

NSW ENERGY & RESOURCES KNOWLEDGE HUB

INNOVATION LAUNCHPAD

Giving SMEs the resources, knowledge, networks and infrastructure to transform ideas into enterprise.

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EXECUTIVE SUMMARY

The NSW Energy and Resources Knowledge Hub is seeking to advance jobs growth in the energy and resources sector by providing a collaborative testing facility to foster and commercialise innovation. This document outlines the proposal to establish an energy and resources Innovation Launchpad.

This will be a physical hub, based within the Newcastle Institute for Energy and Resources (NIER) Precinct at the University of Newcastle Callaghan campus, where businesses and researchers can collaborate throughout the solution design, validation and deployment phases, to bring tried and tested new products to market.

The NSW Energy and Resources Knowledge Hub acknowledges that more meaningful relationships between industry and researchers, and the formation of strong partnerships can drive innovation, accelerate technology to market and promote jobs growth.

The National Innovation and Science Agenda Report confirms that “innovative firms are more competitive, more able to capture increased market share and more likely to increase employment than their competitors. Over the period 2006-2011, 1.4 million new jobs were created by firms aged less than three years old.”

The Innovation Launchpad will help innovative SMEs overcome some of the common barriers to commercialisation, and provide an enduring solution for the NSW economy.

The Innovation Launchpad will facilitate the sharing of resources, infrastructure and knowledge to solve problems, optimise operating practices, break new ground and improve global competitiveness and export potential.

The benefit goes beyond supporting businesses; it puts new technologies and services into the market to increase enterprise and create jobs for NSW.

FINDING SOLUTIONS

The dedicated research and technology space will embed businesses in a research environment to facilitate problem solving through best practice industry/academic engagement.

TESTING FOR SUCCESS

Access to pilot scale testing infrastructure is crucial for SMEs to be able to test, validate and demonstrate their innovation. The Innovation Launchpad will give SMEs the keys to valuable testing facilities not often accessible on the pathway to commercialisation.

A NETWORK OF KNOWLEDGE

Participants will benefit from knowledge exchange and structured programs across a multidisciplinary network of expertise, allowing for swift navigation of challenging business issues relating to IP, commercialisation and exporting.

This is an invitation to contribute to the economic growth of NSW by supporting SMEs to innovate, commercialise and scale-up their businesses through improved industry/academic linkages, purpose built industrial testing facilities and accelerated technology transfer.

Aerial photo of the Newcastle Institute for Energy and Resources precinct at the University of Newcastle Callaghan Campus





BACKGROUND

In 2014, the NSW Government launched The NSW Energy and Resources Knowledge Hub to bring together businesses, research organisations, government and industry associations to enable greater collaboration and maximise opportunities for sector growth.

Since then, the Hub has been creating shared value through joint activities with particular emphasis on knowledge transfer and collaborative projects that support regional SMEs.

SMEs can lack the financial strength and scale to access the same opportunities and support networks of big business, and yet their success contributes significantly to the innovation system by introducing new products and adapting existing products to the needs of customers.

“Over the decade from 2001 to 2011, SMEs aged less than five years employed only around 15 per cent of the Australian workforce, but made the highest contribution (40 per cent) to net job creation in Australia.”

- National Innovation and Science Agenda Report, 2015.

SUPPORTING SMES TO SCALE-UP AND GENERATE JOBS GROWTH

It is widely acknowledged that start-ups are important for job creation, economic growth and innovation activity in Australia, and yet ongoing success for startups is the exception not the rule. Very few start-ups create long lasting jobs or long term social benefits, with an estimated 97 per cent of startups failing to grow and exiting the market.

“Competitive advantage doesn’t go to the nations that focus on creating companies, it goes to nations that focus on scaling companies.”

- Sherry Coutu, Cambridge University (Finance Board).

Of those who make it beyond their first two years, 77 per cent of all economic benefits are created by the three per cent that become high-growth firms. (Professor Colin McLeod, the University of Melbourne.) The Australian Department of Innovation, Industry and Science found that high-growth firms (HGFs) are job creators, contributing a disproportionate amount to FTE growth. Identifying and supporting these high-growth companies can underpin significant industrial transformation and growth.

“Turnover HGFs between 2002 and 2013 contributed 27.6 per cent to FTE employment growth compared to just 0.1 per cent from non-HGFs.”

- Department of Industry, Innovation and Science.

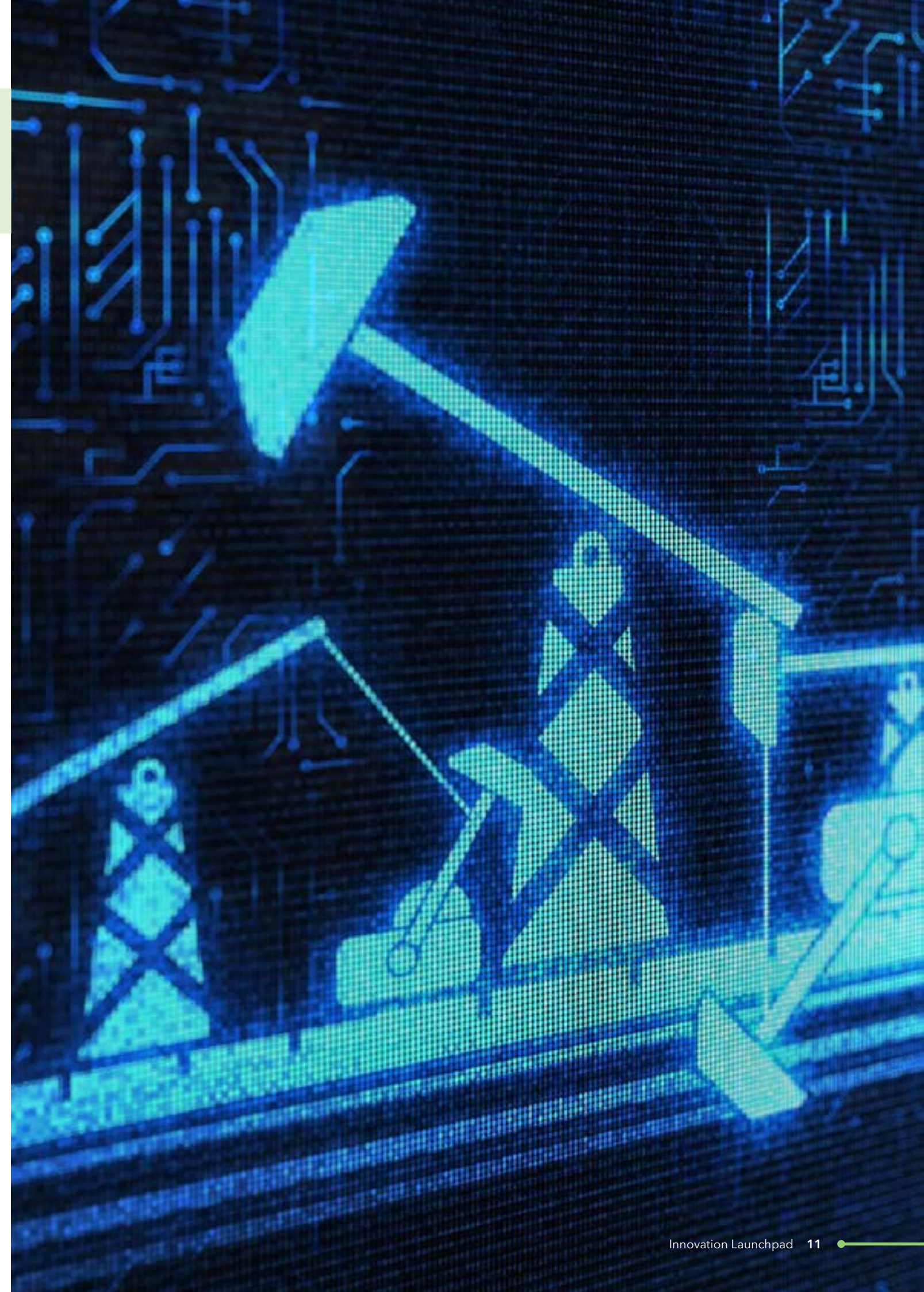
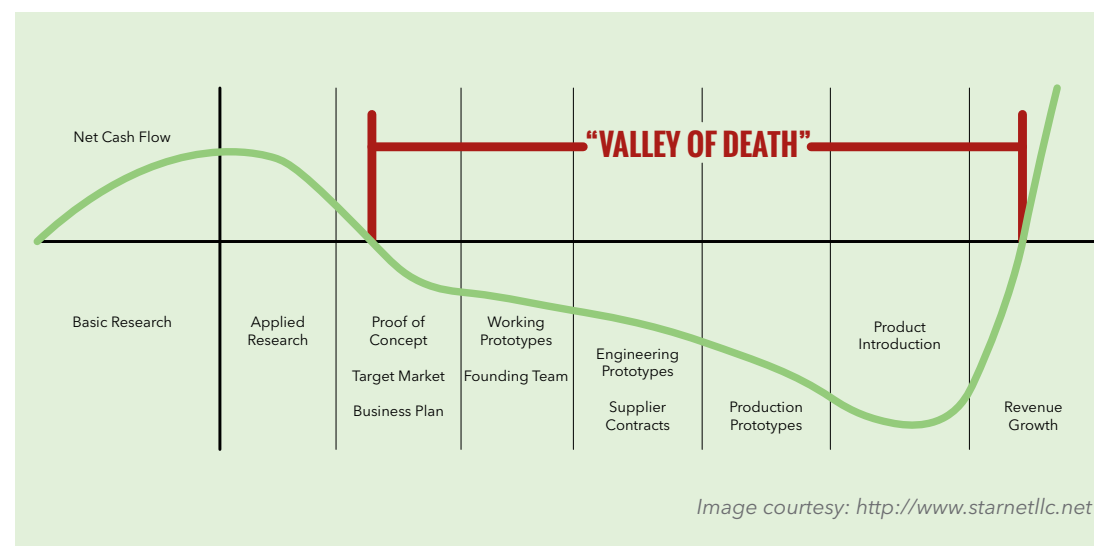
HGFs, also known as scale-ups, are companies with ten or more people and an average annual growth in employees greater than 20 per cent over a three-year period. Targeting scale-ups can have a dramatic impact on economic growth.

“Only nine per cent of Australian small to medium sized businesses brought a new idea to market in 2012-2013, compared to 19 per cent in the top five OECD countries.”

~ National Innovation and Science Agenda Report 2015.

THE “VALLEY OF DEATH”

The “Valley of Death” refers to the void in the innovation cycle that commonly occurs between an idea and a commercial outcome. This tends to halt innovation between the proof of concept milestone and commercialisation, contributing to Australia’s poor record for commercialising new technologies.



BARRIERS TO INNOVATION

Through engagement with industry and collaboration with partners, the NSW Energy and Resources Knowledge Hub has identified some common barriers to innovation and business growth, which should be addressed if we are to support the scale-up of SMEs.

Lack of Collaboration

- Successful innovation relies on a culture that encourages and is conducive to collaborative effort and cross-fertilisation of information within and across sectors. However, collaboration is not often ingrained in the culture for companies in highly competitive industries such as energy and resources. The lack of involvement in collaborative activities by SMEs can hinder the ability of the energy and resources sector to respond holistically to the demand for new technologies and services.

“Businesses that collaborate on innovation with research organisations are three times more likely to experience productivity growth. Despite these benefits, Australia’s rate of collaboration between industry and researchers (at two to three per cent) is currently the lowest in the OECD.”

~ National Innovation and Science Agenda Report 2015.

Limited Access to Testing Infrastructure

- There is a break in the innovation cycle that occurs when organisations cannot access industrial scale facilities to test their technology, de-risk their product and take it to commercialisation.

“The METS Ignited sector consultation process and the 2015 Austmine National Survey revealed that innovators find the mining sector “risk averse” and reluctant to disrupt operations to trial or introduce new systems or approaches. Further, innovators experience difficulty in accessing operational sites for gathering data, testing, and demonstrating outcomes. In response, mining companies have advised that they are not risk averse but rather are reluctant to introduce innovations without sound evidence of benefits and minimisation of operational and HSEC risks.”

~ METS Ignited Living Lab Consultation Briefing 2016.

Inadequate Market Knowledge

- The market is rapidly evolving and contemporary, flexible business models are needed. But the pathway to market can be complex, and SMEs often lack the experience and business know-how to move their businesses to commercialisation.

“Innovation systems for all sectors find the transfer of new ideas and technologies into business a challenging process. Developing innovations that combine step-change technology with business knowledge and commercial imperatives is a difficult process that requires expertise, the right partners, market knowledge and customer pull.”

~ METS Ignited “A living Labs Network for METS and Mining.”

Financial Barriers

Limited accessibility of external funding for new ventures, especially during the working prototype phase can set up financial barriers for SMEs. The working prototype phase is identified as high cost but critical in proving to potential customers the validity of the innovative product.

From an investor perspective, there is not a sufficiently large local pipeline of upcoming investment opportunities to spread investment risk and justify the investment of funds, nor the time and resources to research potential opportunities.

Regulatory Barriers

In a rapidly changing technology environment, out of date or unresponsive regulation can hold back new or untried innovations from the market place.





THE INNOVATION CATALYST

Providing solutions, testing facilities and market knowledge to help SMEs overcome barriers to innovation.

THE NSW ENERGY AND RESOURCES KNOWLEDGE HUB'S INNOVATION LAUNCHPAD WILL OFFER:

A SPACE FOR COLLABORATION

- To facilitate best practice industry/academic engagement
- To embed businesses in the research environment
- To activate solutions.

AN INDUSTRIAL SCALE WORKSHOP

- To test, pilot and demonstrate
- Providing a valuable asset often missing on the pathway to commercialisation
- To attract potential investors by showcasing working prototypes in a high profile environment.

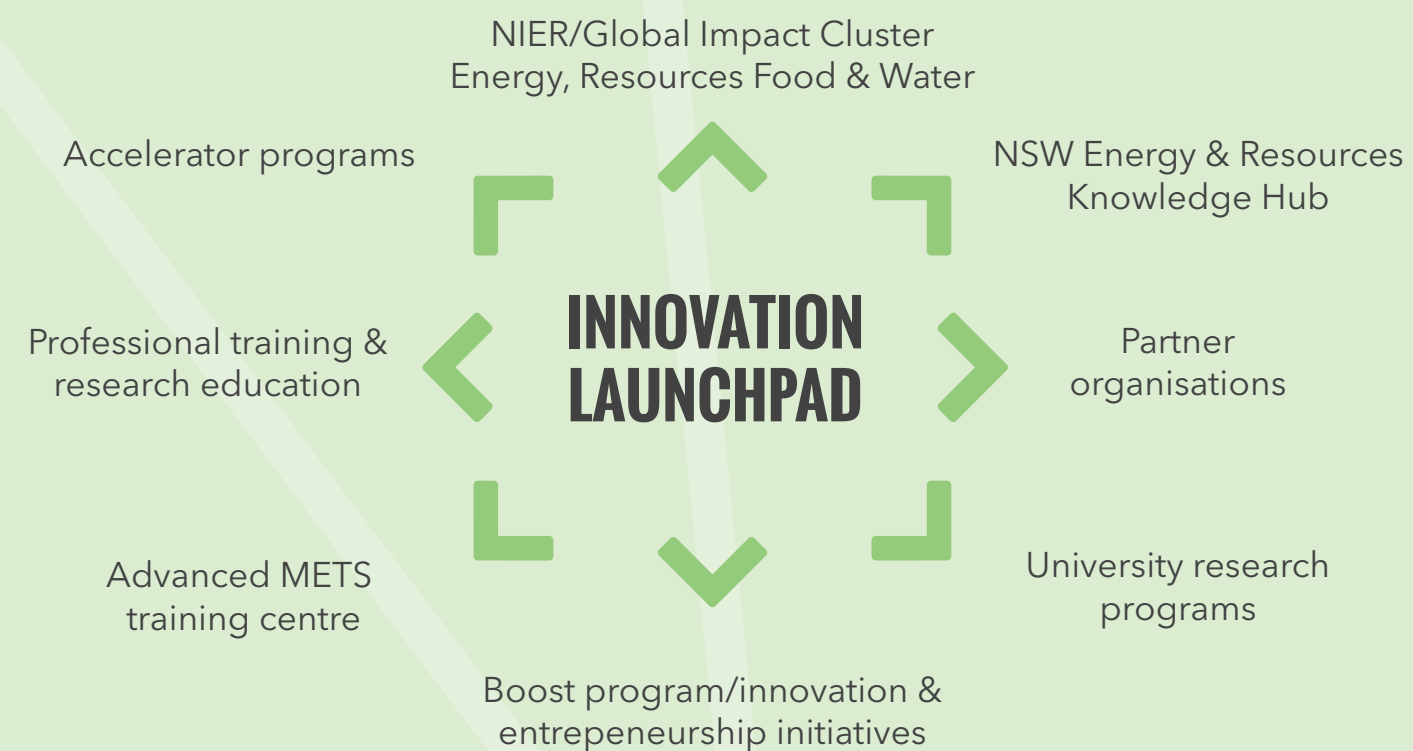
ACCESS TO A COMMUNITY OF EXPERTISE

- To make contact with a multidisciplinary network with associated programs, mentors and support networks
- Facilitating increased visibility with potential investors
- Simplifying regulatory matters through access to state programs, with the opportunity to inform the development of the national regulatory framework.



SERVICE DELIVERY

The Innovation Launchpad will provide a tangible solution to some of the biggest challenges facing industrial innovation, with real value being drawn from the multidisciplinary, multifaceted, engaged network of partners, programs and experts working together to transform the industry.





INNOVATION LAUNCHPAD PROPOSAL

Supporting SMEs to scale up by providing access to the resources and knowledge required to address technological, business and market challenges associated with the transition of the energy and resources industries.

The NSW Energy and Resources Knowledge Hub, with full support from NIER and the University of Newcastle proposes to build and host an Innovation Launchpad at the NIER precinct in Callaghan. Designed to drive an industry innovation competitiveness agenda, this facility will give participants access to:

COLLABORATIVE WORKSPACES

The refurbishment of Level 9 at the University of Newcastle's NIER will embed business enterprise in the research environment to support best-practice industry/academic engagement.

INDUSTRIAL SCALE WORKSHOPS

An industrial workshop will provide Australian enterprise with a valuable asset often missing on the pathway to commercialisation of new technologies or services: access to industrial scale laboratories and research infrastructure to test, pilot and demonstrate innovation to market.

COMMUNITY

The power of the The NSW Energy and Resources Knowledge Hub is in its multidisciplinary network which gives SMEs unprecedented access to research and industry expertise, training and education opportunities, operational and testing assets, and business know-how.



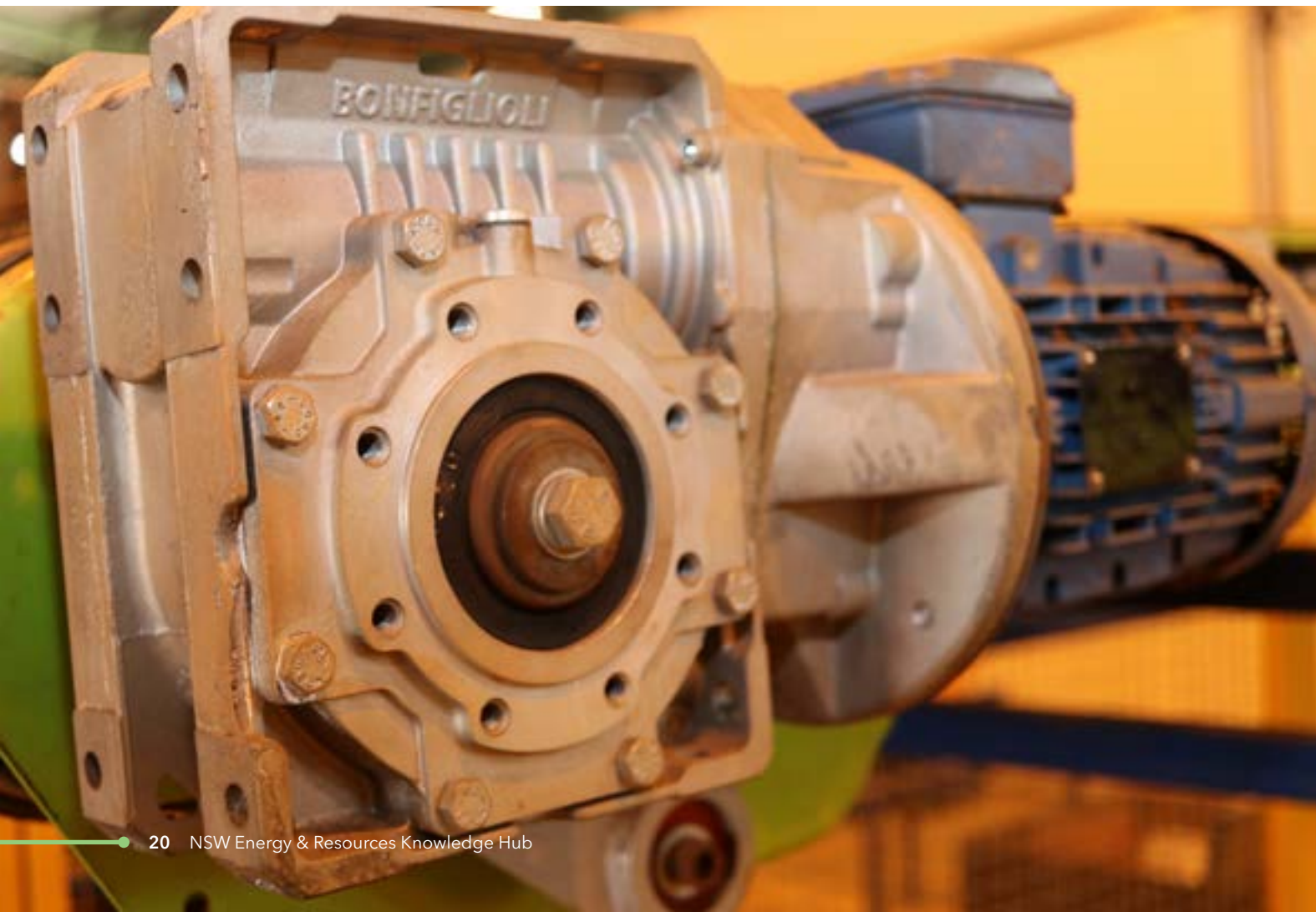
WHAT WILL THE INNOVATION LAUNCHPAD OFFER?

- The opportunity to engage with researchers in best practice industry/academic collaboration
- Access to an industrial workshop and industrial research infrastructure to test, pilot and demonstrate innovation to market
- Modern office space including a desk, high speed internet and access to meeting facilities
- Multidisciplinary collaborative opportunities
- Access to business expertise and knowledge with the opportunity to tap into larger, stronger networks and programs across the energy and resources sector
- A safe working and testing environment
- Mentorship in the commercialisation of business plans
- Industry and market insight.

WHO CAN PARTICIPATE?

Businesses that:

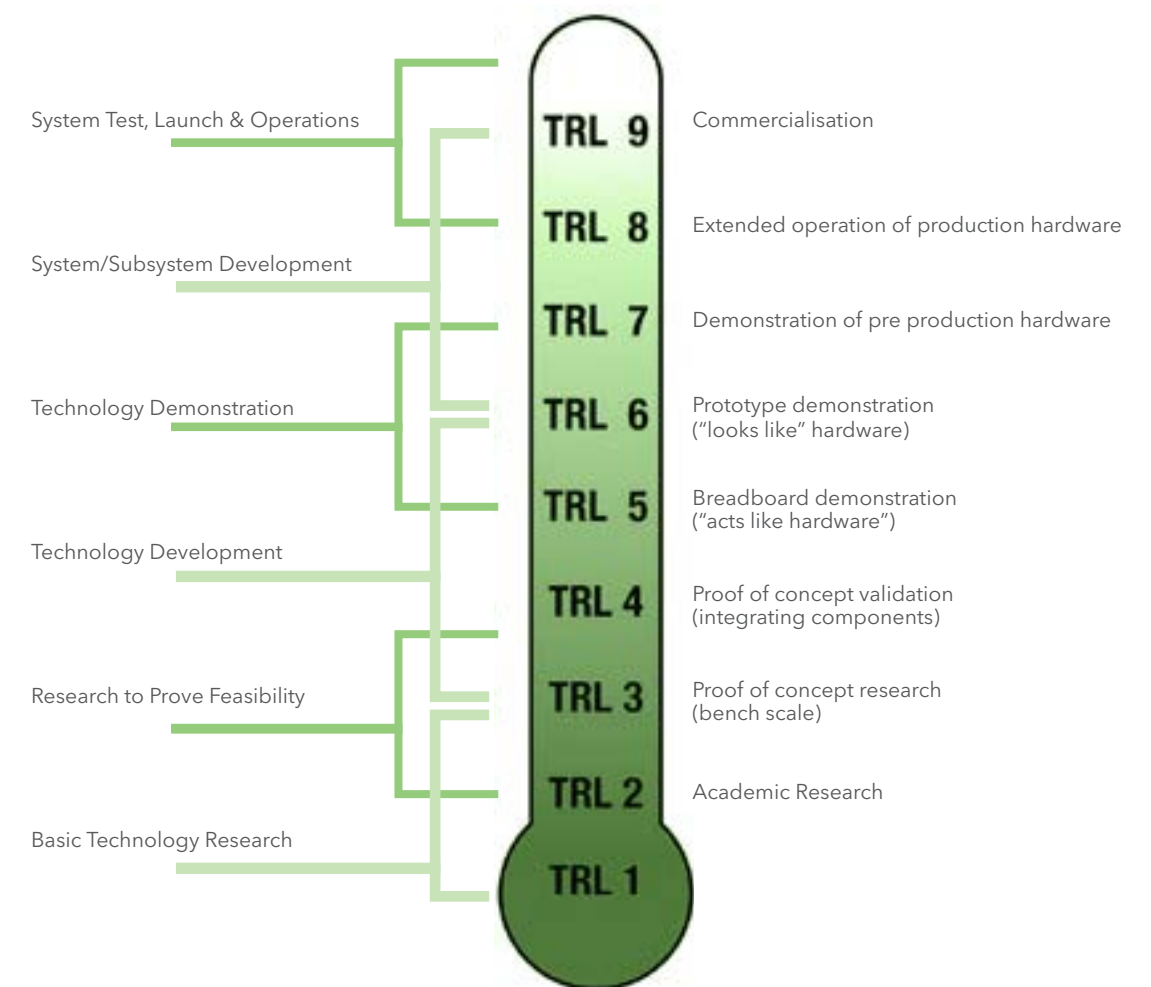
- Are registered in NSW and developing or delivering a product or service for the energy and resources sector
- Are able to show impact to industry and the potential for jobs growth
- Have a concept or product that requires testing in an industrial workshop
- Can demonstrate a Technical Readiness Level of six and above.



TECHNICAL READINESS LEVEL (TRL)

The TRL is a globally accepted benchmarking tool for tracking progress and supporting development of a specific technology through the early stages of the innovation chain. A TRL of six and above is for technology in the "Demonstration" phase, and includes:

- TRL 6 - System/subsystem model or prototyping demonstration in a relevant end-to-end environment.
- TRL 7 - System prototyping demonstration in an operational environment
- TRL 8 - Actual system completed and qualified through test and demonstration in an operational environment, and
- TRL 9 - Actual system proven through successful operations
- The next stage is the "Commercial Readiness Phase," and deployment.



Example TRL scale. The TRL methodology was developed by NASA in 1974 with its use evolving for broad modern day applications and industries.

The TRL scale will form the basis of the Innovation Launchpad program, with participants and partners working together to move through the TRL phases and into commercialisation.

GOVERNANCE STRUCTURE

The Innovation Launchpad will operate under an efficient governance structure administered by the existing framework of the NIER/Global Impact Cluster (Energy, Resources, Food and Water) Advisory Board and The NSW Energy and Resources Knowledge Hub Steering Committee. The addition of the Participants Committee will support productivity by enabling a process for those involved in the program to raise and rectify issues easily.

ADVISORY BOARD

- Existing NIER Advisory Board
- Representatives of key industry areas associated with the core agenda of energy and resources growth
- Provide strategic direction and leadership for the Innovation Launchpad, including assistance to attract strategic funding
- Advise and counsel on strategy and planning in context of current and projected policy and industry trends, needs and issues
- Provide access to national and global networks to support an industry engagement strategy
- Facilitate partnerships with industry.

STEERING COMMITTEE

- Existing NSW Energy and Resources Knowledge Hub Steering Committee
- Made up Executive Director NIER, Hub Coordinator, representatives from NSW Government, Energy and Resources Growth Centres, and industry
- Represent key stakeholders in the effective management of the Innovation Launchpad
- Advise on associated infrastructure activities including space management, utilisation and expansion projects
- Manage operational issues
- Align activities with objectives of The NSW Energy and Resources Knowledge Hub, NSW Government, Growth Centres etc.

PARTICIPANTS COMMITTEE

- Made up of business representatives operating out of the Innovation Launchpad
- A formal avenue for communication
- Identify opportunities and issues
- Provide leadership for knowledge sharing activities
- Provide recommendations around research collaboration and synergy.

COLLABORATIVE OFFICE SPACE

The University of Newcastle has committed to the refurbishment and development of the complete floorspace of Level 9 in the NIER Administrative building. NIER is located on the Callaghan campus of the University of Newcastle, which has a wonderful mix of award winning, architecturally designed buildings and world-class infrastructure scattered over 140 hectares of natural bushland.

The refurbishment of Level 9 will upgrade the current office space to host additional office accommodation, meeting facilities and amenities to cater for the increasing industry partnerships and collaborative research initiatives being undertaken as part of the Innovation Launchpad. This will provide an open plan/flexible office area to maximise space usage and provide quiet spaces, foyer entry, informal meeting and breakout spaces and additional amenities. This will be a shared, co-working space for a range of agencies and energy and resources SMEs.



New floorplan for NIER Level 9 showing the refurbished office and collaboration space

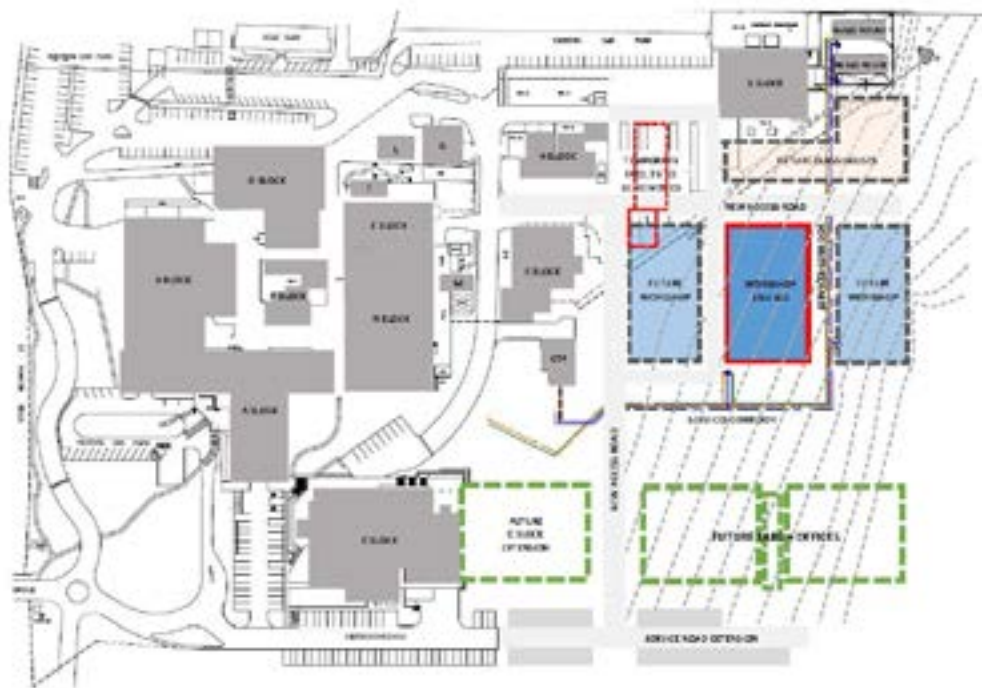
INDUSTRIAL INNOVATION WORKSHOP

NIER is comprised of purpose-built research facilities in a state-of-the-art research precinct including extensive mineral, chemical and related technical laboratories, workshops, offices and five industrial-scale pilot plant workshops.

Participants of the Innovation Launchpad will have access to a purpose built industrial-scale test plant workshop.

BUILDING SPECIFICATIONS

- Heavy industrial building, large span portal frame
- Wind rating: N2 standard
- Length: 50.0 metres (8 x 6.25m bays)
- Span: 30.0 metres
- Height: 7.0 metres
- Roof: steel roof sheet (Colorbond) and insulation
- Walls: steel wall cladding (Colorbond)
- Doors: large opening steel Roller door
- Small control room and amenities
- Features: Overhead gantry crane (10t).



Workshop Site in the NIER Precinct



Site Survey





ACCELERATOR PROGRAM

An embedded program to fast track business growth and drive innovation.

The Innovation Launchpad will provide the platform for scale-ups to access structured programs to accelerate their growth. There is the opportunity to include a structured accelerator program as part of the Innovation Launchpad, to provide businesses a one day per week/12 week mentorship program to fast-track growth and innovation.

As an example, for METS firms, this accelerator could be part of the METS Ignited initiative to roll out METS Accelerators nationally.

Igniting METS - Background

METS Ignited is currently running a pilot METS Accelerator in Queensland that will be rolled out nationally in 2018. METS Ignited is an industry-led organisation funded by the Australian Government as part of its Growth Centre Initiative. “Igniting METS” is an Australian first joint initiative between METS Ignited and the Queensland Government to assist METS companies.

This accelerator program seeks to bring late-stage start-ups and SMEs together with leading mining sector corporates focused on innovative mining sector solutions, to drive greater industry collaboration and commercialisation outcomes across exploration, planning, production, environmental and social innovations.

The successful startup/SME applicants will be fast-tracked through an intensive 12 week program (commencing in mid-July) of deep dive workshops, and mentoring and engagement with industry leaders, entrepreneurs and subject matter experts from Australia and internationally.

The program provides:

- Brand credibility
- Business advice and mentoring
- Customer discovery with client relationships across the Australian METS & Mining sector
- Access to capital
- \$10,000 in sponsorship.



BUILDING ON OUR STRENGTHS

Leveraging the assets of an unrivaled energy and resources cluster.

THE PRECINCT MODEL

Precincts provide the opportunity to bring together the breadth of resources required and the level of specialisation demanded to solve particular societal challenges. (The role of precincts in innovation systems – A discussion paper Dr Terry Cutler, January 2009.)

Hosting the Innovation Launchpad at NIER will embed businesses in a specialised energy and resources research and technology precinct, designed to advance industrial innovation by connecting experts on common ground to facilitate the exchange of ideas, solutions and discovery.

NIER GLOBAL IMPACT CLUSTER MODEL (ENERGY, RESOURCES, FOOD AND WATER)

NIER was established to augment the University of Newcastle's existing reputation of research excellence and expertise within the minerals, energy and resources fields. NIER is located on a 3.8 hectare site adjacent to the University's Callaghan campus, comprising extensive research laboratories, offices and industrial-scale pilot plant workshops.

NIER addresses challenges of the rapidly emerging issues of resource sustainability, productivity and competitiveness associated with energy and resources infrastructure.

NIER RESEARCH IS FOCUSED UNDER FOUR KEY PILLARS:

RESOURCE PRODUCTIVITY AND EFFICIENCY

- Solutions to important problems facing our minerals, gas and water resource sectors.

ENERGY TECHNOLOGIES AND UTILISATION

- Driven by economic and environmental challenges with the goal of increasing productivity and efficiency and reducing greenhouse gases.

ADVANCED MATERIALS FOR ENERGY APPLICATIONS

- Significant potential for the next generation of low cost, sustainable energy applications.

LAND USE, SOCIAL IMPACTS AND SUSTAINABILITY

Focused on the balance between environment, community and economic activity within energy and resource intensive regions.

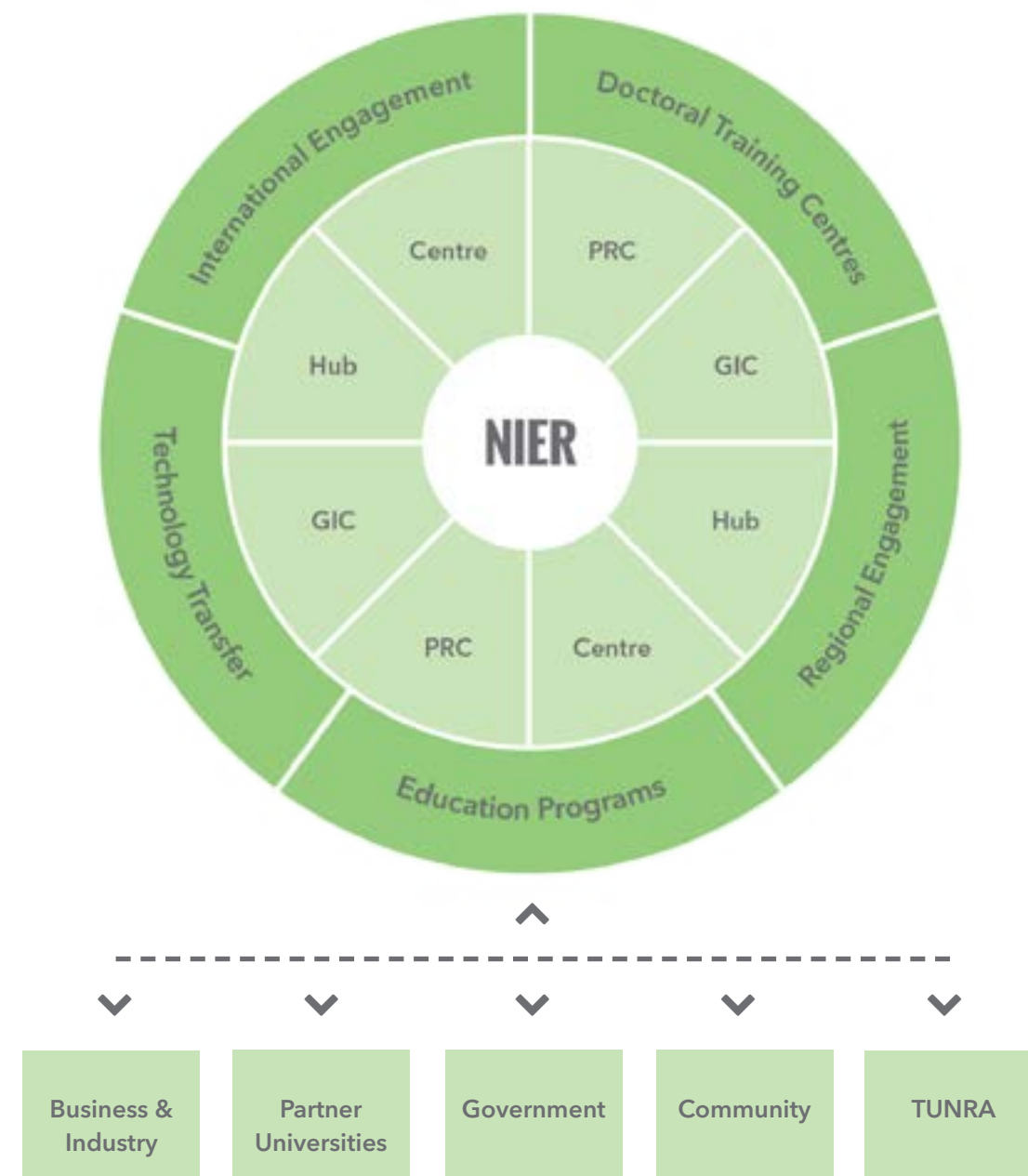
In March 2017, the NIER model expanded with the launch of the Global Impact Cluster for Energy, Resources, Food and Water (GIC ERFW) to support focused industry engagement, transdisciplinary research collaboration and commercial output.

The additional critical areas of water and agribusiness expand the NIER research agenda to tackle important challenges facing these sectors.

The GIC model offers a mechanism to enhance the learning experience through unique undergraduate, postgraduate and doctoral training programs and centres.

The NIER/GIC ERFW framework enables a comprehensive service model that delivers the opportunities, infrastructure, professional development, advice and industry networks required to ensure transformative interdisciplinary collaborations and a culture of innovation and entrepreneurship.

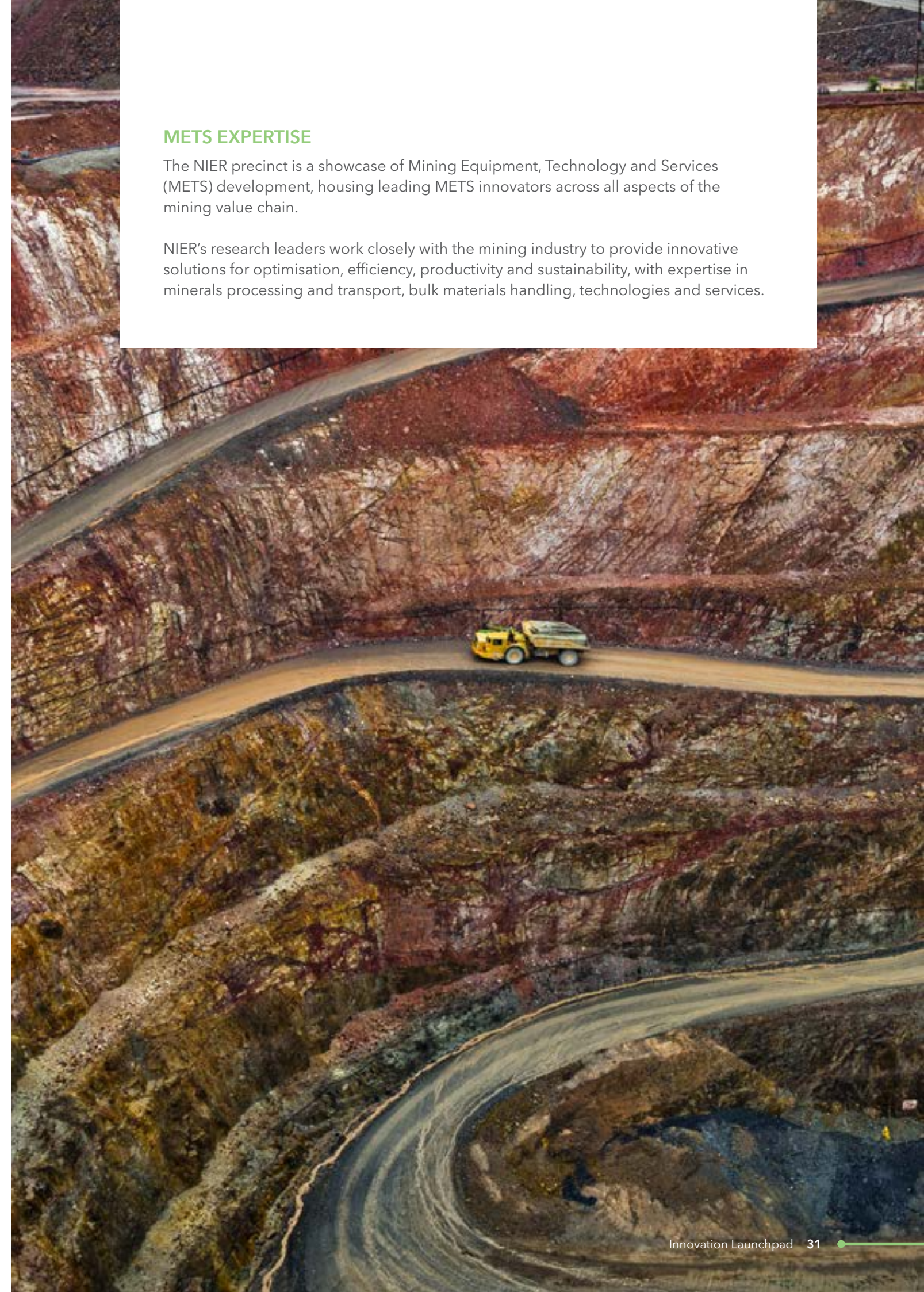
GLOBAL IMPACT CLUSTER MODEL



METS EXPERTISE

The NIER precinct is a showcase of Mining Equipment, Technology and Services (METS) development, housing leading METS innovators across all aspects of the mining value chain.

NIER's research leaders work closely with the mining industry to provide innovative solutions for optimisation, efficiency, productivity and sustainability, with expertise in minerals processing and transport, bulk materials handling, technologies and services.





ACHIEVING COLLABORATIVE INNOVATION

Delivering programs to promote collaboration, drive innovation and boost competitiveness for the energy and resources sector.

THE NSW ENERGY AND RESOURCES KNOWLEDGE HUB

In 2014, NIER won the bid to host the NSW Energy and Resources Knowledge Hub (the Hub). The Knowledge Hubs are a NSW Government initiative established from a NSW Industry Action Plan identifying collaborative innovation as a key industry priority. This formed the basis for the NSW Economic Development Framework, which led to the establishment of five Knowledge Hubs in 2014.



KNOWLEDGE HUBS



ENERGY &
RESOURCES
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FINANCIAL
SERVICES
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CREATIVE
DIGITAL
KNOWLEDGE HUB



MEDICAL
TECHNOLOGY
KNOWLEDGE HUB



TRANSPORT
& LOGISTICS
KNOWLEDGE HUB

The Knowledge Hubs are industry-led collaborative partnerships centered on key NSW industry sectors. The Hubs support industry by providing:

- Co-funding for collaborative projects that drive innovation and productivity
- Greater access to business support, development and advisory services
- Facilitation in developing strategic relations and creating shared value through effective, sustainable partnerships between industry, researchers and government.

The Hub is guided by a Steering Committee who help develop important initiatives for the Hub in the energy & resources sector.

Since its launch, the Hub has played an important role in facilitating collaborative activities to promote innovative new technologies and services, including:

- The development of the Hunter Energy transition Alliance to help identify future jobs and opportunities for new energy investment for the Hunter region, and address the local impact and opportunity of the transitioning energy sector
- Supporting the development of the Australian Energy Storage Database, an information sharing and networking platform to promote the wide range of existing and emerging energy storage solutions available in Australia
- Production of an Energy Technologies Showcase video focusing on the outcomes of research collaborations in new energy technology development
- The formation of METS NSW; a networked platform to increase collaboration and

accelerate innovation to help the NSW Mining Equipment, Technology and Services economy reach its full potential. Activity under METS NSW includes the Regional Supply Chain Roadshow and the Growing METS Matters Regional Forums, and an online interactive capability map of the sector

- The creation of Energy NSW to boost the innovation investment of SMEs in the Energy sector by providing new tools and services to enable Australian businesses to invest, create export opportunities, innovate and grow.

STATE-WIDE, REGIONAL REACH

The Hub is focused on growing NSW businesses by connecting them to a strong, powerful, state-wide network that gives SMEs the support and resources needed to thrive in their local region, and be competitive in global markets.

The Hub seeks to break down geographical barriers to collaboration and innovation, to help businesses link in, collaborate, and share information and resources to find economical solutions that will promote business growth.



METS NSW - IMPROVING PRODUCTIVITY AND EFFICIENCY

A platform of the Hub, METS NSW operates as a key collaborator with national and international industry partners and research institutions.

METS NSW is supporting and strengthening the agility of the METS sector by offering easy opportunities for collaboration and knowledge transfer, and by working with businesses and researchers to identify and respond to new markets.

METS NSW dedicated programs focus on:

- METS specific industry support
- The expansion of SMEs in new markets
- Building stronger links between METS businesses and their end users - mining companies and energy resource providers
- Knowledge sharing and research
- Tools and services to support businesses to innovate and grow.

The power of METS NSW is in the collaborative model that drives advancement by sharing strengths and leveraging off existing METS expertise.



ENERGY NSW - A SECTOR IN NEED

All economic activity across NSW is reliant on cost effective energy supply and the related efficiency technologies and services. With key mining, manufacturing and transport sectors, NSW is the highest consumer of energy in Australia (2013 Australian Energy Statistics, BREE) demonstrating demand from within the state for efficiency technologies and services.

Energy NSW was established by the Hub to support the Energy Equipment, Technology and Services sector for NSW. It shares information and knowledge, and supports energy businesses to navigate a complex and changing environment.

Energy supply and energy efficiency technologies and services facilitate or enable almost all economic activity. As a result, new energy technology and service solutions have the potential to significantly transform the NSW economy.

On 16 June 2017, the Hub hosted the Energy NSW Industry Forum at NIER, with participants from energy businesses in renewables and new energy technologies, government, industry bodies and research institutions.

A facilitated discussion between forum participants identified the need for an incubator program to capture and support SMEs. It was recommended that such an incubator would identify skills gaps and provide skills development, specifically noting the need for early business development to have regional reach.

PARTNER ORGANISATIONS

Industrial-academic research partnerships are an important part of innovation. Businesses are able to get their products to market faster by forming partnerships with universities, while the industry gains expertise in areas they most need it.

Working with the academic community exposes industry to the most advanced technical thinking, new research trends, and novel experimental techniques. Discussions with academic scientists can provide a way to test the validity of certain directions and ways of thinking. These partnerships can challenge beliefs and conclusions, and make the innovation process more straightforward.

The Hub works collaboratively with industry, government and research to facilitate the development of innovative solutions to real-world problems.

METS NSW – PARTNERS



ENERGY NSW – PARTNERS



A NETWORK OF OPPORTUNITY

Access to a network of partner expertise, initiatives and support programs is part of the Innovation Launchpad package for participants. Some key opportunities for collaborations include:

- **University Research Programs** - With high quality research performance in health and medicine, science and engineering, and energy and the environment, the University of Newcastle has attracted some of the very best researchers in the world, providing an important platform for the development of critical mass and future growth of these key research fields
- **Boost Program / Innovation Entrepreneurship Initiatives** - The University of Newcastle is one of 12 delivery partners for the Boost Program, a \$12m NSW Government initiative aiming to accelerate innovation in NSW by supporting greater collaboration between NSW research organisations and their business communities. This program is helping to unlock access to technology, equipment, research and expertise to build an innovation ecosystem and stimulate economic growth right across NSW
- **Integrated Innovation Networks (I2N)** - The University of Newcastle is continuing its long-term strategic commitment to the growth and development of the Hunter region by expanding its ability to foster regional SMEs and startups and create innovation clusters across NSW
- **Other Delivery Partners** - Advantage SME based out of the University of Wollongong is helping to transform university research results into successful new products, services and capabilities
- **Advanced METS Training Centre** - There are emerging skills and technology challenges within the METS sector that require educated, innovative and motivated engineers of the future. The METS Training Centre, hosted at NIER, aims to develop industry engaged research leaders to support industry partners focused on key emerging opportunities for METS technologies.
- **Professional Training and Research Education** - NIER will deliver Education Programs and industrial engagement to ensure critical interaction between industry and research, providing sought after skillsets across a wide range of transforming employment sectors. This will involve working collaboratively with university departments, schools, faculties and research groups to develop and implement interdisciplinary, industry-relevant professional and postgraduate education programs through engagement with academics and industry



COST SUMMARY

BREAKDOWN OF COSTS

REQUIREMENT	CAPITAL SPEND	ONGOING SPEND
REFURBISHMENT OF NIER LEVEL 9 FUNDED BY UON		
Staff Costs		
HEW 7 Coordinator (\$94,839 x 5 Years)		\$474,195
Cost of Build		
Refurbishment to provide office accommodation for industry partners	\$2,000,000	
SUB-TOTAL	\$2,000,000	\$474,195
TOTAL		\$2,474,195
FUNDING REQUIRED		\$0
INNOVATION LAUNCHPAD		
HEW 5 Administrator (\$76,400 x 5 years)		\$382,000
Cost of Build		
Preliminaries and overheads	\$330,000	
Site security fencing	\$20,000	
Site clearing	\$35,000	
Earthworks	\$165,000	
Retaining wall - blockwall	\$86,000	
Drainage and sub-base	\$95,000	
Reinforced concrete pavement	\$230,000	
Landscape	\$85,000	
Services connection	\$50,000	
Heavy industrial building, large span portal frame		
Size 50L x 30W (m), 7m height		
Roof and walls Colorbond cladding		
Large opening steel roller doors		
Reinforced concrete slab	\$1,425,000	
	\$55,000	
Overhead gantry crane (10t)	\$180,000	
Consultant engineering design (8%)	\$175,000	
Design contingency (10%)	\$220,000	
Construction contingency (7.5%)	\$165,000	
SUB-TOTAL	\$3,316,000	\$382,000
TOTAL		\$3,698,000
FUNDING REQUIRED		\$3,698,000
ACCELERATOR PROGRAM		
Incremental startup recruitment, training, mentoring and administration		\$100,000
For the cohort (\$10,000 x 10 startups)		\$100,000
Travel (25-30 individuals interstate once/twice for the demonstration day)		\$50,000
TOTAL		\$250,000
FUNDING REQUIRED		\$250,000

Total required funds to build and coordinate the Innovation Launchpad with embedded Accelerator for five years = **\$3,948,000**



CONCLUSION

This proposal from the NSW Energy and Resources Knowledge Hub, with support from NIER and the University of Newcastle, is to seek the funding required to build and coordinate an Innovation Launchpad, with an embedded METS Accelerator.

This dedicated research and technology facility will give SMEs the resources, knowledge, networks and infrastructure to transform ideas into enterprise.

This proposal is an acknowledgment of the need to provide Australian innovators with an asset to overcome common barriers to innovation and support them to achieve their commercialisation objectives.

The anticipated impact is increased innovation activity for the energy and resources sector, with improved business benefits leading to competitive advantage and jobs growth for NSW.

In submitting this proposal we recognise the importance of effective state, national and international engagement between government, industry and research, and the need to focus on rapid deployment and facilitation of outcomes to ensure a strong future for the energy and resources sector, and Australia's economy.



CASE STUDY EXPLORING THE POTENTIAL WITH EXISTING SUCCESS: EVOCRA WATER SOLUTIONS EVOLVED

As an emerging water treatment company focused on remediating industrial wastewater, the Evocra patent technology was originally applied to remediate acid mine drainage. It has since demonstrated increasing potential more broadly within the mining and minerals processing sector, as well as across other sectors.

Within 12 months of being hosted at NIER, Evocra achieved their first commercialisation opportunity and their staffing needs have since doubled. Evocra now has a Tier 1 client, partnerships with two international engineering firms, and have turned their business thinking from focusing on "Proof of Concept" to "Planning for Success."

Evocra was nominated as a finalist for the 2017 Australian Technologies Competition Cleantech Award for Technologies.

Evocra cites the collaborative framework of the NIER engagement model to be integral in:

- Validating their technology
- Hosting their demonstration plant, enabling them to conduct trials and test
- Assessing the potential need by industry for their technology
- Framing the competitive landscape of comparative/competing technologies
- Engaging in the optimisation of their treatment process
- Providing research and review on the development of new applications and technologies
- Creating pathways to industry and opportunities
- Supporting their engagement with international engineering firms, and
- Mentoring Evocra in the commercialisation of their business plan.

ENDORSEMENT

The NSW Energy and Resources Knowledge Hub proposal to build and coordinate an Innovation Launchpad facility at NIER has been endorsed by the following organisations:



“As Australia’s leading industry body supporting the Mining Equipment, Technology and Services sector, Austmine supports the Innovation Launchpad and its aim to help the energy and resources sector to grow by facilitating targeted opportunities for collaboration and problem solving. Giving SMEs access to pilot scale testing and demonstration infrastructure will fill an essential need as they navigate the path to commercialisation.”
~ Christine Gibbs Stewart, CEO, Austmine.



“We believe that this initiative will be highly productive and lead to significant benefits for the energy and resources sector, and Australia’s competitiveness.”
~ Michael Ulph, Market Leader Environment, Senior Communications Specialist, GHD.



“The launchpad would be very useful for providing support services for development and testing of new energy storage and energy management technologies in NSW. It would also enable some collaboration with services in the energy generation and supply areas, which are often difficult to access by enterprises in pilot demonstration mode.”
~ Mary Hendriks, Industry Executive, Australian Energy Storage Alliance.



“This project will play an important role in continuing to grow and inspire our members by bringing new technologies and services to market, and providing training and education pathways needed for a thriving sector.”
~ Wayne Diemar, Project Director, Hunternet.



“Our support is based on firsthand experience of the benefit a collaborative framework can unlock with NIER as a host and supporting partner. We achieved our first commercialisation opportunity within 12 months of being hosted at NIER and have since doubled our staffing needs.”
~ Mark Sykes, CEO, Evocra PTY LTD.



“This is a valuable program in delivering opportunity for greater collaboration, research and outcomes across the region. The Innovation Launchpad will provide SMEs with access to important testing processes on their journey to commercialisation. The Chamber is delighted to support this initiative aimed at growing success in the Hunter,”
~ Bob Hawes, CEO, Hunter Business Chamber.



Advisian
WorleyParsons Group



APPENDIX: NETWORKS

The NSW Energy and Resources Knowledge Hub and NIER are strengthening their domestic and international networks, and acknowledge their partnerships and associations with the following organisations:

NSW Minerals Council	METS Ignited	Muswellbrook Shire Council
Minerals Council of Australia	University of Sydney	Business Growth Centre
BHP	Energy Change Institute	Energy Efficiency Council
Glencore	BASF	Anglo Platinum
Centennial Coal	Orica	Galaxy Resources
The Bloomfield Group	Forgacs	Tata Steel (coal and barite)
AMIRA	Varley	Curragh Westfarmers
FLSmidth	AusIndustry	Superior Coal
Sedgman	Austrade	Iluka
Australian Coal Research Limited	Industry Capability Network	Bemax
Rio Tinto	Small Business Connect	Innovative Shipping
Anglo American	Regional Development	Koolgarra Sands
TUNRA Bulk Solids	Australia	Arafura Resources
Vale	EFIC	Vector Australia
Fortescue Metals Groups	NSW Business Chambers	Bluestone Tin
Roy Hill	i3net	BMA
Cliffs Minerals	ICTI	Gallagher Consulting
Scantech International	SDIG	IFM
Jord International	Cross Border Commissioner	Sasol Coal
BHP Mitsubishi Alliance	NSW Department of Industry	JVC Copper
New Hope Coal	NSW Office of Environment & Heritage	Metallicon
Peabody	Hunter Valley Research	Dwarsrivier
Idemitsu	Foundation	Consolidated Tin
Australian Bauxite Limited	Business Growth Centre	Nagrom
Arrium Mining and Materials	Hunter Development	BlueScope
Schenck Process Australia	Corporation	Laing O'Rourke
WEARX	Central Coast Development	Control Systems Australia
Aurecon	Corporation	Nepean Group
Ausenco	Property Council of Australia	Continental Conitech
Hatch	Newcastle Port Corporation	Calibre Minerva
Conveyor Dynamics	Riverina International Trade	Conveyor Science
Muswellbrook Chamber of Commerce and Industry	Network	Australian Energy Storage Alliance
RDA Hunter	Australian Institute of Export	GHD
Dantia	Australian Industry Group	Singleton Council
Senvion	Hunter Business Chamber	Singleton Business Chamber
Evergen	Austmine	Engineers Australia
Advisian	AGL Energy	Australian Energy Institute
TUNRA	GE Global Growth	NERA
Hunternet	CSIRO Energy	Advantage SME
	UTS:ISF	

