NEXT GENERATION RESOURCES PARK

UNIVERSITY OF NEWCASTLE
AUSTRALIA

2026 PROSPECTUS

Contents

The University of Newcastle acknowledges the traditional custodians of the lands within our footprint areas: Awabakal, Sarkinjung, Biripai, Worimi, Wonnarua, Gomeroi, and Eora Nations. We pay respect to the wisdom of our Elders past and present. We extend our acknowledgement and respect to all Aboriginal and Torres Straight Islander Nations from which our students, staff and community are drawn.

A REGIONAL CATALYST

The Hunter Region is Australia's largest regional economy, boasting a robust asset base, established supply chains, and a skilled workforce driven by the METS, energy and manufacturing sectors.

As global and national policies shift towards a new energy future, leveraging existing assets and diversifying the Hunter economy will be vital to ensuring long term regional resilience, and fostering the existing and emerging industries which sustain our communities.

Regional participation in the net zero economy will rely on cross-sector collaboration to attract new industries, stimulate innovation, and enable workforce and skills to diversify.

The Next Generation Resources Park (NextGen Park) presents a key link to this transformation, providing a unique model of strategic cooperation that will serve the region to maximise participation in the industries of the future. In cooperation with key stakeholders, the NextGen Park will leverage the region's strong industrial heritage and position the Hunter as a critical national asset in the new energy economy.

Harnessing the capability of existing assets and leveraging new investment, the NextGen Park will provide the infrastructure and enabling mechanisms to support the innovation ecosystem in sectors vital for the Region's sustainability and competitive advantage.

Through its state of the art manufacturing capability and testbed facilities, the NextGen Park will de-risk and accelerate technology into sectors vital for sustainability and competitive advantage, while delivering strategic education pathways to train and accredit the region's diversifying workforce.

Recognising the need for a coordinated regional approach, the NextGen Park will connect with key initiatives in the Hunter—including the Port of Newcastle Clean Energy Precinct, the AGL Hunter Energy Hub and Hunter Joint Organisation—to advance regional cooperation, guide strategic investment, and balance environmental, social and economic priorities to strengthen regional resilience in the emerging new energy economy.

By integrating and reinforcing industry, research and education, the NextGen Park will create a holistic ecosystem; where industry challenges drive applied research, research insights lead education, and education shapes the skilled workforce needed for industrial innovation and growth.

BACKGROUND

Shaped by the region's industrial heritage, the University of Newcastle has built a long-standing and enduring commitment to innovation, education, and community impact. Building on this success, and supported through $30 million in Australian Government funding from the Education Investment Fund, the University established NIER in 2010 as a flagship institute designed to bolster Australia's competitive advantage in energy and resources and drive regional and national progress.

From its inception, NIER has served as a nationally recognised nexus for industry and academia, driving innovative solutions at the forefront of clean energy and sustainable resource development in our region and beyond. Through this demonstrated commitment to driving innovative change in our region, the University successfully secured over $36 million of Australian Government funding in 2024 to develop the Future Industries Facility and Energy Skills Hub through the Regional Precincts and Partnership Program (rPPP), and the Priority Community Infrastructure Program (PCIP).

STRATEGIC ALIGNMENT

The NextGen Park aligns with several initiatives and policy objectives of both the Australian Government and NSW Government, with an emphasis on delivering transformative investment to support strong and sustainable regions.

AUSTRALIAN GOVERNMENT	
National Reconstruction Strategy	Enable industry development in priority areas, including value-add in resources, renewables and low emission technologies, and enabling capabilities.
Future Made in Australia	Enabling skills and training to build Australia's future workforce; Renewable energy, industrial innovation and technology, attracting and enabling investment.
National Science and Research Priorities	• A diverse, skilled workforce to underpin the translation of science into new industries • Embracing science to drive Australia's regional and global interests by placing science at the centre of Australian industry.
Critical Minerals Strategy	• Unlocking enabling infrastructure and services to develop industrial hubs linking the critical minerals sector to global partners • Growing a skilled, diverse workforce that enables a thriving critical minerals sector.
NSW GOVERNMENT	
Hunter Regional Plan 2041	• Diversify the Hunter's mining energy and industrial capacity • Reach net zero and increase resilience and sustainable infrastructure
NSW 2040 Economic Blueprint	• Innovative, world class businesses • Sustainable environmental and resources management
UNIVERSITY OF NEWCASTLE	
Looking Ahead 2030	• Life-ready graduates • Engagement that connects • Research with impact

ADDRESSING KEY CHALLENGES

Risk Management

Effective risk management in innovation begins with understanding the critical vulnerabilities that arise during the intermediate phase of technology development. The “Valley of Death” refers to this high risk phase in the innovation cycle, when a technology moves from lab validation to pilot deployment. At this point, technical and commercial risks are highest, traditional funding sources become scarce, and capital raising is difficult due to the absence of proven competitive advantage. Bridging this gap requires aligning technical progress with commercial traction while operating under significant financial restraints, a difficult task without established enabling mechanisms.

Access to Infrastructure

Small and Medium Enterprises (SMEs) often lack the capacity to fund the scale up of their technology without taking on significant risk. Without access to fit for purpose facilities to test and de-risk their technology, the failure of promising innovations at a critical stage becomes a predictable outcome.

Workforce Expertise

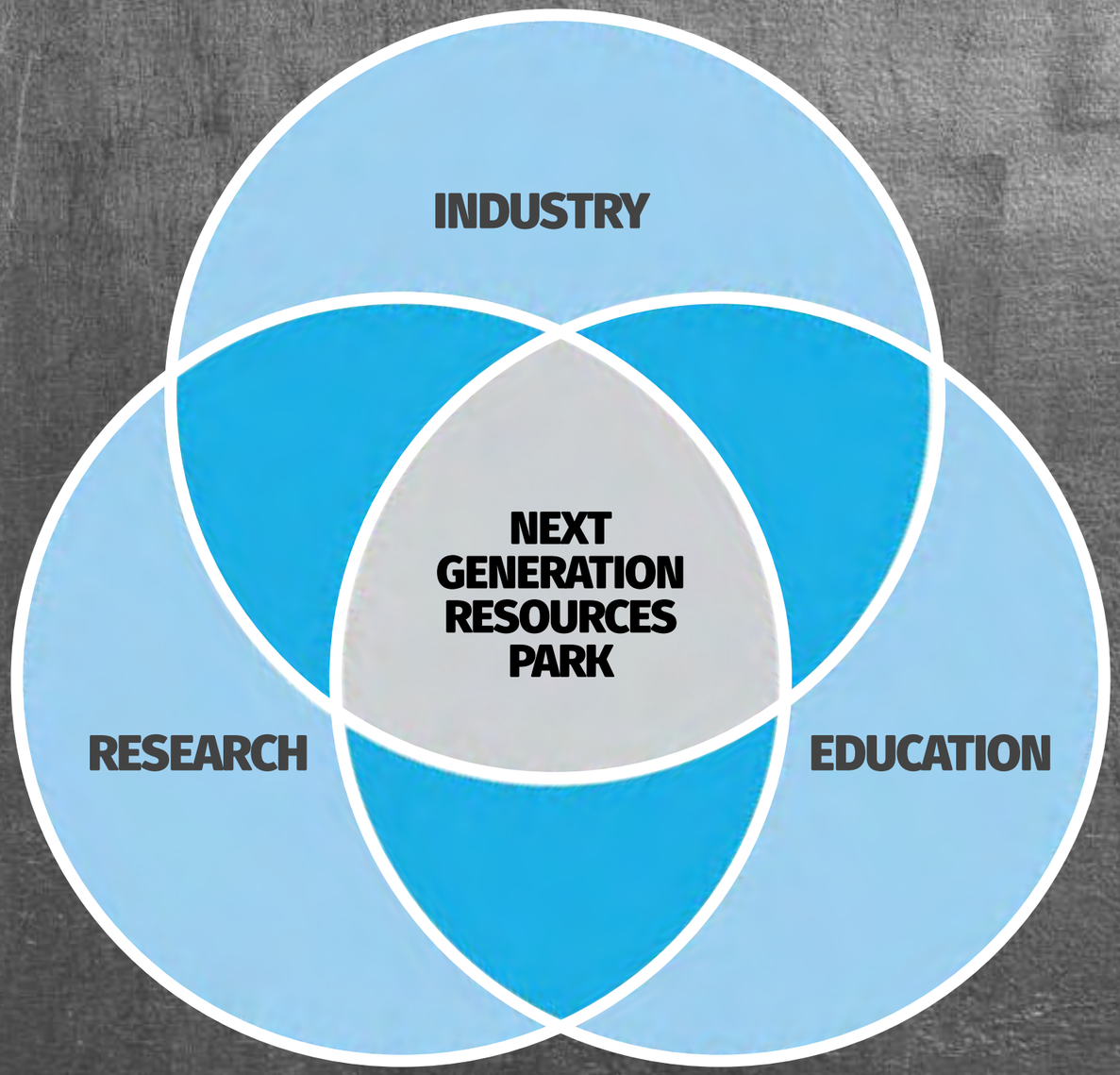
Cooperation is required across industry, research and education institutions, government, and community to support research, innovation and enable workforce and skills development in the Hunter. Current education pathways and training programs are still evolving to meet the skills requirements of significant projects and investments in the region. Furthermore, standards and regulation across emerging industries are not yet set, creating an urgency for an agile education and training system that can respond to market needs.

Effective collaboration

Successful innovation relies on a culture that encourages and is conducive to collaborative effort and knowledge sharing across industries. The highly competitive nature of the energy and resources sector impedes companies’ willingness to foster a culture of collaboration, constraining SME activity and slowing the sector’s response to changing market demands.

Commercial Growth Pathways

Limited business expertise and access to support leaves many SMEs struggling to navigate the path to commercialisation without the flexible business models required. Structured support and knowledge exchange is essential for allowing confident navigation of challenging business issues relating to IP, commercialisation, and market readiness.



MODEL OF ENGAGEMENT

To support a successful regional transition and capture the opportunities of a new economy, we must establish a pivot point where research, education and industry come together.

The NextGen Park will operate at the intersection of these three key pillars.

- **Industry-research** collaborations are critical partnerships that bridge the gap between theoretical knowledge and practical application. NIER maintains a strategic approach to industry engagement supported by frameworks that enable interdisciplinary collaboration, connecting academic excellence with market needs.

- Collaboration between higher **education** providers and **industry** is crucial in preparing students for the workforce. Integrating academic study with real world experience ensures graduates develop the specialised knowledge, advanced capabilities and adaptability to meet evolving industry needs.

- The interplay between **research** and **education** is a fundamental concept underpinning university practice. Integrating research output within an educational setting fosters a holistic and impactful learning environment, enhancing student outcomes by demonstrating the relevance of research as it translates into real world contexts.

NEXT GENERATION RESOURES PARK
Bridging research, industry, and education.

By integrating and reinforcing these key pillars, the NextGen Park will create a holistic ecosystem; where industry challenges drive applied research, research insights lead education, and education shapes the skilled workforce needed to drive industrial innovation and growth.

Strategic investment across these three pillars will build a continuous cycle of knowledge exchange and capability development, strengthening the region's long term economic resilience and prosperity.

THE NEXTGEN PARK

As a premier University based Industrial Hub, the NextGen Park will facilitate a cooperative delivery model with key stakeholders to de-risk innovation and accelerate critical skills development in sectors critical to Australia's policy objectives, acting as a regional catalyst to build critical mass across existing and emerging industries.

Integrating strategic assets from both NIER and the College of Engineering and Science (CESE), the precinct will deliver a comprehensive integrated ecosystem offering the tools and opportunities for high impact partnerships and an accelerated pipeline of transformational skills and technologies.

Collaborative workspaces

Equipment and testbed facilities

Industrial scale workshops

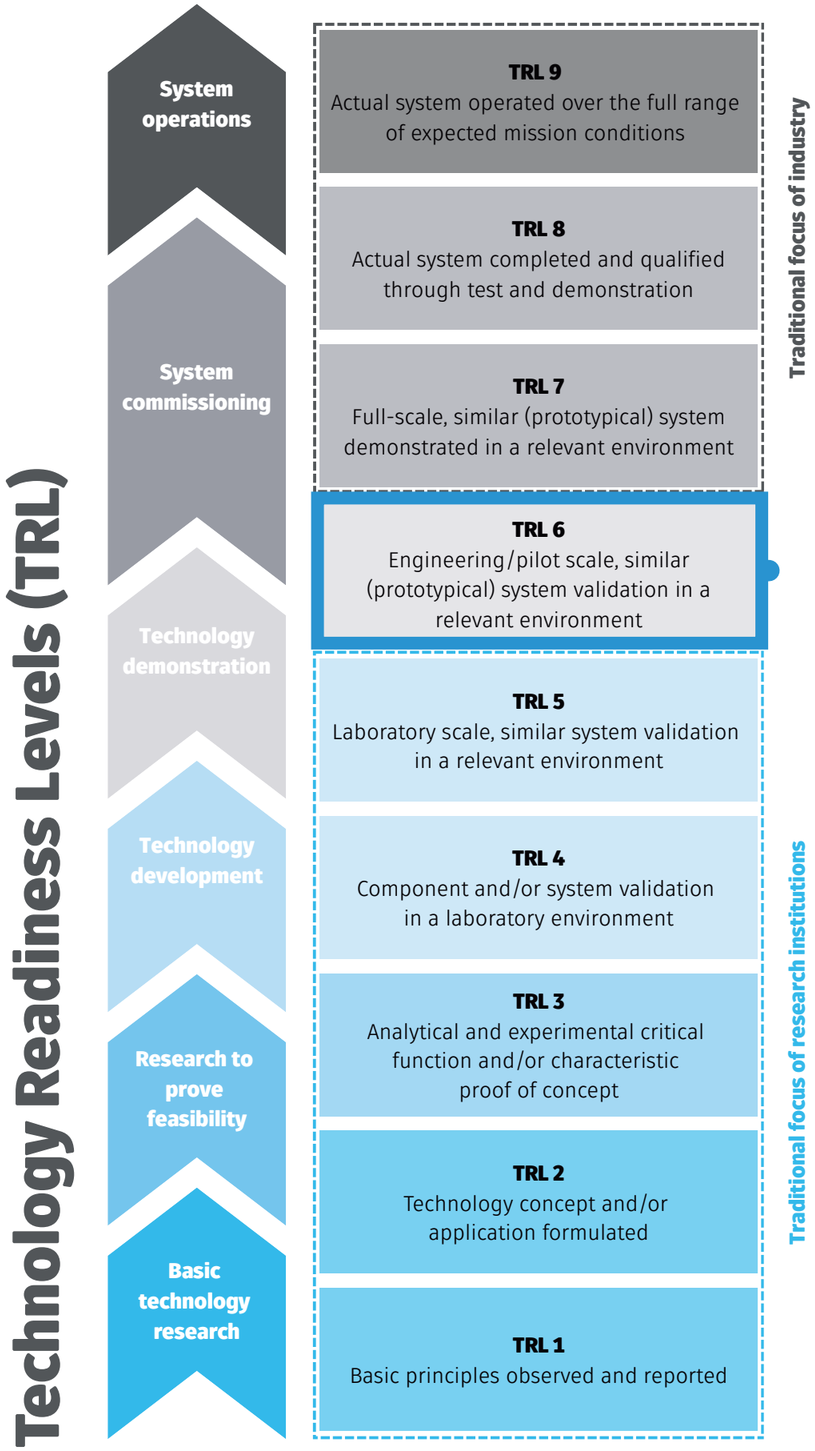
Technical support and expertise

Education and training

Student pathways

Manufacturing capability

Access to regional precinct network



Source: Scync analysis of ARENA (2019)
Technology Readiness Levels Guide

TECHNOLOGY READINESS LEVELS

The Technology Readiness Level (TRL) is a globally accepted benchmarking tool for tracking progress and supporting development of specific technology through the early stages of the innovation chain. The NextGen Park brings together various assets working together to allow technology to move through the TRL phases into commercialisation.

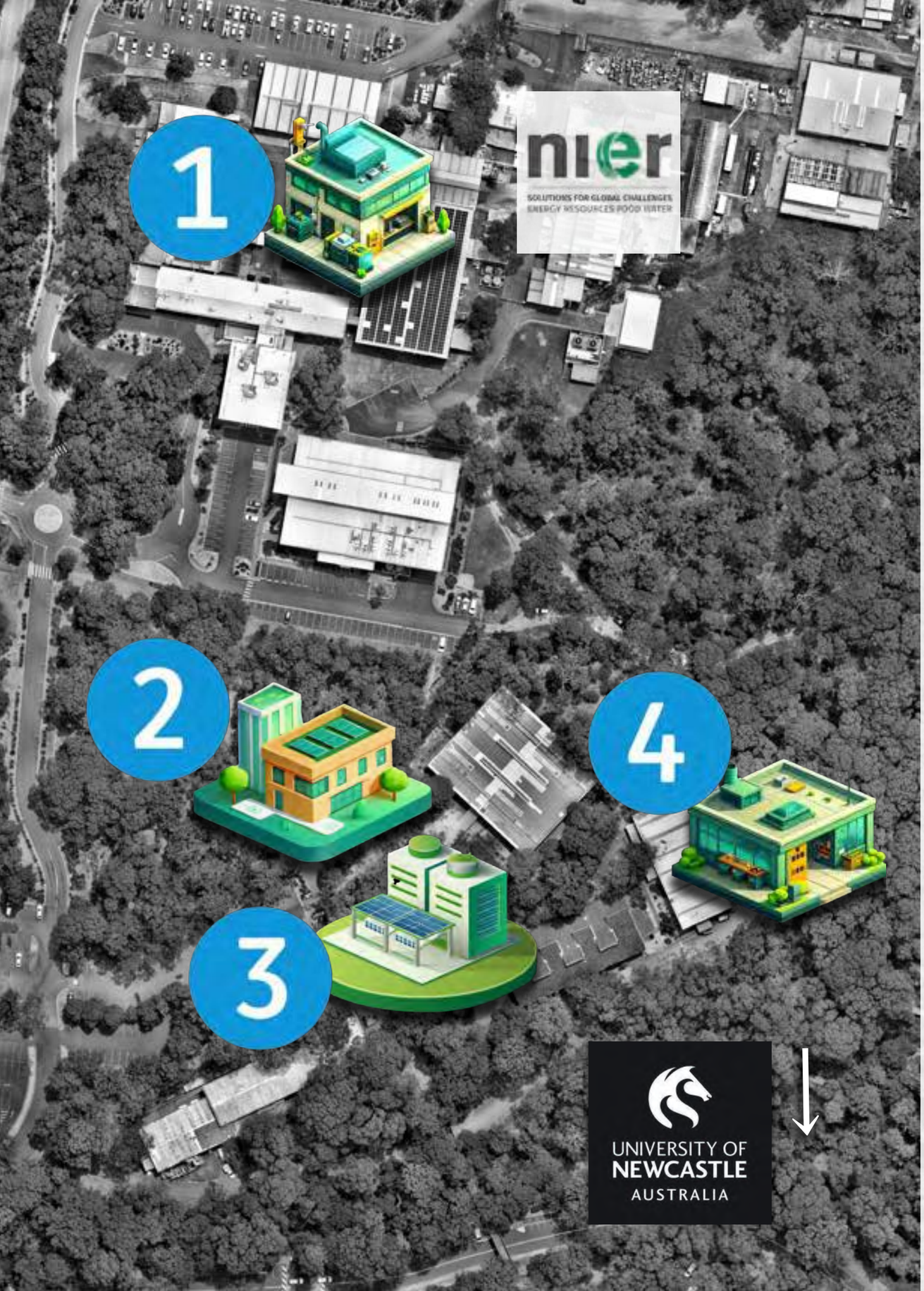
TRL 6

TRL 6 is a key milestone in the technology demonstration phase and represents a major step in a technology's demonstrated readiness, moving product testing from laboratory scale to engineering scale.

As such, TRL 6 often represents a 'sticking point' requiring resources from both innovation originators (e.g. universities) and businesses. De-risking this phase through the provision of capital assets (i.e. lowering the cost to industry) will help to accelerate a technology's pathway to commercial readiness. These capital assets need to support:

- Prototype solutions capable of addressing full-scale realistic problems,
- An operating environment for testing representative of the actual environment,
- Engineering feasibility validated in actual system application.

Source: Scync analysis of ARENA (2019)



NEXTGEN PARK
SITE PLAN

1. MODERN MANUFACTURING WORKSHOP
2. NEW ENERGY SKILLS HUB
3. FUTURE INDUSTRIES FACILITY
4. ADVANCED PROTOTYPING FACILITY

FUTURE INDUSTRIES FACILITY

A purpose-built co-location facility enabling research experts, industry and end-users to collaborate on pre-commercial trials and testing. Market driven and industry-led, the Future Industries Facility (FIF) is a catalyst for new technologies, education and training.

Moving product testing from laboratory to pilot scale represents a major milestone in technology's demonstrated readiness, requiring significant capital investment and resources to validate and accelerate a technology's pathway to commercial readiness. The FIF will de-risk this essential phase, supporting up to 16 industry-research partnerships simultaneously to pilot and validate new enabling technologies from research phase to market inception.

With two 1000 sqm Industrial scale workshops, the FIF delivers targeted demonstration space designed for large scale prototyping for next generation industries, providing:

- Infrastructure to support prototype solutions capable of addressing full-scale operational considerations,
- An operating environment for testing representative of an actual operating environment at scale,
- Access to a multi-disciplinary community of researchers, academics and technicians to achieve engineering feasibility validated in actual system application, and
- Opportunities for integrated skills development; access to co-designed industrial experience programs shaping technical skills and practical workforce experiences for a pipeline of trained, work-ready students.

NEW ENERGY SKILLS HUB

State-of-the-art infrastructure alongside a collaborative education model geared to build capacity, strengthen capability, and aggregate workforce and skills development across future energy systems.

A first of its kind facility in the Hunter, the New Energy Skills Hub bridges the critical gap between world class research infrastructure and industry application, enabling both a proving ground for new energy technologies, and a hybrid education model to address market-identified critical skills development.

The Skills Hub will train, accredit and diversify the regions new energy workforce, offering diverse cooperative solutions between education providers and industry in a wide range of fields. The Skills Hub hosts specialised plant and equipment across five core functional areas:

- **Clean energy technologies**
- **Electrochemical systems**
- **Sustainable fuels**
- **Smart grid and power engineering**
- **Materials science**

Research, testing and demonstration

With specialised equipment and unique technical capability, the Hub will serve as a testbed for industry, providing the tools and capability to test and enhance systems and components across all five functional areas.

Education and training facilities and programs

In co-development between University, TAFE and industry, the Hub will provide access to an enhanced technical skills and education offering for the region, including:

- Upskilling and re-skilling
- Short courses and micro-credentials
- Competency Accreditation and Technical Development Accreditation
- Embedded learning pathways for VET, undergraduate and postgraduate courses
- Bespoke industrial/commercial courses
- Market driven STEM pathways
- Industry placements

Co-Location

The Precinct provides a range of open plan and flexible workspace areas, offices, informal and formal meeting spaces, high speed WIFI, print, and scan facilities. Teamed with kitchen and breakout areas, these facilities offer industry teams the convenience of being embedded in the precinct model for the duration of their project.

MANUFACTURING FACILITIES

Modern Manufacturing Workshop (MMW)

Specialised fabrication and manufacturing machinery with dedicated research and engineering expertise to develop and/or scale up the manufacturing of prototypes, from the incorporation of new technology in commercial designs, to pilot scale manufacture and full commercial deployment.

Advanced Prototyping Facility (APF)

Central Hub to support next generation manufacturing through access to state-of-the-art equipment and tools for high-end prototyping. The APF brings together machinery, multi-use facilities and expert technical support to design, develop and manufacture new parts and technologies.

Australian National Fabrication Facility (ANFF)

ANFF offers specialist equipment and expertise in the design, development and fabrication of nanostructured electronic materials and devices. The only facility of its kind in Australia, the ANFF Hub offers extensive and unique capabilities in functional printing, rapid prototyping and surface characterisation.

A NETWORK OF OPPORTUNITY

Newcastle Institute for Energy and Resources (NIER)

A world class facility with vast technical capability, NIER provides a critical mass of leading researchers across disciplines undertaking innovative industrial research. Supporting 18 Research Centres, NIER facilitates activities that enable our research community to drive impact, bringing together research and industry to provide transformational solutions improving environmental, social and economic outcomes across the critical sectors of energy, resources, food and water.

The Australian Trailblazer for Recycling and Clean Energy (TRaCE) Program

Supported by the Commonwealth Government, the TRaCE initiative combines infrastructure, knowledge and pathways to de-risk research commercialisation, accelerate R&D solutions, and deliver the enabling programs to develop the capability, skills and ecosystems needed to support a new energy industry.

The NSW Energy and Resources Knowledge Hub

As the central anchor of a broad regional engagement network, the NSW Energy and Resources Knowledge Hub fosters lasting partnerships between industry, research organisations, and government - driving innovation and supporting sustainable growth across Australia's energy and resources sector.

Doctoral Training Centres (DTC)

NIER's DTCs provide industry embedded PhD programs and training to produce impactful research outcomes, job-ready graduates and strong links between industry and universities.

Integrated Innovation Network (I2N)

I2N supports the region's business and innovation, providing the commercial tools and connections to validate and scale innovations and ideas. I2N programs teach business skills, test ideas, validate market pathways and support enterprise at various stages of development.

GOVERNANCE

The NextGen Park will operate under an efficient governance structure, leveraging existing safety and governance frameworks established for industrial Innovation carried out by NIER, and integrated with a new cooperative governance model with strong external stakeholder and end-user representation.

PROJECT BOARD

- Representation includes members from Infrastructure and Facilities Services (IFS), College of Engineering, Science and Environment (CESE), NIER and Wellbeing Health and Safety (WHS).
- Responsible for overseeing the implementation of the capital works project in the precinct.
- Provides direction and coordination between business operations and project delivery, including oversight of both infrastructure and operational readiness workstreams.

NEXT GEN PARK INDUSTRY ADVISORY BOARD

- Comprised of representatives of key cross-sector industry stakeholders.
- Drive the development of a forward-thinking framework that supports the precinct mission; ensuring relevance, sustainability, and effectiveness in addressing current and future energy and resources skills needs.
- Facilitate partnerships with Industry and regional networks.
- Provide the overall strategic direction and guidance in relation to precinct industry partner tenancy consistent with University of Newcastle practice.

NIER MANAGEMENT COMMITTEE

- Membership includes representatives from Research and Innovation Division (R&I) , College of Engineering, Science and Environment (CESE), Infrastructure and Facilities Services (IFS) and Wellbeing, Health and Safety (WHS).
- An internal University body responsible for overseeing major infrastructure projects, operational activities, and space utilisation across the NIER precinct, ensuring appropriate occupancy and advising on best practice facility use.

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FOR MORE INFORMATION

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