



HUNTER 2013 INNOVATION SCORECARD

AUSTRALIA'S MOST
INNOVATIVE REGION
THE HUNTER



THE HUNTER INNOVATION SCORECARD SHOWS THAT DOING BUSINESS IN THE HUNTER IS SMART

CONTENTS

THE HUNTER: AUSTRALIA'S MOST INNOVATIVE REGION 01

The Hunter's Innovation Networks.....01

The Hunter Innovation Scorecard.....01

FOREWORDS..... 02

Marcus Westbury.....02

Senator the Hon Kim Carr.....03

The Hon Andrew Stoner MP.....04

Professor Caroline McMillen.....05

THE HUNTER'S INNOVATIVE ENVIRONMENT 07

SLINGSHOT08

HUNTERNET.....08

HUNTER MEDICAL RESEARCH INSTITUTE09

NIER.....09

HUNTER INNOVATION RESEARCH 10

FINDINGS..... 11

CASE STUDIES 15

C-E SOLUTIONS.....15

RENEW NEWCASTLE16

THE CRUCIBLE GROUP PTY LTD.....16

VARLEY GROUP.....17

ROTACASTER WHEEL17

BROKENWOOD WINES.....18

VIRALYTICS LIMITED.....18

ADVITECH GROUP19

mobiLIFE19

ACKNOWLEDGEMENTS 20

2013 Hunter Innovation Scorecard Committee.....20

Supporters.....20





THE HUNTER IS AUSTRALIA'S LARGEST REGIONAL ECONOMY WITH A GROSS REGIONAL PRODUCT OF \$37 BILLION IN 2012. OVER THE NEXT TWO DECADES, THE HUNTER'S AVERAGE ANNUAL GROWTH RATE OF 2.4% WILL BE ABOVE THE NSW AVERAGE, EXPECTED TO BE 2.1%.

A STEADY RISE IN INCOMES AND LIVING STANDARDS IS ANTICIPATED FOR HUNTER RESIDENTS AS THE REGION'S POPULATION INCREASES FROM 650,773.

THE HUNTER: AUSTRALIA'S MOST INNOVATIVE REGION

THE HUNTER'S INNOVATION NETWORKS

The Hunter's capacity to innovate is well documented and celebrated. Collaboration underpins its innovation system and continues to grow.

The *University of Newcastle* is approaching 50 years as a stand-alone institution and its dedicated innovation and research centres, including flagship entities the *Hunter Medical Research Institute* and the *Newcastle Institute for Energy and Resources*, provide opportunities to create and exploit world class knowledge and ideas. Similarly, the CSIRO's Energy Centre cements the Hunter as a leader in clean energy technology innovation.

Hunter TAFE is Australia's largest regional vocational provider and has forged innovative partnerships to provide skills training to support business, industry and the community.

Collaborative networks are a cornerstone of the Hunter's innovative culture. *HunterNet*, for example, encourages innovation and collaboration between a network of over 150 manufacturing, engineering and consulting firms representing the diversity of industries that are successfully operating in the region. The *Hunter Clean Technology Network* links businesses with government programs, researchers and the latest development initiatives to determine smarter ways forward.

As the digital economy takes off, the Hunter is providing a rich environment for tech start-ups, high tech accelerators and alternative urban revitalisation projects.

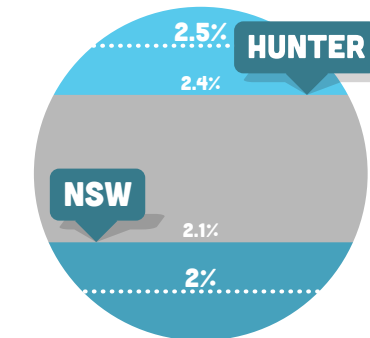
The Hunter's diversity in economic activity, educational opportunities, lifestyle, research centres and a supportive innovation culture means smart happens here.

THE HUNTER INNOVATION SCORECARD

Innovation by definition is the act of doing something new. Businesses that encourage an innovative culture and are putting in place innovative practices are known to be more successful as this enables business to stay ahead of the competition as markets, technologies or trends shift.

In a first for regional Australia, the Hunter Innovation Scorecard (HIS) measures the region's innovation footprint and promotes its innovative capabilities in research and development, education and various industry sectors as well as promoting the strong culture of innovation.

This RDA Hunter initiative has been realised by a collaborative group from Newcastle Innovation, PricewaterhouseCoopers, Hunter Valley Research Foundation and AusIndustry.



OVER THE NEXT TWO DECADES, THE HUNTER'S AVERAGE ANNUAL GROWTH RATE OF 2.4% WILL BE ABOVE THE NSW AVERAGE, EXPECTED TO BE 2.1%



THE HUNTER IS AUSTRALIA'S LARGEST REGIONAL ECONOMY WITH A GROSS REGIONAL PRODUCT OF \$36.9 BILLION IN 2012



A STEADY RISE IN INCOMES AND LIVING STANDARDS IS ANTICIPATED FOR HUNTER RESIDENTS AS THE REGION'S POPULATION INCREASES FROM 650,773

FOREWORDS

MARCUS WESTBURY

Founder and Creative Director
Renew Newcastle

I was in Melbourne at a property industry sustainability forum earlier this year. As it wrapped up, I was asked – only half-jokingly – whether innovation in the property sector was “the Newcastle show?”

The afternoon sessions were bookended by the CSIRO’s Energy Centre at Steel River showcasing the range of high tech innovations that they are working on and me showing off the decidedly low-fi, low- tech innovations pioneered by Renew Newcastle. Both come from the Hunter and both are increasingly being adopted in communities across Australia and around the world.

It’s no secret that the Hunter has had more than its share of challenges and changes over recent decades. It’s also a key reason why the region has such great innovators as the Hunter is an area that has had to adapt and apply its own resourcefulness and creativity in doing so.

Renew Newcastle is a microcosm of many of these stories. Ours is the kind of improvised innovation that comes from adversity. It’s a tie-it-up-with-wire solution to a practical problem in Newcastle – empty and underutilised shops and offices dotted throughout the CBD. It turns out the Hunter’s problems are Australia’s problems and Australia’s problems are the worlds. There are now Renew projects and Renew-inspired projects in places from Ontario to Rotterdam.

Renew Newcastle may not seem to have a lot in common with some of the hi-tech innovators showcased in the Hunter Innovation Scorecard but they too are adapting to the challenges of change. It’s the nature of innovation that it can be resourceful and practical, cheap and cheerful, or hi-tech and massive. Innovation is the application of creative thinking to practical problems, often starting with tough questions or difficult challenges. It inevitably involves a bit of trial and error and almost always requires a little bit of help along the way.

That’s the other reason the Hunter’s innovators are thriving. Whether it’s the diverse energy research programs being undertaken by the CSIRO, the manufacturing expertise at HunterNet, the start-up sector through Slingshot, or the life-saving and changing Hunter Medical Research Institute, the sustainability leadership at the Newcastle Institute for Energy and Resources, or the creative industries seeded by Renew Newcastle, the Hunter is full of enablers progressing their own innovations and connecting and supporting the work of many others.

The Hunter Innovation Scorecard is a great reminder of the work being done already and a great benchmark against which to measure how we will continue to rise to the challenges of change.



“ THE REGION HAS SUCH GREAT INNOVATORS AS THE HUNTER IS AN AREA THAT HAS HAD TO ADAPT AND APPLY ITS OWN RESOURCEFULNESS AND CREATIVITY IN DOING SO.

”

SENATOR THE HON KIM CARR

Minister for Industry, Innovation, Science and Research, Minister for Higher Education, Senator for Victoria

I am pleased and I know that Greg Combet the former Minister for Climate Change, Industry and Innovation and member for Charlton would also be pleased to see the launch of the Hunter Innovation Scorecard 2013.

The Hunter region, like others across Australia, has had its challenges as structural adjustment has seen the closure of some businesses along with the creation and growth of others.

However, the region has approached the future positively, with innovation and collaboration diversifying and strengthening the local economy.

With over 10,000 small and medium sized enterprises operating in the Hunter Region, there is a diverse employment base which includes coal mining and services, tourism, manufacturing, defence, health, horse breeding, wine and other agricultural products.

The launch of the Innovation Scorecard confirms the emergence of the Hunter as one of our more progressive and successful regions. It demonstrates that the region has an innovative environment with business, research and enabling organisations working together to foster innovation.

The results of the Scorecard will benchmark and showcase local innovation performance. As the variety in the Scorecard shows, innovation is not only about designing a new product or service to sell, but can also focus on existing business processes and practices to improve efficiency, find new customers, cut down on waste and increase profits.

The Australian Government recognises the importance of innovation to our national and regional economies. We know that innovative businesses are more productive, more profitable and more likely to increase staff. We know that innovation is critical to competing with the world’s best, both in quality and scale.

That is why our \$1 billion Plan for Australian Jobs this year made significant new announcements in relation to innovation.

Up to ten Industry Innovation Precincts will be established. These will be industry-led national networks to bring together our best industry and research capability from across Australia in areas of competitive advantage and emerging opportunity.

We have committed to a \$350 million fourth round of the Innovation Investment Fund, facilitating an extra \$700 million in investment in small, high growth enterprises.

These initiatives join a comprehensive package of government initiatives such as Commercialisation Australia, the Clean Technology Program, the R&D Tax Incentive and Enterprise Connect, assisting innovators right across the Hunter region. In total, the Government commits almost \$9 billion a year to science, research and innovation.

I congratulate the organisers and look forward to further innovative success for the region.



“ THE LAUNCH OF THE INNOVATION SCORECARD CONFIRMS THE EMERGENCE OF THE HUNTER AS ONE OF OUR MORE PROGRESSIVE AND SUCCESSFUL REGIONS.

”

THE HON ANDREW STONER MP

Deputy Premier and Minister for Regional Infrastructure and Services

I am proud to introduce the inaugural Hunter Innovation Scorecard (HIS). The scorecard is a Regional Development Australia (RDA) Hunter initiative which for the first time measures the region's innovation footprint and promotes its innovative capability in research and development, education and various industry sectors.

The Hunter is the first regional area in Australia to measure innovation in this way focusing on the drivers of innovation for companies in the region as well as setting the environment for innovative companies to thrive.

The theme for the 2013 scorecard is 'The Hunter's Diversity' and although it is more widely known for its traditional industries of coal, equine and wine, the Hunter has quickly gained a reputation for innovation with industries diversifying and adapting to new technologies.

The region is home to world-class research organisations including the University of Newcastle and Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Hunter has rapidly become an emerging centre for renewable energy and is well positioned to grow lucrative new "green" industries.

For instance, the CSIRO Energy Centre in Newcastle has become a solar thermal research hub and provides a focal point for energy research and demonstration, working with Australian and overseas partners.

The Hunter Clean Technology Project – a network of Hunter based SME companies – is also working collaboratively to position the Hunter as a hub for Clean Technology by developing strategies

to secure opportunities for the region and enable greater development of clean products and processes.

The NSW Government is committed to providing the necessary critical infrastructure and services to support the growth and development of these new industries to help build a vibrant, sustainable economy for the Hunter in a carbon constrained future.

For businesses to be successful in the global economy it is imperative they respond to their current customer or organisational needs and anticipate future trends and develop ideas, products or services to meet future demands rapidly and effectively.

To stay ahead of the competition as markets, technologies or trends shift businesses need to focus on existing business processes and practices and find innovative ways to improve efficiency, find new customers, reduce waste and increase profits.

Innovation will enable the Hunter to further diversify its economy, supporting a larger and better connected population, with healthy and thriving communities. The Hunter Innovation Scorecard is a positive step in this direction.



“THE HUNTER IS THE FIRST REGIONAL AREA IN AUSTRALIA TO MEASURE INNOVATION IN THIS WAY FOCUSING ON THE DRIVERS OF INNOVATION FOR COMPANIES IN THE REGION AS WELL AS SETTING THE ENVIRONMENT FOR INNOVATIVE COMPANIES TO THRIVE.”

”

PROFESSOR CAROLINE MCMILLEN

Vice-Chancellor and President The University of Newcastle

Research and innovation are the engine rooms for the economic growth and social health of our regions and the nation; and Australia's universities are key in the delivery of the national innovation agenda.

The University of Newcastle is delighted to partner with the government, businesses and our communities on the Hunter Innovation Scorecard. Through our 2025 Vision, the University of Newcastle aspires to be a global leader in each of our spheres of achievement and to work with our partners to ensure that it is world-class innovation that drives the development of strong regional communities.

Working in partnership with our community, we have built a strong research and innovation scorecard. The Times Higher Education and QS World University Rankings places the University in the top three per cent of universities in the world, and in the top 50 in the world under the age of 50. This is an excellent outcome for a young university competing against the world's best.

The University is a global leader in health and medical science, and in engineering and energy research, and we are home to outstanding researchers working across 15 Priority Research Centres. Nationally, UoN ranks in the country's top 10 research institutions, and more than 90 per cent of our research is rated at or above world standard by the Australian Government's Excellence in Research Australia assessment.

With the Hunter New England Local Health District and the community, the University has established the Hunter Medical Research Institute (HMRI), the only major medical research institute in regional Australia. The Newcastle Institute for Energy and Resources (NIER) is situated in a world-class energy precinct advancing research in sustainable energy production.

The University's research is translating into innovations that are contributing to the development of our regions every day. Innovations such as Professor Paul Dastoor's MobiDrip – a portable, self-powering, IV drug delivery device – are not only being used in hospitals but also creating vital employment in our community. Our University's Laureate Professor Graeme Jameson is internationally recognised for his invention of the Jameson Cell, a radically different flotation device that changed the face of mineral processing and now contributes \$4 billion a year in minerals exports to the Australian economy.

Our technology transfer company Newcastle Innovation, in conjunction with NIER and HMRI, continues to forge new partnerships to take the University's breakthrough technologies to the world.

The University of Newcastle in partnership with our communities holds a strong track record in innovation. This first Hunter Innovation Scorecard demonstrates the remarkable results that can be achieved as a region when we work together to ensure that it is world-class innovation that drives the development of our communities.



“WORKING IN PARTNERSHIP WITH OUR COMMUNITY, WE HAVE BUILT A STRONG RESEARCH AND INNOVATION SCORECARD.”

”

**THE HUNTER IS THE ONLY
REGIONAL AREA IN AUSTRALIA
TO MEASURE ITS INNOVATIVE
CAPACITY IN THIS WAY.**

**QUANTIFYING THE REGION'S STRENGTH IS CENTRAL
TO ITS GROWTH. THE RESEARCH RESULTS SHOW
THAT HUNTER BUSINESSES ARE WELL PLACED TO
MEET THE CHALLENGES OF THE INCREASINGLY
COMPLEX AND GLOBAL MARKET PLACE.
BENCHMARKING AGAINST OTHER CENTRES WILL
BE CONDUCTED INTO THE FUTURE.**



THE HUNTER'S INNOVATIVE ENVIRONMENT

Global contracts, worlds best practice, national innovation award winners – the Hunter is a hub for companies of all sizes that think and operate innovatively.

With a \$37 billion economy – the largest regional economy in Australia – the Hunter has built a sophisticated support network of professional services, infrastructure and peak body associations that recognise innovation as pivotal to its growth and sustainability.

One of the Hunter's key strengths is its collaborative business environment. Industry-led peak body associations contribute to a system of collective thinking where knowledge and outcomes are shared.

This collaborative system values, encourages and supports the development and implementation of innovation and is key to maintaining the Hunter's relevance in an ever-changing global market.

With an economy as diverse and complex as the Hunter's, enabling organisations play a vital role in connecting businesses with research institutes, education providers and other businesses who work together to foster innovation.

The 2013 Hunter Innovation Scorecard features just some of the diverse industries and their peak body associations that operate in the region. From organisations like the Hunter Founders Forum and angel investor groups to Smart Grid Smart City and Hunter DiGiT, the Hunter is at the forefront of investigating and supporting smarter and more inventive ways of doing business.

Highlighted in 2013 are four of the Hunter's thriving industries and the peak body associations that contribute to their continued growth and sustainability. These four industries have particularly strong enabler organisations – Slingshot, HunterNet, HMRI and NIER that are innovative in their own right.



SLINGSHOT

www.slingshotters.com

Slingshot is a high tech accelerator – one of only a handful in Australia and the first in a regional area – that provides seed funding, a dynamic co-working space, and a 12-week mentoring program that nurtures skills and relationships to enable entrepreneurs to build a remarkable company.

The way products and services are developed and funded is being profoundly changed and Slingshot is focused on developing entrepreneurs fully prepared for this new environment. Slingshot's program is driven by a set of hands-on mentors that provide the learning components of the program and a network of specialists in niche markets.

Slingshot is backed by a dedicated \$10million investment fund, has recognised corporate partners and tertiary institutions supporting the program and is driven by a hands-on philosophy that supports participants beyond the program. The organisation has deep roots in the local ecosystem and has strong relationships with media, business, government and the local digital community.

The first intake of eight start-up companies chosen from a field of 150 national and international applicants is due to complete the program in August 2013. Companies range from automated music collaborators to developers of an online shopping mall and a mine operations planning tool.

HUNTERNET

www.hunternet.com.au

HunterNet has several key areas of focus including:

- Identifying and assisting members in pursuit of business development opportunities
- Coordinating collaboration of members' capabilities and efforts to maximise commercial advantage
- Provision of professional development and training to members
- Government advocacy
- Pursuit of group procurement and strategic sourcing opportunities
- Management and provision of apprentices and trainees through our group training company

As an organisation, HunterNet needs to pursue innovative developments and opportunities to ensure its long term strategic growth and to increase its value to members.

Given the changing nature of engineering and manufacturing industries in the Hunter region, HunterNet is positioning itself to engage with emerging industries on behalf of its members.

Particular areas of focus include CleanTech, energy efficiency, and

advanced technologies servicing the Defence Industry.

Media outlets have reported on the current economic downturn widely in recent months. Given HunterNet represents over 200 members that are predominantly SME's in the engineering and manufacturing sector (with a focus on infrastructure, defence, and mining industry segments), the importance of diversification and innovation can not be overstated. HunterNet is working with SME's to:

- Develop new products and service offerings
- Pursue new markets
- Introduce new technologies and processes to improve internal operational efficiencies

The focus for HunterNet members currently is to invest in innovation now to:

1. Maintain operations in the current economic climate
2. Develop new opportunities in new markets
3. Position themselves for the recovery (there always is one!)



HUNTER MEDICAL RESEARCH INSTITUTE

www.hmri.com.au

The Hunter Medical Research Institute (HMRI) aims to provide functional and innovative research buildings, facilities and support services that integrate research and clinical service settings, partnerships with industry and shared infrastructure platforms.

The HMRI Building was purpose-built for co-location of biomedical, public health and clinical researchers in close proximity to the region's largest teaching hospital, facilitating effective translation of research into improved health outcomes.

Clinical trials play a key role in research translation and HMRI recognised the need for researchers to have access to dedicated clinical trials facilities. HMRI developed the HMRI Clinical Trials Centre (CTC) as a core element of the new HMRI Building.

The HMRI CTC is an important service for researchers involved in both industry and investigator-driven clinical trials, and there has been increased interest in the HMRI CTC from researchers who hadn't been affiliated with HMRI.

Through continued development of the HMRI CTC, local researchers will be able to build on their existing reputation for high quality clinical trials. This will position the Hunter Region as an effective and preferred destination for investment in clinical trials.

HMRI will also complete the first phase of construction of a dedicated research imaging facility at the HMRI Building in 2013, which will be the most advanced facility of its type in the Southern Hemisphere.

HMRI has also developed the specialised Clinical Trials Support Unit to provide researchers with assistance in research design, data file management, statistical support, data linkage, health research economics, and access to study participants through the HMRI Research Register.

NIER

www.newcastle.edu.au/nier

Through the Newcastle Institute for Energy and Resources (NIER), the University of Newcastle provides a multidisciplinary model for critical research in energy and resources with facilities on a scale unrivalled at any other education and research centre in Australia.

NIER is located on a 3.8 hectare site and includes extensive mineral, chemical and related technical laboratories and five industrial-scale pilot plant workshops. Building capacity enables a significant increase in research training activities with access to industrial scale facilities fostering industry ready graduates.

NIER's research priorities sit alongside the energy reform agenda of government, industry and the community and address rapidly emerging issues in the energy and resources sector such as resource sustainability, productivity and transformation of the energy system. Key areas of focus include:

- The reduction of energy and water consumption in industries including coal and mineral processing

- The reduction of carbon emissions through next generation carbon capture and storage technologies
- Alternative energy sources including geothermal and polymer solar cells
- Improved efficiency in power generation
- Smarter more efficient grids for distributed electricity generation
- The social element of energy and resources

With world-class researchers and strong industry partnerships, NIER has the collective capacity to contribute to regional and national priorities, and to create the collaborative platform to deliver sustainable solutions to real world problems.



HUNTER INNOVATION RESEARCH

www.hvrf.com.au

The Hunter Valley Research Foundation (HVRF) is a non-profit regional research organisation providing information to local businesses and communities. It aims to inform decision-making and is supported by a broad cross-section of stakeholders.

The existence of the HVRF is testament the Hunter's strong culture of collaboration that supports innovation and the diversity of the regional economy.

The Foundation's economic research, conducted over 25 years, reveals that perceptions of Newcastle and the Hunter as predominantly coal mining hubs are wide of the mark. Many other sectors, including health, tourism and creative industries are resilient and growing alongside the resources sector.

The HVRF business innovation research provides some insight into the strength of innovative activity in the region. The findings summarised in this Scorecard reflect a vibrant culture of businesses introducing new goods and services to the market. The HVRF intends to expand the scope of its innovation study in coming years.

The Hunter is the only regional area in Australia to measure its innovative capacity in this way. Quantifying the region's strength is central to its growth. The research results show that Hunter businesses are well placed to meet the challenges of the increasingly complex and global market place.

Further context is offered by other HVRF economic and wellbeing research, which can be accessed at www.hvrf.com.au.

Methodology

The study design for the Hunter 'Innovation in Business' Survey was a cross-sectional survey of businesses in the Hunter region, conducted by telephone, using computer aided telephone interviewing. Approximately 300 interviews were completed with business owners/managers.

The Hunter Innovation questions have been asked for nine quarters, originating in 2009 as part of the Hunter Central Coast Innovation Festival, and being subsequently augmented with additional questions.

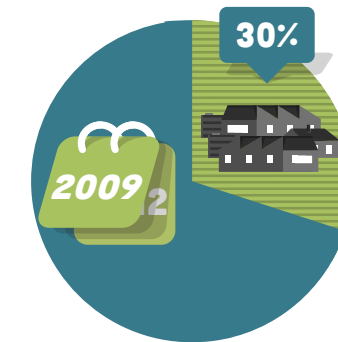
Analysis is carried out using a combined database of the results of surveys carried out in September 2009 to 2012. The questionnaire adopts a definition of innovation which equates to whether businesses have introduced new products or services in the last 12 months. This definition has been adopted to allow analysis within a meaningful framework.

The Hunter region comprises the 11 Local Government Areas of Cessnock, Dungog, Gloucester, Great Lakes, Lake Macquarie, Maitland, Muswellbrook, Newcastle, Port Stephens, Singleton and the Upper Hunter Shire. The sample frame was defined as all businesses in the survey area with landline telephone connections with respondents randomly selected. The response rate rates for the survey are approximately 80 per cent, providing robust representative data.



FINDINGS

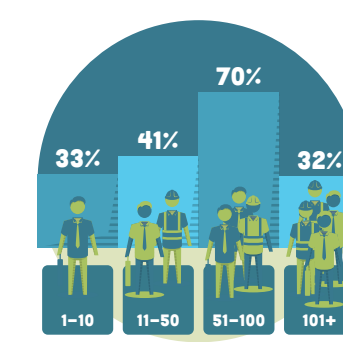
HUNTER'S VIBRANT INNOVATION CULTURE



Data collected by the Hunter Valley Research Foundation reflect a vibrant innovation culture in the Hunter region.

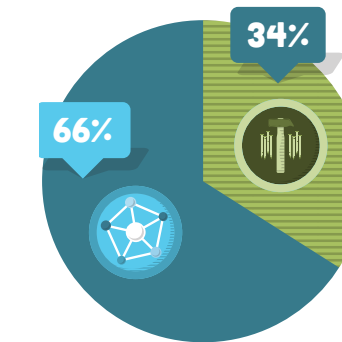
Approximately one third of businesses in the region introduced a new or significantly improved good or service each year from 2009 to 2012 despite the challenges posed by the aftermath of the global financial crisis during that time.

BUSINESSES MOST LIKELY TO INNOVATE



The size of businesses was relevant to whether they had introduced new or improved goods or services, with the very large (100+ employees) and the very small (1-10 employees) the least likely to innovate. The data show organisations with 51-100 employees were significantly more likely to innovate, suggesting that these sized businesses provide a more robust resource base while still maintaining a flexibility to embrace new ideas and implement them (source: HVRF Business Surveys). In addition, the goods-related service sector (including retail trade, wholesale trade, transport and storage, and property and business services) was generally more innovative than other sectors.

NETWORKS SUPPORT HUNTER INNOVATION



Thirty four per cent of Hunter businesses designed and developed their innovations internally, while the remaining 76 per cent used external expertise, which reflects the importance of networking and relationship building to the innovation process.

THE HUNTER'S STORY IS ONE OF DIVERSIFICATION AND GROWING VIBRANCY AS THE REGION EMBRACES COLLABORATION AND FOSTERS ONGOING INNOVATION.

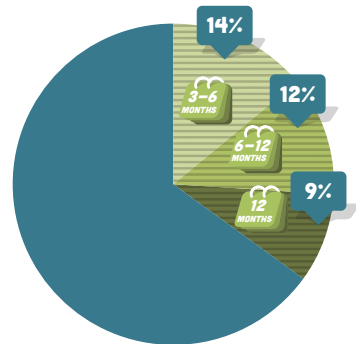
THE HUNTER HAD HISTORICALLY RELIED ON STEEL-MAKING TO FORM THE BACKBONE OF THE REGION'S ECONOMY. WHEN BHP CLOSED ITS DOORS IN 1999, MANY EXPECTED THE REGION TO SUFFER DECLINE AND REDUNDANCY. INSTEAD THE STORY HAS BEEN ONE OF DIVERSIFICATION AND GROWING VIBRANCY AS THE REGION HAS EMBRACED COLLABORATION AND FOSTERED ONGOING INNOVATIVE ACTIVITY. BENCHMARKING AGAINST OTHER CENTRES WILL BE CONDUCTED INTO THE FUTURE.

PROACTIVE BUSINESS INNOVATION CULTURE



The majority (63.1 per cent) of Hunter businesses that undertook the design and development of their innovative goods and services in-house spent three months or less on the process. This suggests that many of the innovations may have been incremental rather than 'radical'. Given the growing understanding of innovation being an ongoing, systemic activity rather than an ad-hoc or piecemeal project-based activity, this is evidence of an innovation-active business culture and a positive indicator of a healthy business community.

INVESTING IN DESIGN AND DEVELOPMENT



The data show approximately 14 per cent of businesses took between three and six months to design and develop their innovation, 12 per cent took between six and 12 months and almost nine per cent took over 12 months. These longer lead times point to a significant investment in the development of new products and services.

NEW PRODUCTS IN THE WORLD

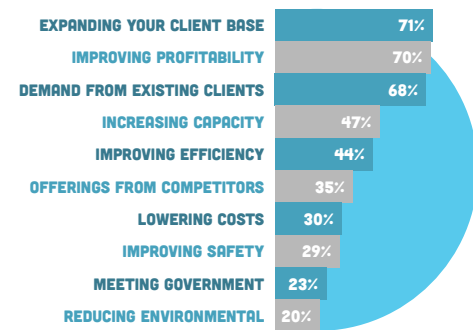


Around eight per cent of businesses that had innovated over the four years of data collection had introduced products or services that were new to the world, and a further 17 per cent that were new to Australia. The multiplier effects generated by the introduction of new products are likely to be considerable, providing new income streams and increased profitability that increase the region's competitive advantage.

APPROXIMATELY ONE THIRD OF BUSINESSES IN THE REGION INTRODUCED A NEW OR SIGNIFICANTLY IMPROVED GOOD OR SERVICE EACH YEAR FROM 2009 TO 2012 DESPITE THE CHALLENGES POSED BY THE AFTERMATH OF THE GLOBAL FINANCIAL CRISIS DURING THAT TIME.

BUSINESSES IN THE GOODS PRODUCING SECTOR WERE SIGNIFICANTLY MORE LIKELY TO DESIGN AND DEVELOP INNOVATIVE GOODS AND SERVICES IN-HOUSE THAN ANY OTHER SECTOR. IN ADDITION THIS SECTOR WAS MORE LIKELY TO INTRODUCE INNOVATIVE GOODS OR SERVICES THAT WERE NEW TO THE WORLD.

MOTIVATORS OF HUNTER INNOVATION



The motivation for innovation varies widely. The graph above shows the proportion of Hunter firms, during the four years of data collection, which had innovated during the previous 12 months and nominated the motivators shown as very strong.

These data suggest that Hunter businesses are pro-active in their approach and that defensive reactivity is unlikely to underpin the majority of investment in bringing new or significantly improved goods and services to the market place.

Innovation of any kind raised businesses' expectations for both profitability and trading in the coming 12 months compared to those not engaged in innovation. Notably, in 2012 a significantly higher proportion of businesses nominated increasing capacity as a very strong motivator for their activity, suggesting that those who were introducing new or improved goods and services were intent on growing their business.

INNOVATION TO REDUCE ENVIRONMENTAL IMPACTS



Reducing environmental impacts was another motivator where there was significant change in businesses' response over three years (this indicator was included for the first time in 2010) from 2010 to 2012.

Fewer businesses indicated that this did not motivate their innovative activity at all, with some variability in the increase between 'a little' and 'very strong'. This suggests that corporate environmental social responsibility may gradually be playing a greater role in either driving or creating a framework for innovation.

This could range from reducing carbon by providing some services remotely, to introducing energy saving features in manufactured products. There are potential synergies between corporate social responsibility approaches and increasing innovation, with the Hunter ideally positioned because, amongst other factors, of the location of CSIRO's Clean Energy Technology Centre at Steel River, the *Smart City Smart Grid Program* and a focus on 'energy' as a priority for the region.



**WITH A \$37 BILLION ECONOMY –
THE LARGEST REGIONAL ECONOMY
IN AUSTRALIA THE HUNTER HAS
BUILT A SOPHISTICATED SUPPORT
NETWORK OF PROFESSIONAL
SERVICES, INFRASTRUCTURE
AND PEAK BODY ASSOCIATIONS
THAT RECOGNISE INNOVATION
AS PIVOTAL TO ITS GROWTH
AND SUSTAINABILITY.**

CASE STUDIES

This inaugural Hunter Innovation Scorecard outlines the reasons why businesses in the Hunter are more innovative than other regions in Australia. The innovative Hunter environment enables Hunter companies to improve, grow and position themselves for future success.

While there are numerous examples of companies and organisations innovating across the region, the nine businesses highlighted in the Case Studies demonstrate the diversity of capability that exists within the focus industries for this year – creative, manufacturing, energy and health/bio-tech.

C-E SOLUTIONS

www.c-esolutions.com.au

Communications-Electronics Solutions Pty Ltd, trading as C-E Solutions, is a systems engineering, systems integration and management services company. In collaboration with its customers, C-E Solutions designs, builds, commissions and supports complex operationally critical systems.

Besides an innovation culture where at least 15 per cent of the productive availability of its billable staff is dedicated to R&D, C-E SOLUTIONS leadership approach is largely one of goal oriented "self-organisation". Staff thinking is therefore freed to find the best answers to technical problems and is enabled by an excellent engineering system residing in a reliable and easy to use suite of web applications.

C-E Solutions also limits resources as much as practicable. This culture imposes an adversity upon the problem solver such that they are forced to think outside the square. Given the organisation has no bias to particular vendor technologies, its solutions can end up comprising anything provided they meet an underlying business need.

The company maintains its proudest innovation originated from an earlier "failed" R&D project from which it learned a great deal about console game technologies and the software that drives that industry. The knowledge gained allowed C-E Solutions to respond to a highly technically challenging problem several years later, using Playstation 3s and games-derived software to demonstrate an artificial intelligent system that learns the patterns of aircraft spatio-temporal movements through airspace.

For C-E Solutions, innovation gives them a point of difference in the market; attracting excellent staff and delivering excellent outcomes.



RENEW NEWCASTLE

www.renewnewcastle.org

Renew Newcastle is a community organisation that has worked with private property owners to "borrow" otherwise unused shops and offices for use by artists, creative enterprises and community initiatives.

Since January 2009 more than 100 new creative projects and initiatives have taken place in privately owned buildings that were otherwise empty, disused and vandalised. The low-cost space and low-risk opportunity to experiment has invigorated the possibilities of the city's artists and creative entrepreneurs.

The program has directly led to a dramatic turnaround in the city with more than 50 once vacant properties now occupied, many successful businesses started and Lonely Planet naming Newcastle a top 10 city in the world in 2011 – citing the Renew Newcastle project as a key reason.



THE CRUCIBLE GROUP PTY LTD

www.thecrucible.com.au

The Crucible Group is a research and consulting organisation that links sustainability, business strategy, innovation and science with a strong industry focus. The Crucible brings together specialist expertise in the processing of mineral and metal resources with a fundamental systems approach to sustainability. They find ways to increase business capacity to create value relative to social or ecological impacts: business success without systemic harm.

The Crucible's vision is "Hunter innovation taking on the world" enabled by regional scientific and engineering excellence addressing global needs.

The Crucible's proprietary Continuous Biomass Converter (CBC) produces clean gas, char and water products from wastes and residues in a single stage process with breakthrough process efficiency and capital effectiveness.

The strategy is to prove the technology for particular applications first in the Hunter and then, with the right deployment partners, proliferate globally.

A full scale plant has been set up at Delta Electricity's Vales Point where CBC gas and char will be co-fired with coal. The project is designed to de-risk the technology for early adopters and create a platform for fossil fuel substitution in power, cement, and manufacturing plants around the world.

The Crucible's capabilities for innovation and proliferation are grounded in the Hunter.

- The development team, Directors and shareholders are all Hunter based
- The Vales Point project establishes a high credibility CBC reference plant and will demonstrate Delta Electricity's leadership in reducing greenhouse gas emissions

- A manufacturing partnership has been established with Forgacs Engineering
- Hunter Angel investors are providing excellent mentoring and networking
- Municipal infrastructure is being explored in Muswellbrook, including the beneficial use of CBC char and water in rehabilitation at a local coal mine
- Opportunities in mini-mill steelmaking are being explored with OneSteel

Over the past six years, innovation has transformed a two person consultancy into a technology commercialisation company that is an integral part of the "innovative chemistry" of the Hunter.

VARLEY GROUP

www.varleygroup.com

Varley is one of Newcastle's oldest and most advanced engineering and manufacturing companies which has been providing innovation and quality in design and manufacturing for over 125 years.

Varley is recognised nationally and internationally for high quality products and efficient product delivery. It has many divisions servicing various sectors including defence and aerospace, power and rail.

To stay competitive and relevant in an ever changing market, Varley has a substantial R&D budget and instils a culture of innovation across its workforce. All of Varley's innovation is developed in-house and is derived from different needs – some is driven by its customers, some by its competitors and some with an eye on the future.

An example of Varley's innovation is Varley Electric Vehicles which is the largest manufacturer of electric vehicles in Australia. It constructs pollution minimising electric cars and superbikes with an ironless electric motor. Varley will ultimately take the technology into mass transport – buses and heavy vehicles.

Varley's materials advancement also drives innovation within the company. New materials are adapted into old products leading to technology that leads the market.

ROTACASTER WHEEL

www.rotacaster.com.au

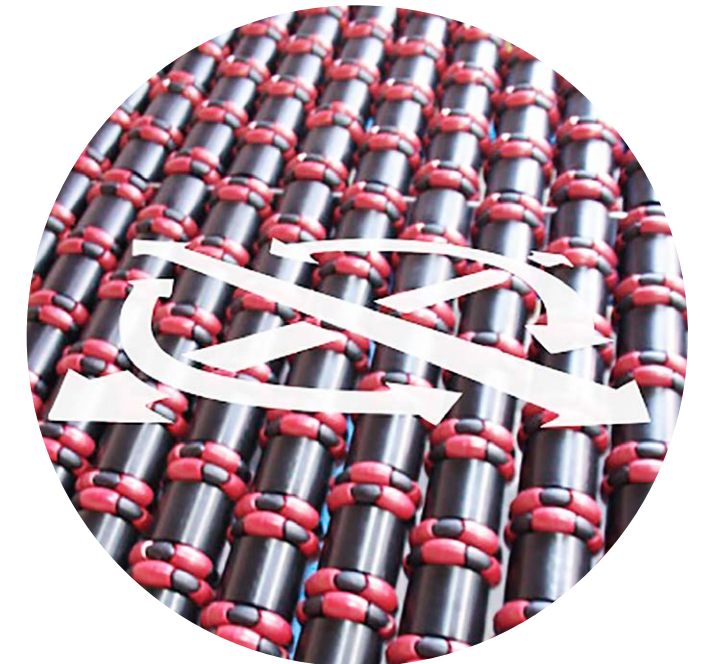
Rotacaster designs and manufactures innovative, patented, multi-directional wheels that are a best-practices solution and an ideal improvement on traditional swivel casters when expanded capability is required.

Rotacaster's innovative multi-directional wheels deliver reliable performance for a wide range of materials handling, conveyor, OEM, robotic and other applications requiring effective manoeuvrability. Rotacaster wheels are sturdy, impact resistant, precision-engineered, and made from fully moulded polymers allowing the engineering of entirely new multi-directional movement solutions at a consumer, commercial and industrial level.

Around the multi-directional wheel, Rotacaster has developed an entirely new category of hand-truck by creating a 4-wheel wheelbase which allows the Rotatruck to carry the load, rather than the user.

This innovation has delivered proven improvement to the user by making the experience easier, increased productivity by requiring users to do less work, and better safety thanks to much better ergonomics.

Innovation is at the core of Rotacaster's corporate philosophy. Not only does the company keep improving its core product they actively develop new uses to showcase the capabilities of the Rotacasters to target new markets.



BROKENWOOD WINES

www.brokenwood.com.au

Established in 1970, Brokenwood Wines has evolved from a weekend venture for self-professed hobby winemakers into one of Australia's most reputable wine labels. Brokenwood was founded by a trio of Sydney-based solicitors – Tony Albert, John Beeston and James Halliday – who paid a then record price of \$970 per acre for a 10-acre block in the foothills of the Brokenwood Ranges.

In order for Brokenwood Wines to remain competitive in the market place, enhance company environmental credentials and satisfy the dynamic nature of consumer and stakeholder demands, a number of innovative initiatives formed part of a company-wide strategy to make improvements to production and processing techniques in both viticulture and winemaking.

Last year Brokenwood Wines received a grant from the Australian Government's Clean Technology Food and Foundries Investment Program to support implementation of a number of energy saving technologies with an anticipated reduction of 60 per cent in annual electricity costs.

The technologies implemented included upgrading the old refrigeration plant which accounted for 66 per cent of overall energy use with a more efficient unit, replacing halogen lighting with more efficient induction units in the winery and warehouse, and installing voltage optimisation.

Brokenwood has also undertaken a number of research and development projects aimed at increasing efficiency and enhancing quality of the end product. These include trialling a new winemaking juice settling technique known as "flotation" aimed at reducing waste and electricity consumption, whilst at the same time resulting in improved juice clarification pre-fermentation.

In addition, Brokenwood conducted trials on wine spoilage parameters and its relation to quality and various oak barrel fermentation options. Also included in R&D is the trial of new spray application techniques and plantings in various vineyard locations across Australia in order to optimise quality and enhance product development.

VIRALYTICS LIMITED

www.viralytics.com

Viralytics Limited is an Australian biotechnology company, listed on the Australian Stock Exchange (ASX VLA), focused on developing oncolytic virotherapy (OV) for the treatment of a wide range of cancers. Viralytics' headquarters are in Sydney and research and operations are in Newcastle.

Cancer affects around 88,000 Australians each year. One in three Australian men and one in four women will be diagnosed with cancer by the age of 75. Current cancer therapies, such as chemotherapies, are not specifically targeted to cancer cells and have severe side effects.

OV is an emerging treatment in the battle against cancer. It is only in the last decade that scientists have been able to understand the mechanism of how viruses attack and destroy cancerous cells.

Associate Professor Darren Shafren from the University of Newcastle is developing a naturally occurring virus (common cold virus *Coxsackievirus*) that has the potential to either stand alone in the fight to destroy cancerous cells, or work in tandem enhancing traditional treatments such as chemotherapy. The research and development is being conducted in laboratories at the Hunter Medical Research Institute (HMRI).

OV offers the potential benefit of a targeted therapeutic approach to cancer treatment with a much reduced side effect compared to traditional anti-cancer therapies. Viralytics' lead product, CAVATAK™, is a proprietary formulation of an oncolytic *Coxsackievirus* with the potential to directly target, infect, multiply within and destroy a wide range of cancer cells, while leaving healthy cells relatively intact.

CAVATAK™ treatment potentially offers improved quality of life for cancer patients. As at late 2012, Phase I and an on-going Phase II human trial have indicated that CAVATAK™ treatment is well tolerated in patients, with certain subjects achieving either stability, where the tumour remains the same in size, or a reduction in tumour growth. In preclinical studies CAVATAK™ has also shown potential to work in tandem with traditional cancer therapies such as chemotherapy.

EVATAK™ is another prospective viral based treatment that targets ovarian, prostate and gastric cancer cells. Viralytics is pursuing this research in a quest for effective cancer treatment without the traditional treatment side effect profile.

ADVITECH GROUP

www.advitech.com.au/group

The Advitech Group is a collaboration of engineering, science, environment and technology companies with experience across heavy industry, manufacturing, mining, construction and commercial sectors. A leading provider of innovative technology solutions, The Advitech Group has a reputation for high quality services.

Innovation is a part of everything The Advitech Group does – from the products offered, the services provide and the methodologies followed, to the structure of its companies and the internal processes and systems used to manage them.

The Advitech Group's philosophy is that innovation emerges from an environment of encouragement and support. Innovation cannot be forced and cannot occur where there are too many constraints. The Group has created a culture of flexibility, adaptability and openness, where ideas and input are appreciated from everyone. The Advitech Group provides a general framework to work within – as long as an idea is ethical, and fits within the scope of science, engineering or technology, it is welcome.

The Advitech Group believes innovation is a gradual, evolutionary process. Five years ago, Advitech Pty Ltd was a stand-alone consulting firm with a vision to grow. Today, with the introduction of a flexible group structure and the creation and acquisition of a number of new businesses, it is now a multi-faceted organisation with an increasing geographical spread in NSW and QLD, growing in strength every day.

One of its most innovative products is the SentineX remote monitoring platform. SentineX was developed by Novecom as a continuous environmental monitoring solution to help the mining industry meet strict environmental conditions, particularly with regards to noise and dust. SentineX now leads the way in environmental monitoring and its capabilities have in turn led to innovation within Advitech. The information provided by SentineX has enabled Advitech's environmental team to develop more innovative processes for acoustic assessment producing more robust and cost effective solutions for our clients.

MOBILIFE

www.mobilifemedical.com

mobiLIFE was started as a joint venture to take ideas and concepts from the University of Newcastle into the medical device industry. Since inception in 2002, the company has grown in strength and now boasts an exciting track record and an exceptional team of individuals with a background of delivering results in the medical device sector.

The mobiLIFE philosophy is to target leaders within their field ensuring every team member within the company delivers skills, contacts, ideas and resources with the aim of improving patient healthcare through innovation.

One of the greatest challenges facing healthcare systems globally is the rising cost of treatments and therapies. An established strategy to reduce healthcare system costs is to provide ways for patients to be treated in their own homes. Drug infusion is particularly suited to the home healthcare setting since the procedure typically takes place over relatively long time durations and requires little intervention.

The mobiDRIP device was the result of solving an industry-led problem to provide patients with a low-cost accurate infusion pump. After a decade of research and development at the University of Newcastle, in partnership with mobiLIFE, the mobiDRIP entered the home infusion market in 2011. The device is already in use in six hospitals across NSW and QLD. On commissioning of a Good Manufacturing Practice (GMP) compliant compounding pharmacy facility at Morisset NSW in 2012, mobiDRIP had access to over 80% of the current estimated Australian market for 24 hour antibiotic home infusions accessible within 24-48 hours.

Most importantly, the technology is delivering all of the impacts predicted by the underpinning research: lower healthcare costs, increased patient choice and changed clinical practice. The long-term opportunity for mobiDRIP lies in exploiting the huge international market for home healthcare (\$1b in the USA alone).



ACKNOWLEDGEMENTS

2013 HUNTER INNOVATION SCORECARD COMMITTEE

RDA Hunter
www.rdahunter.org.au

Newcastle Innovation
www.newcastleinnovation.com.au

Pricewaterhouse Coopers
www.pwc.com.au

Hunter Valley Research Foundation
www.hvrf.com.au

AusIndustry
www.ausindustry.gov.au

SUPPORTERS

The University of Newcastle
www.newcastle.edu.au

TAFE NSW Hunter Institute
www.hunter.tafensw.edu.au

NSW Trade and Investment
www.business.nsw.gov.au

While every effort has been made to ensure that the information in this publication is reliable and accurate RDA Hunter and the Hunter Innovation Committee take no responsibility for the accuracy of such information and cannot be held responsible for any consequence resulting from misdescription or inadvertent errors contained within.