

# Research and Development Plan 2015-2017

It is my pleasure to introduce the University of Western Sydney's Research and Development Plan 2015-2017.

This plan provides the landscape and sets the direction for the future of research at UWS.

The plan evolved through broad consultation across the University and with key stakeholders. This extensive feedback helped us refine and sharpen the core research mission we share: delivering engaged and impactful quality research to our community, business and public sector partners.

Any plan is only as good as its implementation. This is a document that sets clear, achievable objectives that need to be activated and communicated to our communities. I seek your support in taking that essential next step.

I look forward to working with you.

A handwritten signature in black ink, appearing to read 'S Holmes', with a long horizontal flourish extending to the right.

**Professor Scott Holmes**  
**Deputy Vice-Chancellor Research and Development**

## ‘The University of Western Sydney is a research institution driven by impact’

The University of Western Sydney is a research institution driven by impact. Our research makes a difference regionally, nationally and globally. We are committed to collaboration with our regional, national and international communities to contribute to their economic, social and environmental well-being.

At UWS excellence in research is the precondition of impact. With research excellence we connect our local and global communities and create world-leading impact.

UWS is student-centred and research-led. This research plan frames the UWS vision of engaged research across three key dimensions: **futures, impact** and **capacity**. These dimensions are interconnected and mutually reinforcing. To achieve our objectives the University’s teaching and research capacities must also be interconnected and mutually reinforcing.

At UWS research is part of the student lifecycle. Research is essential to fulfilling the social mission of the University and the aspirations of our students.

UWS has pursued a strategy of research concentration since 2004. The 2015-2017 plan maintains this strategy through research themes, but with a shift of emphasis to enable UWS to achieve its engagement objectives.

The administrative structures through which UWS facilitates research and engagement will support collaboration with colleagues and external partners. Our research success relies on interdependent factors, and requires whole of institution thinking by individual researchers, research groupings, research Centres, the Institutes, the Schools, and professional staff.

UWS will be acknowledged in the sector for its leadership in delivering research outcomes to its communities.

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The Australian Research Council defines research impact as:

*the demonstrable contribution that research makes to the economy, society, culture, national security, public policy or services, health, the environment, or quality of life, beyond contributions to academia.*

UWS will develop its own definition of research impact. This definition, while aligned with the ARC’s, will represent the diversity and distinctiveness of UWS research.

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# ‘Our research themes speak to the history and culture of the University and its communities’

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The University’s research themes are:

Urban Living and Society:  
People, Culture, Economy and Built Environment

Health and Well-being:  
Translation, Service and Innovation

Education:  
Access, Equity, Pathways, and Aspirational Change

Environmental Sustainability:  
Climate, Agriculture and Resources

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The research themes are part of UWS’s institutional identity. Pursued since 2004, our research concentrations have shifted in emphasis but not fundamental direction. This consistency in focus has been built on authenticity and engagement: our research themes speak to the history and culture of the University and its communities, providing a shared vision for their future.

Through the research themes UWS will continue to engage with the community in ways that resonate with our stakeholders.

The research themes support the University in mobilising research areas where we have the excellence and scale to enable impact. We balance this with innovation and responsiveness. Our research themes support innovative research while building on our strengths.

UWS’s unique regional footprint will underpin our success in these theme areas. Our themes’ alignment with the national Strategic Research Priorities ensures that our research translates beyond our region and benefits the nation.

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The University’s research themes:

build on our research strengths

align with the national Strategic Research Priorities

take advantage of UWS’s unique regional footprint

acknowledge and extend the history and culture of UWS and its communities.

*More detailed narratives for the themes, including their alignment with the national Strategic Research Priorities, are included in Appendix ii.*

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## Urban Living and Society: People, Culture, Economy, and Built Environment

Research within this theme is focused on understanding and guiding economic, social and infrastructure change through the lens of urban living and the social formations that flow from it. Our current and expanding research expertise in urban planning, the digital humanities, infrastructure engineering, innovation networks, social cohesion, cultural studies and globalisation will serve the community as it adapts to the challenges of urban change.

## Health and Well Being: Translation, Service and Innovation

UWS systematically explores how health initiatives can prevent disease and illness, encourage healthy lifestyles in individuals and communities, and reduce the cost and impact of illness. The University's history as a major educator of frontline health professionals—extended with the addition of its medical school in 2007—shows through its research: practical, oriented to the translation of basic research into community health services and policy, and concerned with the needs of the individual within a complex health system.

## Education: Access, Equity, Pathways and Aspirational Change

UWS draws on the diversity of Western Sydney to underpin research that explores educational access on a global scale. This research theme respects and supports individuals and communities in their economic, social and cultural aspirations. UWS is committed to realising the opportunities offered by new pedagogies and transformational technologies for all students.

## Environmental Sustainability: Climate, Agriculture and Resources

UWS research explores global problems within local environments, including food security, resource scarcity and climate change. UWS research in any geographical region will have an impact on these global issues.

UWS takes a broad, interdisciplinary approach to sustainability. Research within this theme acknowledges that environmental sustainability is as important in the city and the suburb as it is in the bush; sustainability relies on insights from sociology, the arts, engineering, green IT, education, health and economics as well as the biological and physical sciences.

# Impact Snapshot



Quit: Pharmacotherapy for smoking cessation during pregnancy and the inter-pregnancy period

UWS research aims to make quitting easier.

Women who smoke before falling pregnant face difficulties in stopping—increasing health risks for the foetus. Women from disadvantaged circumstances may find it even more difficult to use the best therapy to help them quit.

This research uses data from a range of sources—midwives, pharmaceutical records, and other health records—to identify the safest and most effective methods to help women quit.

**The University will develop the next generation of researchers and practitioners using innovative and engaged research training.**

**The University will undertake research that engages with the opportunities and potential of its stakeholders, influencing policy and practice throughout the region, and contributing to scholarship and practice nationally and internationally.**

UWS is a research-led university that sees learning and research as connected aspects of the student experience. We are a young, flexible and dynamic institution that can shape itself to the needs of our communities and develop new researchers to meet those needs.

UWS responds to a rapidly growing, culturally diverse community in the Western Sydney area. In order to respond to this community the University is committed to collaboration with regional, national and international partners to ensure that the best practices elsewhere are translated locally and nationally.

*Key performance measures are provided in Appendix i.*

## Supporting Futures

2015-16

1.1 Consolidate the oversight of research training through the creation of a Graduate Research School under the leadership of the Dean of Graduate Studies.

1.2 Incorporate research activities into undergraduate programs and implement the PhD Pathway program to develop a research student lifecycle and graduates who are 'research ready'.

1.3 Create a UWS College of Adjuncts to promote and expand the role of our engaged community, industry and business partners, and to drive research aligned to the research themes.

1.4 Consult with our communities through the Ideas Lab to identify research-led responses to community, industry and business-identified problems.

Ongoing

O.1 Form wide-ranging strategic partnerships with a limited number of international institutions to streamline and optimise research relationships.

O.2 Develop distinctive HDR programs and opportunities through international, industry, business, community and government placements and a comprehensive personal and academic development program.

O.3 Support academics to develop long-term funding opportunities, professional development and progression plans.

O.4 Develop and implement a research leadership platform for Aboriginal and Torres Strait Islander HDR candidates.

### Supporting Futures

#### Ongoing

O.5 Contribute to the economic, environmental and social well-being of Western Sydney through meaningful long-term research collaborations with external partners.

O.6 Increase and diversify the range of scholarship options, including industry, public sector and NGO sponsorship.

O.7 Align HDR load to areas of research concentration and the research themes.

O.8 Support the entry of HDR graduates into the workplace through supported interactions between potential employers and HDR candidates.

# Impact Snapshot



**Sustained Groundwater Capacity:** Improved village scale groundwater recharge and management for agriculture and livelihood development in India

Across India, small-holder farmers rely on groundwater irrigation. With an increasing capacity to exploit the resource through technology and an expanding population exploiting it, demand has outstripped supply.

Our researchers are working with local farmers and communities to guide research-led changes to improve long-term access to groundwater. Together with an Indian research team and NGOs, the research will deliver new policies to sustain groundwater capacity.

**Enhancing and promoting the impact of UWS research will expand the University's research capacity through financial and non-financial collaborations with external partners. The University will be a sector leader in the delivery and measurement of research impact.**

At UWS research impact means we deliver demonstrable benefits through our research to our communities and partners. Our research has diverse impacts beyond the institution on all spheres of public and private endeavor.

UWS is acknowledged by its sector peers and government partners as a university focused on delivering research outcomes to its regional, national and international communities. The University is committed to working with major funding bodies and state and federal governments to translate our research into applications valued by our stakeholders.

*Key performance measures are provided in Appendix i.*

## Supporting Impact

### 2015-2016

1.1 Launch the Centre for Western Sydney as an open access, research impact aggregator that engages the University's key stakeholders in its research.

1.2 Promote and disseminate research impact, stakeholder engagement and research translation by convening an annual impact forum for institution-wide knowledge sharing on creating research with impact, including the presentation of awards recognising outstanding research impact achievements. This will be combined with agenda forums with external stakeholders to provide input and feedback on future directions and the translation of existing research outcomes.

1.3 Develop and implement an impact assessment model to qualitatively assess research impact.

1.4 Implement Easy Access IP as the preferred IP model.

### Ongoing

O.1 Evaluate research impact alongside traditional measurements of research activity to inform resource allocation, recruitment and promotion.

O.2 Seek opportunities for research impact and partner engagement through the Research, Engagement, Development and Innovation Unit (REDI).

O.3 Monitor ongoing research performance to ensure impact milestones are achieved.

O.4 Diversify outcomes of research projects to increase non-traditional publications, outputs, translation and impact.

# Impact Snapshot



[Staying on at School: Strategies for increasing high school completion rates in low-retention regions of NSW](#)

UWS researchers analysed the factors that affect students' decisions to stay, or leave, school. Across NSW student retention rates to year 12 can be as low as 50%.

By collecting three years of data from 2000 students in regional areas with the worst retention rates, our researchers mapped young people's pathways through school and identified the roadblocks to them completing year 12.

The researchers identified ways to keep Western Sydney students in School.

# Impact Snapshot



**Less Waste and Cheaper:** The use of innovative anchors for rehabilitating existing demountable steel

The way things connect is important. UWS engineering researchers have been looking at how concrete and steel can be fixed together using 'blind bolts' to allow building materials and entire buildings to be recycled.

An estimated 40% of landfill is created by the construction industry. When you combine this with the cost of new materials, it all fits together: less waste and cheaper construction that benefits industry and the environment.

**Through a facilitative internal structure the University will deepen its external networks and increase the intensity and quality of its research.**

UWS has built its research capacity through strategic investments in research Institutes, Centres and Groups.

The University will continue to adopt a selective and concentrated approach to building research capacity at Institute and School level, but with a diversified mix of funding including a greater proportion of external income. A higher proportion of our staff will secure external research income.

Structural reform will enable intensive and open collaboration between all researchers. Researchers will be supported to access external networks, respond to research opportunities and develop impact through an alignment of resources, processes and outcomes.

*Key performance measures are provided in Appendix i.*

### Supporting Capacity

2015-16

1.1 Revise and consolidate the business and public sector development profile of the University through the creation of the Research Engagement, Development and Innovation unit (REDI).

1.2 Develop and implement a Research Effort Framework to guide research workload and to recognise and celebrate traditional and non-traditional research engagement, translation and impact.

1.3 Develop an Infrastructure Plan to support infrastructure acquisition and resource-sharing aligned with the University's research priorities.

1.4 Appoint Foundation Theme Chairs to drive internal and external interdisciplinary collaboration for theme development.

1.5 Deliver researcher development programs to increase knowledge-sharing across the University and facilitate interdisciplinary networking.

Ongoing

O.1 Align our digital capacity and infrastructure with research impact through the leadership of the eResearch team.

O.2 Recruit academic staff aligned to research themes, with a focus on developing early career and postdoctoral researchers.

# Impact Snapshot



Three Degrees of Difference: Is physiological flexibility of forest trees constrained by home climate in a rapidly warming world?

A change of three degrees to average temperatures by 2070 will be the equivalent of a 900 km move north for Australia's forests.

This research is finding out if our forests can adapt.

By using controlled environments to measure the effects of increasing levels of carbon and heat, researchers will be able to determine the photosynthesis and respiration effects to Eucalypts under changing climate conditions.

The work will help mitigate the effect of a changing climate through strategies to assist Australia's forests.



## Key Performance Measures

### Measures | Themes

M.1 Increase percentage of research projects and research outcomes aligned with research themes.

### Measures | Capacity

M.1 Overall income to rise by 12% per annum, with a particular focus on diversified funding streams: Category 2 (other public sector research income), Category 3 (industry and other research income) and Category 4 (CRC income).

M.2 Five percent (5%) per annum growth in HERDC publication points.

M.3 Five percent (5%) per annum growth in citation count for targeted disciplines measured across a three year time frame.

M.4 Increase outbound, cross-institutional infrastructure sharing.

### Measures | Impact

M.1 Percentage of identified impact milestones reached for each theme.

M.2 Increase the number of non-traditional publications lodged with the Research Repository.

M.3 Increase number of research translation activities with international partners.

M.4 Increase the aggregate value of research consultancies.

## Key Performance Measures

## Measures | Futures

M.1 Increase HDR commencements by 5% pa.

M.2 HDR completions are in load and on-time.

M.3 Increase percentage of international HDR candidates.

M.4 Increase percentage of HDR candidates supported by a scholarship.

M.5 Increase number of HDR candidates participating in research with national and international partners within public and private sector institutions at either research project or research supervision level.

## Education: Access, Equity, Pathways and Aspirational Change

‘UWS draws on the diversity of Western Sydney to conduct research that explores educational access on a global scale’

### Context

The University of Western Sydney was founded on principles of educational access that it now pursues through its research: access, equity and aspiration in education.

At the UWS’s 1987 ground-breaking ceremony, the President of the Interim University Council, Peter Wilenski, described the new University as a step towards ‘the educational welfare of the people of Sydney’s west.’

Gough Whitlam, Wilenski’s mentor, laid the groundwork for this extension of educational enfranchisement to Western Sydney nearly twenty years before—when he was himself a member for a South-Western Sydney Federal electorate seeking election to the Prime Ministership:

‘We are all diminished when any of us are denied proper education.’

Itself a product of educational access, equity, aspiration, and pathways to educational attainment, UWS translates these principles into research, engagement and impact at all levels of education.

UWS draws on the population diversity of Western Sydney to underpin research that explores educational access on a global scale. This research theme respects and supports individuals and communities in their economic, social and cultural aspirations.

UWS acknowledges that new pedagogies and transformational technologies will have an impact on our learning communities. UWS is committed to realising the opportunities offered by new pedagogies and transformational technologies for all students.

## Education: Access, Equity, Pathways and Aspirational Change

### Alignment

#### Strategic Research Priorities

##### Lifting productivity and economic growth

Research outcomes will identify the challenges and opportunities in a changing world economy, particularly in the context of the economic rise of Asia, and help to build a resilient new economy so that Australia can thrive, while also identifying the means to enhance the wellbeing of all Australians.

Deliver skills for the new economy

##### Promoting population health and wellbeing

Research outcomes will help to build resilient communities and achieve a state of physical, mental and social wellbeing, and not merely the absence of disease, or infirmity, for all Australians in whichever part of Australia they live.

Maximise social and economic participation in society

#### Socio Economic Objectives

##### Sector C Society

93 Education and training

9301 Learner and Learning  
 9302 Teaching and Instruction  
 9303 Curriculum  
 9304 School/Institution  
 9305 Education and Training Systems  
 9399 Other Education and Training

## Health and Well-being: Translation, Service and Innovation

‘concerned with the needs of the individual within a complex health system’

### Context

UWS systematically explores how health initiatives can prevent disease and illness, encourage healthy lifestyles in individuals and communities, and reduce the cost and impact of illness.

Nursing was among the first degrees at the University of Western Sydney. In a short time, UWS had the largest nursing school in NSW. The University’s history as a major educator of frontline health professionals—extended with the addition of its medical school in 2007—shows through its research: practical, oriented to the translation of basic research into community health services and policy, and concerned with the needs of the individual within a complex health system.

UWS research in health and well-being adopts an integrated approach that is, by necessity, interdisciplinary. The Campbelltown health precinct demonstrates our collaborative approach to this research theme, drawing together researchers in health and public health.

This integration extends to allied health and our significant research program in complementary medicine.

Disciplines outside the health fields contribute to this research orientation, particularly in the areas of eHealth, infant speech perception and language acquisition, policy, and urban planning for community well-being.

## Health and Well-being: Translation, Service and Innovation

### Alignment

#### Strategic Research Priorities

##### Promoting population health and wellbeing

Research outcomes will help to build resilient communities and achieve a state of physical, mental and social wellbeing, and not merely the absence of disease, or infirmity, for all Australians in whichever part of Australia they live.

Optimise effective delivery of health care and related systems and services

Improve the health and wellbeing of Aboriginal and Torres Strait Islander people

#### Socio Economic Objectives

##### Sector C Society

##### 92 Health

9201 Clinical Health (Organs, Diseases and Abnormal Conditions)  
9202 Health and Support Services  
9203 Indigenous Health  
9204 Public Health (excl. Specific Population Health)  
9205 Specific Population Health (excl. Indigenous Health)  
9299 Other Health

## Environmental Sustainability: Climate, Agriculture and Resources

‘The University’s footprint is a crucible for the land-use, urban and agricultural climate change adaptation, and resource pressures facing our region, the nation and the world.’

### Context

Research within this theme acknowledges that environmental sustainability is as important in the city and the suburb as it is in the bush; sustainability relies on insights from sociology, the arts, engineering, green IT and economics as well as the biological and physical sciences. The use and production of recycled materials, urban green cover and public health, small business attitudes towards climate change: these are examples of the way in which UWS takes a broad, interdisciplinary approach to sustainability.

UWS’s campuses cover both Sydney’s second CBD and Greater Sydney’s remaining agricultural areas. The University’s footprint is a crucible for the land-use, urban and agricultural climate change adaptation, and resource pressures facing our region, the nation and the world.

The University’s Hawkesbury Institute for the Environment draws on this unique proximity to areas facing the acute pressures of climate change adaptation and changing land-use to undertake essential research into soil biology, ecosystem integration and function, and plant and animal adaptations to a changing climate. The Institute also draws on the University’s history of providing research-based training in agriculture through its location at the Hawkesbury campus, on the former site of the Hawkesbury Agricultural College, founded in 1891.

The Hawkesbury Institute for the Environment uses large-scale, innovative research infrastructure to advance global research. EucFACE, the only native forest free air carbon enrichment facility worldwide, allows researchers to field test the effects of increased atmospheric carbon on mature trees.

A research greenhouse, built in partnership with Horticulture Australia Ltd, will enable our food security researchers to develop new forms of sustainable horticulture.

While the University’s neighbourhood gives it a unique perspective on the interdependence of urban and agricultural systems within a local area, our research extends beyond the region. The University conducts research under this theme recognising that local environments are connected with global issues such as food security, resource scarcity and climate change. UWS research in any geographical region— from research into saving the Cumberland Plain Snail to the capacity of Australian Eucalypts to adapt to and mitigate rising levels of atmospheric carbon dioxide— will have a potential impact on all regions.

## Environmental Sustainability: Climate, Agriculture and Resources

### Alignment

#### Strategic Research Priorities

##### Living in a changing environment

Research outcomes will identify strategies to develop resilient natural (ecosystems) and human environments (people, communities and their utilities and industry) that can all thrive in a changing environment.

Identify vulnerabilities and boundaries to the adaptability of changing natural and human systems

Manage risk and capture opportunities for sustainable natural and human systems

Enable societal transformation to enhance sustainability and wellbeing

##### Managing our food and water assets

Research outcomes will identify new food production practices and systems that can accommodate competing demands for soil and water while ensuring the long-term sustainability of these assets.

Optimise food and fibre production using our land and marine resources

Develop knowledge of the changing distribution, connectivity, transformation and sustainable use of water in the Australian landscape

Maximise the effectiveness of the production value chain from primary to processed food

#### Socio Economic Objectives

##### Sector D Environment

##### 96 Environment

##### 9601 Air Quality

##### 9602 Atmosphere and Weather

##### 9603 Climate and Climate Change

##### 9604 Control of Pests, Diseases and Exotic Species

##### 9605 Ecosystem Assessment and Management

##### 9606 Environmental and Natural Resource Evaluation

##### 9607 Environmental Policy, Legislation and Standards

##### 9608 Flora, Fauna and Biodiversity

##### 9609 Land and Water Management

##### 9610 Natural Hazards

##### 9611 Physical and Chemical Conditions of Water

##### 9612 Rehabilitation of Degraded Environments

##### 9613 Remnant Vegetation and Protected Conservation Areas

##### 9614 Soils

##### 9699 Other Environment

## Urban Living and Society: People, Culture, Economy and the Built Environment

‘Over the next twenty years Western Sydney will be the location of one of the largest infrastructure spends in Australian history.’

### Context

Research within this theme area is focused on understanding and guiding economic, social and infrastructure change through the lens of urban living and the social formations that flow from it. Our current and expanding interdisciplinary research expertise in urban planning, the digital humanities, infrastructure engineering, innovation networks, social cohesion, the law, governance frameworks, cultural studies and globalisation will serve the community as it adapts to the challenges of urban change.

Over the next twenty years Western Sydney will be the location of one of the largest infrastructure spends in Australian history. Sydney’s second airport, at Badgerys Creek, will not only be the first infrastructure spend of its kind in Australia in thirty years, it will be accompanied by a number of hard infrastructure support systems to manage the logistics of the airport.

With planned expansions of the traffic corridors from the north and east, Western Sydney will be more accessible to its nearest population centres and, through the new airport, the world.

This hard infrastructure will need to be accompanied by soft infrastructure. Western Sydney is a region experiencing changing land-use, changing demographics and a changing industry profile. The new developments will accelerate the pace of change and increase the need for influential research that guides long-term thinking for Western Sydney. Inclusion and equity, the professional production of creative art work and its appreciation in museums, galleries, theatres and cinemas, will be essential elements in a system that includes hard infrastructure.

## Urban Living and Society: People, Culture, Economy and the Built Environment

### Alignment

### Strategic Research Priorities

#### Living in a changing environment

Research outcomes will identify strategies to develop resilient natural (ecosystems) and human environments (people, communities and their utilities and industry) that can all thrive in a changing environment.

Identify vulnerabilities and boundaries to the adaptability of changing natural and human systems

Manage risk and capture opportunities for sustainable natural and human systems

Enable societal transformation to enhance sustainability and wellbeing

#### Promoting population health and wellbeing

Research outcomes will help to build resilient communities and achieve a state of physical, mental and social wellbeing, and not merely the absence of disease, or infirmity, for all Australians in whichever part of Australia they live.

Maximise social and economic participation in society

#### Securing Australia's place in a changing world

Research outcomes will identify ways to improve Australia's capacity to deliver national security and identify the means by which personal security in Australia will be safeguarded. This challenge should be considered in the context of global uncertainty and changes in the Asia Pacific region.

Manage the flow of goods, information, money and people across our national and international boundaries

Understand political, cultural, economic and technological change, particularly in our region

### Socio Economic Objectives

#### Sector C Society

94 Law, Politics, and Community Services  
95 Cultural Understanding

#### Sector B Economic Development

86 Manufacturing  
87 Construction  
88 Transport  
89 Information and Communication Services  
90 Commercial Services and Tourism  
91 Economic Framework



Office of the Deputy Vice-Chancellor  
Research and Development

University of Western Sydney  
Locked Bag 1797  
Penrith NSW 2751 Australia  
[www.uws.edu.au](http://www.uws.edu.au)