022. The Asia-Pacific is becoming the largest market for mining equipment globally.

Australia now has Free Trade Agreements (FTAs) with almost all major trading partners. Australia's mining and METS sectors have a long history of strong performance, and, according to Austmine, more than 66% of Australian METS firms now export globally.<sup>38</sup> The survey conducted for this report suggests that the MIW METS sector is much less engaged with overseas markets, and reasons for this disparity – namely, the MIW METS sector is more focussed on local supply chains than other regions, different survey scopes and misrepresentative survey findings – were explored previously in the report. It is worthwhile reiterating that there is insufficient evidence to comment on the merits or accuracy of the Austmine survey's methodology or scope which could have contributed to the large disparity between the two surveys' findings.

Austrade has identified the strongest international opportunities for Australian METS firms in Latin America, China, India, Russia, New Caledonia, Papua New Guinea, Africa, Indonesia and Mongolia. These opportunities are said to exist right across the supply chain, including:

- Capital equipment;
- Contract mining;
- Exploration;
- Mining consumables;
- Professional services including engineering and consulting;
- Software and advanced technologies – Australian suppliers have an international reputation for innovative solutions; and
- Equipment supply – a range of mining equipment is in short supply at present including the supply of tyres.

### 3.3 Critical gaps and barriers in the resources and METS supply chain

Overall, it is considered there is suitable capability of the METS sector to meet the requirements of the resources sector and supply chain as present. However, several barriers, gaps and challenges were identified as part of stakeholder consultation. Issues include technology adoption and realising collaborative potential. Table 5 outlines critical gaps and barriers to the METS industry's future growth that have been identified in existing literature.

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<sup>37</sup> Australian Department of Industry, Innovation and Science: METS (2019) *Sector Competitiveness Plan Update*. [online] Available at: <https://www.industry.gov.au/sites/default/files/2019-07/industry-growth-centres-progress-and-impact-report.pdf>

<sup>38</sup> Austmine (2015) *National METS Survey 2015*.

**Table 5: Literature review of critical gaps and barriers in METS industry**

<i>Source</i>	<i>Barrier</i>
METS Ignited (2017) <i>Mining Innovation: Key Mining Challenges</i>	<ul style="list-style-type: none"> <li>• Deeper, continuously up to date, understanding of the resource base</li> <li>• Boosting productivity and maintenance performance through analytics, connectivity and IoT</li> <li>• Optimising material equipment flow, towards a continuous mining and processing mindset</li> <li>• Improving performance and reducing harm through mechanisation and automation</li> <li>• Reducing mining’s footprint including boosting safety and environmental performance</li> <li>• Selective mining and processing to boost processing intensity</li> <li>• Novel mining and processing addressing difficult and presently uneconomic orebodies (e.g. low-grade)</li> <li>• Reducing mining’s footprint including boosting safety and environmental performance, and improving stakeholder relations</li> <li>• Improving exploration for deep and remotely located minerals</li> </ul>
Synergies Economic Consulting (2009) <i>Review of Coal Supply Chains</i>	Coal supply chain participants do not currently perceive adequate incentive to co-operate. Common ownership is not required, but in lieu of this a common purpose of participants in the supply chain must be established.
Centre for METS business innovation (CMBI) (2019) <i>METS challenges and successes</i>	Lack of collaboration between regional councils, inter-governmental departments and mining company innovation acknowledged as a weakness.
Department of Industry, Innovation and Science: METS (2019) <i>Sector Competitiveness Plan Update</i>	<ul style="list-style-type: none"> <li>• Culture of independence that has limited ability to collaborate and increase addressable market and research issues</li> <li>• Access to patient (long-term) capital for start-ups and especially scale-ups (SME growth and innovation)</li> <li>• Low international market knowledge</li> <li>• Small number of innovative and capable firms that can manage the changes and opportunities facing the sector</li> </ul>
AlphaBeta (2019) <i>Staying Ahead of the Game</i>	If local supply chain fails to adapt to mining automation (failure to train workforce to assist in automation effort), loss in employment could result in \$27 billion loss of benefits. Up to 220,000 new jobs can be made from mining automation.
QMCA and IAQ, (2019) <i>Queensland Major Projects Pipeline</i>	Approximately 70,000 rail construction and manufacturing jobs will be demanded above existing supply to support national rail infrastructure delivery by 2022/23.
Esteves, Ana et al. (2009) <i>Local SME Participation in the Supply Chains of</i>	<ul style="list-style-type: none"> <li>• The information gap that exists between small and very large companies</li> <li>• The perceived lack of capacity in small enterprises</li> <li>• Disincentives created by global supply chain management trends</li> </ul>



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*Australian Mining, Oil and Gas Companies*

- Barriers arising from corporate policies and systems

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CSIRO (2017) *Mining Equipment, Technology and Services*

- In a changing landscape, the continued success of Australian METS companies is not guaranteed. High rates of digital and technological change in the mining sector reduce the, once high, barrier to entry for METS companies, resulting in greater competition for equipment and services.
- The cyclical nature of the mining industry, which directly impacts METS companies.
- Low levels of industry collaboration, with relationships between METS, mining and research sectors often characterised as transactional rather than strategic, discouraging innovation and forcing price minimisation.
- Weak translation of mining research into commercial outcomes and innovation.

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Source: Lytton Advisory, 2020

### Identified Barriers from consultations

Feedback from stakeholder consultation indicated continuing difficulty of METS SMEs engaging in the procurement process of large resource companies although there has been considerable improvement recently. These issues included:

- the information gap that exists between small and very large companies;
- the perceived lack of capacity in small enterprises;
- disincentives created by global supply chain management trends; and
- barriers arising from corporate policies and systems.

However, programs such as BHP's C-Res initiative were cited as providing significant benefit to addressing the above issues.<sup>39</sup> In 2012, the Local Buying Program (LBP) was established to support small businesses in the MIW region in their engagements with BHP Mitsubishi Alliance (BMA) and BHP Mitsui Coal (BMC). Recognising the challenges experienced by smaller businesses to engage as a supplier of BHP, the LBP makes it simpler and easier for these businesses to competitively bid for supply opportunities that are released by BMA and BMC operations. The LBP is delivered in partnership between BHP and C-Res. C-Res is a cost neutral entity that proudly continues to deliver the LBP for all BHP Minerals Australia assets nationwide. In 2018-19 there were:

- 17 Days average payment period from receipt of invoice;
- \$101,709,164 Total Approved Spend;
- 939 Total Number of Approved Suppliers; and
- 6,717 Total Approved Work Opportunities.

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<sup>39</sup> BHP (2020) *Adding value to our local Communities*. [online] Available at: <https://c-res.com.au>

Stakeholder consultation highlighted the Accessing Supply Chain Opportunities (ASCO) program that offers business development programs to encourage the local supply of goods and services. The ASCO program aims to increase supply chain participation through:

- addressing issues in the supply chain;
- developing a better customer focus;
- understanding and responding to major project supply chain requirements;
- becoming more aware of major project opportunities; and
- being better placed to submit competitive tenders.

### Identified Gaps from consultations

Stakeholder consultation indicated several assets and capabilities necessary for the strategic development of the MIW METS sector which do not currently exist, including:

- Business management and planning skills - many MIW METS business owners are too busy “working in the business rather than on it” – which impedes planning; research and development, collaboration and innovation; applying for grants; protecting IP. Business management skills were also identified, with a lack of commercialisation skills cited. There is often a poor understanding about calculating commercial risk and managing that risk which has prevented exploring opportunities in new markets;
- Feedback indicated the established resources sector is reluctant to trial or adapt to new technology and instead waits for concepts or commercialisation to be proven elsewhere.<sup>40</sup> In some instances, it has been easier to sell Australian technology to India than in our own Australian market. Also, METS business own thinking limits opportunity, with some companies believing the Bowen Basin is the only place to be, neglecting other markets. There exists some complacency and each MET SME may have only two clients and will stick to those clients. In some instances, they may not be prepared to travel to the Bowen Basin to provide remote or on-site capability. Only a select few METS have interest in exporting with only a few with the products, knowledge and drive for overseas markets. Companies have indicated they require assistance to develop appropriate business models, sales skills, marketing and to undertake export readiness training;
- Addressing regional leakage through businesses sourcing from outside of MIW. Many METS rely on machinery sourced elsewhere. There are potentially missed opportunities in manufacturing with much equipment having to be sourced from overseas with associated logistics challenges;
- Specialist service gaps includes machining in the MIW region and corrosion protection with only one organisation providing these services;
- Specialist skills gaps include shortages in diesel fitters, electricians, freight and logistics. In addition, during the last downturn between 2013 and 2018 there was a significant under investment in apprenticeships that is now impacting on the sector; and

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<sup>40</sup> Feedback from the pilot survey suggests it is mining companies which are unwilling to trial new equipment and technology due to the perceived risks.

- A medium to communicate what the region has to offer and link opportunities to capability. Many SME METS do not have an online presence and their presence is often unknown and they do not advertised in the digital space.

### Identified challenges from consultations

The opportunity for growth of the METS sector is recognised as being significant. However, industry consultation exposed some challenges to be addressed to reach the vision of a thriving hub of innovation, commercialisation and growth. There were several challenges raised in stakeholder consultation including:

- The greatest risk for the sector is its major reliance on a single commodity: coal. The cyclical nature of resource development which is driven by international commodity prices and global demand for coal and a lack of diversification away from coal;
- At present, many METS businesses know only the next quarter's pipeline of work as opposed to a year in advance, as was the case at the height of the resources boom;
- Competition with the resources sector for the right employees with the right skills;
- The geographical location of some of METs sector particularly in Bowen results in a limitation of the resource projects that they can feasibly service. There is a prevailing trend of exploration shifting towards the south and south west away from Bowen;
- Commercial secrecy and lack of collaboration is a barrier. Mining companies are reluctant to reveal their innovation requirements to METS businesses in case competitors learn about their innovation agendas; and METS businesses can be reluctant to collaborate because they are concerned about losing their IP;
- Access to finance for R&D is an issue. METS have traditionally had to self-fund their own R&D and are solely carrying the risk of commercialising new products, processes and services. Currently there is a fragmentation of research and development effort because of a lack of collaboration between industry and researchers;
- Some costs of running a business such as labour, transport, regulatory and energy costs are higher than other competitor countries. METS companies have identified red tape and regulation as a significant cost;
- The depreciated Australian dollar does improve the attractiveness of MIW exports to world markets. However, METS companies need to be innovative and add value to their products, processes and services to ensure they are not competing on price alone;
- There is a requirement to change the conversation about coal and the required differentiation between metallurgical coal and thermal coal for example. There is a view among stakeholders that some of the skills shortages particularly in engineering degrees could be solved by addressing negative views regarding the resources industry;
- Multiple costly inductions required for site access including individual induction and company and industry certification; and
- Prices for key commodity groups continue to fluctuate and Australian resource producers compete with countries across the world to get commodities to export markets at the lowest possible cost.

## Export barriers

Barriers and restrictions to trade weigh heavily on Australian METS firms to engage internationally. While there is a range of barriers that can be directly negotiated on, such as trade agreements, a considerable degree of export impediments, like resource nationalism, are not subject to negotiation in trade agreements. However, this does not mean that progress cannot be actively pursued. As the Minerals Council of Australia noted:

*“agreements can contribute to institution building and reform, particularly through provisions on good regulatory practice and through work programs associated with chapters on economic cooperation”.*<sup>41</sup>

Broadly speaking, barriers to exports can be defined as either non-tariff or direct. Non-tariff barriers (NTBs) are non-tariff measures (NTMs) that discriminately increase the price of imports or restrict trade. Examples of NTBs include contract distribution and regulatory requirements. Direct barriers to exports, such as tariffs, quotas and domestic subsidies, are overt measures implemented to directly reduce the viability of foreign activity within a given jurisdiction.

Barriers to exports vary from country to country. Table 6 is information extracted from the Minerals Council of Australia’s 2017 *New Frontiers* report on the state of trade for Australian METS firms in South and East Asia.<sup>42</sup>

**Table 6: Summary of barriers and restrictions to Australian METS exports by jurisdiction, 2017**

<i>Jurisdiction</i>	<i>Non-tariff barriers</i>	<i>Direct measures</i>
Indonesia	110 mineral tariff lines are affected by three or more NTMs. These include technical barriers, import licensing and export related measures.	For construction services, Indonesia is rated by the OECD as the second most restrictive among 44 countries. Firms providing these services must form a joint venture with not more than 55% owned by foreign partners. The schedule permits very significant limits on services provided by executives, managers and technical experts. For engineering services, commercial presence can involve either a joint operation representative office or a joint venture no more than 49% foreign owned, while consulting and design services delivered by commercial presence must be provided through a representative office with a local partner. Legal services are almost completely closed to outsiders.
Laos	Over three quarters of mining-related products are subject to three or more NTMs. About half are export taxes and prohibitions. Others include price controls on imports, import licensing	Foreign enterprises can establish a commercial presence in Laos with up to 100% ownership, though in practice, the government must have 10% ownership of mining ventures. Preferences to local businesses (i.e. limits on national treatment) are extensive and cover taxation,

<sup>41</sup> Australian Mining (2018) *New frontiers: South and East Asia*. [online] Available at: <http://www.austmine.com.au/DesktopModules/EasyDNNNews/DocumentDownload.ashx?portalid=98&moduleid=12556&articleid=5142&documentid=809>

<sup>42</sup> Ibid.

	requirements and restrictions on payments for imports	subsidies, investment incentives and other support measures.
Malaysia	The mineral sector is impacted by import licensing for potential mining equipment and by preferences to Bumiputera (ethnic Malays and other indigenous ethnicities in Malaysia) in contracts with the government and government-linked enterprises.	Restrictions on foreign investment mostly affect equity holdings in services sectors. The Malaysian Government has freed up restrictions on government assistance is available to foreign investors, including tax incentives. Foreign equity of up to 100% is allowed in the extraction and processing of minerals, though in practice foreign investments typically involve joint venture arrangements with local partners.
Philippines	Minerals products and mining equipment imports are affected by a range of technical barriers, import licensing requirements, export-related measures, customs and other regulations and charges, and measures related to state trading enterprises.	The 2016 OECD FDI Regulatory Restrictiveness Index rates the Philippines as the most restrictive among ASEAN economies for investments in primary industries (including mining), business services and transport. Moves to close mines or suspend mining operations, ban new open-cut mines and raise mining taxes to punitive levels indicate that much remains to be done to attract international investors.
Thailand	All minerals, metals and machinery lines are affected by at least one NTM, and most mineral products by three or more. Import licenses are required for many raw materials.	Construction services allow Australian equity up to 100% for services delivered by commercial presence. Businesspersons (across all sectors) allowed up to five year stays for intra-corporate transferees and three years for contractual service suppliers. Thailand imposes equity limits on a large number of activities, including mining. In sectors where Thailand is not yet believed to be competitive, government approvals and permits are required. That said, extensive investment incentives are available to foreign companies including in relation to corporate tax, duty free imports and utilities, infrastructure and construction costs
Vietnam	No imported product is free of at least one NTM. They include product standards, export-related measures, tax incentives for domestic manufacturing, and discriminatory government procurement policies.	Vietnam is seen as a generally desirable destination for greenfield FDI investment, but not in mining. This is largely because the mining sector is dominated by a handful of state owned and linked enterprises that control the playing field. A restrictive and constantly changing taxation and regulatory environment also discourages direct investment.

## Summary

The MIW METS sector has several supply chain barriers, gaps, and challenges that will need to be addressed if the sector is to continue to grow and realise its full potential.

### 3.4 International opportunities

Here we examine the METS sectors in a few other countries and regions that have a significant mining industry. This may include coal and other mined resources.

## North America

Canada, like all countries with a significant mining sector relies on a wide range of goods and service suppliers to support the current operations and the further development and growth of the METS sector, or the Mining Supply and Services (MSS) sector as it is referred to in Canada.

Canada is home to many world-class exporters of mining products and expertise. However, the MSS sector is fragmented both along product lines and geographically. There are an estimated 3,700 suppliers in Canada. The MSS sector is concentrated mainly in four provinces: Ontario, Quebec, British Columbia and Saskatchewan. The MSS clusters in these regions formed to provide products and services to the local mining activities. The sector is generally characterised by small companies: the more specialised a goods or services provider is, the smaller they are likely to be. That said, there are some relatively large firms in the MSS sector, generally those whose goods and services have applications across sectors other than mining.<sup>43</sup>

The 300 plus corporate member Mining Suppliers Trade Association Canada (MSTA CANADA) connects mining supply and services companies across Canada to business opportunities locally and around the world. Membership comes from manufacturing, logistics, consulting, research and development etc. whose focus is on the trade and export part of the METS sector.

The MSS sector has a keen focus on exports. They accounted for 25.5% of the revenue in mining and oil and gas machinery manufacturing in 2014, which has since risen to 32.6% in 2018. In metals and minerals services, exports accounted for 28.4% of output in 2014, and 33.7% in 2017.<sup>44</sup>

There is a regional cluster in each of the 4 main mining provinces. Ontario being the major mining province has approximately 1,400 mining supply and service companies with Sudbury, the major centre for mining in Ontario, which has a cluster of approximately 320 businesses with several of them involved with innovation. Also, there is a mixture of large and small businesses of about 150 with the Sudbury Area Mining Supply and Service Association.

This group assists its members in connecting with the Provincial Government's program *Accelerate to International Markets*. The government has also developed an online system to connect international buyers with the MSS's of Ontario.

Sudbury's Centre for Excellence in Mining Innovation (CEMI) signed a memorandum of understanding in September 2019 with METS Ignited. The aim is for both to collaborate and accelerate the commercialisation of mining innovations in each country.<sup>45</sup>

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<sup>43</sup> PWC (2019) *Canada's Mining Supply and Services Ecosystem and Exports*. [online] Available at: [https://mineconnect.com/wp-content/uploads/2019/05/PwC\\_MSS-Report-FINAL.pdf](https://mineconnect.com/wp-content/uploads/2019/05/PwC_MSS-Report-FINAL.pdf)

<sup>44</sup> Ibid.

<sup>45</sup> Centre for Excellence in Mining Innovation (2019) *Canada's CEMI and METS Ignited Australia Sign MOU* [online] Available at: <https://www.cemi.ca/canadas-emi-and-mets-ignited-australia-sign-mou/>

METS Ignited CEO Adrian Beer said: “A relationship with Canada’s CEMI will allow a mechanism for made in Australia solutions to enter the Canadian and Global mining ecosystems.”<sup>46</sup>

Quebec is the major producer of aluminium, so suppliers have developed expertise in providing the needs of smelters and processing plants both at a local and international level.

Saskatchewan with potash and uranium production has had its MSS sector develop with two organisations, one representing mostly SME industrial equipment and service suppliers focussed on the local market rather than exports. The other is a research cluster (International Minerals Innovation Institute) aligned with the different services and products which suppliers are offering in Saskatchewan. They aim to develop and implement innovative education, training, research and development partnerships for supporting a world-class minerals industry. Government has supported the private sector in the development of required infrastructure.

British Columbia MSS businesses are in the main represented by the Mining Suppliers Association of B.C. They are, in the main, heavy equipment manufacturers like Ionic Engineering, B&D Manufacturing or Komatsu Mining Corp. Many are into maintenance to extend the life of machinery. There are a significant number of engineering consultancies in the province (mainly Vancouver) with an eye on exporting widely. This bears out the major requirement for success being access to the required infrastructure which major centres in Canada and Australia provide.

Canadian exporters are well organised with ongoing developments of their current markets. Australia is seen as one with niche markets for Canadians due to the METS sector being mature and highly diversified. However, it is recognised by the MSS sector that closer collaboration between both could enhance Canadian productivity.

The 2015 Austmine National Survey found that the United States (US) was the sixth most successful export location for the Australian METS industry.<sup>47</sup> Australian-US METS sector engagement is being encouraged by FTAs and strong relationships between respective domestic governments. Recently, for instance, Austmine and the Nevada Mining Association completed a Mining Mission to explore opportunities with base and precious metal mining companies in Utah and Nevada.<sup>48</sup>

The US, in addition to being a current export partner of many METS businesses in the MIW region, has immense export potential given the size of its national mining operations (see Figure 17 for data on METS firms exporting to US). The US produces a wide range of commodities such as coal, metals, and industrial minerals. The US Geological survey reported \$2 billion of

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<sup>46</sup> Northern Ontario Business (2019) *Sudbury mine innovation centre finds kindred spirit down under*. [online] Available at: <https://www.northernontariobusiness.com/industry-news/mining/sudbury-mine-innovation-centre-finds-kindred-spirit-down-under-1689520>

<sup>47</sup> Ibid. Austmine (2015)

<sup>48</sup> Austmine (2020) *USA Mining Mission Review: Australian METS Well Received in Nevada and Utah*. [online] available at: <http://www.austmine.com.au/Events/category/articles-editorials/usa-mining-mission-review-australian-mets-well-received-in-nevada-and-utah>



year-on-year growth for American mines, producing approximately \$86.3 billion in minerals in 2019.<sup>49</sup>

## Latin America

Latin America continues to be the fastest growing destination for Australian mining investment and for METS investment and exports. Austrade identifies the main countries in Latin America for METS trade and investment are Chile, Brazil and Peru with many and various opportunities. Each of those countries has many established Australian METS offices.<sup>50</sup>

- Chile: 59 Australian METS companies with registered offices;
- Brazil: 30 METS companies with registered offices; and
- Peru: 60 METS companies with registered offices.

Australia has the advantage of being recognised by the Chile Government as having a substantial METS sector for supporting the Chile mining sector and underpinning competitiveness to develop world class supply chains there. METS by forming closer partnerships can pave the way to achieve and apply leading techniques for improved, sustainable mining. METS has a place in the leading and developing Latin American mining countries for collaboration. The region could benefit from closer partnerships to achieve and apply leading techniques for improved, sustainable mining.

For Chile, Austrade reports that specific areas where Australia has strong offerings that match market needs include:

- innovation and research and development;
- underground mining and especially block-caving;
- safety in mining;
- intelligent mining (interoperability);
- automation and robotics;
- land rehabilitation and mine closure;
- energy Infrastructure;
- development of human capital and training in line with the industry's current and future needs;
- environmental related products and services (tailing management, water treatment plants, software);
- community engagement consulting; and
- renewable energies.

A feature of the Brazilian mining sector is a move towards exploration and mining in the country's north where large high-grade iron ore deposits are located. Opportunities are being taken up by Australian METS companies with the capacity to operate in those tropical remote

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<sup>49</sup> USGS (2020), *Mineral Commodity Summaries 2020*. [online] available at: <https://pubs.er.usgs.gov/publication/mcs2020>

<sup>50</sup> Paydirt Media (2017) *White Paper Submission*. [online] Available at: <https://www.fpwhitepaper.gov.au/sites/default/files/submission/170227-302-paydirt-media-pty-ltd.pdf>



areas. Assistance has come via the Australian Government, but some operators are saying that more needs to be done. Furthermore, all of the necessary infrastructure will need to be developed and infrastructure comes at a substantial cost and delays are detrimental to such large projects.

For Brazil, Austrade reports that specific areas where Australia has strong offerings that match market needs include:

- mineral exploration – geophysics, mapping, drilling, blasting;
- mining software – resource estimation, modelling, mine design and planning, maintenance and optimisation;
- automation and robotics;
- contract mining and engineering services;
- environmental equipment and consulting;
- mining processing technologies;
- mining equipment;
- mine safety;
- mining education and training services;
- mining research and university collaboration; and
- community engagement consulting.

## Africa

Australian exploration and mining activity in Africa have expanded strongly from very low levels two decades ago. Australian companies now collectively make up the largest mining investor group in Africa. According to DFAT research:

*“Australian companies play a large role in furthering the use of innovation and technology in the African mining sector. Where these innovations improve safety and allow some technology transfer to the host countries, these technologies will have the ability to open up deposits that were once deemed impossible to mine.”<sup>51</sup>*

*“In the Austmine 2015 survey, 33 per cent of METS companies identified Sub-Saharan Africa as a key market, while 26 per cent regard North Africa as important. The Austmine 2013 survey found that 21 per cent of Australian METS companies have invested in Sub Saharan Africa through establishing operations there.”<sup>52</sup>*

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<sup>51</sup> Australian Department of Foreign Affairs and Trade (no date) *The Australia-Africa Minerals and Energy Group: Value Add in Africa*. [online] Available at: <https://www.dfat.gov.au/about-us/publications/trade-investment/business-envoy/Pages/august-2019/the-australia-africa-minerals-energy-group-value-add-in-africa>

<sup>52</sup> Ibid.

## India

According to a recent report from Department of Foreign Affairs and Trade regarding resources, mining equipment, technology and the services sector, “India is one of the most important future markets for Australian METS companies. As India grows and seeks to modernise its mining sector, METS will increase across the board. Australian METS companies have a competitive edge, particularly in the coal value chain and beneficiation.”<sup>53</sup>

This same report encourages the Australian Government to provide greater support to the METS sector to achieve an increased footprint in India. Ongoing government to government and industry engagement in India is needed, including increasing the Australian Government’s presence in the resources hub of Kolkata.

A further recommendation of the report is to “draw on Australian development assistance to establish a mechanism for Australian METS companies to provide, on a commercial basis and protecting IP, research and development, technology and expertise to regional partners, with a priority placed on developing India’s mining sector and METS standards.”<sup>54</sup> It is acknowledged that Australia exports to India will remain resource based.

From the foregoing consideration of what the state of play is in some of the major mining economies, several observations can be drawn.

Looking at the Canadian MSS sector, there are some domestic factors which could well hinder its growth. Such as the MSS sector is largely composed of relatively small companies mainly in machinery and equipment as opposed to services. Numerous global MSS service businesses are based in Canada, for example Golder, and Stantec. This not being the case of machinery and equipment, which as the recognised connection between size of business and productivity, is not strong; a barrier to growth becomes obvious. The larger the business the more likely it is to be an exporter. On the other hand, small businesses usually struggle to achieve entering export markets due to constraints like resources and capital, access to infrastructure. One salient point for those intending to access the export market, is to have a local presence for all the obvious reasons.

Costs can at times be another area of concern due to exchange rates and the fact that Canada is a high cost jurisdiction. With MSS manufacturing continually developing towards hi-tech as in all developed countries, the cost element for many in the MSS sector becomes a challenge. That said, delivering value through the accessible hard and soft infrastructure is paramount to being successful in any market.

### 3.5 Hard and soft infrastructure issues facing METS SMEs in the MIW region

The MIW region hosts significant infrastructure that contributes to the region’s economic growth and employment opportunities. This offers access to both local and regional markets

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<sup>53</sup> Australian Department of Foreign Affairs and Trade (2018) *An India Economic Strategy to 2035*. [online] Available at: <https://www.dfat.gov.au/geo/india/ies/chapter-4.html>

<sup>54</sup> Ibid

through a combination of road, rail, telecommunications and air transport and human capability. The region is generally regarded to have adequate infrastructure for current production and accessibility to local and regional markets, which providing a foundation to support existing industries. Stakeholder consultation indicated that major pieces of infrastructure are required for future growth in the MIW region, which is discussed in the categories below.

## Road

The regional road network is critical to the economic development of the MIW region as it facilitates the transport of export goods to market and enables the movement of critical materials and technology across the region (fuel; mining equipment etc).

However, at present many MET SMEs employees are required to travel the Peak Downs Highway that has large stretches of single carriageway. The highway is a key transport route connecting the regional city of Mackay to the mining and agricultural areas of Central Queensland. This is not only an efficiency and capacity issue but a road safety issue consistent with each METS duty of care towards their employees.

Planned and under construction major infrastructure developments, such as the Mackay Ring Road and the Bowen Basin Service Link will enable further improved efficiencies for local and other business alike, through lower transport costs and reduced negative externalities to residents and other users. These benefits flow beyond the resource sector to other horticultural and agricultural supply chain efficiencies.

The Mackay Ring Road is a bypass route under construction near Mackay, Queensland. The proposed road is 21 km long and will be built in 3 stages:

- Stage 1 is 11.34 km in length and will connect the Bruce Highway to the south of Mackay (at Stockroute Road) with the Bruce Highway to the north of Mackay (near Bald Hill Road). It will involve a new bridge over the Pioneer River and an interchange with the Peak Downs Highway. It aims to provide a bypass of Mackay for Bruce Highway traffic that is immune to flooding and free of signalised intersections.[1] Stage 1 of the project is expected to cost \$540 million, 80% of the funding is from the Commonwealth and the remaining 20% from Queensland;
- Stage 2 is 8.2 km in length. It will connect Stage 1 near the Bruce Highway at Glenella to Harbour Road at Mackay Harbour. The route will follow the Mackay Harbour Railway (Port Rail Line). Stage 2 is estimated to cost \$350 million, of which the Australian government has contributed up to \$280 million. Detailed design and planning are yet to commence; and
- Stage 3 is 1.4 km in length. An additional connection from Stage 2 to the Port and Slade Point Road.

Stage 1 of the Mackay Ring Road is due for completion in 2020 at a cost of some \$540M however stakeholder feedback indicated that the commencement of Stage 3 Mackay Port access road as part of the Mackay ring road / bypass upgrade to the Peak Downs Highway is essential to provide better access to the Bowen Basin—i.e. ‘port to pit’ connectivity. Significant continuing investment in the Bruce Highway has been identified as crucially needed. Councils indicated that the region just doesn’t have a highway (the Bruce Highway) that allows for the region to grow.

The Mackay Northern Access contract has been awarded with completion expected in 2022.

## Rail

The rail network is particularly critical to the resources sector in the MIW region enabling the export of bulk coal via the region's ports. It also plays a significant role in containerised freight transport. Aurizon's Central Queensland Coal Network is one of the world's largest and most complex rail supply chains and connects domestic coal users to the export terminals at Abbot Point, Dalrymple Bay and Hay Point. No additional projects were identified as part of stakeholder consultation apart from the North Galilee Basin Rail project.

## Ports

The region is home to several major ports including coal ports at both Hay Point in the south of the region and Abbot Point in the north. The Port of Mackay is vital for fuel distribution into resource areas as well. The Port of Mackay and Port of Hay Point provide the region with access to international markets through multi-cargo import and export services and one of the world's largest coal terminals.

**Table 7: Summary of MIW Ports**

Port	Description
Port of Mackay	The multi-cargo import and export port is located seven minutes from Mackay's City Centre. It's one of the largest multi-commodity ports in Queensland in terms of cargo throughput. The port's capabilities include a heavy-lift wharf, a general cargo berth and marine infrastructure with AQIS approved wash down facilities. Port of Mackay's current capacity is up to 600 ships a year, with a combined import/export cargo of more than six million tonnes per year (Mtpa). The port offers competitive cost options for importation and exportation from the Bowen and Galilee Coal Basins. As well as servicing coastal and international shipping, the port has a small craft harbour with tourist terminal, major marina amenities and public boating access. The port is vital for fuel distribution to the resource sector, but also provides extensive opportunities related to resource service; and other port-related industrial, shipping and marine service activities.
Port of Hay Point	The Port of Hay Point is one of the largest coal export ports in the world. Comprised of two separate terminals, the port is linked to the Bowen Basin coal mines through an integrated rail-port network. Both terminals have rail unloading facilities, onshore stockpile yards and offshore wharves which are serviced by conveyor systems which allow deep water loading.
Abbot Point	The Port of Abbot Point is Australia's most northern coal export port. In naturally deep water, the port is located 25 kilometres north of Bowen and incorporates the Adani Abbot Point Terminal (AAPT) with a current export capacity of 50 million tonnes per annum. The Port of Abbot Point is a strategic asset to Queensland due to its proximity to the Abbot Point State Development Area, the resource rich Bowen Basin, Galilee Basin and North West Minerals Province, its remote location from urban development, and access to deep water. Abbot Point has one operating terminal, Adani Abbot Point Terminal (AAPT or T1). Coal is supplied to T1 by rail, and services customers in the Newlands and Collinsville area and several Bowen Basin mines. Tugs, operated by Bowen Towage Services (a joint venture between Svitzer and Glencore), also service the port. Annual tonnage in 2018-19 was 28,943,291.

Source: Mackay Regional Council (2020) *Enabling Infrastructure*. [online] Available at: [https://www.mackay.qld.gov.au/business/invest\\_mackay/regional\\_economy/enabling\\_infrastructure?SQ\\_PAINT\\_LAYOUT\\_NAME=a-z\\_listing](https://www.mackay.qld.gov.au/business/invest_mackay/regional_economy/enabling_infrastructure?SQ_PAINT_LAYOUT_NAME=a-z_listing)

The Mackay Port is "Queensland's fourth largest multi-commodity port by throughput and is one of the major servicing centres for the Central Queensland mining and agricultural industries. Its proximity to the Mackay CBD, and Australia's leading mining equipment technology and services (METS) hub in Paget, makes this tailored port an ideal integrated logistics transport solution for your trade needs. What's more, it boasts land transport links by

road and rail, and water links by ship or barge. .... undertaking initial development works on the next Mackay industrial precinct expansion area”.<sup>55</sup>

There is also in excess of 50 industrial and commercial businesses close to the port, with more than 150 ha of land under lease and a Port land bank of around 250 ha of vacant land with potential for later development, which is a positive for potential METS future growth.

It should be noted that the Port is grossly underutilised. Currently, it has around 160 ships dockings per year but can accommodate 550 to 600 per year. Its combined import and export capacity is more than 6 million tonnes per year, but the current trade is around 3 million tonnes per year. For this vacant capacity to be utilised, all infrastructure requirements around the port and beyond must be utilised and additional needs met to avoid costly impediments.

Stakeholder feedback indicated a historical lack of intermodal competition between the Port of Mackay and road freight that has now been addressed. This previously limited METS opportunity to only the installation and service of equipment, and not the supply of broader-based vertical solutions that could be imported through the port. However, it is noted that the Port of Mackay has recently made significant investments to provide for additional capacity.

On 1 March 2019, NQ Bulk Ports reported that “In the past 18 months, we have invested almost \$10 million in infrastructure upgrades at the Port of Mackay”.<sup>56</sup> The new investment has allowed roll-on roll-off (RORO) ships to berth at the Port of Mackay. The first ship berthed in August 2018, the first RORO ship berthed, delivering four Caterpillar 794AC mining trucks.<sup>57</sup> The infrastructure upgrade is reflected in a drastically increased throughfare of break bulk goods to the Port of Mackay (see Figure 8).

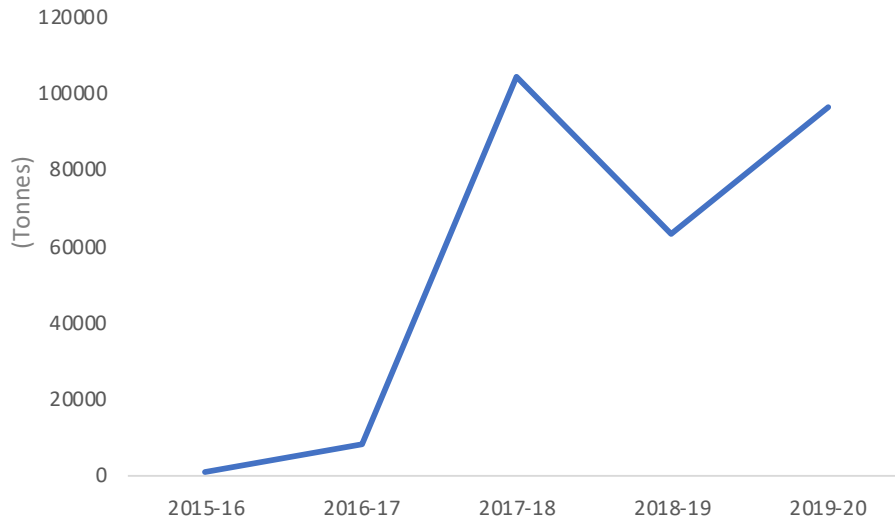
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<sup>55</sup> North Queensland Bulk Ports Corporation (2020) *Port of Mackay*. [online] Available at: <https://nqbp.com.au/our-ports/mackay>

<sup>56</sup> North Queensland Bulk Ports Corporation, 2019, *Super-sized RORO vessel set for grand entrance at Port of Mackay*, website post.

<sup>57</sup> North Queensland Bulk Ports Corporation, 2018, *First RORO ship arrives in Mackay*, website post.

**Figure 8: Break bulk throughfare to Port Mackay, 2015-16 - 2019-20**



*Source: North Queensland Bulk Ports Cooperation*

This recent infrastructure investment anticipated to provide an opportunity for increased sourcing, provision and assembly of components and equipment in Mackay as opposed to being road freighted from Brisbane that was previously the norm.

### Airports

The region is home to three regional airports servicing more than 1.3 million passengers annually. Mackay Airport, Moranbah Airport and Whitsunday Coast Airport in Proserpine are serviced by major airlines with convenient destinations and connections. Mackay has also been announced as the location for the second Qantas Group Flight Training Academy, with construction due to commence in 2020.

The Mackay airport is currently undertaking an upgrade that will involve freight, logistics and distribution facilities and will allow the region's growing industries to access enhanced export opportunities and a wider market base.

In summary, no additional air infrastructure needs were identified from stakeholder consultation.

### Telecommunications

Stakeholder consultation indicated a perceived urgent need to better enable high speed internet telecommunications infrastructure and digital network to take advantage of the increasing adoption of technology and automation of the resources sector. METS employees who need to work remotely require greater access range, volume of data and speed.

The importance of reliable, fast communications and digital infrastructure will be of increasing importance into the future throughout the mining cycle. With data in many instances being collected at all junctures in mining life cycles, the analysis, and sharing and implementation decision outcomes based on real time information can only be achieved by timely reliable systems.

The NBN rollout in Mackay although an early regional rollout, is considered by some as successful, but with the caveat that heavy investments will be required in order that digital workforces are not located in State capitals.<sup>58</sup>

There are concerns with the current state of play, in particular in areas undergoing substantial mining activity which brings with it additional pressures from increasing residential, commercial and engineering activities. The MIW area currently experiences this, and in some cases where “remote” mining is taking place it has reached a serious stage requiring immediate actions. A complete lack of signal, intermittent signal and slow speeds do not bode well for the sector. It is a regional economic imperative to communicate across the supply chain.

METS participants and indeed the balance of the whole region depend upon this to operate at a high level to develop and grow the competitive advantage. The ICT industry across the region will continue to reset their skill set and update knowledge to meet the changing community requirements. This industry’s soft infrastructure support is primarily based in Mackay which puts others at a disadvantage. For the hard infrastructure, Optus, Telstra and Vodaphone are the retail service providers. Mackay itself has Telstra 5G coverage while 3G and/or 4G is provided to most of the balance of the MIW region.

The Mackay Isaac Whitsunday Region Digital Infrastructure Study (2019) for GW3 ultimately found that there is no large-scale public investment currently required in the MIW region.<sup>59</sup> However, it identified opportunities for targeted investments which should largely address stakeholder concerns. It identified that:

- local councils could investigate whether they could expand their own fibre optic networks;
- MIW regional councils, community groups, and industry could lobby for the acceleration of the 4G and 5G technology rollout by telecommunications companies, possibly supported by Mobile Blackspots program;
- there is an opportunity to develop an open Internet of Things Low Power Wide Area Network (LPWAN) using Council owned or operated networks in urban areas; and
- public wi-fi could be introduced at strategic tourist locations and the eduRoam wi-fi network, an international network for higher education students and staff, could be expanded in the region.<sup>60</sup>

Capitalising on these opportunities in telecommunications would no doubt benefit the MIW METS sector as well as the broader regional economy.

## Workforce

The MIW region has an ever-present requirement for human capital and, according to stakeholder consultation, 1,000 plus current vacancies for service-level jobs in the resources

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<sup>58</sup> Mackay Region Chamber of Commerce (2019) *2019-20 Pre Budget Submission*. [online] Available at: <https://treasury.gov.au/sites/default/files/2019-03/360985-Mackay-Regional-Chamber-of-Commerce.pdf>

<sup>59</sup> Aurecon (2019) *Mackay Isaac Whitsunday region Report*, Commissioned by GW3, Mackay.

<sup>60</sup> *Ibid.*, p. IV.



sector. Historically, such shortages have had knock-on effects on overall labour availability and have fuelled demand for higher wages. There is a need to smooth out the cycle for skills and labour, so remuneration levels are considered more sustainable. Furthermore, METS companies are seeking to diversify into products and services that are innovative and autonomous and, hence, require employees with new skills and capability.

Accordingly, there are many required skills and trades spread across the METS sector and need for new ones are ongoing. The Mackay hub and indeed Australia, to reap the benefits from the more sophisticated mining techniques now being employed, must develop further a well skilled workforce. The need for the physical placement of well-focused training and facilities should be considered by government and industry.

Many skills and trades held by operatives within the METS sector are transferable to other sectors and this is demonstrated through the cyclical nature of the mining/resource sector. This matter is being compounded as demographics change. It is also well recognised that particularly young trade people prefer life in the larger centres rather than small and remote locations.

Any pockets of shortage of skills and trades leads one to the conclusion of a mismatch between the skill sets being provided by the TAFE's and what is required within the METS sector. Hence, both groups need closer consultation regarding course design. The adage for workers - attract train and retain - has never been more appropriate.

Another related matter is the ever-increasing need for hi-tech skills as all sectors continue to evolve. This leads through to enhancing existing and putting in place any new infrastructure required. There is the need for skilled labour and training for the sector to adopt the new and emerging digital technologies. Mackay has a comprehensive university with a combined secondary school, TAFE and university curriculum. This is recognised as key to a collaborative and innovative education sector but to be successful and beneficial to METS close collaboration with local industry with all having an eye on the future.

Having laid out the relevant workforce issues, we now turn to the large amount of activity occurring in the region to address these issues.

There are currently multiple education and training facilities aimed at reducing the workforce skills gap, which have received extensive funding from both public and private entities. For instance, the Queensland Government committed \$7 million to the recently completed Mackay Resources Centre of Excellence (RCOE). BHP Mitsubishi Alliance (BMA) has also announced \$2.3 million in funding toward the newly established RCOE and a chair of automation and future work skills at CQUniversity. The broad funding base gives some indication of the extent of the issue posed by skills shortages in the METS sector.

The Queensland Future Skills (QFS) Partnership is led by BHP Mitsubishi Alliance (BMA) and includes TAFE Queensland and CQUniversity Australia as education partners. The partnership is designed to fund and facilitate the fast-tracked development and delivery of automated technology pathways, skill sets and qualifications in open-cut mining operations in Queensland.

Launched in August 2019 by Queensland Minister for Skills and Training Development, The Hon Shannon Fentiman MP, the partnership will define the first wave of new skills that are

required to support automation and technology advances in the Queensland resources sector and for individuals in Queensland communities to acquire these skills.

Through significant consultation with Expert Working Groups and industry subject matter experts, including the Australian Industry Skills Committee, Skills Service Organisation (PwC's Skills for Australia), the Partnership has developed a Qualification Framework and a suite of new programs that will pave the way for the introduction of new technologies and Industry 4.0.

The first phase of new training programs including 10 Micro-Credentials, 12 Skill Sets and a Certificate II Qualification were endorsed by the Partnership Steering Committee in June 2020 and these programs are now being developed for approval by the Australian Skills Quality Authority (the national VET regulator). New training programs will be piloted in industry from October 2020. The Micro-Credentials and Skill Sets are aimed at upskilling existing workers in a range of skills in the broad field of autonomous technologies, including Program Logic Controllers and SCADA systems, data analysis and management, fault finding, networks, and cyber-security, among others. The Certificate II qualification is designed as an entry level pathway to support improved career pathways for local communities into jobs of the future. In 2021, Queensland Future Skills Partnership will commence development of a higher-level qualification, at Certificate III level or higher.

## Summary

The region is generally regarded to have adequate infrastructure however there are key infrastructure projects that are required in the MIW region if the METS sector it to continue to grow and realise its full potential as a key economic driver for Queensland.

**Table 8: MIW Infrastructure Pipeline**

<i>Project Description</i>	<i>Sponsor</i>	<i>Sector</i>	<i>Total Value (\$m)</i>	<i>Status</i>
Abbot Point Dredging	QLD Government	Harbours and ports	600	Credibly Proposed
Bruce Highway – Goorganga Plains Upgrade	Qld Government & Federal Government	Roads, bridges and runways	330	Prospective
Bruce Highway – Sarina to Cairns – Mackay Northern Access Upgrade	Federal Government	Roads, bridges and runways	111	Under Construction
Bruce Highway – Sarina to Cairns – Mackay Ring Road / Bypass – Stage 1	Qld Government & Federal Government	Roads, bridges and runways	497	Under Construction
Clarke Creek Wind (800MW) – including 400MW Solar & Battery System	Energy Pacific Vic Pty Ltd	Electricity	1500	Under Construction
Galilee Basin Transmission Project	Adani	Electricity	100	Announced
Galilee Basin Water Supply	Adani	Water	80	Announced
Hay Point Berth 2 Upgrade	BMA	Harbours and ports	200	Prospective
North Galilee Basin Rail	Adani	Rail	1000	Under Construction
Peak Downs Highway – Walkerston Bypass	Qld Government & Federal Government	Roads, bridges and runways	150	Announced
Peak Downs Hwy Improvements – Eton Range	Qld Government & Federal Government	Roads, bridges and runways	189	Under Construction
Urannah Dam	Bowen Collinsville Enterprises	Water	250	Prospective
National Broadband Network – Qld component	NBN Co.	Telecommunication s	6928	Under Construction

Source: Queensland Major Contractors Association (2020) *Queensland Major Projects Pipeline Report*. [online] Available at: <https://qmca.com.au/2020-major-projects-pipeline-report/>

Efficient freight transport and logistics services are crucial to the regions supply chains along with a stock of commercial offices and warehouses relevant to businesses. The continuity of availability and reliability of water, waste management, electricity at affordable prices must also be planned and actioned to meet the demand for services going forward.

## 4. Survey of MIW METS businesses—Methodology

### 4.1 Introduction

Based on the Scope of Work (reproduced in Appendix A), desktop analysis and consultations with stakeholders and the PAG, Lytton Advisory developed an online survey of MIW METS businesses, which has been refined following feedback from the PAG and pilot tested. The survey is available at this link:

<https://www.surveymonkey.com/r/FG9BZJY>

### 4.2 Structure of the survey

The survey was developed to reflect the requirements of the Scope of Work. At a high level, this means the survey is designed to gather essential business information (e.g. industry, turnover, FTEs, etc.), information on capabilities, and SWOT information, including barriers to exports. Hence, the survey contains questions on:

- Turnover
- Industry
- Employees
- Exports
- Clients/customers
- Collaboration
- R&D
- Extent of supply chain software and technology, automation, lean manufacturing
- Constraints on business growth
- Opportunities and obstacles
- Intent to export
- Barriers to export
- Social impact
- Contact details

### 4.3 Response to survey

Following on from the pilot survey conducted in late March through to early April 2020, Research by Design, in conjunction with support from RIN, launched the online survey with local METS businesses in the MIW region. RIN provided significant assistance via social media and phone call follow-up with their database which was complemented with video messages from the local mayors and Dean Kirkwood at the METS Export Hub.

The online survey comprised 56 questions and was conducted over a three-week period from 13 May to 5 June 2020 with a response rate of n=105. Of the 105 surveys undertaken; 56% completed the survey in full. Together with the pilot survey of n=17; the total response count was n=122.

It should be noted that respondents dropped out in the later stages of the survey; survey fatigue becoming a more and more difficult issue to manage. Information in this part of the survey

related to quantitative questions about barriers to export and social impact of the business and do not impact on the quantitative findings presented in this report.

Results from the online survey confirm the findings presented from the pilot survey apart from the shift in sentiment of economic uncertainty from the COVID-19 pandemic. All other key findings remain consistent across both surveys i.e. findings from the n=105 cohort from the online survey corroborate the key findings in the smaller n=17 survey.

## 5. Survey findings

### 5.1 Business characteristics

#### Turnover

Most firms turned over less than \$20 million a year (Figure 9). Businesses that turned over between \$1 million and \$10 million a year represented three in ten respondents. However, a small number representing about one in six, turned more than \$50 million a year. This highlights that where financial capacity is a consideration, there are two distinct groups to consider within the sector.

**Figure 9. What was the annual turnover of your business at the end of FY 2018-19?**

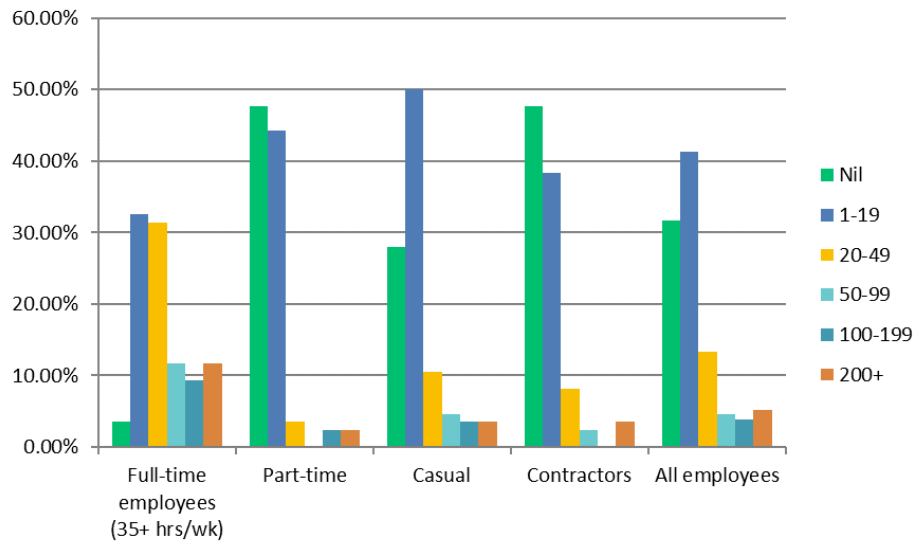


Source: MIW METS Survey, 2020.

#### Workforce

Employment patterns within respondent businesses varied significantly (Figure 10). The question was posed to consider a pre COVID-19 operating environment. Several businesses employed small numbers of people across different employment categories (as defined by the ATO): full time, part-time, casual and contractors. Half of respondents employ between one and nineteen casual employees, with around one in three employing similar numbers of full-time employees and contractors. Importantly nearly half of respondents employ neither part-time staff nor contractors. This highlights that sector issues relating to employment are likely to be shaped by a small to medium sized enterprise context. It is noted that respondents reporting increasing levels of employees tended to employ proportionately on a full-time basis. For example, while relatively small numbers of businesses reported employing more than 200 employees, full time employees represented more than half of the employment across these businesses.

**Figure 10. Including those owners engaged in its day-to-day activities, how many employees were employed by your business as at end of February 2020 (i.e. pre COVID-19 impact)?**



Source: MIW METS Survey, 2020.

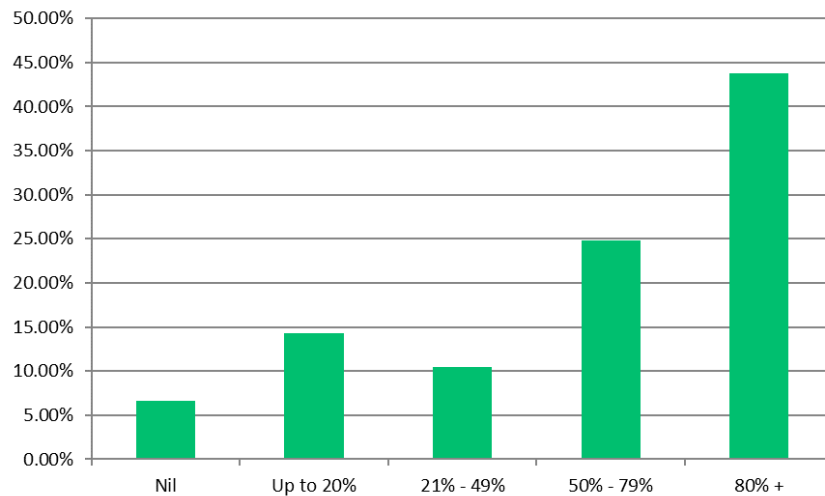
Three in five businesses employed indigenous employees, with more than one in five employing more than five indigenous employees. A strong response rate for this question indicated businesses were aware of the composition of their workforces. This provides a good basis for developing workforce participation strategies in the future.

Businesses in the METS sectors are generally invested in apprentices and trainees. This is shown by over three quarters offering employment to apprentices and trainees, with more than half this group training five or more apprentices at one time. However, given that almost one in three do not offer employment of this type, a challenge will be to understand the reasons for this and the extent to which the sector needs more apprentices and trainees.

### Dependence on the METS sector

Survey respondents were significantly involved in the METS sector (Figure 11). More than two fifths of respondents generated more than 80% of their turnover from the sector, with another quarter generating between 50% and 80% of turnover from the sector. This highlights a group of businesses that have a clear commercial focus and dependency on the resources sector.

**Figure 11. Approximately what % of your annual turnover is sourced directly from the mining sector, either nationally or internationally?**



Source: MIW METS Survey, 2020.

Survey respondents were almost universally engaged in supplying the coal mineral sector. Around one fifth of respondents were equally engaged in supplying additional mineral sectors: iron ore; copper; high value commodities<sup>61</sup>; and aluminium, alumina and bauxite. This highlights a group of businesses that has a clear focus on the coal sector, with some interest in the broader mineral sectors.

### Industry sector

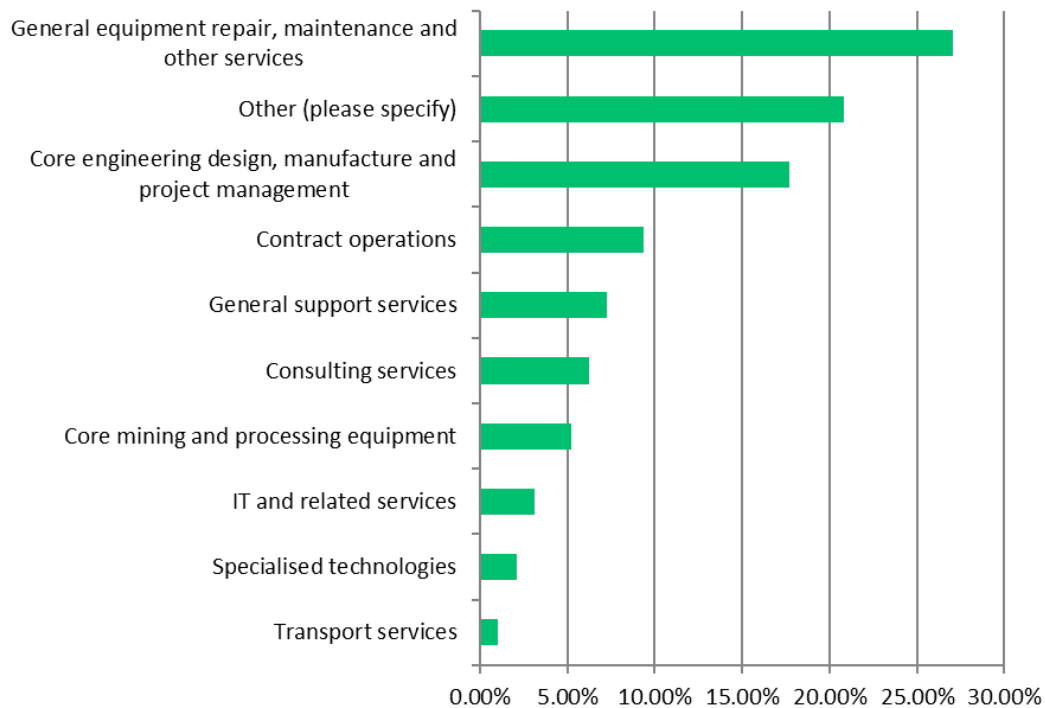
Three main industries capture most of the businesses operating in the METS sector: General equipment repair, maintenance and other services; core engineering design, manufacture and project management; and contract operations. Combined, businesses in these industries represented 54% of survey respondents. However, a further 21% operated in diverse areas and specialist fields. This suggests that while industry specific approaches to METS businesses can address the bulk of the sector, it may run the risk of not engaging with specialist businesses. A breakdown by sub-sectors is available in Appendix 2.

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<sup>61</sup> Gold, silver and diamonds.



**Figure 12. Which industry best describes the nature of your business affairs?**

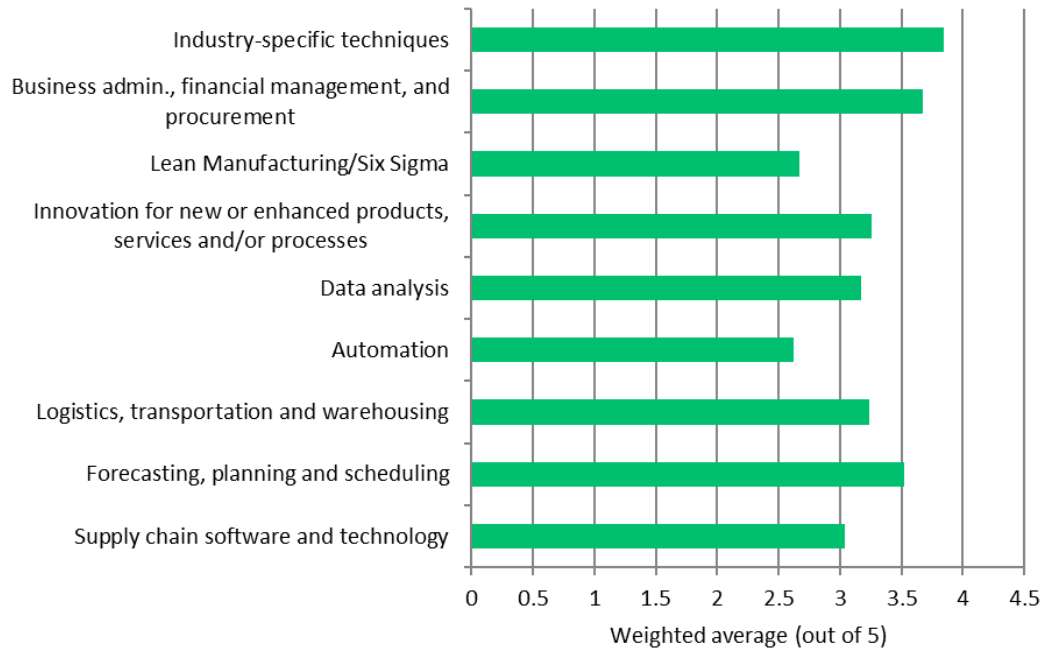


Source: MIW METS Survey, 2020.

## 5.2 Business capabilities

Businesses were asked to rate their current stage of development for a range of functions. Significant areas where there were no formal processes or reporting were: automation (22%), Lean Manufacturing/Six Sigma (20%), supply chain software and technology (16%) and logistics, transportation and warehousing (14%). This indicates some of the greatest areas of need. In contrast, areas that respondents considered were nearly or fully developed (with ratings of 4 or 5) were: industry specific techniques (59%), business administration and finance (54%), forecasting, planning and scheduling (46%), and data analysis (41%) (Figure 13).

**Figure 13. Please rate your company’s current stage of development for each of the following business functions**



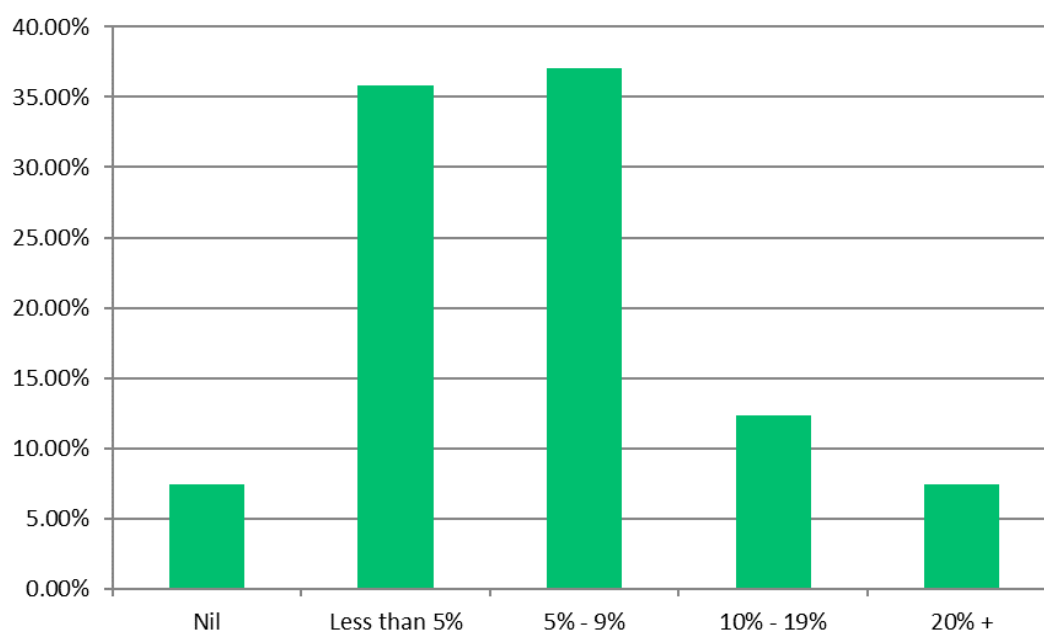
Source: MIW METS Survey, 2020.

### 5.3 R&D, innovation, and collaboration

#### R&D and innovation

Nine in ten METS businesses invest in research and development of new products, services or processes (Figure 14). A small number, one in fourteen, make significant investments of more than 20% of their annual business costs. One in two spend between 5% and 19% on research and development. This suggests that businesses in the sector are aware of the significance of R&D on their operations.

**Figure 14. In the current financial year (2019-20), approximately what percentage of your business costs will be directed to the research and development of new products, services or processes?**



Source: MIW METS Survey, 2020.

## Collaboration

A very strong response from the survey was in relation to collaboration. Respondents were asked on a 1 (not willing under any circumstance) to 5 (very willing and ready to act) scale to rank their company’s willingness to collaborate and develop regional capabilities. A weighted average score of 4.25 was received providing a very positive platform for the MIW METS Export Hub.

A small group of respondents provided a low rating on collaboration. Responses included a range of comments that were specific to the business that was responding, such as ‘Not my decision. Would be the decision of the owners and senior managers’, to needing authorisation from head office. Other qualitative comments were around protection of intellectual property and the need to know what is expected and the likely outcomes.

Qualitative responses revealed the main reasons for reluctance to collaborate with other companies are as follows:

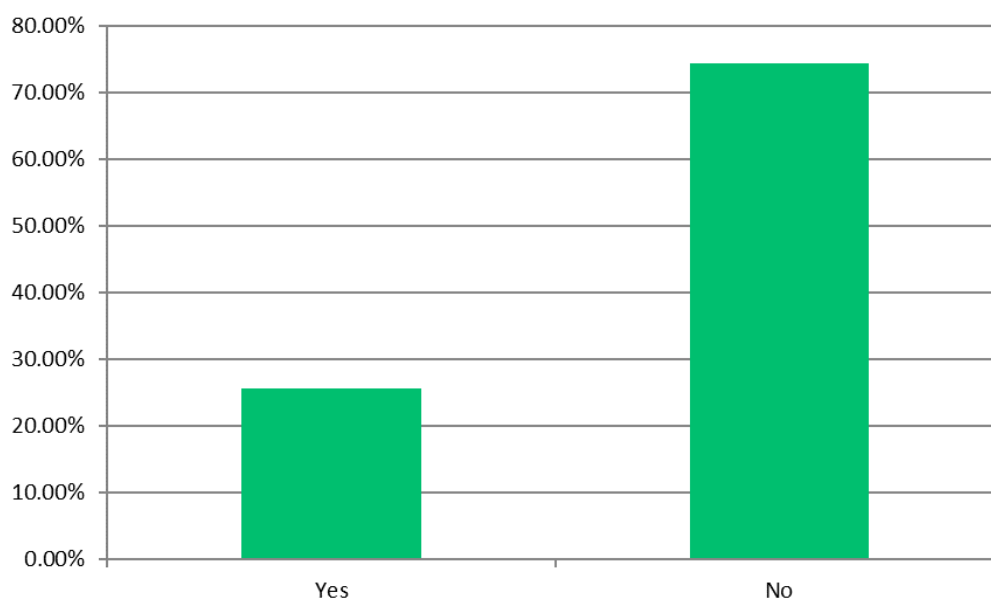
- Concerns about protection of IP
- Lack of certainty about the process and what that means for individual companies-from experience in the past, when you collaborate with similar companies they usually just want to acquire your staff due to the labour shortage ...”
- The collaborative process is undertaken in-house -“we have subsidiaries around the world to collaborate with ...”

The low incidence of these comments would not appear to be a permanent barrier to collaboration.

## 5.4. Export orientation

Approximately three quarters of survey respondents are not currently exporting to other countries (Figure 15). This presents both a challenge and an opportunity. Understanding the current disposition of METS businesses in the region will greatly assist in shaping the kind of assistance needed to stimulate more export activity.

Figure 15. Are you currently exporting to other countries?



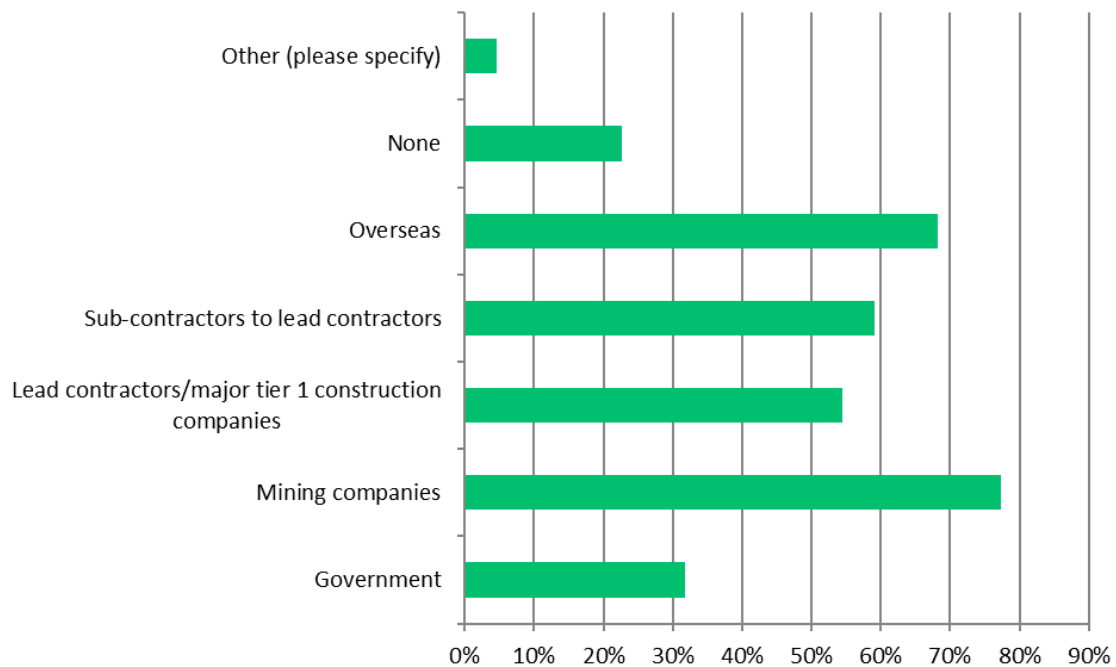
Source: MIW METS Survey, 2020.

### Characteristics of exporters

METS exporters responding to the survey overwhelmingly export goods rather than services. Twice as many businesses export goods as compared to services. None of the businesses responding to this question exported both.

The client base of METS exporters is diverse. Over three quarters have sold goods to mining companies, with almost three in five respondents indicating overseas. METS exporters also sell into construction companies and contractors. Just over half sold to lead contractors or tier 1 construction companies, with three in five acting as sub-contractors to lead contractors. Government plays a significant role, as three in ten METS exporters sell to them.

Figure 16. Please indicate if you have sold GOODS to any of the following clients in the last 12 months? (tick all that apply)



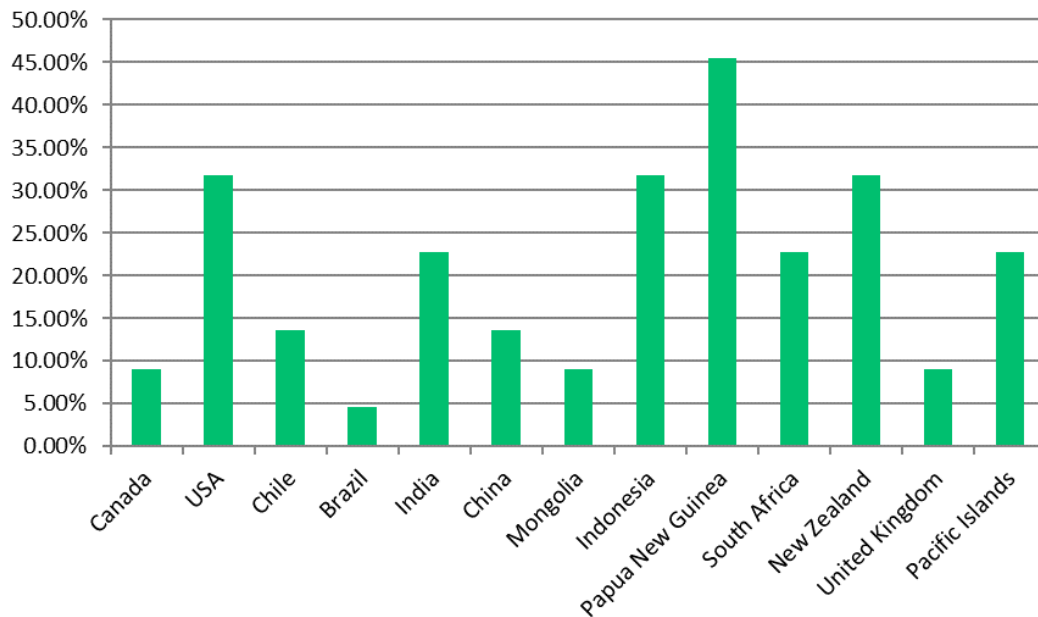
Source: MIW METS Survey, 2020.

While the pattern of sales of services to clients is similar there are some differences. The same proportion of METS exporters sells into mining companies. Three in five sell services to lead contractors and major tier 1 construction companies. Half of METS exporters act as sub-contractors to lead contractors. Government appears to play a more significant role in services, as two in five METS exporters sell to them.

### Markets for exporters

The main markets METS exporters engaged with in the last 12 months have included: Papua New Guinea, USA, New Zealand, India, South Africa and the Pacific Islands (Figure 17). This highlights both the potential geographic spread of current export opportunities and may reflect the different demands for both goods and services across these markets. A small number of companies also indicated several other countries. However, numbers for each country were not significant.

Figure 17. Which countries have you exported to in the last 12 months?



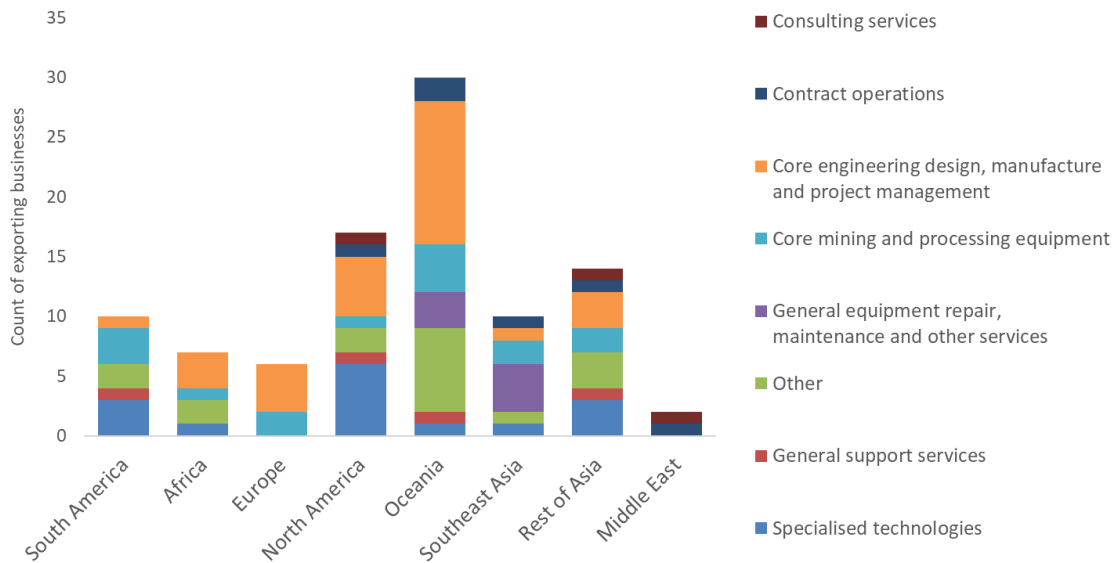
Source: MIW METS Survey, 2020.

Other export markets that exporting survey respondents indicated they are investigating are diverse and include:

- Canada;
- China;
- Europe;
- India;
- Indonesia;
- South Africa;
- South America;
- Thailand; and
- the United States.

However, half of the METS exporters are currently not investigating other additional export markets. This highlights the potential to expand export opportunities for METS exporters.

**Figure 18. Export destinations by type of services**



Source: MIW METS Survey, 2020.

Note: Regions are made-up of varying numbers of export destinations. For a detailed breakdown of regions see Appendix 6.

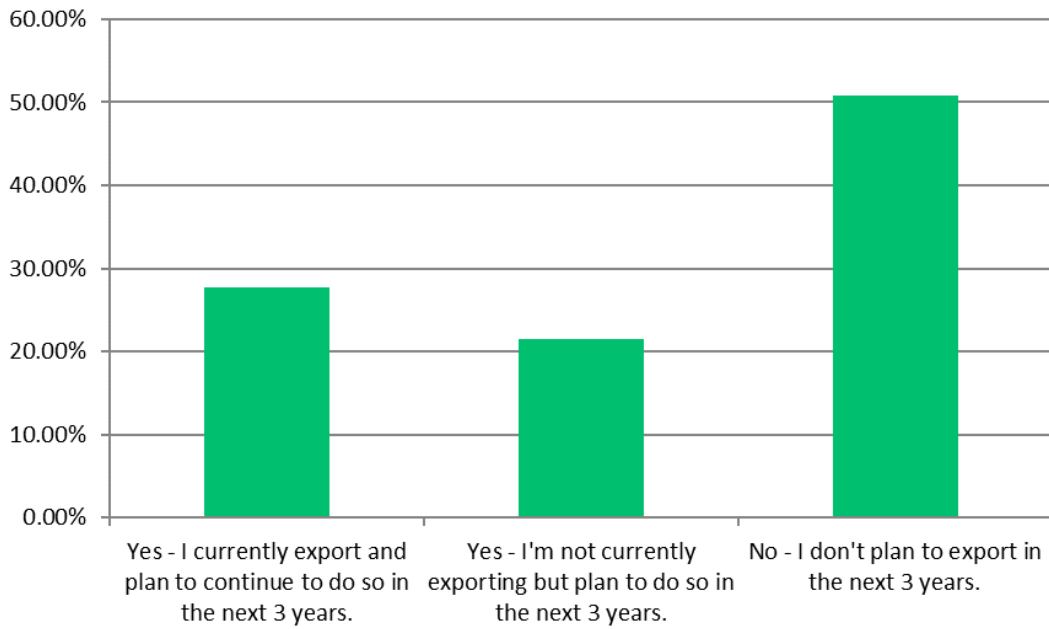
The MIW METS sector exports a range of services to many parts of the globe (Figure 3). The survey indicated that the Oceania region (Fiji, New Caledonia, Pacific Islands, Papua New Guinea, South Sea Islands, Fiji) was the most popular export destination for MIW METS firms, with 60 survey respondents conducting business within the region. Papua New Guinea and the United States were the most popular export destinations at the national level, receiving services from 13 and 12 MIW METS firms, respectively.

29 core engineering design, manufacturing, and project management firms exported their services, making them more connected with overseas partners than any other nature of business. Firms delivering core mining and processing equipment, specialised technologies and other services were also highly represented in this regard with 15, 15 and 17 MIW firms exporting their services.

### Intentions to export

Half of respondents currently do not plan to export in the next three years (Figure 19). A further 22% currently do not export but intend to do so within the next three years. The remaining 28% of respondents are exporting and expect to continue to do so. This highlights the significant opportunity to lift the export levels of this supply chain.

**Figure 19. Do you plan to export in the next 3 years?**

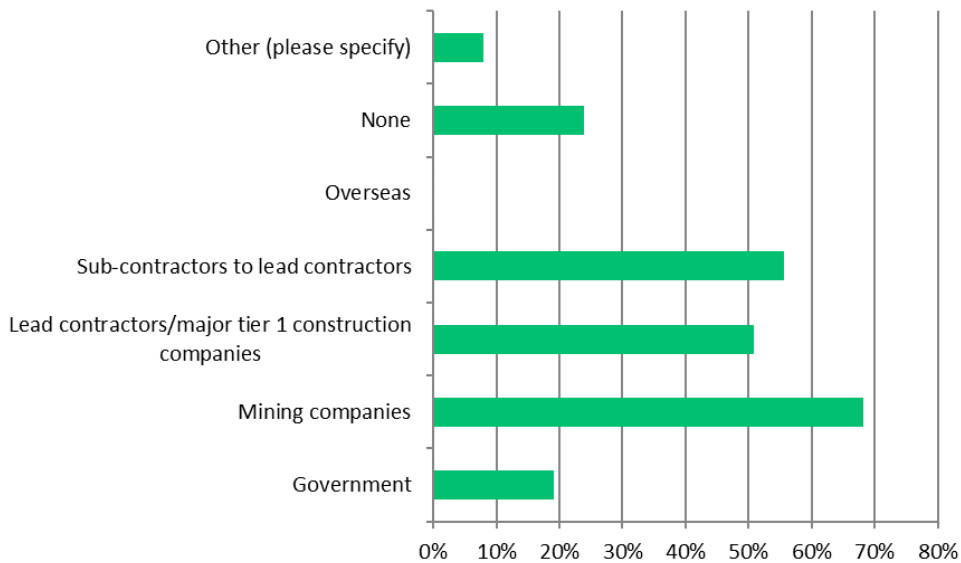


Source: MIW METS Survey, 2020.

**Markets for non-exporters**

Three in five survey respondents indicated that they have sold goods in the last year to a range of clients. Almost three in five of these businesses sold goods to mining companies. Half of the respondents also sold goods to lead contractors, major tier 1 construction companies or sub-contractors to lead contractors. Less than one in five sold goods to government.

**Figure 20. Please indicate if you have sold GOODS to any of the following clients in the last 12 months? (tick all that apply)**

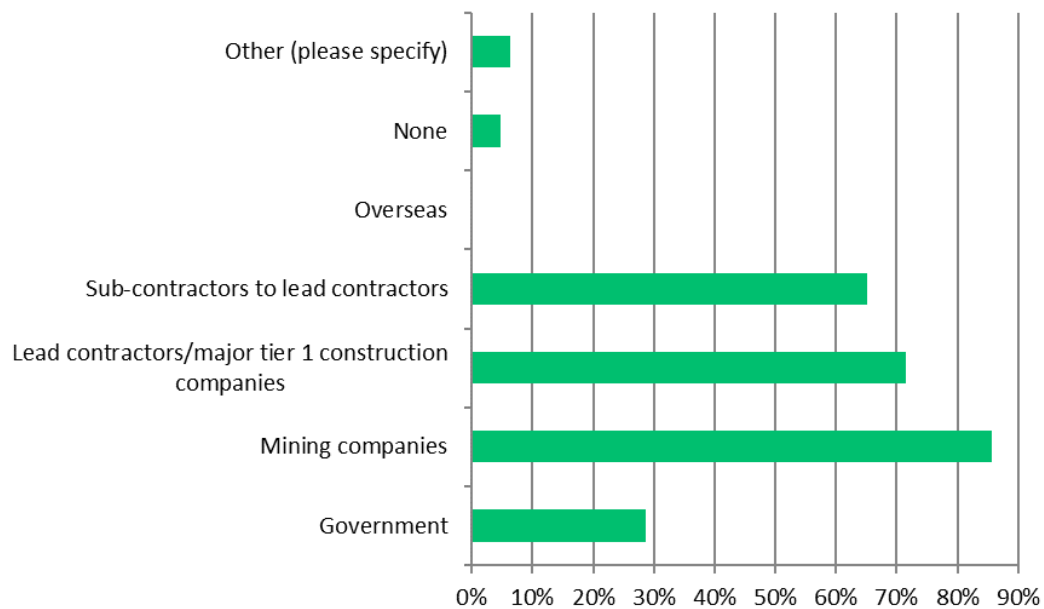


Source: MIW METS Survey, 2020.



The pattern for sales of services was similar, but the proportion of businesses selling to different clients varied. A high proportion of respondents (85%) sold services to mining companies, compared to those who sold goods. Similarly, more businesses sold services to lead contractors, major tier 1 companies (71%) and sub-contractors to lead contractors (65%), than businesses selling goods. More respondents also sold services to government (28%) than goods.

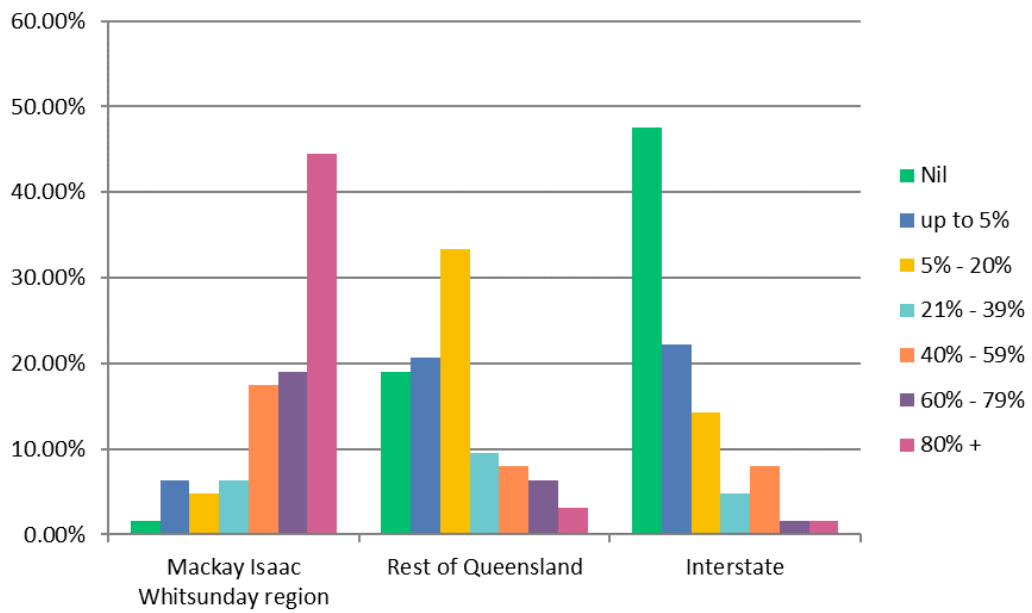
**Figure 21. Please indicate if you have sold/provided SERVICES to any of the following clients in the last 12 months? (tick all that apply)**



Source: MIW METS Survey, 2020.

Survey responses about geographic sources of domestic turnover were revealing but not surprising. At one extreme one in five businesses report no turnover from the rest of Queensland or interstate. At the other, 44% of businesses reported that more than four fifths of their turnover came from the Mackay Isaac Whitsunday region. A further 36% of businesses reported that between two fifths and four fifths of turnover came from the MIW region. This highlights the obvious economic dependence of these businesses on this resource supply chain. Interestingly, just over two fifths of businesses generated between 5% and 40% of turnover from the rest of Queensland, which suggests that there may exist wider benefits to the State from the supply chain.

Figure 22. Approximately what percentage of your total turnover for the last 12 months was to the following regions?

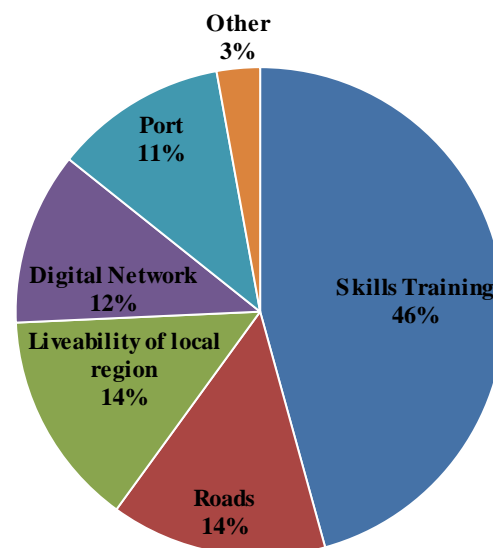


Source: MIW METS Survey, 2020.

## 5.5 Infrastructure requirements

Skills training is seen as the leading soft infrastructure issue and roads, digital network and port ranked similarly as hard infrastructure issues (Figure 23).

**Figure 23.** Are there any hard (i.e. roads, bridges, ports, digital, etc.) and soft infrastructure (i.e. skills training, other support services, etc.) issues facing METS SMEs in the Mackay Whitsunday Isaac region?



Source: MIW METS Survey, 2020.

Qualitative comments indicated liveability in the local region is seen as impacting on the availability and stability of the workforce and has been cited as a barrier to the development of the MIW METS supply chain:

- “... we need people to live in the region and not the SE corner”
- “There is a failure to attract additional industries to the local area”

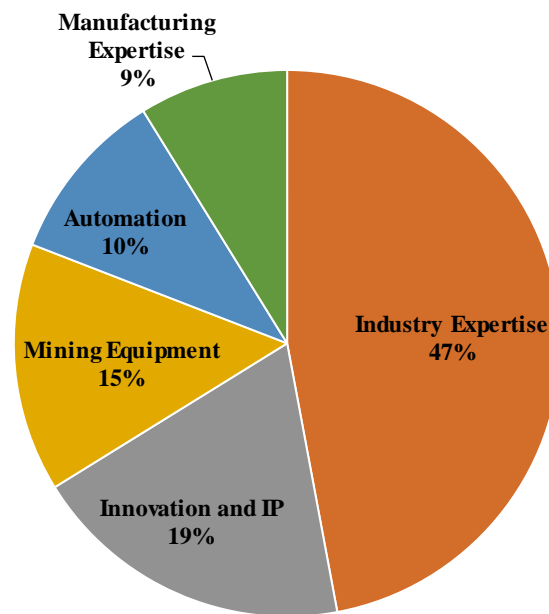
Regarding hard infrastructure, the importance of the port and road infrastructure is reaffirmed with one-in-four mentioning issues with one or both; “the road network to the Bowen Basin is not good enough”. Key observations include:

- “The Covid19 has proven how unreliable the mobile and mobile internet reliability / coverage is – it is woeful.”
- The Mackay Port needs to be upgraded to handle larger break-bulk cargo and container handling.”
- “We need better digital capacity into Mackay; there needs to be capacity to handle industrial level files and applications, not just email and video streaming.”

## 5.6 Opportunities

Survey respondents considered there is substantial potential to export expertise, innovation, and IP, as well as automation technology and services and physical mining equipment (Figure 24).

Figure 24. What opportunities do you believe exist for local METS SMEs to export goods and services?



Source: MIW METS Survey, 2020.

Industry expertise is best described as soft skills such as:

- Contract mining services
- Asset management strategies
- Engineering expertise
- Safety expertise and mine safety
- Mine optimisation and operational efficiencies
- Design thinking for manufacturing
- Trades training
- Maintenance planning
- Supply chain management

Key observations include:

- Australia has the highest standards and that drives innovation and product quality and world's best practice.”
- “Everyone knows Australia's standards are world class and this is what export markets are chasing.”

Innovation and IP; examples include:

- Technical upgrades for underground mining equipment
- Other options for OEM products which address operational efficiencies
- Mining technology specifically related to safety
- Other technology specifically related to operational efficiencies

Mining Equipment examples include:

- Underground coal drilling equipment
- Conveyer technology

Manufacturing expertise relates to:

- Remanufactured components for mining fleets
- On demand parts manufacturing
- Non-OEM parts manufacturing

Automation:

- Software development

IT development related to automated operating systems

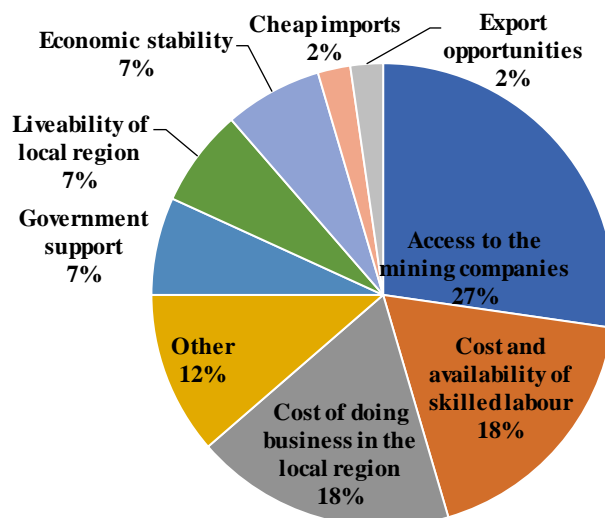
## 5.7 Barriers and threats

### Critical gaps and barriers

Critical gaps in order of importance are:

1. Access to mining companies;
2. The cost and availability of skilled labour;
3. Cost of doing business in the local region;
4. Liveability within the local region
5. Government support (Figure 25).

**Figure 25. What do you see as the critical gaps and/or barriers in the resources and METS supply chain which directly affects your company?**



Source: MIW METS Survey, 2020.

### *Access to mining companies*

This crosses several issues:

- “All major mining houses have different platforms and the costs to understand or train up to use each one is a cost to the company not the mine site. Also, individual mine site inductions and the cost to the company to pay the employee to attend each site or have to reimburse the mine site if they leave within 6 months is a large burden.”
- “Not enough companies look locally.”
- A lack of willingness to change on-site operations – even with proven solutions from companies in the same industries.”
- “Access to the people within the large mining houses that actually make decisions and want to know what we have to offer.”
- “Notification of business opportunities; difficult to register as a preferred supplier (mining companies don't want too many suppliers) but reduces the amount of companies notified about tenders - this is becoming more difficult.”

### *The cost and availability of skilled labour*

- Lack of skilled people ... “we need to move people into the regions”
- “Inconsistent workflow drives the casualisation of the workforce and weakness in business investment confidence.”

### *Cost of doing business in the local region*

The cost of doing business in the local region is impacted by:

- OEM control on pricing
- Cost of production in Mackay
- Australian industry is highly regulated driving up operational costs

### *Liveability within the local region*

Liveability in the local region is mentioned as an issue for the MIW region generally—e.g.:

- “The town needs to get ahead with the new port/river precinct and try and attract people to come here with skilled labour and stay here with the long term. We need partners to be happy.”

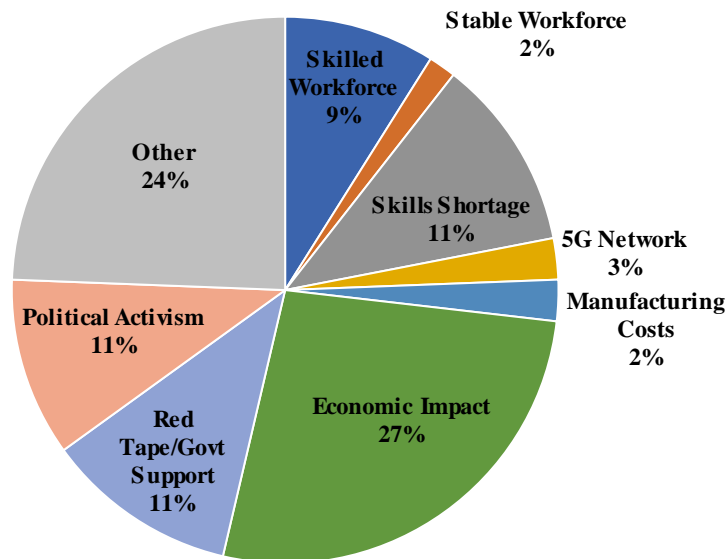
### *Government support*

Government is seen as not providing enough support or there is “too much red tape” – respondents have not provided clear guidelines other than government intervention is seen as “restrictive”.

### *Threats*

COVID-19 and the associated economic downturn were the largest threat to the sector (Figure 26). Ongoing workforce issues are also important. Collectively 22% of responses relate to issues about the workforce.

Figure 26. What do you perceive to be the threats to the METS industry in the Mackay Whitsunday Isaac region?



Source: MIW METS Survey, 2020.

There is a clear shift in sentiment from the Pilot Survey, which was conducted in March 2020, just as the reality of the COVID-19 impacts were beginning to be felt across the Australian business sector.

Responses in the Pilot Survey focused on:

- Threat 1: attracting and retaining a skilled workforce
- Threat 2: the cyclical nature of the resources sector; specifically, the boom/bust cycles which also affect workforce stability; and
- Threat 3: the lack of collaboration within the METS sector and with the mining companies themselves

The priority has now shifted to the uncertainty of the impact of COVID-19 and the long-term economic outcomes from the pandemic.

Concerns raised include:

- Commodity prices
- Access to international markets
- Exchange rates
- The possibility of a downturn in mining; and
- Other trade barriers

Notwithstanding economic uncertainty, issues regarding the stability, quality and shortage of skilled workers remain paramount within the sector.

The negative effects of political activism have also become more important as concerns about climate change, political stability, trade wars and the social perception of mining gain traction.

Government ‘interference’ and ‘red tape’ have also been highlighted as hampering growth in this sector. Difficulties related to government approvals, policies, political agendas (also mentioned in political activism and viewed as a lack of support from the government), certification procedures and generally ‘red tape’ have all been raised; as has lack of support via the grant approval process.

Other issues relate to:

- regional affordability
- aversion of skilled people wanting to live in Mackay
- inflated wages/rents because of boom/bust cycles
- consultancy expertise being sourced outside the local area
- large OEM manufacturers drip feeding innovation
- mining investment moving off shore due to regulatory complexity
- freight and transport costs; and
- the impact of imported and inferior products competing with local companies

It should be noted that the main threat identified by businesses, as specific to their business, in the Pilot Survey was the security of their own supply chains – notably:

- Dependency in China; and
- Local companies not always carrying stock and relying on freight from SE Queensland or interstate – a small number of companies mentioned buying stock direct from suppliers and bypassing local businesses

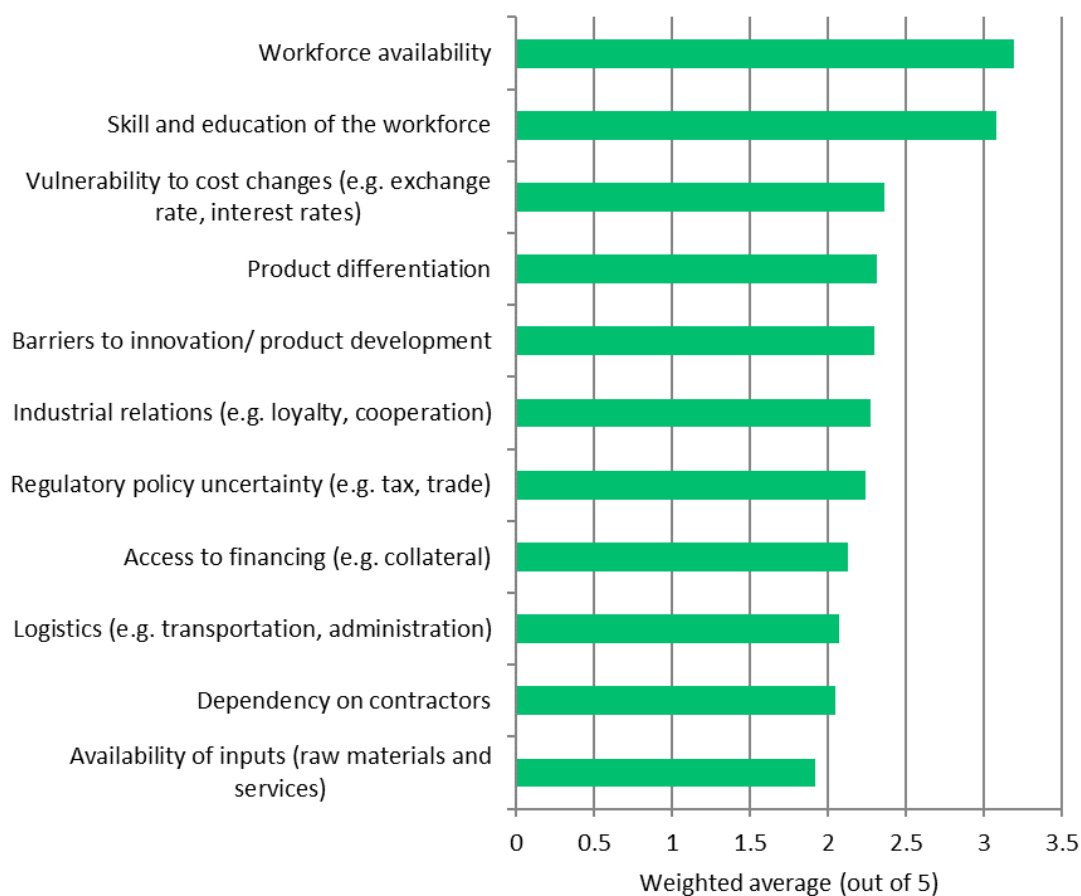
### Operational issues

Survey respondents indicated there were several issues that were particularly problematic for operating and growing their businesses. Weighted responses were calculated for the severity of these issues. The top five were:

- Workforce availability;
- Skill and education of the workforce;
- Vulnerability to cost changes;
- Product differentiation; and
- Barriers to innovation/product development.



Figure 27. Please tell us if any of the following issues are problems for the operation and growth of your business (weighted average score out of 5)



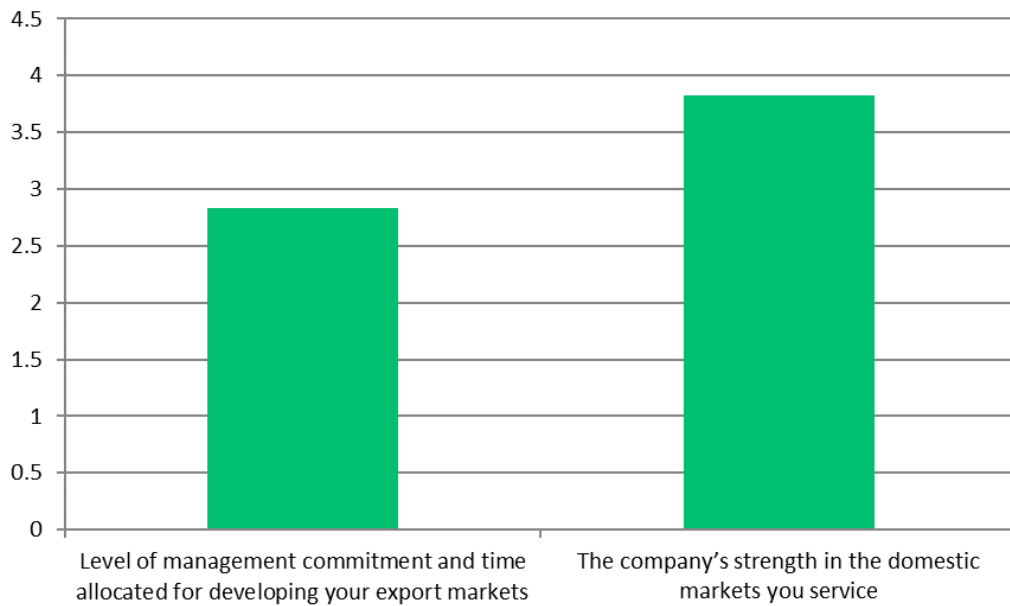
Source: MIW METS Survey, 2020.

### Issues regarding the development of export markets

#### *Management commitment and time*

Survey respondents contrasted the level of management commitment and time allocated to developing export markets with strength in the domestic market. The response rate for this question was low. There was a significant difference. On a weighted average basis, businesses rated their domestic market strength at 3.5 while their effort to developing export markets at 2.5 (Figure 28). An implication of this result is to highlight the potential importance of a strong domestic market as a platform for exports.

Figure 28. Please rate your company's business activities to support export development (weighted average score out of 5)

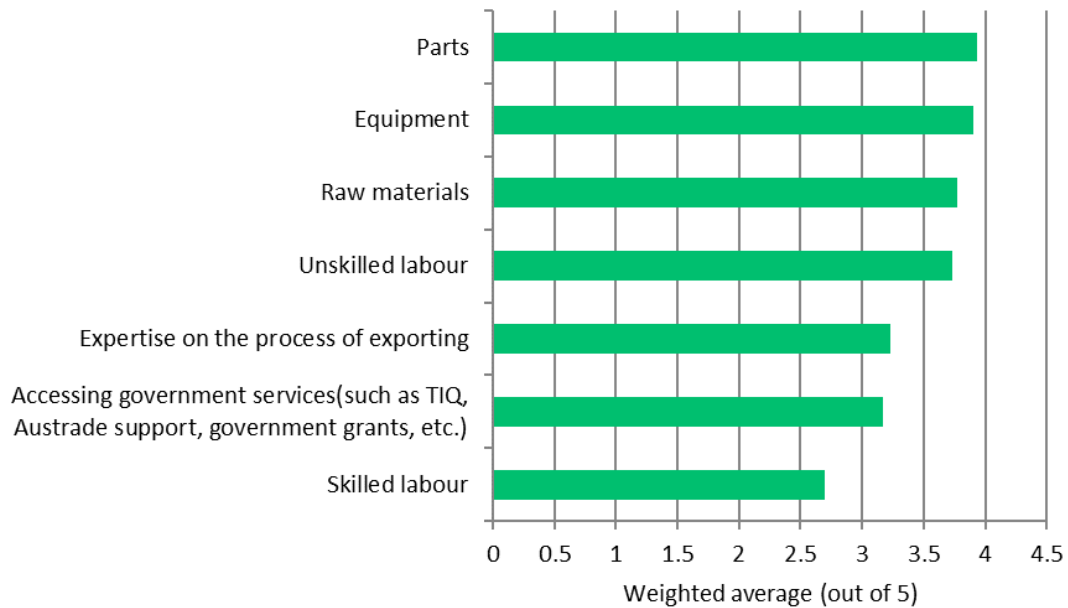


Source: MIW METS Survey, 2020.

#### *Sourcing inputs to support export activities*

Sourcing inputs to support export activities is important. METS exporters highlighted some of the difficulties they are facing. The three most highly ranked challenges are: Skilled labour; Accessing government services; and Expertise on the process of exporting. The latter two suggest information issues may be a barrier to more effective exporting.

**Figure 29. Please rate your company’s level of difficulty in sourcing the following inputs to support export activities (weighted average score out of 5)**

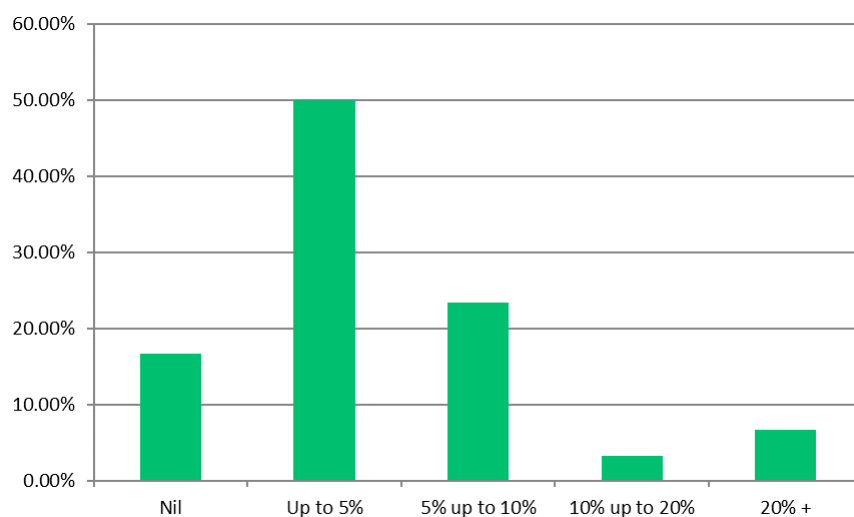


Source: MIW METS Survey, 2020.

*Resources committed to developing export opportunities*

Most METS exporters committed less than 5% of annual turnover to developing export opportunities (Figure 30). Almost one in four spent between 5% and 10% of turnover on export development, and one in six were not spending anything. The relatively low level of spend is ambiguous because the amount depends on the export strategy of each respondent and their desire to grow exports in place of or in addition to domestic work.

**Figure 30. As a percentage of turnover, how much money has your business committed to the development of export opportunities over the last 12 months?**

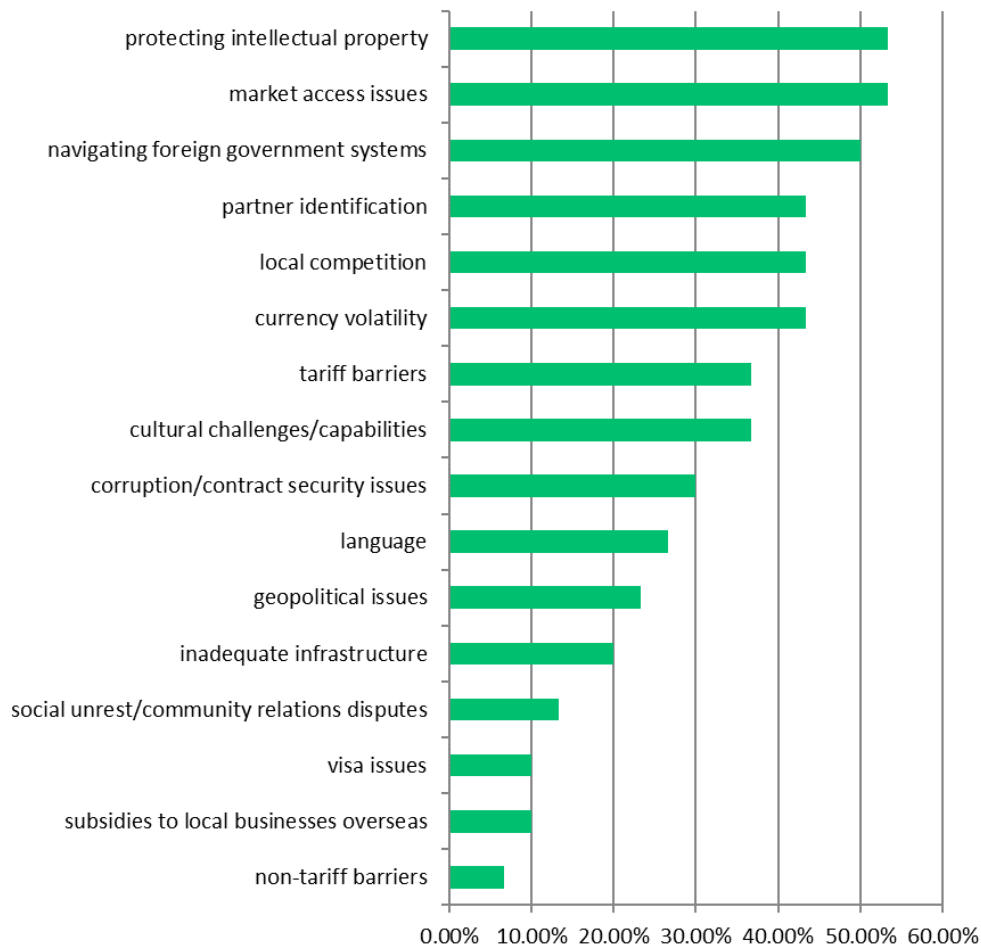


Source: MIW METS Survey, 2020. Note: question noted “Expenses can be on internal and external sources.”

## Export barriers

METS exporters were asked to consider a range of export barriers and identify their top five. Market access issues and protecting intellectual property were equal first (Figure 31). Navigating foreign government systems came second. Currency volatility, local competition and partner identification came equal third.

Figure 31. Barriers that affect your ability to export (% of respondents)



Source: MIW METS Survey, 2020.

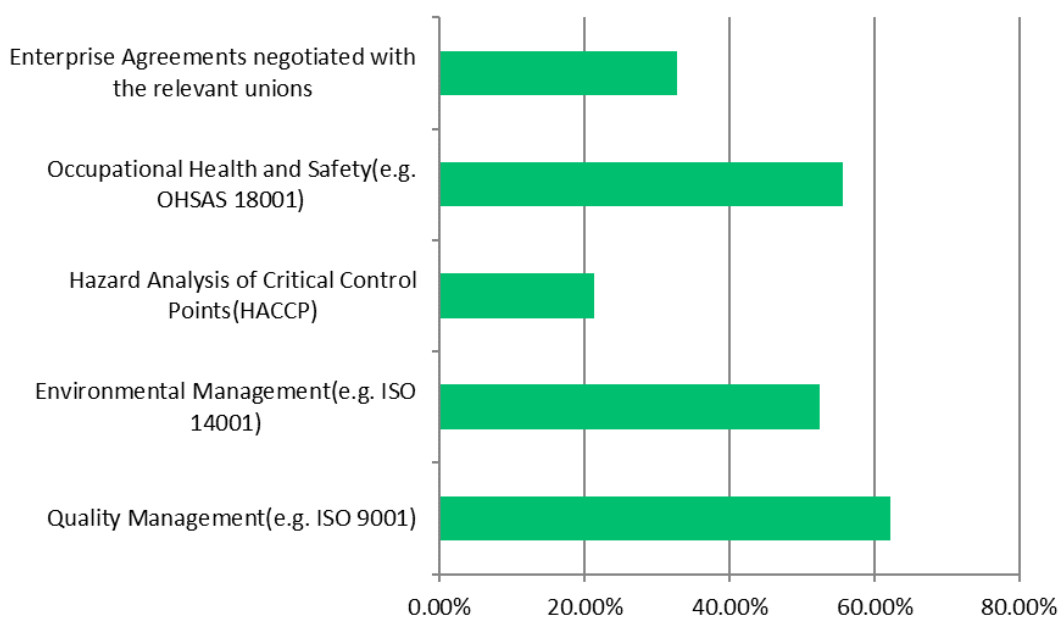
METS exporters were also asked about other barriers to exports. These included resource costs, government collaboration, funding, geography, marketing, cash flow, logistics and finance. While a diverse range of issues were raised, no discernible pattern was evident but the three main barriers were shown to be market access issues, protecting intellectual property, and navigating foreign government systems.

## 5.8 Other issues

### Certifications and accreditations

Businesses were asked about the certifications and accreditations they held. Strong responses were provided for Quality Management (62%), Occupational Health and Safety (56%), and Environmental Management (52%) (Figure 32). It is important to note that the requirement for particular certifications and accreditations is heavily context dependent. Respondents were also asked to identify any other form of certification, accreditation or agreement. Consistent with the heterogenous nature of the METS sector, a wide diverse range of responses were provided based on the technical disciplines involved and requirements of counterparties.

Figure 32. Does your business hold any form of certification, accreditation or agreement for the following?



Source: MIW METS Survey, 2020.

## 6. Case studies of successful MIW METS businesses

### 6.1 Mastermyne

Mastermyne was founded in Mackay in 1996 and today is one of Australian mining's most trusted contractors. Mastermyne has been listed on the ASX since 2010 and grown year on year to now be a business that generates annual turnovers above \$250 million and employing over 1,000 people.

Strategic growth and diversification over the years now means Mastermyne provides an extensive suite of underground services and products supported by a large fleet of mining equipment. Mastermyne's order book is supported by several tier 1 coal mine operators along with Junior and tier 2 niche asset owners. Mastermyne maintains a reputation for delivering safe, cost effective and high-quality projects with an acute focus on always improving and expanding its service offering. This focus on continuous improvement has been the catalyst for doing things differently and being better and technology has played a big part of that.

The Companies capabilities span new mine development, mine operation and all mine support services and products. In addition, a Registered Training Organisation delivers training and compliance solutions designed to improve efficiency and reduce costs to mine operators.

Spanning the east coast of Australia, the company is made up of people who share core values that create value for their employees, clients, communities and shareholders.

*“The Mastermyne Way is how we summarise the Companies values and these values are centred around a key set of keeps which are: keep safe, keep on, keep it real, keep together and keep challenging.”*

*“Mastermyne has built a strong, capable and resilient company that is defined by the great people in the organisation, it is these great people who continue to deliver unparalleled value to our stakeholders.”*

*Tony Caruso – Mastermyne Managing Director*

Their overall disciplined approach to execution and strategy has seen Mastermyne thrive through the resources cycles and grow into a highly respected organisation offering the following services.

- **Mining:** Mastermyne capabilities span new mine development and mine operation and all mine support services such as roadway construction, ventilation, conveyors, longwall relocations and application of polymeric strata support.
- **Production & Ancillary Equipment:** An expanding fleet of production and ancillary equipment servicing their own projects and are dry hired. Ongoing capital investment in new fleet and new technology has introduced automation and improvements to safety and production performance.
- **Products:** Mastermyne's extensive operational experience and partnerships with Australian and overseas suppliers delivers an extensive range of products that offer mine essentials at competitive pricing.

- **Design and Engineering:** The group specialises in unlocking value through mine studies, mine optimisation, technical services and initiatives to extend current contracts and scopes.
- **Training:** MyneSight delivers accredited training and mine inductions to create job-ready skilled workforces and training and compliance management solutions to mine operators. Mastermyne's purpose built underground facility delivers a 'best in industry' inexperienced miner worker work-readiness program.

For further information visit: <https://www.mastermyne.com.au/>

## 6.2 4PS Software

4PS Software is web-based software designed to manage and optimise four key aspects of SMEs: People, Plant, Procedures and Process.

Businesses and their employees are kept up to date in real-time about any aspect of their business requiring monitoring and management. 4PS is especially valuable as a tool for project management.

4PS Software was developed in 2008 by Michael Storch who is founder and Managing Director of Mackay Safety after identifying a market gap for SMEs to be able to meet their duty of care obligations as well as better run their business in an affordable, accessible and easy to use manner.

4PS takes the manual and tedious aspect of paper files out and leads to real time-savings and better organisational outcomes in the management of people, plant, procedure and processes.

4PS is an easy to use and set up system helping SMEs keep track of employees and equipment. It is also a central repository for storing and updating SME processes and procedures. Using 4PS, business information is accessible from anywhere with internet access—from home, office, or the field via 4P Mobile.

*“What makes the 4PS system so effective is that information is immediately available to and received from frontline personnel and stored in a single, easily searchable data base, that is populated from all site locations.”*

*“For example, the effective identification and control of workplace hazards is the basic principle for the maintenance of a safe workplace. As frontline personnel make up much of the workforce it stands to reason they are best placed to identify many of the hazards present within the workplace and map these for others.”*

*“The implementation of the 4PS tool has created an environment where frontline personnel quickly adapted and embraced a new way of communicating and reporting on potential workplace information within the workplace.”*

*“Improved visibility into daily operations for personnel in control of workplaces through a significantly improved ability for deliver real time*

*critical information obtained from all levels of the operation has offered extraordinary productivity gains.”*

*“User businesses were able to now be pro-active rather than reactive. Frontline personnel felt that they were being heard for the first time in a long time.”*

*Michael Storch – Founder 4PS Software & Mackay Safety Managing Director*

There are several key advantages of 4PS and 4P Mobile app.

- Knowing all the qualifications of staff as well as the need for upcoming training without the need for paper files enables training around projects and allocating people with the right qualifications and competencies (and availability) to the right equipment and jobs. All employee records (e.g. personal details, employee documents, next of kin information) and their management can be accessed via a secure cloud-based system.
- Paperless Digital Forms means there is no longer a need for forms and their physical submitting and storage. Staff can access one central repository for all forms (including employee forms, timesheets, procedures, on-site safety observations etc) via mobile device such as a smartphone or tablet.
- The equipment maintenance module of 4PS with the 4P Mobile app out in the field can ensure equipment is safety compliant and in top working order while in use on all jobs including maintenance for vehicle servicing, electrical test and tags, extinguisher checks and more. Automatic alerts can be set up about forthcoming maintenance needs.
- Information is up to date and in one central location meaning there is no need to keep referring to others source points to find and monitor important information such as expiry of fleet vehicle lease renewals, the location of standard report templates, gaps in certifications, and many other aspects of running a business.
- Information is current, using just one system accessible from any device with an internet connection. Notifications can be shared instantly between the office and a team out in the field allowing next-level efficiency.

Developed over 20 years in the heavily compliance-driven mining industry, 4PS software is easily transferrable and relevant for any industry. It excels especially in industries with strict compliance needs including mining, agriculture, manufacturing, construction, defence, recruitment and many more.

More broadly Mackay Safety is a one-stop service for safety compliance, providing safety management consultants providing advice on systems and their implementation, independent audit and incident investigation. They offer expert reviews and advice on safety improvement strategies and are experts in recruitment of safety staff for major projects and secondments of safety experts to projects when required.

For further information visit: <http://www.thebulliongroup.com.au>



### 6.3 Linked Group Services

Linked Group Services is a leading provider of complementary trade services and renewable energy products to the mining and resources, construction, agricultural, industrial and government sectors.

The company specialises in remote-area services and solutions across Australia with the vision of providing reliable energy in any location and is an innovator of sustainable solutions in electrical, solar, air-conditioning, mechanical, automotive electrical, data, fibre optic and steel fabrication.

Linked Group Services commenced operations in 2010 when Chief Executive Officer Peter Shaw and Managing Director Jason Sharam recognised a gap in the commercial market and began providing electrical contractors to mining companies throughout Australia.

Linked Group Services is dedicated to being as progressive and innovative as possible. Sustainability and diversification are the key to the future success of many industry sectors and their approach has been to continually monitor, improve and implement better products, systems and procedures for their clients.

*“From the beginning, it was about making sure the highest standards were delivered to clients and from that grew a thriving, innovative enterprise.”*

*“We are passionate about delivering practical products and services that save resources and reduce clients’ operational costs.”*

*“Linked Group Services vision is to provide the best innovative mining and energy business solutions, with cost effective and sustainable outcomes.”*

*“We pride ourselves on using as many Australian made products as possible and our emission and environmental footprint is very minimal due to our entire complex utilizing our own fully off grid Tesla system.”*

*Linked Group Services Managing Director – Jason Sharam*

Linked attributes the success of its services to the appropriate level of training, skills and experience of its team members, alongside an exceptional safety awareness and culture throughout the company.

The company’s highly skilled and site-ready team is backed up by quality tooling and equipment. Only quality products are used in their maintenance and projects services, some of which are manufactured or produced in a local workshop.

Linked have focused on the successful delivery of high-quality trade services and products to support the resource, mining and construction sectors in regional Queensland and have progressively expanded their services to also include agriculture, industrial and commercial, residential and Government sectors. Linked Group Services capability includes the following.

- **Mining capability:** Linked Mining includes specialist trade services; electrical and mechanical projects; fabrication, engineering and drafting; fleet and equipment; and mining products.
- **Trades:** mechanical, fabrication, automotive (light and heavy), drafting and engineering – electrical. Linked staff are experts in mining services, have extensive solar and renewables knowledge and are passionate about delivering practical products and services that save resources and reduce clients' operational costs.
- **Mining services:** Labour hire for all trades, services and administration – ongoing and shift relief; supervision and project management; maintenance and shutdowns; planning and scheduling; grid connect and standalone solar design and installation, mechanical and electrical design and engineering, flexible support contracts, power quality audits and turnkey projects (design, build, operations, maintenance and end of life)
- **Products:** The EcoSkid is a Hybrid Power Supply designed as a direct replacement for diesel generators at remote sites and is a fully mobile, complete off grid solution, meeting mine specification standards, scalable to power requirements, generator back up. EnviroSkid is a solar powered remote process monitoring system and can be used for flow monitoring, de-watering, flare ignition and remote-control. EcoPort is a car park solution that provides both shelter and solar power generation and is designed in house and eco-rail is designed and owned by Linked and is the quickest most effective way of creating a weatherproof solution for solar carports in the world.

For further information visit: <https://www.linked.net.au>

## 7. Conclusions

### 7.1 Findings

The top 10 findings from the survey are summarised below:

1. **High willingness of participating companies to collaborate and develop regional capabilities:** on a scale of 1 (not willing under any circumstances) to 5 (very willing and ready to act), the weighted average score of all respondents was 4.25. This affirms the desktop analysis finding that opportunities to merge around common themes exist.
2. **Broad commitment to Indigenous employment and apprentices and trainees:** three in five businesses have indigenous employees and more than three quarters offer apprenticeships and traineeships.
3. **High proportion of non-exporting firms:** Nearly three quarters of survey respondents are not currently exporting to other countries (Figure 15) and half of respondents currently do not plan to export in the next three years (Figure 19). A further 22% do not do so but intend to export within that time frame. The remaining 28% of respondents are exporting and expect to continue to do so.
4. **Barriers to exports:** Market access issues and protecting intellectual property were equal first (Figure 31). Navigating foreign government systems came second. Currency volatility, local competition and partner identification came equal third.
5. **Firms are committing relatively low amounts of resources to developing export opportunities:** The majority of METS exporters committed less than 5% of annual turnover to developing export opportunities (Figure 30). Almost one in four spent between 5% and 10% of turnover on export development, and one in six were not spending anything.
6. **Skills training seen as the leading soft infrastructure issue:** greater consensus (47%) view skill training as the most significant issue facing METS SMEs in the Mackay Whitsunday Isaac region (Figure 23). The issue appears to be driven by a lack of skilled people that want to move into necessary regions and the inconsistent nature of mining work.
7. **Roads, digital network and port ranked similarly as the most crucial hard infrastructure issues (Figure 23).**
8. **Liveability of local regions:** the stability of the workforce requires “people to live in the region and not the SE corner”. Another respondent noted that “there is a failure to attract additional industries to the local area”.
9. **Access to mining companies viewed as most critical barriers:** this issue crosses several dimensions, including cost of training up employees to abide by workplace health and safety regulations that are often unique to the site in question, tendency of companies to disregard local companies, resistance to change, inaccessibility of large mining houses, and awareness of business opportunities.
10. **Shift in perceived threats from the Pilot Survey conducted in March 2020 to the operational survey, reflecting impacts posed by COVID-19:** the main threat identified by businesses, as specific to their business, in the Pilot Survey was the security of their own supply chains – notably: dependency on China; and local companies not always carrying stock and relying on freight from SE Queensland or interstate. The recent survey found that businesses viewed the pandemic and its associated economic downturn as the largest threat to the sector. Notwithstanding economic uncertainty, 22% of responses relate to issues about the workforce (Figure 26).

## 7.2 Recommendations

**Recommendation 1: Continue the focus on the importance of embracing innovation and technology to maximise the regional METS competitive advantage.** Initiatives to be considered include:

- refining the Innovation Accelerator Program (Innovation and commercialisation) through METS Ignited and identifying other grant opportunities in this space; and
- establishing a MIW METS business incubator that helps create and feed start-ups directly into the MIW METS supply chain, connecting them with major resource companies and tier 1 contractors.

**Recommendation 2: Identify key specialist clusters which have export potential and create working groups to examine opportunities to collaborate on greater efficiency in use of inputs by businesses in this segment.** Suggested cluster working groups include:

- data collection, reporting, and analytics, especially regarding safety and health systems and services;
- architectural, engineering, and other technical services; and
- conveyor technologies.

**Recommendation 3: Promote export potential and enhance capability and collaboration through MIW METS Export Hub activities and initiatives such as the following.**

- Regular MIW METS Export Hub Export Readiness Programs. These programs will help participants how to identify and allocate resources necessary to be able to expand into overseas markets.
- Regular presentations providing exposure to other METS related emerging industries in the region including defence, bio-futures, ag-tech, aerospace, and aviation.
- Collaboration workshops and information sessions, given the strong interest in collaboration among METS businesses.

To enable this recommendation, long-term funding commitments for the Export Hub (beyond the current program) should be prioritised.

**Recommendation 4: The METS Export Hub use the outputs of GW3's Future Employment Study to work with the Queensland Government Department of Employment, Small Business and Training (DEBST) and other training and education providers to assess the supply of and future demand for skilled METS labour in the region to identify gaps and maximise output from MIW METS sectors.** This will be cognisant of current efforts to develop relevant qualifications, skill sets, and micro-credentials relating to the growing demand for skills in the broad field of autonomous technologies, including Program Logic Controllers and SCADA systems, data analysis and management, fault finding, networks, and cyber-security, among others.

**Recommendation 5: Continue to advocate for a clearly prioritised investment in roads, port, and rail infrastructure.** Industry participants emphasised the importance of these infrastructure assets. It is essential for METS sector representatives to liaise closely with other key industry users (particularly agriculture and defence) to maximise efficiencies.

**Recommendation 6: Prioritise the need for continual investment in digital infrastructure and connectivity.** GW3's MIW Digital Infrastructure Study states that large scale, public investment in digital connectivity enhancements is not likely in the short-term. However, industry participants acknowledge that industry growth will be driven largely by the adoption of digital technology. Therefore, the METS sector must collaborate and develop business cases for telecommunications companies, government, and other communications providers to enhance localised digital infrastructure.

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## Appendix 1. Scope of work

The consultancy team is required to work with the MIW METS Export Hub Project Advisory Group to prepare a Capability Mapping and Supply Chain Analysis Report for the region's Mining Equipment, Technology and Services (METS) sector.

The project will require delivery of the following:

- a) Profile the capabilities and capacity of existing METS business within the MIW region:
  - Identification of METS businesses in the region
  - Product / service range within region
  - Turnover range and employment levels
  - Expertise and skill levels, including best practice and innovation
  - Value of industry to the region
  - Current levels of export activity – including quantity exported, percentage exported, types of products / services, port of export / entry, destination markets and businesses, etc.
  - Key areas of strengths and weaknesses, opportunities and threats within the regional METS offering.
- b) Conduct an analysis of existing supply chains across the domestic resource sector, identifying:
  - Current and future needs of domestic mining companies (inside and outside of MIW region) in relation to METS products and services. (Note, research should be based on interviews with OEMs and large primes to understand their supply chains.)
  - Critical gaps and potential barriers to MIW METS entry into domestic supply chain – external and internal
  - Opportunities for MIW METS sector to meet current and future supply needs.
- c) Conduct an analysis of key international opportunities and markets complementary to MIW METS sector capabilities. (Note, PAG recognises further international in-market demand analysis will be needed post this project in this area).
- d) Identify soft and hard infrastructure required to underpin future growth within MIW METS sector – e.g. including skills, best practice, quality, and innovation and technology.
- e) Prepare a report with analysis and recommendations that optimises the region's capability and capacity to supply domestic and international markets.
- f) Prepare a list of barriers to export for the region listing them in priority order including recommendations for removing these barriers and measures of success.

The report should include a comprehensive array of company capabilities across the range of METS related activities from exploration, construction, extraction, engineering, fabrication, facility services, transportation and logistics, professional services, remediation, and any other core segment of the mining industry.

The MIW METS Export Hub Project Advisory Group is looking for an analysis that;

- a) is specific to the unique capabilities of the METS businesses in Mackay, Isaac and Whitsunday region;
- b) provides understanding of domestic and global industry trends and innovation within the resource and METS sectors;
- c) will underpin the development of a regional METS Export Strategy.

All information gathered from business engagement should be compiled and provided in a transferrable format (e.g. Microsoft Excel) and provided to the MIW METS Export Hub Project Advisory Group at the completion of the project.

## Appendix 2. Breakdown of METS businesses by sub-sector

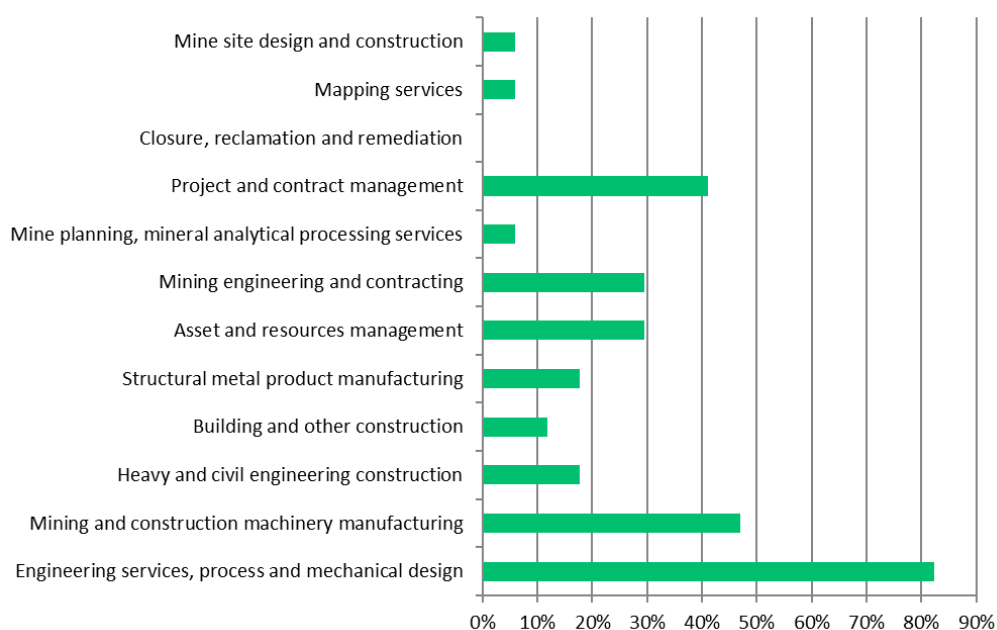
The following sections provide a more detailed breakdown of the METS sub-sectors investigated in the report.

NB: percentages in the following charts may not equal 100 because respondents were asked to tick all business affairs that applied to them within a given sub-sector (i.e. many firms engaged with various business affairs within a single sub-sector).

### Core engineering design, manufacture and project management

17.71% of survey respondents indicated that core engineering design, manufacture and project management best described their business affairs. Firms within this sub-sector mostly provided engineering services, process and mechanical design, while mining and construction machinery manufacturing and project and contract management were also prominent service provisions. About a third of respondents in this sub-sector also provided asset and resources management and mining engineering and contracting. Other business affairs were delivered by less than 20% of respondents, and no firms indicated any involvement with closure, reclamation and remediation services (Figure 33).

Figure 33: What do your business affairs include? (Core engineering design, manufacture and project management sub-sector)

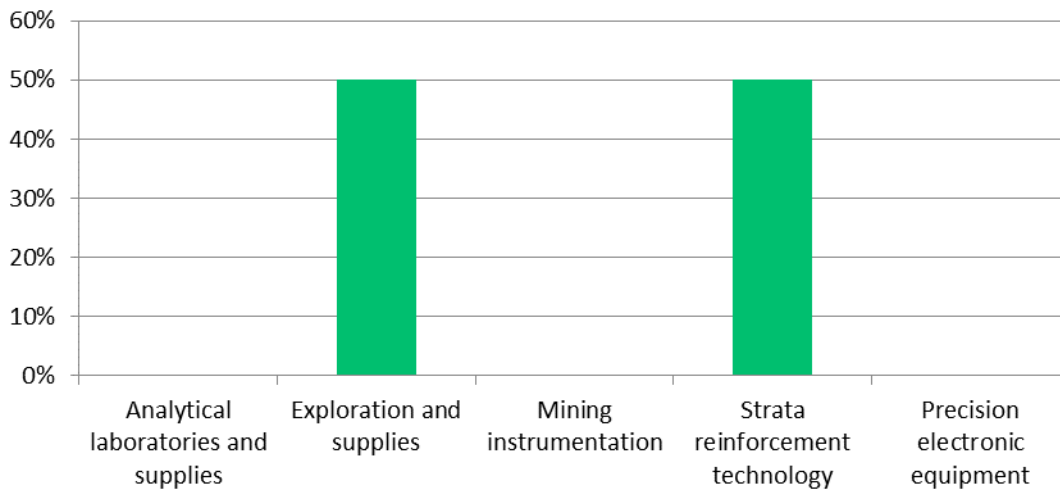


Source: MIW METS Survey, 2020.

### Specialised technologies

2.08% of survey respondents indicated that specialised technologies best described their business affairs. Only two respondents in this survey belonged to specialised technologies, of which one was involved in exploration and supplies and the other in strata reinforcement technology (Figure 34).

Figure 34: What do your business affairs include? (Specialised technologies sub-sector)

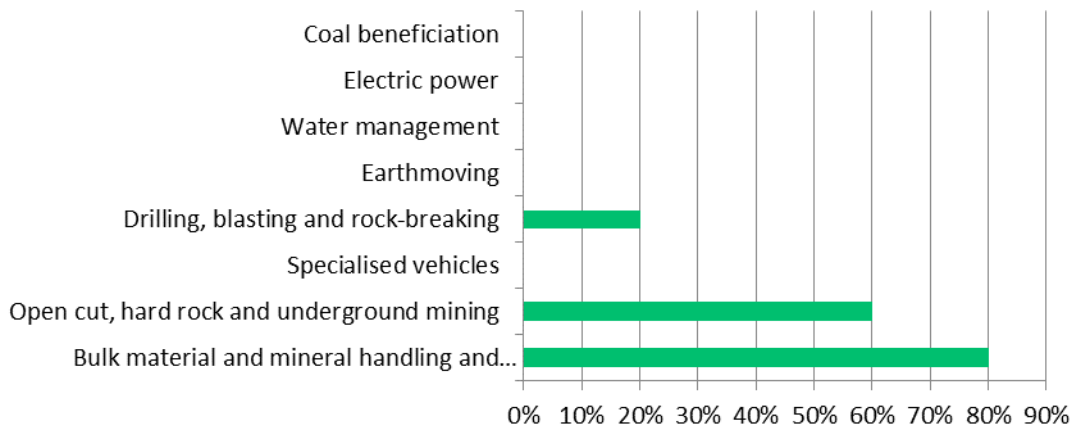


Source: MIW METS Survey, 2020.

### Core mining and processing equipment

5.21% of survey respondents indicated that core mining and processing equipment best described their business affairs. The five respondents are predominantly engaged in bulk material and mineral handling and processing and open cut, hard rock and underground mining. One respondent also engaged with drilling, blasting and rock-breaking services (Figure 35).

Figure 35: What do your business affairs include? (Core mining and processing equipment sub-sector)

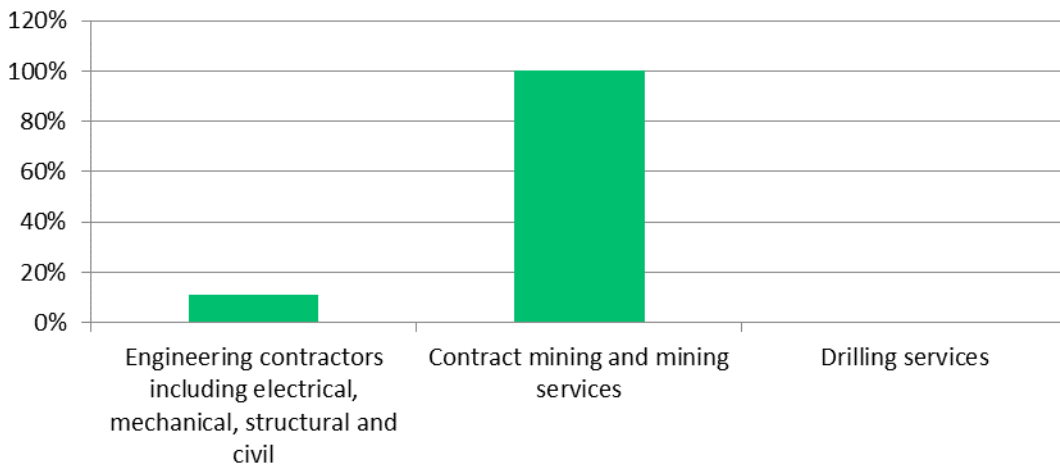


Source: MIW METS Survey, 2020.

### Contract operations

9.38% of survey respondents indicated that contract operations best described their business affairs. All respondents in this sub-sector are engaged with contract mining and mining services, while one firm also provided engineering contractors, including electrical, mechanical, structural and civil (Figure 36).

**Figure 36: What do your business affairs include? (Contract operations sub-sector)**

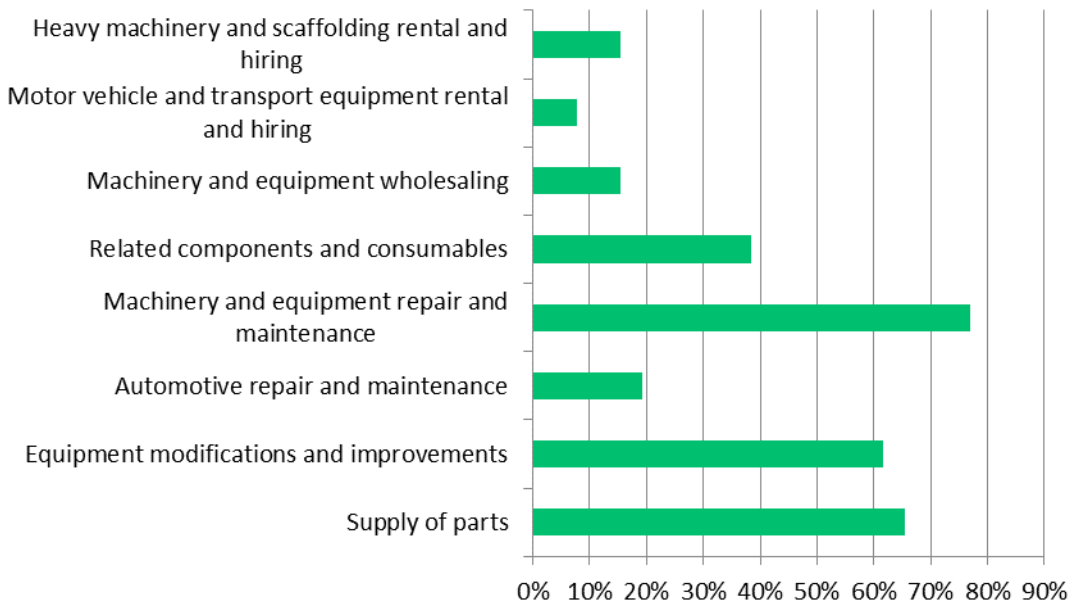


Source: MIW METS Survey, 2020.

### General equipment repair, maintenance, and other services

27.08% of survey respondents indicated that general equipment repair, maintenance and other services best described their business affairs. Most respondents in this sub-sector provided services in machinery and equipment repair and maintenance, supply of parts, and equipment modifications and improvements. Automotive repair and maintenance, machinery and equipment wholesaling, and motor vehicle and transport equipment rental and hiring were less prominent business affairs among respondents (Figure 37).

**Figure 37: What do your business affairs include? (General equipment repair, maintenance and other services sub-sector)**

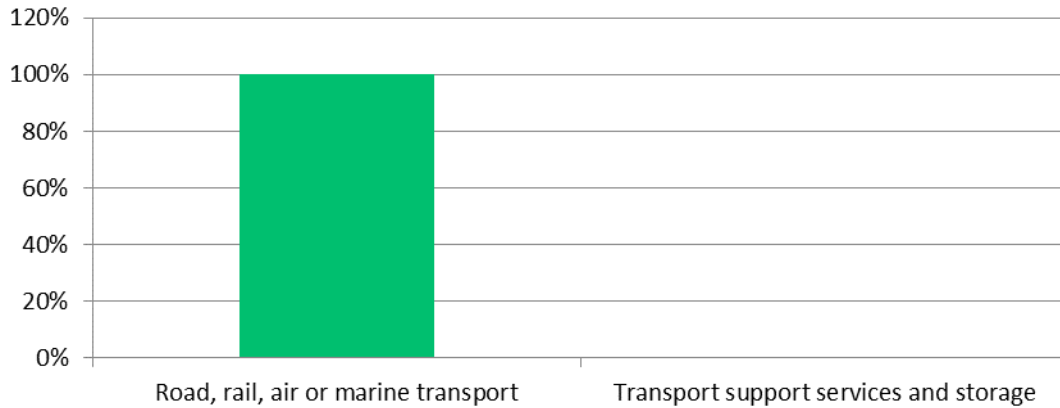


Source: MIW METS Survey, 2020.

## Transport services

1.04% of survey respondents indicated that transport services best described their business affairs. A single respondent provided road, rail, air or marine transport services (Figure 38).

Figure 38: What do your business affairs include? (Transport services sub-sector)

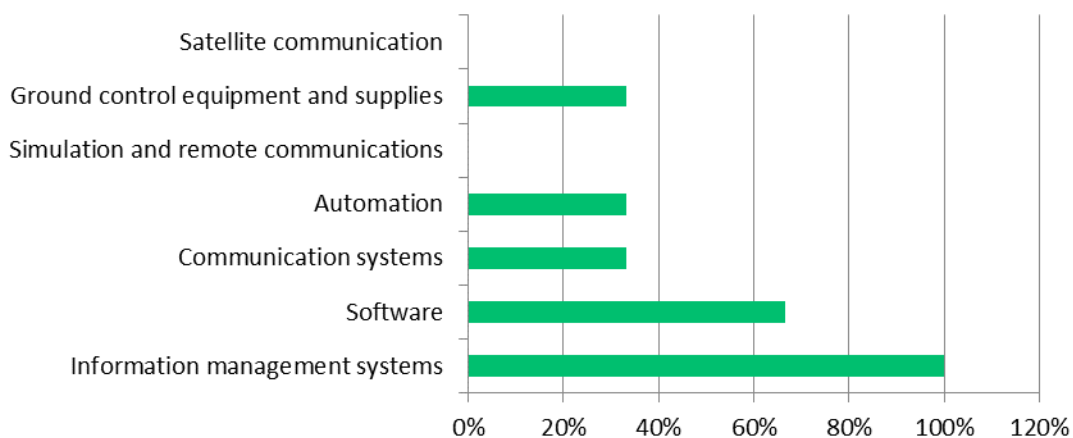


Source: MIW METS Survey, 2020.

## IT and related services

3.13% of survey respondents indicated that I-T and related services best described their business affairs. All three respondents provided services in information management systems and two also were involved in software services. Communication systems, automation, and ground control equipment and supplies were each applicable to one respondent (Figure 39).

Figure 39: What do your business affairs include? (I-T and related services sub-sector)

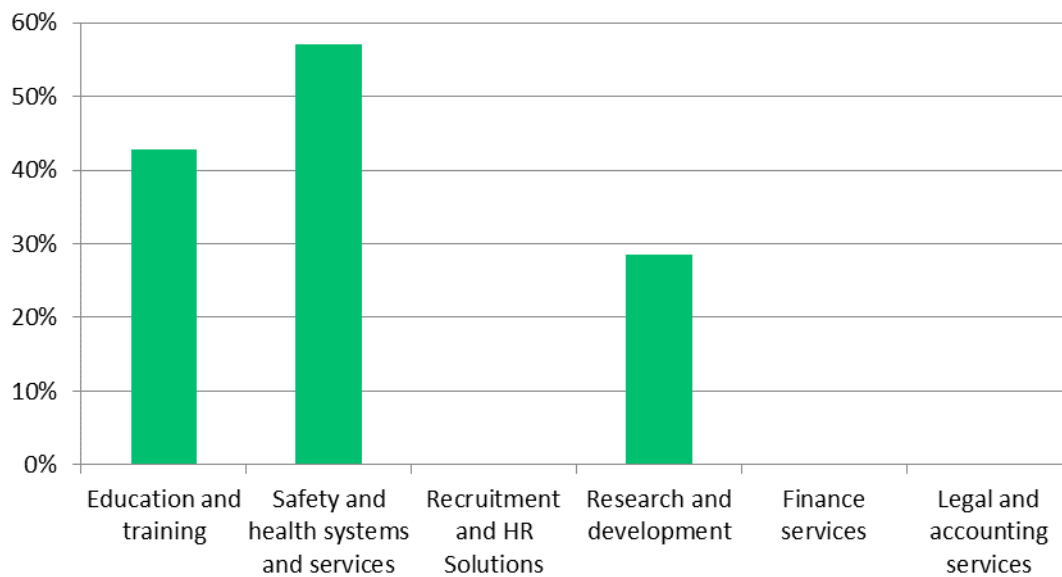


Source: MIW METS Survey, 2020.

## General support services

7.29% of survey respondents indicated that general support services best described their business affairs. Most respondents delivered safety and health systems and services, while education and training, and research and development were less prominent (Figure 40).

**Figure 40: What do your business affairs include? (General support services sub-sector)**

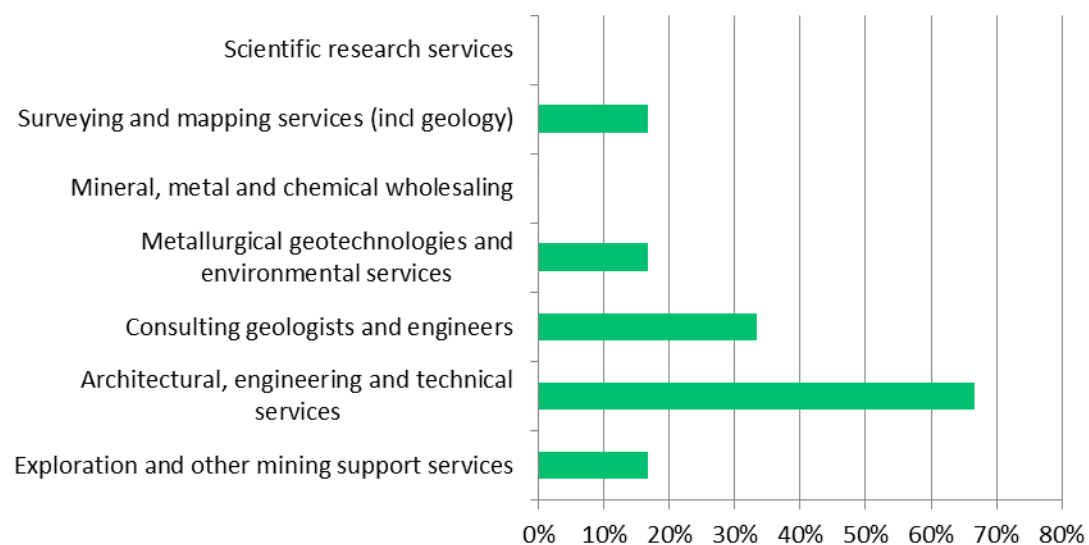


Source: MIW METS Survey, 2020.

### Consulting services

6.25% of survey respondents indicated that consulting services best described their business affairs. Most respondents in this sub-sector provided architectural, engineering and technical services. Consulting geologists and engineers, exploration and other mining support services, metallurgical geotechnologies and environmental services, surveying and mapping services were provided by at least one firm (Figure 41).

**Figure 41: What do your business affairs include? (Consulting services sub-sector)**



Source: MIW METS Survey, 2020.

### Other (please specify)

20.83% of survey respondents indicated that their business affairs fell outside of the above industries. Specialised services and energy-related business affairs make up most of the “other” responses. Respondents specified the following industries:

- Manufacture of Transportable Buildings (2)
- Training (3)
- Civil Construction works, Earthworks, Roads
- Quality control
- Manufacturer of Electrical Equipment Worldwide
- Material supplies
- Energy alternatives
- Supply of Explosives
- Engineering Design and Manufacture of specialty innovative equipment
- Cleaning
- Registered Training Organisation and Safety Consultancy
- Supply Chain Consulting
- Industrial gases and consumables
- Fuel Supply
- Local Government
- Specialised High Voltage Electrical Testing
- Specialist pipe design, manufacture and installation



## Appendix 3. Pilot Survey

Research by Design conducted a pilot survey via telephone interviews with a sample of RIN and Export Hub members to test the veracity and integrity of the questionnaire. This pilot was conducted over a four-day period; Monday 30<sup>th</sup> March to Thursday 2<sup>nd</sup> April 2020.

The purpose of this approach was to ensure the questions and survey logic were sound prior to launch via email to METS businesses in the Mackay Isaac Whitsunday region.

**Table 9: Completion Rates of Pilot**

Company Listing: n=22	Completed  - Unable to contact - Unavailable but asked link to be sent via email - Not suitable (no sales to the mining sector)	13  3* 5 1
Hub members: n=8	Completed  - Unable to contact - Unavailable - Not suitable (no sales to the mining sector)	4  2* 1 1

\* Research by Design complies with market research standards which recommends that only three attempts be made to contact a person for any given research project.

### Outcomes of pilot survey

The survey logic satisfies responses for:

- METS companies not exporting and not planning to export
- METS companies not exporting but planning to export
- METS companies exporting and planning to continue to export

Results of the pilot survey are as follows:

- 100% of respondents actively engaged with the survey with an average interview time of 30 minutes
- Zero respondents recommended any changes to the survey i.e. they were satisfied with the relevance of the questions and ease of response to the survey
- Completion time via the online platform will be much shorter at around 15 minutes
- Only modest changes have been made to the original survey; specifically, stratification of employee/part-time/casual/contractor numbers and average turnover for each of the regions
- Almost all respondents opted-in to the final question: “Would you like to be contacted by a representative from the METS Export Hub to have your company profile updated?” (The only exceptions were from existing Hub Members)

- Several respondents were asked about appropriate timing for the launch of the survey – all **STRONGLY RECOMMENDED** the survey be held over until after Easter.

#### Recommendations based on pilot

- The launch of the survey be delayed until after Easter
- The communications strategies for the launch of the survey focus on the importance of the survey for the METS sector for the region – anecdotally; all respondents understood the importance of the project and were keen to participate. Respondents comments include:
  - This is an important project and I recommend as many METS companies complete the survey as possible
  - It’s an easy survey and makes sense
  - It’s important for all companies to participate so that we better understand what is going on in our region

#### Key Pilot Results

From the pilot survey, which was made up of 17 responses, information gained on the METS sector businesses within the MIW region is presented in the following figures. It is indicative, given the small sample size, but provides examples of the type of data that will be evaluated in the supply chain analysis for this study.

Figure 42: Pilot – Annual turnover from mining sector

#### % of your annual turnover sourced directly from the mining sector, either nationally or internationally?

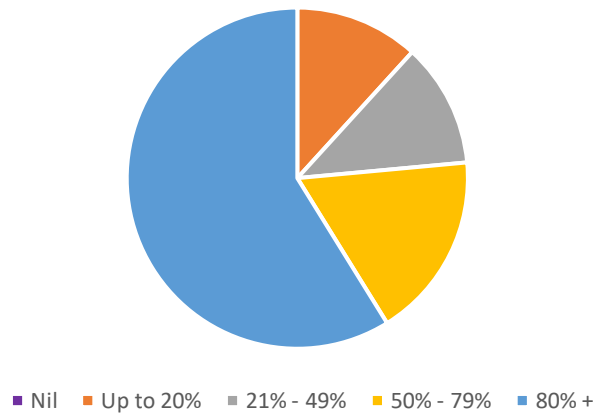


Figure 43: Pilot – annual turnover at end of FY 2018-19

### Annual turnover of businesses at the end of FY 2018-19?

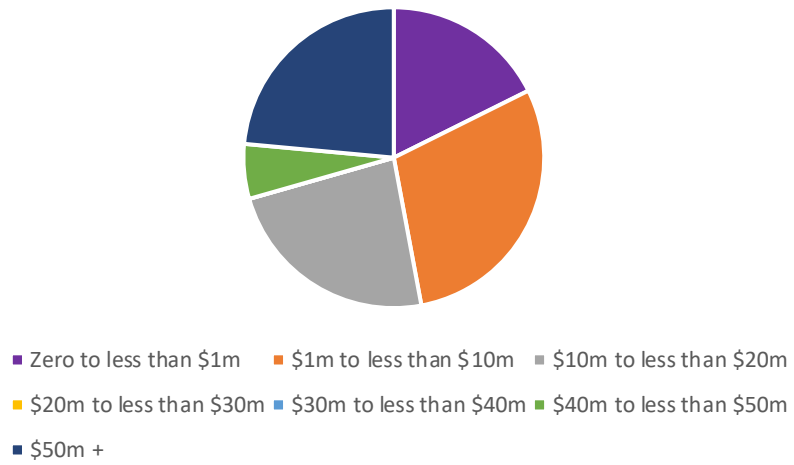


Figure 44: Pilot – Business exports to other countries

### Business exports to other countries

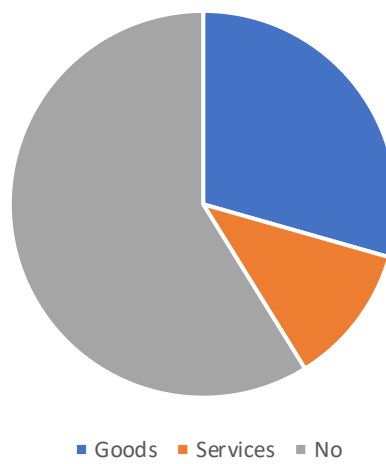
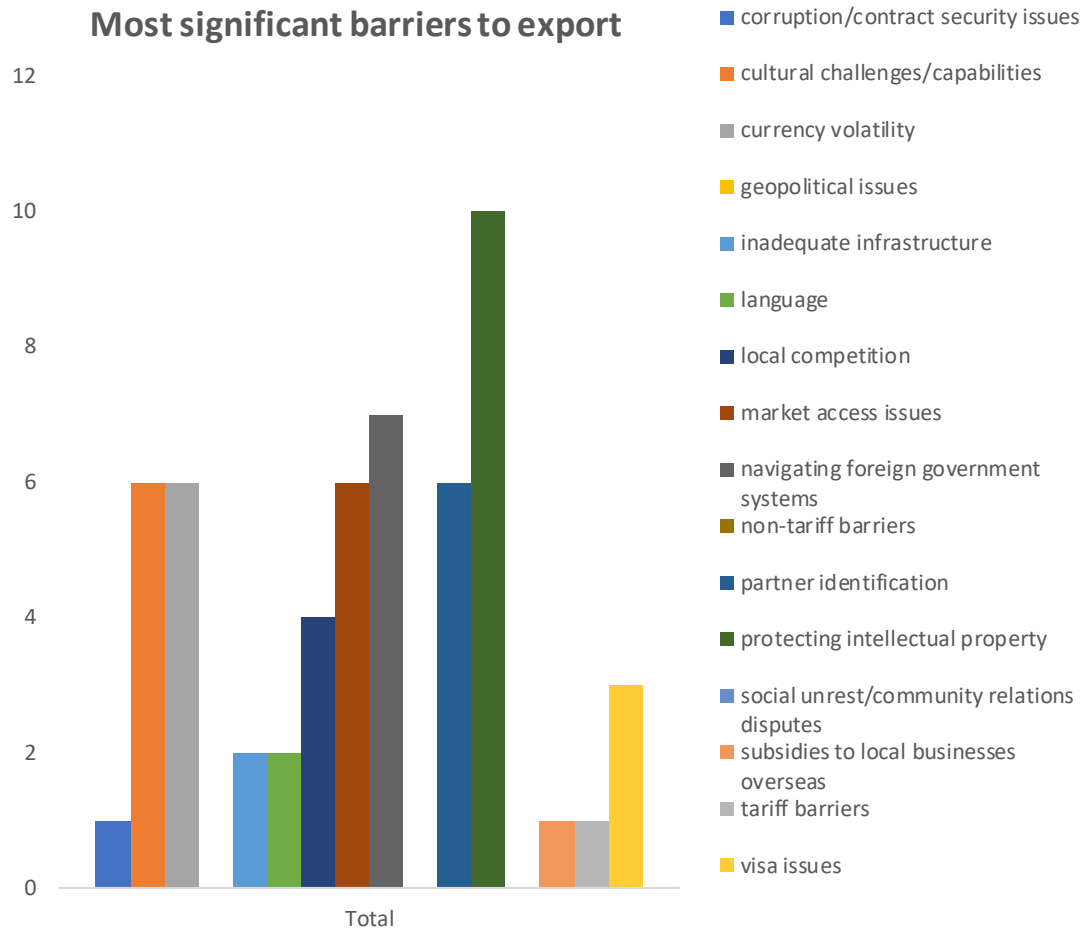


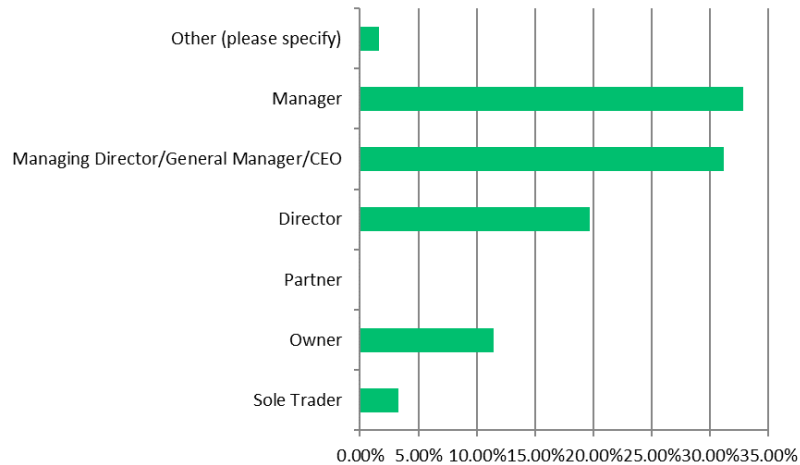
Figure 45: Pilot – Top 5 barriers to export



## Appendix 4 Characteristics of survey respondents (i.e. person filling out the survey)

Senior level engagement with the survey is observed from the role of the individual; responding on behalf of their businesses. Half were either a director, managing director, general manager or chief executive office of their organisation. A further one in ten were the owner of their business. Almost one in three nominated themselves as managers.

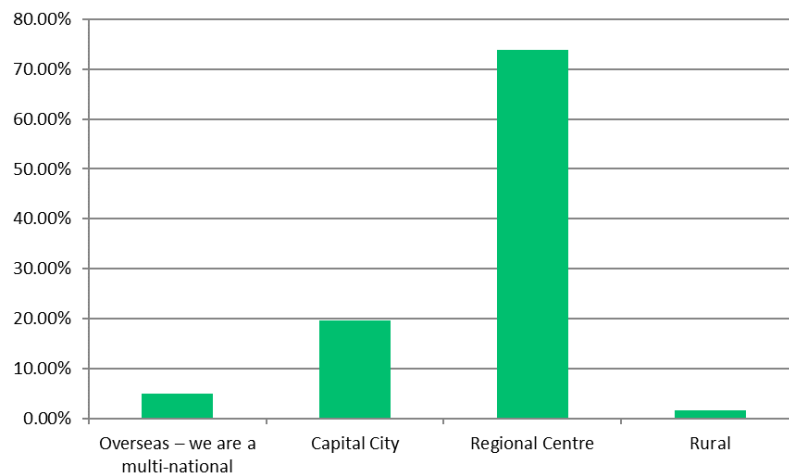
Figure 46. What is your role in your company?



Source: MIW METS Survey, 2020.

METS survey respondents were overwhelmingly headquartered in a regional centre (74%), with a significant proportion in a capital city (20%). This is likely to put a lot of decision making and the decision makers within the supply chain close to its physical operation. A postcode analysis highlighted that 83% of respondents were based in or near Mackay.

Figure 47. Where is your Head Office located?



Source: MIW METS Survey, 2020.

## Appendix 5. Arbre Forest Industries Training and Careers Hub

Lytton Advisory team members have previously visited the Arbre Forest Industries Training and Careers Hub in Launceston, Tasmania in 2019 following references as an ideal example of a careers and training solution. The Hub's primary function is to promote the careers within the industry, capture any interest, then offer a pre-employment training program to cater for that interest.

### Summary of Arbre

**Origin:** Comes from the 2012 RFA industry assistance package with seed funding from Government to pay for capital equipment.

**Location:** Launceston, Tasmania

**Role:** Arbre undertakes industry career promotion and a training coordinator role. Career promotion involves travelling to and hosting school delegations to promote the forestry and timber industry as a career. Its training coordination role involves coordination between industry (ascertaining training needs) and RTOs to arrange training and access various funding sources.

**Resourcing:** 0.5 full-time equivalent (FTE) executive officer, 0.8 FTE consultant, 0.8 FTE executive assistant.

**Assets:** Simulators, utility vehicle, and office equipment, etc. Building provided in kind from industry member.

**Governance:** Incorporated Association, with a Board of 8 persons from across the industry. It has a constitution, articles of association, and has 4 Board meetings each year plus an Annual General Meeting.

**2016-17 Budget:** Revenue: \$249,774, Expenses: \$131,441 Surplus: \$118,332

**2017-18 Budget:** Revenue: \$207,897, Expenses: \$141,603 Surplus: \$66,294

**Funding:** Primarily member subscriptions (\$128,589) one-off seed funding grant from the State Government \$150,000. Underwritten by Kevin Morgan (Industry member).

### Arbre Mission

The Hub is overseen and managed by a Governing Board represented by Forico, Sustainable Timber Tasmania, Timberlands Pacific, Norske Skog, Reliance Forest Fibre, Waratah Forestry Equipment Pty Ltd, Casagrande Lumber Pty Ltd and Technical Forest Services. The Hub is a not-for-profit organisation. In Arbre's words:

*"We will create a membership base of like-minded employers within the industry that will be informed, on time, of any potential employee possibilities through a communications program involving introduction, progress and follow up, as well as up to date information and participation in training and employment programs as and when they appear. The bigger and wider we can create this network, the more successful the Hub will be."*

*“The Hubs charter is to work diligently, and foster strong relationships with the education industry, government agencies, training providers, and community groups to promote the value and opportunity of Forestry careers.”*

*“Our belief that this project is much overdue, and very much industry driven gives it the credibility necessary for your involvement as a member of the Arbre Hub.”*

The Arbre Hub operates in a highly cost-effective manner. It is dynamic and is premised to scale to demand. There is a symbiotic relationship between the Arbre Hub’s career work and training facilitation and coordination activities (Table 10).

**Table 10. Arbre’s career work and training facilitation**

Career Activities	To promote forestry and timber careers to primarily Tasmanian schools. It does this through hosting school delegations to the Hub centre where they have several simulators to showcase what is involved in harvesting. The Hub’s Executive Officer visits schools to talk about the industry and utilises a simulator to create interest. Arbre has developed a forestry cadetship – Cadet Forester Program. In addition, Arbre attends AgFest and rural shows, etc.
Training Coordination and Facilitation	<p>Arbre clusters businesses together to create critical demand for a training course and then secures an RTO to deliver that training and then also accesses funding from Government to offset the expense of training. Arbre identifies opportunities (business or project) for host employment and provides an employment Expression of Interest to its members.</p> <p>Arbre works with labour hire companies who recruit individuals to undergo training (five plus five) who are hosted by business with best individuals offered employment at end of training. Relationship is between Arbre the labour hire company and business/project. Arbre facilitates a log truck driver program being driven by National Heavy Vehicle Regulations (delivered by AJL training) and developed the Five plus five training program utilising Timber Training Creswick as the RTO.</p>

Source: Lytton Advisory analysis of Arbre, 2019.

Other key points noted in relation to Arbre by the project team included the following.

- Arbre is entirely an output of industry coming together to lead itself.
- There is a major emphasis on Arbre being politically neutral, and it is not involved in advocacy for the industry. That is left to the Forest Industries Association of Tasmania (FIAT).
- There is an overwhelming need for the centre to be industry neutral. There exists a significant downside if a hub is hosted at an industry member’s site. Some other businesses may not be prepared to use the hub due to the fear of their workers being poached.

## Appendix 6. Export destination by nature of business

Table 11. Export destination by nature of business

<b>NATURE OF BUSINESS</b>	South America	Africa	Europe	North America	Oceania	Southeast Asia	Rest of Asia	Middle East
Specialised technologies	3	1	0	6	1	1	3	0
General support services	1	0	0	1	1	0	1	0
Other	2	2	0	2	7	1	3	0
General equipment repair, maintenance and other services	0	0	0	0	3	4	0	0
Core mining and processing equipment	3	1	2	1	4	2	2	0
Core engineering design, manufacture and project management	1	3	4	5	12	1	3	0
Contract operations	0	0	0	1	2	1	1	1
Consulting services	0	0	0	1	0	0	1	1
<b>Total</b>	<b>20</b>	<b>14</b>	<b>12</b>	<b>34</b>	<b>60</b>	<b>20</b>	<b>28</b>	<b>4</b>

Regions are compiled from data regarding the following nations:



**Table 12. Export destination regional breakdown by nation**

Region	Nations
South America	Argentina, Brazil, Chile, Panama, and Peru
Africa	Botswana and South Africa
Europe	Germany, Poland and the United Kingdom
North America	Canada and the United States
Oceania	Fiji, New Caledonia, New Zealand, Pacific Islands, Papua New Guinea, and South Sea Islands
Southeast Asia	Indonesia, Malaysia, and the Philippines
Rest of Asia	China, India, Japan, Mongolia, and South Korea
Middle East	Saudi Arabia and the United Arab Emirates