Westmead Innovation District:
Building Western Sydney’s jobs engine
Strategic Vision 2016-2036
A vision to drive investment and jobs growth in Western Sydney by transforming Westmead into a globally competitive Innovation District by 2036

The Westmead Alliance comprises:
1. Western Sydney Local Health District
2. The Sydney Children's Hospitals Network
3. The Westmead Institute for Medical Research
4. Children's Medical Research Institute
5. Westmead Private Hospital
6. The University of Sydney
7. Western Sydney University
8. City of Parramatta Council
9. Sydney Business Chamber
10. Cumberland Council

* Urban Growth NSW also contributed to this study.

The Westmead Alliance stakeholders came together in 2013 after recognising there were significant benefits to be gained through the development of a collaborative approach to continuing to develop and promote Westmead as a world class medical, educational and research precinct. The partners, collectively known as the Westmead Alliance, entered into a Memorandum of Understanding aimed at building commitment and consensus towards a shared vision for the Precinct. The Alliance advocates for the interest of the Precinct, demonstrates leadership in the maintenance and growth of the core objectives of the Precinct and supports business/industry growth.

Building Western Sydney’s jobs engine

Within the space of less than forty years Westmead has grown from a dusty showground on the outskirts of Sydney to become Australia’s largest concentration of health, education and research facilities.

In this short time Westmead has seen billions of dollars of investment by successive governments prioritising it as a place for public health and research investment. Along with private and non-Government sector investment, Westmead now provides over 18,000 specialised high value jobs.

Our region faces a staggering growth challenge over the next twenty years with more than one million new residents due to arrive. And the Westmead precinct will do more than just treat this expanded population. It will employ them.

The Centre for Western Sydney has identified 318,086 people leave the region every day to access work. The industrial base of Western Sydney is being disrupted and changed by the growth of new industries that rely on highly skilled knowledge workers. The proposed Westmead Innovation District model is well placed to generate these knowledge jobs.

“Westmead already represents Australia’s largest concentration of health services co-located with world leading education and medical research. The opportunity for Westmead to play a larger role in transforming Australia’s economy over the future is unsurpassed.”

To help promote the opportunities the Westmead precinct presents, the Westmead Alliance has commissioned Deloitte Access Economics to undertake new economic modelling to report and explore the contribution and impact that Westmead has on the national economy.

This report breaks new ground; eleven institutions have come together to help realise the economic potential of health, education, research and business all operating within the Westmead Innovation District.

The results are remarkable. This study details the current economic contribution to the Australian economy, a forecast for 2036 at current levels of investment and a potential Innovation District model that would house 50,000 jobs and make Westmead a true jobs engine for Western Sydney.

“If embraced by government, Westmead provides the opportunity to deliver 50,000 new high-value, specialist knowledge economy jobs by 2036 in the Westmead precinct. That’s 32,000 jobs more than present... adding $2.8 billion per annum of economic output to the NSW economy... and gets us well on the way to providing the additional jobs needed for Western Sydney’s future.”

More than $3.4 billion of public and private investment has been committed to rebuild Westmead over the next decade. We have also identified a further $2.4 billion of projects required over the next decade to transform Westmead into Western Sydney’s first true Innovation District by 2036.

This report builds the case for more private investment and industry collaboration in the fields of bio-tech, med-tech, allied health and primary care. It makes clear recommendations around identifying land for redevelopment, resolving critical transport and infrastructure barriers, and a more enlightened planning vision that will help attract new talented workers to the precinct.

On behalf of the Westmead Alliance, I invite you to join us in delivering this additional $2.8 billion per annum of economic output to the NSW economy, and leveraging this investment further to secure Western Sydney as the knowledge jobs engine room of Australia.
A new vision for Westmead

A Unique Opportunity
Leveraging the Westmead transformation

Westmead is Australia’s largest health services precinct – a national and international leader in critical and acute health care, medical research, and education in nursing, medicine, allied health professions, and science and technology related to health. Over the last forty years, Westmead has developed a unique reputation for its successful integration of healthcare, research, and education. Its innovative model has resulted in huge improvements in the quality and effectiveness of Australian clinical care and improved health practice internationally.

Now Westmead is building on its success by preparing for a new era of growth. In the last four years more than $1.5 billion has been committed by government and universities to upgrade the precinct in response to emerging population demands and the unique health challenges of Western Sydney. This investment will further boost Westmead’s scale, connectivity and demonstrated ability to innovate. Put simply, Westmead’s investment will further boost Westmead’s scale, connectivity and the unique health challenges of Western Sydney.

The concept of Innovation Districts, as drivers of local economic development, was recently (2014) discussed by the Brookings Institute who defines Innovation Districts as; geographically compact areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators and accelerators.

Innovation Districts facilitate economic development through the creation of environments designed to strengthen the possibility of knowledge spill-overs, new product development and innovation

Modelled off the successful Toronto Discovery District in Canada, this document presents a case for considering Westmead as a future Innovation District. It does this by:

• Cataloguing all known and proposed investment
• Outlining actions for government and private sector stakeholders, including metrics to track success
• Proposing new plans to attract talented workers
• Presenting the broad institutions that support a Westmead Innovation Eco system
• Identifying potential investment opportunities
• Modelling the economic impact of Westmead achieving a jobs density similar to the Toronto Discovery District model
• Providing clear information for potential global investors and acts as a preliminary information and promotion tool.

What needs to be done?

By building off Westmead’s existing eco system of world leading health, education and medical research institutions, only a relatively small range of interventional measures are required to ensure Westmead evolves into a globally competitive Innovation District. Some of these interventions include:

• Adoption of the globally successful Innovation District model at Westmead, including new projects and initiatives that facilitate innovation and economic development
• Ensuring supply of sufficient, available employment and industrial land for new investment, including assessing surplus public landholdings and reviewing their zonings.
• Addressing ongoing transport and access issues of Westmead
• Creating a single point of contact, and other ‘economic cultivators’ for interested investors and resource a strategy to integrate domestic and global promotional efforts
• Creating a new civic heart, public domains and high quality living options which will help attract the best and brightest to Westmead.

We also present an Action Plan for Investment on page 36 outlining individual tasks required to transition Westmead into an Innovation District by 2036.

Growth scenarios

Deloitte Access Economics was commissioned to model two economic growth scenarios for Westmead, above business as usual. These include:

• Business as usual: 30,000 jobs by 2036
With over 18,000 jobs, Westmead is already a significant provider of specialised employment that without much intervention will most likely grow to 30,000 jobs by 2036
• Scenario 1: 43,000 jobs by 2036
However, if all current and potential investment plans for Westmead are delivered, Westmead could create over 43,000 jobs by 2036. This level of jobs expansion assumes the Action Plan for Investment is delivered and that current investment levels for Westmead are continued beyond the next decade to 2036.
• Scenario 2: 50,000 jobs by 2036
If Westmead successfully transforms into a globally renowned Innovation District by 2036 the location could deliver up to 50,000 knowledge jobs by 2036. This level of jobs expansion assumes the Action Plan for Investment is delivered and that current investment plans for Westmead are exceeded beyond the next decade to 2036.

Our economic modelling also estimates that by achieving a jobs target of 50,000 by 2036 Westmead will deliver an additional $2.8 billion per annum of economic output to the state’s economy.

We encourage government to support the concepts and proposals in this document that aims to fill Western Sydney’s growing population growth job-deficit by attracting new investment to Westmead and transforming it into a world-renowned Innovation District; one that also contributes to better health outcomes in Western Sydney and beyond.

Deloitte Access Economics
July 2016
### A short history of Westmead

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>Parramatta Marist High established.</td>
</tr>
<tr>
<td>1828</td>
<td>Westmead railway station opens.</td>
</tr>
<tr>
<td>1829</td>
<td>Catherine McLulay School Westmead established.</td>
</tr>
<tr>
<td>1830</td>
<td>University of Sydney Dental School at Westmead established.</td>
</tr>
<tr>
<td>1849</td>
<td>Parramatta Mental Hospital established.</td>
</tr>
<tr>
<td>1864</td>
<td>Marian, Urban, Res and Cheston nursing homes established.</td>
</tr>
<tr>
<td>1868</td>
<td>Westmead Hospital established.</td>
</tr>
<tr>
<td>1893</td>
<td>Westmead railway station opens.</td>
</tr>
<tr>
<td>1895</td>
<td>The Children’s Hospital at Westmead opens (including the University of Sydney Children’s Hospital at Westmead Clinical School).</td>
</tr>
<tr>
<td>1896</td>
<td>Westmead Hospital established (including University of Sydney Westmead Clinical School).</td>
</tr>
<tr>
<td>1964</td>
<td>Westmead in the 1940s.</td>
</tr>
<tr>
<td>1966</td>
<td>Marist High School Westmead established.</td>
</tr>
<tr>
<td>1966</td>
<td>University of Sydney Dental School at Westmead established.</td>
</tr>
<tr>
<td>1968</td>
<td>Westmead Hospital announced.</td>
</tr>
<tr>
<td>1975</td>
<td>The Children’s Hospital at Westmead opens.</td>
</tr>
<tr>
<td>1978</td>
<td>Westmead in the 1960s.</td>
</tr>
<tr>
<td>1978</td>
<td>Parramatta Light Rail construction commences.</td>
</tr>
<tr>
<td>1979</td>
<td>Westmead in the 1970s.</td>
</tr>
<tr>
<td>1980</td>
<td>Westmead in the 1980s.</td>
</tr>
<tr>
<td>1990</td>
<td>Westmead in 1990.</td>
</tr>
<tr>
<td>1991</td>
<td>Westmead Education Hub established.</td>
</tr>
<tr>
<td>1996</td>
<td>Westmead Millennium Institute established.</td>
</tr>
<tr>
<td>1996</td>
<td>Westmead in 1996.</td>
</tr>
<tr>
<td>2000</td>
<td>The Kerry Parker Research Building opens, housing the Kids Research Institute.</td>
</tr>
<tr>
<td>2001</td>
<td>Westmead Research Hub established.</td>
</tr>
<tr>
<td>2014</td>
<td>Westmead in 2014.</td>
</tr>
<tr>
<td>2025</td>
<td>Westmead in 2025.</td>
</tr>
<tr>
<td>2026</td>
<td>Westmead in 2026.</td>
</tr>
<tr>
<td>2036</td>
<td>Westmead in 2036.</td>
</tr>
</tbody>
</table>
Westmead Innovation District | Building Western Sydney’s jobs engine

Context

Westmead is a vital part of Western Sydney’s rapid development

Western Sydney’s population will grow by almost 50%, or one million people during the next 15 years. Over this timeframe, jobs and economic growth will be boosted by billions of dollars in public and private investment earmarked for the region. Nowhere better exemplifies the potential opportunities this growth will bring than Westmead. With a range of major health, education, medical research and residential developments already underway or planned, Westmead is in a unique position to drive positive social and economic outcomes for Western Sydney.

Westmead is well-placed to work with innovative, entrepreneurial private companies

Westmead is ideally placed to work with the private sector. It is capable of creating new health innovations and enterprises that develop new services and products with the single goal of improving health care outcomes in more cost-effective ways. This requires new and expanded partnerships; those that span health, education and research along with the business community. Our vision for Westmead aims to create the environment where these new partnerships and health innovations have a greater possibility of occurring in ways that address this challenge.

Westmead has a strong track record as a successful innovator in the delivery of healthcare

The vision for Westmead is to build on its record of success. Westmead’s delivery of healthcare with integrated medical research, education and private sector involvement, will create more smart economy jobs leading to improvements in health outcomes for our community. With a well-established range of major health, education and research institutions, Westmead represents a ready mix of existing partners capable of driving the creation of new innovations and ideas that will drive the development of new models of health care delivery – including preventative health – in more cost effective ways. This vision is about inviting the business sector to Westmead to work with existing precinct partners to address these challenges. It will also help create Australia’s next generation of health innovations and related enterprises.

In 2016 Westmead produced over $1.9 billion of economic output, representing 1.6% of Western Sydney’s economy

Western Sydney by numbers:

- 2.2 million residents – to expand by 1 million
- 52% of Sydney’s population growth
- $127 billion GRP
- 35% born overseas
- #1 employer in health and education
- 1 new international airport

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Our action plan for investment 36
Westmead today

Economic roles of Westmead

This chapter details the current economic roles and contributions directly to national productivity through the health and education assets, Westmead students, from pre-schoolers through to PhD candidates. Westmead is one of the largest health, education and research precincts in the world; Westmead provides direct health services to almost 10% of Australia's population. By 2031 it will be part of the largest Local Health District in Australia. It also provides education to over 3,400 population. By 2031 it will be part of the largest Local Health District in Australia. It also provides education to over 3,400 population.

A catalyst for talented labour markets: Westmead is also defined by its labour market. In 2011, more than 71,000 residents living within 30 minutes of Westmead held degree or higher qualifications in the fields of science, health, engineering, mathematics and IT. A total of 3,700 residents holding PhDs also live within Westmead’s labour market catchment. These highly skilled labour forces represent approximately one-third of Sydney’s total talent pools in these respective cohorts.

Westmead not only draws upon talented labour, it also produces it. In 2016 Westmead will train over 200 PhD students; along with providing over 1,100 highly skilled medical research jobs, of which 170 are leading clinical academic scientist jobs.

Magnet for capital: Westmead has a long history of attracting both public and private capital. As shown on page 8, Westmead currently has over $3.4 billion of capital mobilising within the precinct, with potential identified for over $2.4 billion of additional capital over the next decade. The growing role of Westmead as a location for specialised services and employment will encourage further capital investment and commensurate attention from capital markets.

A platform for national innovation: Government and industry widely recognise that Australia’s future prosperity is inextricably linked to its ability to innovate. Dr Terry Cutler who led the Australian National Innovation System Review in 2008 concluded there is actually no such thing as a national innovation system; rather Australia’s innovation system is a network of distinct regional and subregional eco systems. These structures cannot just be driven from on high, they must be driven locally. This conclusion points to the observation that locations, like Westmead with existing clusters of knowledge based institutions and workers, will become the requisite platforms upon which Australia’s innovation agenda must be based. As others have noted; Westmead will become the ‘aircraft carrier’ of Sydney’s future economic prosperity.

A provider of concentrated jobs: As shown above Westmead currently provides over 18,000 jobs; the largest number of jobs within Sydney’s seven integrated health and education precincts. With potential to grow up to 50,000 jobs by 2036, Westmead will play an increasingly important role in shaping Sydney’s future economic geography. Excluding Global Sydney CBD, there are few other locations across Sydney capable of producing net jobs growth on the scale possible at Westmead.

A hub of Western Sydney’s health, education and research economy: In many ways Westmead operates as an integrated part of other health, education and research networks spread across Western Sydney. Many of these networks have physical presences in other precincts across Western Sydney. Over time, economic and investment opportunities will arise that cannot be retained at Westmead, but can be secured with any one of four other growing health and education precincts located at Liverpool, Penrith, Campbelltown and Blacktown.

Regional catchments

The largest number of Westmead’s workforce live to the West of Westmead. At present, over three quarters of workers at Westmead use a car as the primary method of travel to work, only 8% currently use the train.

Table 1: Health, research and education precincts in Sydney

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Source: Deloitte (2016)

Westmead, driving the agglomeration of one of Sydney’s great new cities: Westmead is one of the largest health, education and research precincts in the world; it provides direct health services to almost 10% of Australia’s population. By 2031 it will be part of the largest Local Health District in Australia. It also provides education to over 3,400 students, from pre-schoolers through to PhD candidates. Through its health and education assets, Westmead contributes directly to national productivity through the role these facilities play improving economic participation. Westmead conducts world-class health and medical research that traverses the spectrum from basic to translational and clinical research, taking innovation from bench to the bedside.

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<td>3,100</td>
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<tr>
<td>Campbelltown</td>
<td>2,000</td>
</tr>
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</table>

Source: Deloitte (2016)
Access to talented labour markets

In eastern parts of Sydney, a large cohort of young workers with postgraduate qualifications in health, medicine and science, such as doctors, live in close proximity to Westmead. Approximately 4,500 residents aged 20-34 with postgraduate qualifications live within 30 minutes of Westmead, representing 23% of all Sydney residents. This is often referred to as the dream demographic.

Of the 65,000 Sydney residents who have postgraduate qualifications in the fields of health, medicine, science and engineering, the Westmead suburb has the highest proportion at 1.5%, with Parramatta at second with 1.4%.

The future of Westmead

Westmead as an Innovation District

In 2014 the Brookings Institute released a paper titled ‘Rise of Innovation Districts: A New Geography of Innovation in America’ that outlined how a new urban model is emerging, giving rise to what are now being called Innovation Districts. Innovation Districts, by definition, are geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. They are also physically compact, transport accessible, technically-wired and offer mixed use housing, office and retail.

The Brookings Institute argues that Innovation Districts represent a radical departure from traditional economic development in three regards:

• Unlike customary urban revitalisation efforts that emphasise commercial aspects of development, or the targeting of footloose industry through artificial tax incentives, Innovation Districts help their geography move up the economic value chain of global competitiveness by growing the firms, network and commercial structures that drive broad-based prosperity.

• Instead of building isolated science or technology parks, Innovation Districts focus extensively on creating a dynamic physical environment that strengthens the possibility of knowledge spill-overs being created.

• Rather than focus on discrete industries, Innovation Districts represent an intentional effort to create new products, technologies, and market solutions through the convergence of disparate sectors and specialisations.

The basis for thinking about the future of Westmead lies not in policy makers and business thinking of Westmead as a hospital or research precinct, but as an Innovation District critical to the economic and social prosperity of Australia.

The Brookings Institute work acknowledges three kinds of Innovation Districts, including:

• The ‘Anchor Plus’ district model
• The ‘Urbanised Science Park’ district model
• The ‘Re-imagined Urban Area’ district model.

It is the first of these three, the Anchor Plus district model, defined by the presence of multiple anchor institutions, that provides the best learning for rethinking about the future of Westmead.

Reference: http://www.brookings.edu/about/programs/metro/innovation-districts

Table 2: Healthcare practitioner concentrations in Sydney

<table>
<thead>
<tr>
<th>Suburb</th>
<th>Practitioners</th>
<th>Practitioners per km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westmead</td>
<td>1,080</td>
<td>372</td>
</tr>
<tr>
<td>Liverpool</td>
<td>549</td>
<td>87</td>
</tr>
<tr>
<td>Bella Vista</td>
<td>118</td>
<td>31</td>
</tr>
<tr>
<td>Blacktown</td>
<td>298</td>
<td>19</td>
</tr>
<tr>
<td>Campbelltown</td>
<td>208</td>
<td>19</td>
</tr>
<tr>
<td>Penrith</td>
<td>1115</td>
<td>11</td>
</tr>
</tbody>
</table>

Source: Healthcare Real Estate Australia (2016)
Investment pipeline
A place for your business to grow

Projects shaping Westmead

A total of $5.8 billion of investment is under various stages of delivery, planning, or with potential to be delivered as part of plans for Westmead over the next decade. This includes:

- $3.4 billion, currently being delivered or under planning
- $2.4 billion, potential development (identified by Deloitte Access Economics).

Following is a selection of current major projects being promoted in Westmead:

Table 3: Westmead investment pipeline

<table>
<thead>
<tr>
<th>Major Westmead investment projects (selected plans, over 15 years)</th>
<th>$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parramatta North Urban Transformation Program</td>
<td>1500</td>
</tr>
<tr>
<td>2. Westmead Redevelopment Stage 1 (including Westmead Hospital and The Children's Hospital at Westmead)</td>
<td>900</td>
</tr>
<tr>
<td>3. The University of Sydney, Westmead Plans</td>
<td>500</td>
</tr>
<tr>
<td>4. Western Sydney University Westmead Campus – 5 lot subdivision</td>
<td>450</td>
</tr>
<tr>
<td>5. Children's Medical Research Institute (stages 2-5)</td>
<td>250</td>
</tr>
<tr>
<td>6. Parramatta Light Rail Network*</td>
<td>155</td>
</tr>
<tr>
<td>7. Mayflower Retirement Village development</td>
<td>144</td>
</tr>
<tr>
<td>8. Westmead Innovation Centre</td>
<td>60</td>
</tr>
<tr>
<td>9. The Westmead Institute for Medical Research (stage 2)</td>
<td>95</td>
</tr>
<tr>
<td>10. Ronald McDonald House Westmead development</td>
<td>45</td>
</tr>
<tr>
<td>11. Wesley Lodge redevelopment</td>
<td>–</td>
</tr>
<tr>
<td>12. Neighbourhood retail centre</td>
<td>–</td>
</tr>
<tr>
<td>13. Westmead Private Hospital expansion</td>
<td>–</td>
</tr>
</tbody>
</table>

Sources: Deloitte Access Economics (2016)

* Estimated value attributed to Westmead

Table 4: Surrounding infrastructure

<table>
<thead>
<tr>
<th>Project</th>
<th>Value ($ million)</th>
<th>Estimated year of delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude Tower</td>
<td>450</td>
<td>2017</td>
</tr>
<tr>
<td>Western Sydney University, Parramatta CBD Campus</td>
<td>221</td>
<td>2017</td>
</tr>
<tr>
<td>Parramatta Square, sites 3 &amp; 4</td>
<td>500</td>
<td>2019</td>
</tr>
<tr>
<td>Parramatta Stadium</td>
<td>300</td>
<td>2019</td>
</tr>
<tr>
<td>Parramatta Square, sites 5 &amp; 6</td>
<td>1,200</td>
<td>2021</td>
</tr>
<tr>
<td>Westfield Tower</td>
<td>400</td>
<td>2021</td>
</tr>
<tr>
<td>Museum of Applied Arts and Sciences</td>
<td>600</td>
<td>2022</td>
</tr>
<tr>
<td>Parramatta Light Rail</td>
<td>1,600</td>
<td>2023</td>
</tr>
<tr>
<td>Cumberland Newspapers site</td>
<td>52</td>
<td>na</td>
</tr>
</tbody>
</table>

Total 5,323

Sources: Deloitte Access Economics (2016)

A total of $5.8 billion of investment is under various stages of delivery, planning, or with potential to be delivered as part of plans for Westmead over the next decade.

Table 5: Estimated additional gross floor area (GFA), Westmead (2016 – 2031)

<table>
<thead>
<tr>
<th>Period</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016/2021</td>
<td>340,000</td>
</tr>
<tr>
<td>2021/2026</td>
<td>500,000</td>
</tr>
<tr>
<td>2026/2031</td>
<td>480,000</td>
</tr>
<tr>
<td>Total</td>
<td>1,320,000</td>
</tr>
</tbody>
</table>

Additional refers to net increase of total GFA estimated in 2016. Includes commercial and residential GFA.

Source: Deloitte Access Economics.

By 2031 an additional 1.3 million square metres of GFA is estimated to be supplied at Westmead.

Pages 12-26 of this document identify both confirmed investment plans for Westmead of $3.4 billion and an estimated $2.4 billion worth of investment required to fund a range of identified facilities at Westmead over the next decade.

A further $5.3 billion of surrounding infrastructure will be delivered around Westmead over the next seven years in a range of residential, cultural, sporting, transport and education infrastructure. These investments will support Westmead’s capacity to deliver jobs over the next two decades.

Sources: Investment Monitor, Deloitte Access Economics (2016)
Current and future economic uses of Westmead

Legend

1. The Childrens Hospital Westmead
2. Westmead Hospital
3. Westmead Private Hospital
4. Cumberland Hospital
5. Childrens Medical Research Institute
6. Westmead Institute for Medical Research
7. Kids Research Institute (KRI)
8. Parramatta North Urban Transformation Program
9. Northmead industrial area
10. Westmead town centre
11. Proposed Parramatta Light Rail Route
12. T-Way
13. T-Way stop
14. Westmead Station
15. Western rail line
16. Catherine McAuley Secondary School
17. Marist High School
18. Mother Teresa Primary School
19. Western Sydney University campus
20. Parramatta CBD
21. Parramatta Park
22. Parramatta Stadium
23. M4 Motorway
24. Hawkesbury Road
25. Mons Road
26. Briens Road
27. Cumberland Highway
28. Old Windsor Road
29. Janies Ruse Drive
30. Windsor Road
31. Church Street

1. Westmead Precinct
2. Future health industry uses
3. Major health, research and education uses
4. New living and accommodation
5. Higher density residential/health uses
6. Complementary education, health and research uses.
7. New Westmead civic heart
8. Future complementary health and medical uses
Westmead eco system

Building an eco system that inspires innovation

The Westmead eco system

Westmead is characterised by an established eco system of leading public and private health, education, and medical research anchor institutions. Supported by highly talented surrounding labour markets these institutions have acted as magnets for further health related investment. In many ways they have facilitated the growth of a dynamic eco system that now includes over 350 complementary enterprises located at Westmead.

Like any thriving ecology, Westmead’s eco system has a range of species critically important for its growth and prosperity. For Westmead to develop as an ‘Innovation District’ it requires one final species to be added to the system; this species being major health technology enterprises such as bio and medical technology firms.

These enterprise types will be critical in Westmead’s future success in that they can bring advanced technologies, capital and skilled workers required in any eco system where innovation drives local economic growth.

Over the next decade this eco system, including anchor institutions conceptually described on the following diagram, will continue to strengthen through a range of new investments. The following chapters of this document aim to highlight individual components of the eco system, including profiles of various plans by project partners that when combined, will work to further strengthen the innovation eco system emerging at Westmead.

Diagram is provided for conceptual purposes only and includes selected anchor institutions, networks and locals drivers of Westmead’s existing eco system.

Source: Deloitte Access Economics and Health Care Real Estate Australia.
Westmead is a national leader in the delivery of high-quality, patient-centred healthcare. It is focussed on keeping people healthy, providing world-class clinical care and delivering truly integrated care with a right care, right place, right time focus. Hospitals across Westmead are state and national leaders in healthcare delivery and development. They are also home to world-class clinicians, who are recognised as being foremost in their fields.

Westmead is most well-known for providing critical and acute health care services for both adults and children in NSW. Driving much of that load is the increasing burden of chronic, non-communicable diseases such as diabetes, obesity and cardiovascular disease. Hence Westmead also plays a major role in measures designed to reduce the burden of chronic disease in Western Sydney.

Westmead health workers acknowledge that the healthcare environment is changing, with emerging technology, changing expectations and contemporary models of care re-thinking the way we deliver health services. Westmead is responding to this changing healthcare environment with major redevelopments, which will redefine the way we deliver healthcare to patients.

“The innovative plans we are making today at Westmead will have a profound impact on paediatric clinical care, research and education on a global scale.”
Dr Michael Brydon, Chief Executive, Sydney Children’s Hospitals Network

“We are keen to engage with business and the services sector to attract investment to Westmead for the delivery of excellent health services in a highly liveable urban environment.”
Danny O’Connor, Chief Executive Western Sydney Local Health District

At the University of Sydney, we provide more than a quarter of a million hours of direct patient care for the most disadvantaged people in our communities.”
Professor Chris Peck, Dean, Faculty of Dentistry

Major health services
1. Westmead Private Hospital
2. Westmead Hospital
3. Westmead Hospital Centre for Oral Health
4. The Children’s Hospital at Westmead
5. Westmead Skin Hospital
6. Cumberland Hospital

Major current plans
• Westmead Redevelopment
• Primary care facilities
• Expansion of Westmead Private Hospital
• Expanded private hospital services
• Private mental health facilities
• Refurbishment of Westmead Education and Conference Centre.
Objectives
- To be recognised as delivering world-class health, education and research services for the communities of Western Sydney and beyond
- To improve health care through:
  - Integration of research, education and clinical care
  - Close collaboration in service delivery, education and research by the precinct partners
  - Active engagement of partners outside the precinct in delivering on the healthcare, education and research vision of the precinct
- Continue the specialisation of Westmead as Western Sydney’s primary centre for complex acute and chronic health services
- Broaden and integrate private hospital services with public services at Westmead
- Work with the NSW Government to identify opportunities for the private sector to partner with public agencies to deliver health facilities and services at Westmead.

Components of the Vision
- A new acute services building linking Westmead Hospital and The Children’s Hospital at Westmead, providing new state-of-the-art operating theatres and two new emergency departments for our adult and paediatric patients and 1.5 floors shared with the University of Sydney for health-related education
- The University of Sydney investment in Westmead to build on Westmead’s strengths in cancer cell biology, cancer genomics, bioinformatics and the diagnostic sciences including histopathology, biochemistry and immunopathology and expand the educational opportunities available on the precinct to engineering, physics, business management and the social sciences
- A new Innovation Centre which will draw together research and academic institutes, private companies, clinical providers, health service providers and state entities to collect and generate ideas and new solutions fostering a culture of innovation and knowledge sharing to solve the health challenges of today and the future
- New Comprehensive Care Centres in areas like cardiology, that provide a one-stop-shop for patients with specialist treatment from multi-disciplinary teams
- Additional cohesive drug, alcohol rehabilitation and mental health services
- Future health technology park located in proximity to the Westmead precinct.

Implementation
- Secure longer-term opportunities for health technology firms to locate in proximity to the hospitals
- Identification of future land use, transport and infrastructure needs.

NSW’s largest health redevelopment
More than $900 million has been committed by the NSW Government for Stage 1 of the Westmead Redevelopment, including the construction of a new central acute services building linking Westmead Hospital to The Children’s Hospital at Westmead.

The redevelopment will also help build on the strong collaborations between Westmead’s network of hospitals, research institutes and education organisations for the benefit of the families of Western Sydney and beyond. The Westmead Redevelopment is the biggest health redevelopment project in NSW.

The new 12 storey hospital building, due for completion in 2020, will integrate a number of adult and paediatric services including pharmacy and imaging. It will also include new state-of-the-art operating theatres, a new emergency department for adults and paediatric patients and a new cardiac comprehensive care centre to provide a one-stop-shop for patients requiring specialist treatments from multi-disciplinary teams.

Stage 1 of the Westmead Redevelopment also includes refurbishments of some areas within Westmead Hospital to support comprehensive care centres for gastroenterology, respiratory and aged care as well as expanding ambulatory care.

Car parking across the precinct is also being improved with $72 million invested including a new six-storey car park with 1250 spaces.

So far, more than 2,500 clinicians and patients, consumers and families have been consulted about the Westmead Redevelopment to ensure the new facilities meet community needs and help transform the precinct into a world class centre for knowledge, skills and care.
Education

Growing a greater university presence at Westmead

Over 3,400 students currently attend Westmead, ranging from preschool to doctoral students. Two of Australia’s largest universities, The University of Sydney and Western Sydney University both have major plans for expansion at Westmead and surrounding areas. These plans total almost $1 billion, and will see tertiary student numbers at Westmead grow to 8,500 over the next decade.

Academic plans included in this growth outlook are focussed in the fields of diagnostic sciences and technologies, sustainable health, patient-centred care and translational health. Other areas will include data analytics, engineering, IT, health, arts and social sciences.

The increased University presence at Westmead will create a complementary mixing of students, researchers, academic leaders and industry. As a result, Westmead will be ideally positioned to take advantage of the data revolution that is set to change the face of medicine.

“World-leading, industry engaged and community embedded research will be at the forefront of Western Sydney University’s presence in the revitalised Westmead. This will include technology-infused clinical teaching and start-up incubation.”

Professor Barney Glover, Vice-Chancellor and President, Western Sydney University

Major education facilities
- The University of Sydney Westmead Clinical School
- The Children’s Hospital at Westmead Clinical School, the University of Sydney
- The University of Sydney faculties of:
  - Dentistry
  - Nursing
  - Health Sciences
- The University of Sydney Centre for Oral Health
- Charles Perkins Centre, Westmead node
- Western Sydney University College and International Language School
- Western Sydney Local Health District Research and Education Network.

“World-leading, industry engaged and community embedded research will be at the forefront of Western Sydney University’s presence in the revitalised Westmead. This will include technology-infused clinical teaching and start-up incubation.”

Dr Michael Spence, Vice-Chancellor and Principal, University of Sydney

Proposed facilities
- Western Sydney University Westmead campus redevelopment (+2,500 students)
- The University of Sydney Westmead campus plans (+4,800 students)
- New Clinical Training facility (Western Sydney University)
- Consolidation of The University of Sydney Dental School, and development of Masters of Nursing at Westmead
- The University of Sydney significant investment in medical research and education at Westmead including a new School for undergraduate science and engineering students, and a hub for the Sydney Health Data Coalition. Plans include:
  - Sydney Uni Stage 1 (Westmead Education and Conference Centre)
  - Sydney Uni Stage 2 (Westmead Innovation Centre)
  - Sydney Uni Stage 3 (CASB)
- Expanded opportunities within medical research institutes
- National Institute for Complementary Medicine (Western Sydney University)
- The University of Sydney significant investment in medical research and education at Westmead including a new School for undergraduate science and engineering students, and a hub for the Sydney Health Data Coalition.
Objectives

- Grow a greater University education profile at Westmead
- Westmead to expand its role as an international destination for training of health and medical professionals
- Develop an eco system that promotes invention
- Westmead to become a leader in workplace integrated
- To train the health, medical and research workforce to service Western Sydney's rapidly growing population.

The University of Sydney holds 190
dental chairs at its Westmead's Centre
for Oral Health, with approximately
125,000 patient appointments
provided every year.

Components of the Vision

- Building Australia's medical research, science and
innovation capacity by training the world-leading
researchers of tomorrow
- A new range of student accommodation to service
the growing tertiary education profile of Westmead
- New clinical training facilities, co-located with student
learning centres
- Integration of research and education with clinical care,
with an emphasis on inter disciplinary and transdisciplinary
training
- Development of a university campus style environment,
in future Public Domain plans, to attract more students to Westmead
- An expanded range of academic disciplines provided
at Westmead
- Development of an educational environment that
fosters innovation through trans-disciplinary interaction
- More Australian Government funded study places
for Nursing and health professionals.

Implementation

- Student accommodation to be pursued on key public
and private sites within Westmead
- Ensure future clinical, innovation, research and start
up spaces proposed for Westmead will consider spaces
that encourage student participation
- Development of a Westmead Research and Educational
Engagement Plan between Western Sydney University,
The University of Sydney, the Children's Hospital at
Westmead and the Western Sydney Local Health District.

Creating vibrant student communities

Development is currently underway at Western Sydney University's Westmead Campus to transform the site into the gateway to the Westmead. The four-hectare development is set to include education, commercial, retail, residential and community spaces that will service the rapidly growing resident and worker populations of the region.

The campus is positioned at the nexus of the Westmead train station, bus transit way service and Westmead Hospital. In light of this strategic location, the development will facilitate access to public transport nodes for patients and workers commuting to and from the public and children's hospitals.

The project aims to build the academic profile of the University's Westmead campus to complement the sites strategic location.

Once redevelopment is complete, the campus will provide for a range of targeted education and research opportunities including:
- National Institute for Complementary Medicine
- Clinical Nursing and Allied Health
- Multi-disciplinary research
- Translation health research
- Data Analytics
- Biomedical engineering.

Launch Pad, business and innovation support program for start-up and high growth technology based businesses in Western Sydney.

The redeveloped campus will provide a critical point of interaction for up to 2,500 students, and support a population of 2,000 residents and 1,900 workers.

The Western Sydney University site is a 5 lot subdivision with mixed use zoning covering 123,000 sqm. One of the lots will be reserved for development of the university campus. Two lots will be mixed use commercial and retail. The further two lots will be residential.

The Westmead Campus currently contains Western Sydney University's English Program, IELTS Centre and Professional and Community Programs.
Research

A thriving community of world leading medical researchers

Westmead offers a full spectrum of medical research from basic research to translational and clinical research, and population health studies. Westmead is home to over 1,100 full-time equivalent (FTE) research staff, across four major institutes and numerous research centres, groups and networks. The majority of these (700) are full-time researchers, including 170 leading clinician-scientists, with the remainder being research support staff.

In 2015 Westmead researchers were awarded over $79 million in Category 1 public medical research grants, compared to less than $30 million in 2006. In 2015, researchers at Westmead achieved a grant writing success rate of 22%, compared to a publicised national success rate of 14%.

Westmead’s research institutes and clinical facilities also play an integral role in education. In 2016, Westmead’s research institutes, in partnership with Westmead’s hospitals, will train over 200 PhD students, and a further 100 post graduate students. The University of Sydney alone trains over 300 PhD students and 700 students in medical, nursing, dental and allied health professions at Westmead.

“With a world-class basic medical research program we are making new discoveries and helping to train the next generation of researchers, problem-solvers and innovators who can harness the current explosion in scientific knowledge to improve the health of people everywhere.”

Professor Roger Reddel, Children’s Medical Research Institute

Major research institutes
1. Institute for Clinical Pathology and Medical Research (ICPMR) - Pathology West
2. Kids Research Institute
3. Children’s Medical Research Institute
4. Westmead Institute for Medical Research
5. University clinics
6. Western Sydney Local Health District Research and Education Network

Major plans for research growth
- Western Sydney University Translational Health Research Institute
- National Institute for Complementary Medicine (Western Sydney University)
- Children’s Medical Research Institute, stages 2-5 (increasing researchers five-fold)
- The Westmead Institute for Medical Research, stage 2
- NSW Bio-Banking facility
- Westmead Innovation Centre
- Dedicated paediatrics clinical trials centre at the Kids Research Institute
- Western Sydney University Clinical Training Facility
- Sydney University’s Knowledge Hub (Westmead spoke)
- Western Sydney University LaunchPad.
Objectives
• Continue to grow the research profile and presence of Westmead, with the purpose of translating discoveries into new therapeutic opportunities, improved clinical care, and improved hospital population health outcomes.
• Attract additional private sector funding for health and medical research conducted at Westmead.
• Position research conducted at Westmead to maximise global trends from health innovations forecast over the next decade.
• Ensure the commercial benefits of high impact research conducted at Westmead are retained in Australia.

“At Westmead, businesses have the opportunity to work alongside some of the World’s pre-eminent scientists and clinicians with the most advanced research equipment available.”
Professor Tony Cunningham, The Westmead Institute

Components of the Vision
• Westmead Research Hub to identify ways to better align and promote precinct research with global health innovation opportunities described on page 23.
• Using the strength of national centres for research excellence in infectious diseases, immunisation, pancreatic islet transplantation, obesity and melanoma.
• Hub networked translational research centres including:
  1. Cell and Gene Therapy Centre aimed at curing diabetes, leukaemia, heart failure and immune diseases.
  2. Cancer.
  3. Infectious and immune diseases.
  4. Neurosciences and mental health.
• Link to establishment of university science and engineering schools at Westmead.
• Greater access to research expertise to attract private sector interest in core research facilities including:
  – The world’s first industrialised proteomics cancer research facility.
  – Plans for a jointly funded Centre for Clinical Bio-Banking.
• Continue to create formal partnerships with research institutes external to Westmead.

Implementation
• Focus on building scale and diversity of innovation activities across Westmead, followed by improving the translation of discoveries into healthcare and commercial applications.
• Establish a Westmead commercial hub to be the conduit for researchers, innovators, and students to take great research and ideas to the world, encourage and engage with private sector.
• Foster education pathways for science, technology, engineering and maths (STEM) students interested in pursuing a career in the medical and life sciences.
• Ensure Westmead researchers are aware of venture capital opportunities and what they would need to do to gain the interest of venture capital.
• Continue long-term investment in facilities, equipment and data services to future-proof research and continue to attract and retain internationally acclaimed researchers and academics to Westmead.
• Increased support for translational research, through provision of greater facilities for clinical research.

Westmead Research Hub case study
Formed in 2001, the Hub is a cooperative venture designed to focus the research activities of the Westmead Campus with a vision to be a world-leading health and medical research precinct enhancing the community’s health and prosperity.

The Hub focusses on basic, translational and clinical research and members comprise the two independent medical research institutes in Westmead, the University of Sydney, the research divisions of the hospitals and the large pathology institute (ICMPR). Environmental design encourages spontaneity and the translation of ideas between researchers and clinicians from all institutions, while easy access to research expertise and technology facilities increases both individual and collective research productivity.

In order to increase scale, focus is now on attracting private sector funding. Future Hub activity will not only allow research teams to work directly with private interests, but will also attract researchers outside of the precinct to utilise Westmead’s world class facilities on an ad-hoc or subscription basis.

Table 6: Future GFA estimates for delivery by 2031

<table>
<thead>
<tr>
<th>Institute</th>
<th>Current GFA (sqm)</th>
<th>Future GFA (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital/University research space</td>
<td>12,480</td>
<td>40,000</td>
</tr>
<tr>
<td>Children’s Medical Research Institute</td>
<td>9,000</td>
<td>23,000</td>
</tr>
<tr>
<td>Kids’ Research Institute</td>
<td>7,200</td>
<td>9,000</td>
</tr>
<tr>
<td>The Westmead Institute for Medical Research</td>
<td>17,800</td>
<td>28,000</td>
</tr>
<tr>
<td>Other space</td>
<td>n/a</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46,180</strong></td>
<td><strong>110,000</strong></td>
</tr>
</tbody>
</table>

Existing facilities available at Westmead are outlined on page 28.

Research technologies

**Cell imaging**
2 laser scanning fluorescence microscopes
1 fluorescence deconvolution microscope
3 midrange optical microscopes
1 laser capture microscope for molecular biology
High pressure liquid nitrogen freezer for specimens
Super-Resolution Microscope

**Electron Microscopy**
2 transmission electron microscopes
1 transmission electron microscope for diagnostics
Specimen preparation and technique development services
Equipped for routine room temperature and low temperature specimen preparation
High pressure liquid nitrogen freezer for specimens

**Genomics**
Genotyping analysis
Microarray and nanosting technologies
Gene detection technologies
Genome sequencing
Quality control methods to maintain for RNA and DNA

**Flow Cytometry**
Capable of detecting 23 parameters simultaneously at the speed of 70,000 cells per second
2 basic flow cytometry analyzers
2 intermediate flow cytometry analyzers
2 high end flow cytometry analyzers
1 intermediate cell sorter
1 high end cell sorter
1 fully automated cell separator

**Proteomics**
2 separate mass spectrometry facilities for Research or Industrialised proteomics
6 SWATH 6600 mass spectrometer systems, harmonised together for ProCan
6 diverse high end research mass spectrometers
Well-equipped proteomics research hotel, wet lab space for sample prep and data analysis
Our Discoveries

Since 1978, medical researchers at Westmead have led the development of numerous new medical treatments and prevention programs in Australia and in some cases have changed health practice internationally. Here are just a few of our discoveries:

Melanoma: Westmead researchers helped discover the first gene that causes a high risk of melanoma in families. They have subsequently found most of the more than 20 gene variations that influence melanoma risk in the community, together with sun exposure.

Leukemia: Westmead researchers also developed therapies with immune cells to control potentially fatal infections in leukemia patients where drug therapy is failing. Recently they have adapted this type of cell therapy to treat leukemia itself.

Breast cancer: Breast cancer researchers made a discovery critical to improving diagnosis of the disease. They revealed that antibodies used in diagnostic testing often fail to detect both forms of progesterone receptor – which are an indicator of response to endocrine therapy in the clinical management of breast cancer.

Diabetes: Diabetes researchers at WIMR/Westmead Hospital established Australia’s first successful clinical pancreatic islet cell transplant program. Infusing patients with pancreatic islet cells gave normal blood glucose levels without insulin injections, thus curing patients in the majority of cases.

Cancer treatment: Westmead researchers discovered the Alternative Lengthening of Telomeres mechanism (ALT), creating an entirely new field of research that could lead to treatments for 15% of cancers that use this mechanism to maintain unlimited growth, including some of the most aggressive types, such as glioblastoma.

Gene therapy: Westmead researchers also conducted the first ever gene therapy clinical trial for a genetic disease in Australia.

Westmead Innovation Centre

The new Westmead Innovation Centre will build on Westmead’s global reputation in clinical innovation and integrated health, research and education and provide additional links throughout Australia and around the world.

It will draw together research and academic institutes, clinical providers, public health services providers and state entities to create a collaborative environment that helps us solve the health problems we face today and in the future.

Its central location and connectedness with Westmead precinct partners ensures it is uniquely placed to tap into all the talent and expertise across healthcare, education and research.

The Westmead Innovation Centre will be collecting and generating ideas and new solutions from patients, clinicians, researchers and other innovators and will be fostering a culture of innovation and knowledge sharing.

Comparable projects have demonstrated potential for significant benefits, for example, 23,000 health and well days were ‘given back’ to the local population due to Ko Awatea’s efforts in New Zealand. Similarly, the Innovation Centre at University of Pittsburgh Medical Centre created $22 million of value through productivity improvements.

The investment in data sciences is also an exciting development which will help advance our diagnostics, prevention and care and will be complemented by a new clinical innovation lab for improved testing of the ideas and solutions proposed through the centre.

The Westmead Innovation Centre will harness the skills, experience and investment from a wide range of industry partners from both the public and private sectors opening the opportunity for further investment from new businesses within Westmead, Parramatta and across Australia.

Launchpad

Western Sydney University is assessing the potential establishment of a LaunchPad within the Westmead Precinct. LaunchPad’s wrap-around support model puts Tech Start-ups at the centre of a range of key supports and services including: modern collaborative workspaces, mentoring, funding, government grants, networking, and connectivity to the University’s wide range of researchers, facilities and equipment. The Westmead LaunchPad will provide opportunities to generate, expand and showcase health and technology innovation within the precinct leveraging the collaboration opportunities and Government and corporate partnerships available through LaunchPad’s broader network of innovation centres across Western Sydney.

Major research institutes at Westmead

- The Westmead Institute for Medical Research (WIMR)
- Children’s Medical Research Institute (CMRI)
- Kids Research Institute (KRI)
- Institute of Clinical Pathology and Medical Research (ICPMR)

Launchpad

Western Sydney University is assessing the potential establishment of a LaunchPad within the Westmead Precinct. LaunchPad’s wrap-around support model puts Tech Start-ups at the centre of a range of key supports and services including: modern collaborative workspaces, mentoring, funding, government grants, networking, and connectivity to the University’s wide range of researchers, facilities and equipment. The Westmead LaunchPad will provide opportunities to generate, expand and showcase health and technology innovation within the precinct leveraging the collaboration opportunities and Government and corporate partnerships available through LaunchPad’s broader network of innovation centres across Western Sydney.
Health business
An ecosystem that supports industry growth

Spending on health accounts for approximately 10% of Australia’s GDP, a figure anticipated to grow over the next decade. This trend is being driven by a rapidly growing and ageing population and increases in the incidence of lifestyle related disease, awareness of health needs and improvements in treatments and technology.

Innovation in the way the research sector and industry collaborate towards developing new treatments and ways of delivering health will be critical in addressing many of the region’s current health challenges. The same innovation however, if properly supported, will lead to direct commercial opportunities capable of growing into new health economy industries.

In this context, Westmead possesses a wide range of health, education and research infrastructure, combined with proximity to skilled labour markets that provide a natural environment for the diffusion and translation of novel ideas that can be spun into new health enterprises. Put simply, a place where new businesses and industries of the future are born.

The economic opportunity for both public and private sector investment at Westmead lies in developing the programs, facilities and environments where the health economy of the future can grow.

“It is an exciting time to be growing our business within the Westmead precinct, bringing health, education and research together for the people of Western Sydney. We look forward to continuing to deliver high quality private healthcare for decades to come.”

Mike Flatley, Chief Executive Officer of Westmead Private Hospital

Over 350 enterprises are already at Westmead, the majority in allied health service industries. See map on page 9 for greater local identification.
Sources: Deloitte Access Economics (2016)

Over 49 dermatologists and 80 staff in total work at these facilities.

The profits from The Skin Hospital fund the research and education programs undertaken by the Foundation. Research at the Foundation is underpinned by the extensive catalogue of skin pathology collected from over 40 years of clinical service. Research at the Foundation is led by Pablo Fernández-Peñas MD, PhD, FACD, who is also an Associate Professor in Dermatology at the University of Sydney and Head of the Department of Dermatology at Westmead Hospital. Current and previous research project topics include outcomes after dermatologic surgery, cost-effectiveness in Mohs surgery, pain during laser procedures, proteomics of squamous cell carcinoma (SCC), and utilities in non-melanoma skin cancer. This research has been undertaken with partners including WSLHD, University of Sydney, Sydney West Translational Cancer Research Centre, The Crown Princess Mary Cancer Centre, and Douglass Hanly Moir Pathology.

The Foundation is a major training centre for dermatologists. Over 95% of NSW dermatology graduates have received training at The Skin Hospital. Around $1.5 million of training is dedicated to dermatologists, dermatology registrars, general practitioners, medical students, nursing staff and nursing students who attend teaching clinics and programs conducted by the Foundation.
Objectives

• Grow Westmead as a specialised employment centre for the health industry
• Provide the infrastructure, cultural environment and appeal that will compel firms from start-ups to large biotechnology to locate at Westmead
• Attract additional private health and medical services to Westmead
• Support the placement of medical and allied health students to gain work place learning opportunities in local health enterprises and institutions.

Implementation

• Deliver the Westmead Innovation Centre
• In continuation of the market sounding exercise commenced by Deloitte and Health Care Real Estate Australia as part of preparing this Vision, further identify the nature and depth of user demand by health enterprises to locate to Westmead
• Maximise the work, knowledge and momentum developed in the preparation of this study as a launching pad to delivery of the Vision
• Work with NSW Government to develop a commercial strategy to attract a large biotechnology, medical technology and pharmaceutical anchor companies on public lands at Westmead to drive greater public-private research collaboration.

Components of the Vision

• Existing employment lands at Westmead to be used for future health industry uses
• Surplus public sites to be focused and developed to attract private health enterprises
• The future innovation centre to be purpose designed space where Westmead staff, researchers, students and graduates can share ideas with peers, industry leaders and the wider commercialisation and start-up community
• Attraction of additional primary care, day surgeries, diagnostics and other allied health services to meet current precinct needs
• Attraction of new major private laboratory space to facilitate the mixing of public and private researchers in commercial environments
• A future home for global health technology enterprises.

Investment targets

Our strategy to becoming an Innovation District

To become an Innovation District requires Westmead to take the next step in the evolution of its eco system to one capable of driving national, social and economic prosperity through innovation.

Our vision of Westmead to become an Innovation District will be achieved through:

1. Targeting opportunities to invest over the next five years
2. Targeting private investment in medical research
3. Targeting major health technology enterprises.

Opportunities to invest over the next five years

The following represents potential categories of health sector investment over the next five years.

• Purpose built consulting suites (including sessional suites)
• Larger private hospital (including private emergency department)
• Wider range of diagnostic facilities
• Day surgeries
• Major primary healthcare facilities
• General and specialised dental facilities
• New gym/ kitchen nutrition/diet education facilities
• Private cancer care facilities
• Maternity and early parenting
• Palliative care facilities
• Rehabilitation
• Psychiatric care
• Specialised private care facilities such as:
  - Sleep disorder clinics
  - Pain management clinics
  - Dialysis treatment facilities
• Additional IVF services
• Increased private Intensive Care Unit and High Dependency Unit facilities
• Preventative healthcare focused businesses
• Health and medical industry associations.

A large majority of this investment will be delivered within existing and proposed development plans for Westmead, resulting in significant uplift in local employment.

Targeting private investment in medical research:

To be achieved through aligning Westmead’s research specialisations with health innovations likely to transform global health over the next ten years. By doing this, Westmead seeks to attract business partners to fund medical research that results in greater commercial benefit for Westmead’s research community, and that supports increased innovation in health service delivery.

The areas where Westmead will focus its medical research in this regard is described on page 25.

Targeting major health technology enterprises:

To be achieved by establishing the necessary locations at Westmead where major health technology firms of the future can locate. These firms will benefit from Westmead’s emerging innovation eco system, as described on page 24.

This effect will grow jobs and economic activity through establishing a new virtuous circle of economic activity through the introduction of health technology enterprises to Westmead.

Global biomedical enterprise born at Westmead

Animated Biomedical Productions is a specialised medical animation studio, creating 3D medical and biotech animations. The company was established in 1996 by Dr Brian Somerville MD, a physician practicing in Westmead who also established and operated The Westmead Neurological Centre neighboring the Westmead Hospital. ABP’s clients include Pfizer, Channel 7, ResMed, Discovery Health, EnGeneIC, Springer Healthcare, King’s College London, Novartis, Pearson, the American Heart Association and the ABC.

The business spin off, ABP Learning, provides eLearning solutions to clients across the healthcare sector. Fast internet connectivity in the Westmead area allowed ABP to work with talented and competitive animators, as well as clients, from around the globe and also allowed their local, diverse workforce the flexibility to program and project manage from home or hot-desks. ABP’s location has also allowed them to leverage off Westmead’s globally recognised brand as a major health destination.

ABP is attracted to the prospect of quality, technology-rich, shared and scalable space in Westmead where they can collaborate with other businesses and challenge themselves to continue to innovate.
Aligning our medical research with global trends
Where medical research at Westmead meets global opportunity

In 2016 Deloitte surveyed leaders across the global healthcare system to identify the innovations most likely to transform health care over the next decade. The survey identified innovations that have the potential to improve the health care delivery, and provide opportunities for commercialisation. The top ten innovations identified in this survey are listed below, in no particular order. The following represent the key areas of research strength at Westmead in alignment with global health trends, which offer the greatest potential for commercialisation.

Table 7: Future global health innovations

<table>
<thead>
<tr>
<th>Top 10 health innovations likely to transform global health care by 2026</th>
<th>Research presence at Westmead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Personalised medicine: applying genomics and proteomics (proteogenomics) to identify at-risk individuals or toward personalising the management of diseases based on the likelihood of an individual patient's response to treatment.</td>
<td>Strong</td>
</tr>
<tr>
<td>2. 3D printed devices: lower cost and highly customised medical technology products that can be tailored to suit the physiological needs of individual patients.</td>
<td>Strong</td>
</tr>
<tr>
<td>3. Immunotherapy: treatments with the potential to significantly extend survival for cancer patients, without the negative side effects, and associated health care costs, of traditional chemotherapy.</td>
<td>Strong</td>
</tr>
<tr>
<td>4. Point of care diagnostics: allow for convenient, timely testing at the point of care (e.g. physician office, ambulance or hospital) resulting in faster, more cohesive patient care.</td>
<td>Strong</td>
</tr>
<tr>
<td>5. Leverage patient experiences via social media: tapping social media data and data from online communities offers health care organizations the ability to track consumer experience and population health trends in real-time, much more efficiently than current approaches.</td>
<td>Growing</td>
</tr>
<tr>
<td>6. Telehealth: offers a more convenient way for consumers to access and increase self-care while potentially reducing office visits, travel time, and also prevent complications and ED visits.</td>
<td>Growing</td>
</tr>
<tr>
<td>7. Wearables as disappearables: technology-enabled monitors, and sensors incorporated into clothing and accessories that allow consumers to easily track aspects of their health, in a way that is much less intrusive.</td>
<td>Potential</td>
</tr>
<tr>
<td>8. Convenience care: retail clinics and urgent care centres provide more convenient, lower cost care, addressing patient health issues more quickly.</td>
<td>NA</td>
</tr>
<tr>
<td>9. Artificial intelligence: the ability of computers to think like and complete tasks currently performed by humans with greater speed accuracy, and lower resource utilisation.</td>
<td>NA</td>
</tr>
<tr>
<td>10. Virtual and augmented reality: simulated environments that could accelerate behaviour change in patients in a way that is safer, more convenient, and more accessible.</td>
<td>NA</td>
</tr>
</tbody>
</table>

Source: Deloitte (2016)

Over the next five years Westmead will actively pursue new strategies that develop and align its research with future global trends in health innovations shown above.
In the future, Westmead will establish a clear urban structure and layout to make it easier for residents and visitors to access the wide range of precinct facilities. New retail opportunities that encourage visitors, residents and workers to stay and use the precinct are being designed, along with new innovative spaces and services to enhance the visitor experience at Westmead.

In 2013 the Westmead Alliance identified over $68 million of public transport, access, parking and urban amenity improvements aimed at unlocking the investment and jobs potential of Westmead.

“You attract talent by having a very exciting eco system, by having a great place to live and work. There is a growing recognition that having great urban places and spaces is as important for productivity and nurturing human talent as a city being a nice place to walk around. It’s actually an important part of competitiveness.”

Lucy Turnbull AO, Chief Commissioner, Greater Sydney Commission

Artist’s impression of Hawkesbury Road in 2036.
Source: JRH Design Studio

Civic heart and accessibility
Creating a new civic heart for Westmead

Existing services
Civic
- Wesley Lodge Conference Centre
- Westmead Tavern
- Old Westmead town centre
- Parramatta Park
- Northcott conference facilities
- The Oakes Neighbourhood Centre.

Accessibility
- T-way rapid bus system
- Westmead Station
- Numerous small public parking facilities
- Proximity to M4 and M7 Motorways via multiple regional roads.

Future services
Civic
- New Westmead town centre
- Transport Interchange linking Westmead station with university and hospital campuses
- New super market
- New meeting and conference facilities
- Retail and dining ‘Eat Street’ developed along Hawkesbury Road
- Expanded cultural and entertainment facilities at Parramatta North and Parramatta CBD
- Parramatta Stadium.

Accessibility
- Expanded private car parking facilities
- Parramatta Light Rail
- Enhanced cycling paths linking Westmead Hospital precinct with Parramatta Park and Parramatta CBD.
Objectives
- Development of greater urban amenity at Westmead
- Development of Westmead as an attractive place to work, live and visit
- Address access to Westmead by enhancing transport accessibility
- Grow a vibrant and safe street economy
- Increase the permeability and walkability of Westmead
- Encourage better linkages between Westmead and Parramatta Park
- Enhance public transport services
- Reduce the rate of car use to Westmead
- Provide the full range of personal shopping services
- New retail opportunities to encourage visitors, residents and workers to look at as a one-stop shop.

Implementation

Civic heart
- Establishment of a high amenity, tree lined, transit boulevard along Hawkesbury Road, including new dining and retail uses
- Full range of local cultural and entertainment facilities as part of new civic heart.

Accessibility
- New transport interchange for Westmead linking bus, rail and light rail options
- Parramatta Light Rail linking Westmead to Sydney Olympic Park via Parramatta CBD
- Improved pedestrian links/ pedestrian bridge or sky walk linking Western Sydney University and Westmead Hospital
- Surrounding local intersection upgrades to support improved accessibility
- Prioritisation of surrounding state and national road improvements to facilitate greater local and regional access to Westmead.

Walkability
- New landscaped walkways through the medical core encouraging visitors to use green spaces and new amenities
- Westmead way finding program to encourage walkability
- Public domain upgrades of key green corridors at Westmead
- Employee walking initiatives that promote exercise, particularly at nearby Parramatta Park
- Ten minute connection to Parramatta CBD, through improved cycling and pedestrian networks and proposed Parramatta Light Rail route.
Living locally
Creating environments where researchers, clinicians and students will choose to live.

Westmead currently houses approximately 12,400 residents in roughly 4,600 dwellings. A large proportion of these dwellings are apartments. There are current plans for over 3,400 dwellings to be developed at Westmead, the majority being apartments. This will increase the total number of dwellings to approximately 8,000, all within walking distance to local facilities of Westmead.

Of significance, the North Parramatta Urban Transformation Program will provide 2,700 new dwellings across five super lots, to the north of Westmead alongside the Parramatta River. Similarly, Western Sydney University has plans for up to 900 dwelling as part of redevelopment of the campus. The provision of a wider range of attractive accommodation options at Westmead will be vital to ensure Westmead provides a quality and affordable competitive offer to skilled staff.

Existing living and accommodation
- Approximately 4,600 dwellings, typically apartment living
- Predominately freestanding dwellings surrounding Westmead, excluding Parramatta CBD
- Ronald McDonald House Westmead
- Wesley Lodge
- Casuarina Lodge
- Chisolm Cottage
- Wesley Lodge
- Wesley Apartments.

Future living and accommodation
- Parramatta North Urban Transformation Program (see case study below)
- Western Sydney University Campus Redevelopment (residential component)
- Ronald McDonald House Westmead
- Mayflower Retirement Village development
- Wesley Lodge site redevelopment
- Multiple student accommodation proposals.

Parramatta North Urban Transformation and Transport Program
The Parramatta North Urban Transformation Program will activate the historic North Parramatta area and create an anticipated 2,700 new homes on the footprint of the Westmead Health Precinct. 6,000 residents and 2,000 workers will each day live, work and play amongst the repurposed sandstone buildings from Australia's early colonial history, including the Parramatta Female Factory and Roman Catholic Orphan School. These buildings will be creatively designed to function as collaborative commercial and cultural spaces for students, researchers and entrepreneurs in the Westmead community.

Planning includes the a multipurpose oval, conservation of old growth trees, landscaping that compliments the heritage landscape, revitalisation of the Parramatta River and water access, pedestrian and cycle paths, recreation spaces, play grounds, water features and public art spaces. The first sites are anticipated to go to market in 2017 with the entire development to be completed over the coming decade.
Over 52,000 additional dwellings are proposed for development in proximity to Westmead over the next decade. This potential dwelling increase could support the addition of over 120,000 residents living within proximity of Westmead within this time frame.

Table 8: Surrounding dwelling and population growth

<table>
<thead>
<tr>
<th>Locality</th>
<th>Proposed dwellings</th>
<th>Population increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parramatta CBD</td>
<td>14,957</td>
<td>35,150</td>
</tr>
<tr>
<td>Camellia</td>
<td>24,255</td>
<td>57,000</td>
</tr>
<tr>
<td>Northmead</td>
<td>2,809</td>
<td>6,600</td>
</tr>
<tr>
<td>Southern Westmead</td>
<td>2,050</td>
<td>4,817</td>
</tr>
<tr>
<td>Mays Hill</td>
<td>1,460</td>
<td>3,694</td>
</tr>
<tr>
<td>South Wentworth</td>
<td>1,576</td>
<td>3,987</td>
</tr>
<tr>
<td>Merrylands</td>
<td>5,223</td>
<td>13,214</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>52,330</strong></td>
<td><strong>124,462</strong></td>
</tr>
</tbody>
</table>

Source: Deloitte Access Economics (2016)

Ronald McDonald House Westmead

Ronald McDonald House Westmead provides accommodation within the grounds of the Children’s Hospital Westmead for sick children and their families.

In late 2017 Ronald McDonald House will be relocating to a new facility in Westmead, to meet the growing need for their services. The new location will mean the number of beds expands from 98 to 416, the number of rooms will increase from 23 to 60 and the number of volunteers required to service the facility will double from 125 to 250.

Ronald McDonald House provides hotel and apartment style accommodation including kitchen and dining facilities for guests. Community volunteers for the Meals From The Heart Program provide home-cooked meals thrice weekly for guests. Other facilities include laundries, verandahs, gardens, a disabled-access bathroom and car parking.
2016 family tree

Over 180 major support organisations and services

Health
  • Hospitals
    - Westmead Hospital
    - The Children’s Hospital at Westmead
    - National Pancreas Transplant Unit
    - National Islet Transplant Service
    - Westmead Private Hospital
    - Cumberland Hospital
    - National Poisons Information Centre
    - NSW Newborn Screening Centre
    - NSW Burn Service
    - National Foetal Evaluation Centre
  • Allied health
    - Westmead Specialist Centre
    - Westmead Manipulative & Sports
    - Westmead Eyes
    - Smiles First Dental
    - Westmead Dental
    - Allied health
      - Supercan
    - Baby Glimpse
    - Laverty Pathology
    - Douglass Hanly Moir
    - PRP Westmead Diagnostic Imaging
    • Diagnostics
      - Castlereagh Imaging
    - Blacktown Hospital
    - Auburn Hospital
    - Parramatta Community Health Centre
    - Headspace Parramatta
    - Merrylands Community Centre
    - Health Share NSW
    - Westmead Breast Cancer Institute
  • Diagnostics
    - Australian Laboratories
    - Allergy Testing Services
    - PRP Westmead Diagnostic Imaging
    - Douglass Harley Moir
    - Laverty Pathology
    - Baby Glimpse
    - Centre for Women’s Ultrasound
    - Castlecrag Imaging
    - Women’s Diagnostic Ultrasound
    - Supercan
    - Southern Cross Xray

Affiliates
  • State Centre for Bone Marrow Transplant
  • The Sydney Children’s Hospitals Network (SCHN)
  • Mount Druitt Hospital
  • Blacktown Hospital
  • Cabramatta Hospital
  • Marian Nursing Home
  • Lilian Wells Nursing Home
  • Unit Care Ageing – Mayflower Village
  • Westcourt
  • Christadelphian Homes
  • Uniting Mayflower Westmead
  • Northcott
  • More at Home Community Care
  • Other
    - Starlight Express
    - Abundant Life Health Care Centre
    - Sim + Chang Acupuncture & Herbal
    - Acupuncture Fertility & IVF Support Clinic
    - Relationships Australia
    - Parramatta Female Factory Precinct – Parragirls
  • Education
    - Westmead Private Physiotherapy Services
    - APC Prosthetics
    - Innate Health Chiropractic
    - Sports Medicine Clinic
  • Ambulance Services
    - Care Flight
    - Newborn & paediatric Emergency Transport Service (NETS)
  • Day Surgeries
    - City West Specialist Day Hospital
    - The Skin Hospital
    - Westmead Fertility Clinic
  • Medical Centres
    - Daher Centre
    - Gold Cross Medical Centre
    - Hawkesbury Road Surgery
    - Marie Stopes International
    - Northmead Medical Centre
    - Queens Road medical Centre
    - Redbank House
    - Specialist Medical Centre
    - The Ashley Centre
    - The Children’s Hospital at Westmead
    - Medical Centre
    - Westmead Doctors
    - Westmead Medical Centre
    - Westmead Specialist Centre
  • Aged and Special Care
    - Lilian Wells Nursing Home
    - Marian Nursing Home
    - Uniting Care Ageing – Mayflower Village
    - Westcourt
    - Christadelphian Homes
    - Uniting Mayflower Westmead
    - Northcott
    - More at Home Community Care
    • Other
      - Starlight Express
      - Abundant Life Health Care Centre
      - Sim + Chang Acupuncture & Herbal
      - Acupuncture Fertility & IVF Support Clinic
      - Relationships Australia

  • Parramatta Female Factory Precinct – Parragirls
  • Day Surgeries
    - City West Specialist Day Hospital
    - The Skin Hospital
    - Westmead Fertility Clinic
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    - Daher Centre
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    - Marian Nursing Home
    - Uniting Care Ageing – Mayflower Village
    - Westcourt
    - Christadelphian Homes
    - Uniting Mayflower Westmead
    - Northcott
    - More at Home Community Care

  • Health and medical education
    - Western Sydney University (WSU)
      - WSU College and International Language School
      - WSU College
    - The University of Sydney (SU)
      - Westmead Clinical School
    - The Children’s Hospital at Westmead
      - Clinical School
    - Westmead Centre for Oral Health
      - Sydney Nursing School
    - NSW Institute of Psychiatry
    - Western Sydney Local Health District
      - Surgical Skills Training Network
    - Westmead Postgraduate Medical Education Centre
    - Research & Education Network
    - Wesley Health Management
  • Primary and Secondary Schools
    - Parramatta Marist High
    - Catherine McAuley
    - Palm Avenue School
    - Redbank School
    - Mother Teresa Primary Westmead
    - Westmead Public School
    - Darcy Road Public School
    - Sacred Heart Primary
    - Westmead Christian Grammar School
    - The Children's Hospital School
  • Early Childhood
    - Westmead Early Education Centre
    - Baby’s Day Out Family Day Care
    - Central Park Early Learning Centre
    - The Children’s Hospital at Westmead
      - Child Care Centre
    - Westmeadow Child Care Centre
    - KU Westmead Preschool
    - North Parramatta Montessori Academy
    - Another World 4 Kids Kindergarten
    - Jolly Frog Kindergarten
  • Research
    - University Centre for Rural Health
      - Lismore
    - School of Rural Health (Dubbo, Orange)
    - Pam McLean Communications Centre
    - Business
      - Emed (medical devices)
    - Epic X – (medical imaging)
    - Torsmob Australia (rehabilitation equipment)
    - Southern Cross Hospital Supplies
    - EverX (radiology equipment)
    - TAD Disability Services (disability equipment)
    - Animated Biomedical Productions (medical animation)
    - Air Liquide Healthcare (medical supplies/ equipment)
  • Hospital and University Research Centre
    - Microbiology
      - Centre for Virus Research
    - Centre for Transplant and Renal Research
    - Centre for Immunology and Allergy Research
    - Centre for Diabetes, Obesity and Endocrinology
    - Ludwig Engel Centre for Respiratory Research
    - ACRF Centre for Heart Research
    - CMRI
      - Cancer Research Unit
      - Cell Biology Unit
      - Cell Signalling Unit
      - Embryology Unit
      - Gene Therapy Unit
      - Eye Genetics Group
      - Telomere Length Regulation Group
      - Synapse Proteomics Group
      - Genome Integrity Group
      - Translational Vectorology Group
      - Cell Cycle Unit
      - CellBank Australia
      - Vector & Genome Engineering Facility
      - ACRF Centre for the Proteome of Human Cancer (ProCan)
      - ACRF Telomere Analysis Centre
      - Biomedical Proteomics Facility & ACRF Centre for Kinomics
    - KRI
      - National Centre for Immunisation Research and Surveillance
      - Centre for Kidney Research
      - Children’s Centre for Bone and Musculoskeletal Health
      - The Cancer Centre at The Children’s Hospital Westmead
      - Centre for Acute Care Research
      - Grace Centre for Newborn Care
      - Centre for Perinatal Infection Research
    - Banking services
      - Westpac Bank Branch
      - Commonwealth Bank Branch
      - Arab Bank Branch

Business Facilities
  • Novotel Sydney Parramatta
  • Holiday Inn Parramatta
  • Fiori
  • Parkroyal Parramatta
  • Ibis budget world Westworthville
  • Mantra Parramatta
  • Mercure Sydney Parramatta
  • Rydges Parramatta
  • Parramatta Waldorf Apartments

Accommodation
  • Novotel Sydney Parramatta
  • Holiday Inn Parramatta
  • Fiori
  • Parkroyal Parramatta
  • Ibis budget world Westworthville
  • Mantra Parramatta
  • Mercure Sydney Parramatta
  • Rydges Parramatta
  • Parramatta Waldorf Apartments
  • Redbank School
  • Palm Avenue School
  • Redbank School
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  • Westmead Public School
  • Darcy Road Public School
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    - Animated Biomedical Productions (medical animation)
    - Air Liquide Healthcare (medical supplies/ equipment)
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    - Microbiology
      - Centre for Virus Research
    - Centre for Transplant and Renal Research
    - Centre for Immunology and Allergy Research
    - Centre for Diabetes, Obesity and Endocrinology
      - Ludwig Engel Centre for Respiratory Research
      - ACRF Centre for Heart Research
      - CMRI
        - Cancer Research Unit
        - Cell Biology Unit
        - Cell Signalling Unit
        - Embryology Unit
        - Gene Therapy Unit
        - Eye Genetics Group
        - Telomere Length Regulation Group
        - Synapse Proteomics Group
        - Genome Integrity Group
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        - ACRF Telomere Analysis Centre
        - Biomedical Proteomics Facility & ACRF Centre for Kinomics
      - KRI
        - National Centre for Immunisation Research and Surveillance
        - Centre for Kidney Research
        - Children’s Centre for Bone and Musculoskeletal Health
        - The Cancer Centre at The Children’s Hospital Westmead
        - Centre for Acute Care Research
        - Grace Centre for Newborn Care
        - Centre for Perinatal Infection Research
      - Banking services
        - Westpac Bank Branch
        - Commonwealth Bank Branch
        - Arab Bank Branch

28
Our aim is to continue to build the Westmead family tree to create the environment where discoveries and breakthroughs occur as a result of the co-location of talented individuals and enterprises. The 2016 Westmead family tree provides an overview of the broader eco system of institutions and services at Westmead. It is not yet a definitive list, rather a list that will be added to as institutions, services and businesses are identified, located or grown at Westmead.
Westmead's economic contribution

Deloitte Access Economics estimates the total economic output of Westmead equalled approximately $1,979 million in 2016. This includes $1,135 million from the ten key health, education and research institutions located in Westmead, and an estimated $844 million from other businesses located at Westmead. By comparison, Westmead represents approximately 1.6% of Western Sydney's total economic output.

Direct Indirect Total

Value added ($m) 1,212 525 1,736
Employment (FTE) 18,056 3,934 21,990

Source: Deloitte Access Economics (2016)

- Of total economic output produced at Westmead, over $1,212 million of this was new economic value added to the Australian economy as a result of goods and services produced at Westmead.
- Westmead also has strong economic linkages to other sectors of the economy through its demand for intermediate inputs. In 2016 Westmead indirectly contributed an additional $525 million in value added to the Australian economy, and supported an additional 3,934 FTE jobs outside of Westmead.
- Spin off jobs created by Westmead are likely to be concentrated in the industries of: professional, scientific and technical services, wholesale trade and administrative services.

Economic contribution if we deliver the vision

This section examines the impacts of Westmead's proposed current development plans and goal of becoming an Innovation District by 2036 on the state economy. Computable general equilibrium (CGE) modelling has been used as it considers (1) the resource constraints within the economy, and (2) the flow-on impact for supplier industries that typically support health and education services. The presented economic impacts reflect the benefits of developing Westmead under two scenarios above business as usual:

Economic growth scenarios for Westmead

- **'Business as usual (BAU)' Scenario**: Where jobs and investment at Westmead grow at historic rates. Under this Scenario employment is expected to reach over 30,096 full-time equivalent (FTE) jobs by 2036.
- **'Current pipeline' Scenario (1)**: Where jobs and investment at Westmead grow at rates supporting current and proposed investment plans. Under this Scenario employment at Westmead is expected to grow to 43,713 by 2036.
- **'Toronto Discovery District' Scenario (2)**: Where jobs and investment at Westmead grow at a rate required to reach job densities found within the Toronto Discovery District (see case study section), of approximately 200 jobs per hectare. Under this Scenario Westmead would reach 50,000 by 2036.

- Based on the additional FTE jobs likely to be created under Scenario 1, the additional economic output for Westmead will be $1.3 billion higher by 2036, compared to the baseline, and support an additional 13,000 jobs.
- Under Scenario 2, this increases to $2.8 billion in additional output over BAU Scenario, and $1.5 billion over Scenario 1.

State wide impacts to employment

The employment impacts presented below represent the additional jobs that would be created across the state economy if Westmead reaches Scenarios 1 and 2 employment targets.

For example, under the Scenario 1 an additional 984 full-time equivalent (FTE) jobs will be created in the state’s economy by 2021, compared to BAU. This increases over time, reaching 1,871 FTE jobs by 2036. This represents 0.04% of the state workforce.

The employment deviation peaks in 2031 with an additional 2,775 jobs above the baseline, declining thereafter to 1,871 by 2036. This is driven by the capital investment, which creates new jobs in the relatively labour intensive construction sector, however declines after 2031 as currently forecasted capital investment is completed.

However, if current levels of capital investment can be sustained beyond 2031, gross state product will increase by an additional $385 million per annum between 2026-2036, and create an average of 368 additional jobs per annum over the same period, above Scenario 2 figures.

Table 9:

<table>
<thead>
<tr>
<th>Industry</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key health and education providers</td>
<td>57%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care and social assistance</td>
<td></td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Transport, postal, and warehousing</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional, scientific and technical services</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other industries</td>
<td></td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>57%</td>
<td>6%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Table 10: Forecast jobs growth

<table>
<thead>
<tr>
<th>Summary</th>
<th>2016</th>
<th>2021</th>
<th>2026</th>
<th>2031</th>
<th>2036</th>
<th>Jobs growth 2016-2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business as usual (BAU) scenario</td>
<td>18,694</td>
<td>21,998</td>
<td>25,803</td>
<td>27,925</td>
<td>30,096</td>
<td>11,402</td>
</tr>
<tr>
<td>Scenario 1: Current pipeline</td>
<td>18,694</td>
<td>27,979</td>
<td>33,508</td>
<td>39,842</td>
<td>43,713</td>
<td>25,019</td>
</tr>
<tr>
<td>Scenario 2: Toronto Discovery District</td>
<td>18,694</td>
<td>26,520</td>
<td>34,347</td>
<td>42,173</td>
<td>50,000</td>
<td>31,306</td>
</tr>
</tbody>
</table>

Source: Deloitte Access Economics (2016)
Westmead’s three economic dividends:
Achieving these additional economic impacts will occur through new levels of investment (described in this Vision) that will deliver three economic dividends to the state and national economy, including:

• A production dividend: by attracting billions of dollars of new investment including infrastructure to Westmead to facilitate the construction of facilities and services currently envisaged for Westmead over the next decade. This effect will grow the economic activity by enabling the production of more goods and services at Westmead.

• A productivity dividend: Connecting world leading research conducted at Westmead to global trends in health innovations predicted over the next decade. This effect will grow economic activity by catalysing new forms of wealth and income through increasing the commercial translation and application of research from Westmead. This translation success will exponentially increase the rate of attracting capital to Westmead.

• An innovation dividend: Establishing an eco system of innovation at Westmead through attracting complementary health technology firms within the next decade. Rapidly progressing technological advances are already facilitating health care discoveries at a rate never seen before. A Westmead innovation eco system will ensure Westmead remains at the forefront of new technologies that will undoubtedly lead to ground breaking medical breakthroughs. This effect will grow jobs and economic activity through establishing a new virtuous circle of economic activity through the introduction of health technology enterprises to Westmead.

Table 11: Summary impacts, 2016–2036

<table>
<thead>
<tr>
<th>Summary</th>
<th>2016-36</th>
<th>2016</th>
<th>2021</th>
<th>2026</th>
<th>2031</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross State Product deviation from BAU (NPV, $m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario 1</td>
<td>6,959</td>
<td>171</td>
<td>550</td>
<td>706</td>
<td>1,173</td>
<td>1,287</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>9,624</td>
<td>1</td>
<td>588</td>
<td>1,030</td>
<td>1,874</td>
<td>2,558</td>
</tr>
</tbody>
</table>

| Employment deviation from BAU (average, FTE) |         |      |      |      |      |      |
| Scenario 1               | 1,321   | 327  | 984  | 1,338| 2,775| 3,740|
| Scenario 2               | 1,937   | 25   | 1,050| 1,858| 3,777| 3,740|

Source: Deloitte Access Economics (2016)

Chart 4: Westmead additional output ($m), 2016–2036

Source: Deloitte Access Economics (2016)
# International learnings

<table>
<thead>
<tr>
<th>Discovery District – Toronto, Canada</th>
<th>Manchester Corridor – United Kingdom</th>
<th>Cambridge’s Kendall Square</th>
<th>Westmead</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
<td>250 ha</td>
<td>243 ha</td>
<td>220 ha</td>
</tr>
<tr>
<td>Core is 31 ha</td>
<td>Core is 39 ha</td>
<td>Core is 32 ha</td>
<td>Core is 12 ha</td>
</tr>
<tr>
<td><strong>Proximity to closest CBD</strong></td>
<td>1.5km (Toronto CBD)</td>
<td>2km (Manchester CBD)</td>
<td>2.5km (Boston CBD)</td>
</tr>
<tr>
<td><strong>Employees</strong></td>
<td>50,000+ (22,000 medical care and research related jobs)</td>
<td>60,000 (10,000 in hospitals)</td>
<td>50,000</td>
</tr>
<tr>
<td><strong>Students</strong></td>
<td>n/a</td>
<td>70,000</td>
<td>12,000</td>
</tr>
<tr>
<td><strong>Walk score</strong></td>
<td>97</td>
<td>98</td>
<td>86</td>
</tr>
<tr>
<td><strong>Hospital beds</strong></td>
<td>1,000</td>
<td>1,000+</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Anchor institutions</strong></td>
<td>University of Toronto Hospital for Sick Children Toronto General Hospital Princess Margaret Cancer Centre Mount Sinai Hospital Toronto Rehabilitation Institute</td>
<td>University of Manchester Manchester Metropolitan University Manchester Royal Infirmary St Mary’s Hospital (women and babies) Manchester Royal Eye Hospital Royal Manchester Children’s Hospital University Dental Hospital of Manchester</td>
<td>Massachusetts Institute of Technology Major technology companies, in biotech, IT, technology and clean energy fields, including Google, Microsoft, Facebook, Amgen, Biogen and Novartis.</td>
</tr>
<tr>
<td><strong>Economic cultivators</strong></td>
<td>MaRS Discovery District research facility Over 100 science related firms</td>
<td>Manchester Investment and Development Agency (MIDAS) Manchester Science Partnerships (science and technology park) University of Manchester Innovation Centre CitiLabs bio-medical facility MedTECH Centre – incubator for medical technology companies Trustech – acts as a gateway between NHS and industry Innospace</td>
<td>Cambridge Innovation Centre Broad Institute of MIT and Harvard The Johnson and Johnson Innovation Centre Pfizer and Novartis Institutes for Biomedical Research</td>
</tr>
</tbody>
</table>
Discovery District – Toronto, Canada
District model: Anchor Plus’ district model
Focus: Incubation
District strengths:
• Density and co-location: Co-location of incubation, translational research, academia and world class clinical care in the last 10 years a number of research buildings have been built to take advantage of the synergies with the long established, world class hospitals. Taken as a whole, the District is probably the most concentrated mix of research, biomedical companies, finance and business support services anywhere in the world.
• World leading institutions: University of Toronto (and its affiliated teaching and research hospitals) is ranked in the top three North American institutions for medical publications and citation, and the global precinct is a global leader in clinical health care and research.
• Incubation support infrastructure: Strong incubation support infrastructure, such as the MaRS centre, a not-for-profit corporation founded to commercialise publicly funded medical research and other technologies, has emerged as the new biomedical convergence centre which provides research labs, business incubator facilities and business services.
• Proximity to CBD: Close proximity to Canada’s financial and business centre – Bay Street, which provides services and advice on legal, accounting and venture capital investment. One block away is the seat of the Ontario Government.
• Diverse local labour force: Toronto is one of the most multicultural cities in the world with nearly half the population having been born abroad. This wide-ranging diversity of culture has high-value industries such as biomedical and health research.
• Government support programs: Ontario Government in partnership with the Government of Canada, have initiated a number of incentive programs such as tax credits, with the aim of fostering the biotechnology industry, cited to have the capacity to reduce cost of conducting research within the Discovery District by up to 66%.
• Urban Successful urban amenity and pedestrian accessibility and connectivity with wide footpaths and well-set back buildings. Raised footbridges has created the right conditions for an exchange of ideas, and has helped the labour force to achieve greater proficiency in the STEM skills required by connectivity of the district in winter, however single co-habited buildings are increasing in prominence.

District challenges:
• Lack of retail facilities: Lack of diversity in functions within the precinct, notably retail facilities: likely a result of high rents.

“The Discovery District allows entrepreneurs access to corporations, investors, mentors, university institutions and labs to test their concepts. We are where inspiration meets realisation.”

MaRS Discovery District
Manchester Corridor – United Kingdom
District model: Anchor Plus’ district model
Focus: Partnerships
District strengths:
• Proximity: Close proximity to the University of Manchester, the largest clinical academic campus in Europe, is fundamental to the success of the precinct. The hospital provides 5000 graduates of medicine and biotechnology annually, a focus for research on a grand scale. Within the corridor the main thoroughfare is well serviced by retail premises.
• Shared vision: through the formation of a strategic partnership in 2007 between Manchester City Council and a number of key organisations in the Corridor has provided guidance and certainty have been able to make investments in incubation facilities.
• Idea Lifecycle support: Perhaps the most pioneering aspect is the provision of a variety of pathways for ideas development, which allow basic research to be taken to stage-five clinical trials and eventual product commercialisation. The NowGen and Citilabs facilities were built with incubation specifically in mind, and allow small biotech to progress an idea from inception through to commercialisation without ever having to leave the Corridor. This has result in a variety of spaces that can be shared for conferences, informal and formal meetings of stakeholders, business development and translations research facilities. The University of Manchester Innovation Centre for example provides bioscience infrastructure laboratory facilities and other facilities for bioscience incubators. The overwhelming beneficiary has been biotech startups.
• Precinct Support Facility: Manchester Investment and Development Agency (MIDAS) acts on the behalf of local authorities and provides assistance to organisations wanting to move into the area.
• Urban Amenity: New residential developments and refurbishments to the Whitworth Art Gallery and several green spaces balance activity with safe, uncongested open space, give the Corridor a town-like atmosphere.
• Vibrant economy: Young and international population assisted in developing dynamic daytime and evening economy.

District challenges:
• Integration with Manchester Science Park
• Ongoing private investment.

“What you need is a place to develop shared purpose – city, industry, university, hospital.”
Keith Chantler, Manchester Royal Infirmary
Cambridge’s Kendall Square
District model: Anchor Plus’ district model
Focus: Full innovation cycle
District strengths:
• History of partnerships and commercialisation: actively established in the 1950’s by MIT to foster university/industry partnerships and emphasise the commercialisation of ideas.
• Nationally leading organisations: Proximity to Harvard University and Massachusetts General Hospital, assisting in the district being a nationally significant life sciences/pharmaceutical cluster.
• Historic framework regarding manipulation of genetic material. The first city in the world in 1977 to regulate the manipulation of genetic material. This transparent and established framework encouraged biotech firms, such as Boigen, and furthermore biotech venture capitalists due to the certainty of the operating future of the city.
• Proximity and density: Quoted as being one of the densest innovation districts in the world, there is a high concentration of start-ups, high tech companies and venture capital firms, which has fostered a successful collaboration between the community, the university and the financial community. 13 of the top 20 global biopharmaceutical companies are now headquartered at Kendall Square.
• Support for commercialisation: The success of the precinct has been encouraged in part by the presence of MIT’s Technology and Licensing Office. cross-disciplinary research at MIT (engineering and science) and establishments such as the 1999 founded Cambridge Innovation Centre (CIC), aiming at facilitating entrepreneurs and start-ups. CIC itself has assisted in raising over $1.8 billion in venture capital investment and housing of over 1,400 companies since inception.
• Plans for growth focusing on diversity of use: While deemed a destination in itself for both MIT and residents of Cambridge MIT has significant development plans, to encourage interaction and cross fertilisation between users and to turn the precinct into a more lively and welcoming neighbourhood that provides a range of retail, work and dining experiences.

District challenges:
• Affordability: Rapidly rising rents from the influx of commercial IT and pharmaceutical firms.

“We’re not here just to gain new knowledge; we’re here to transfer that new knowledge into useful things.”
Phillip Sharp, Institute Professor, MIT
Case studies of success at Westmead

ProCan™: World-first industrialised cancer proteomics research facility
In December 2015, CMRI won the largest private foundation grant for medical research equipment in Australian history, for the biggest and boldest new idea in cancer research, as judged by a panel of national and international experts. The award of $10m has been used to establish ProCan™ (the ACRF International Centre for the Proteome of Human Cancer), the world’s first industrialised cancer proteomics facility.

Using cutting-edge PCT-SWATH-MS mass spectrometry technology on a large scale, the ProCan project will analyse the human cancer proteome. ProCan scientists will, over the next five to seven years, analyse many thousands of proteins in each of approximately 70,000 tumour samples, representing every type of cancer. Complex bioinformatic analysis of the immense amount of data generated with what is already known about these cancers (including other ‘omic’ data and the cancers’ documented responses to treatment) will address major scientific and clinical questions. This will bring together cancer genomics with cancer proteomics (i.e. proteogenomics), on an unprecedented scale. The data generated are expected to transform cancer pathology (cancer diagnosis) and cancer treatment decision-making, and to lead to new discoveries, which may identify new targets for cancer therapeutics. A key aim of this research is to develop algorithms and tools that will more rapidly and accurately identify the type and subtype of cancer, potentially reducing the time taken and the number of separate pathology tests (especially those involving immunostaining) required for cancer diagnosis and classification of cancer type.

In addition, proteomic ‘signatures’ will be identified that predict a particular cancer’s response to available treatments. This information will be used to develop a clinical decision-making tool, enabling oncologists to choose the treatments most likely to be efficacious against an individual patient’s cancer and to avoid those treatments that would likely fail – leading to more effective, personalised cancer treatment.

Importantly, CMRI has major plans to diversify its proteogenomics research program toward improving the diagnosis and treatment of, and finding new drug targets for, many diseases beyond cancer. Our initial focus will be in the field of neuroscience (e.g. epilepsy; neuromuscular disorders) and mental health.

Vector and Genome Engineering Facility (CMRI)
On 18 February 2016, the New South Wales Minister for Medical Research, The Hon Pru Goward MP, officially opened CMRI’s Vector and Genome Engineering Facility (VGEF). Established in part with over $1 million in funding provided by the New South Wales Government, VGEF is part of the Government-supported paediatric research initiative aiming to increase the speed of research translation into new treatments.

The research facility will use state of the art technology to create vectors (microscopic tools) for the delivery of gene therapy (healthy copies of a gene) into diseased tissue, and also further develop this technology. Potential applications of this technology include treatment and/or cure of a wide range of genetic diseases.

The VGEF offers commercial services in design, cloning and packaging of a range of viral vectors, including safe AAV-based gene therapy tools, with the potential for use not just in liver and bone marrow but also in other organs that are more difficult to treat.

Additionally, VGEF offers custom genome-editing services, based on the latest technologies, such as CRISPR/Cas9 and TALEN. To stay competitive in the fast-changing fields of vectorology and genome engineering, VGEF will optimise existing tools and develop new technologies to progress gene therapy research.

CMRI actively seeks academic and commercial collaborators to help speed the use of new vectors developed within VGEF, into clinical trials for various paediatric and adult diseases.

EPIC use of 3D printing to transform children’s bone health
Professor David Little of the Sydney Children’s Hospital Network is using 3D printing to create implants specifically designed for use by children with musculoskeletal conditions and lower leg deformities. Currently many children only have access to adapted adult models that cannot provide the same quality of care as specifically engineered implants.

The new implants will provide children with early access to innovative new treatments, improve functional outcomes, reduce surgical revision and minimise hospital and recovery times. This innovative technology also provides training opportunities for health practitioners and a multi-disciplinary team of students while assisting clinicians in surgical design and execution.

Professor Little has developed an Intellectual Property portfolio of six orthopaedic devices and technologies. He has received a Medical Device Fund grant for his SyMaxys rod which has since been licensed to a leading global orthopaedic company Orthopediatrics. Signature Orthopaedics has been engaged for product development and manufacture of SyMaxys. Signature Orthopaedics is a leader in the orthopaedic medical device industry and a local manufacturer, located in Lane Cove.

Source: Deloitte (2016)

“ProCan’s results are expected to transform cancer pathology (cancer diagnosis) and cancer treatment decision-making.”
Children’s Medical Research Institute

Source: Sheahan, M: Walk, Talk, Work - The Importance of Pedestrian and Public Space for Collaboration in Hospital Knowledge Precincts (2015), funded by National Association of Women in Construction

Our action plan for investment

Steps to implementation
In addition to implementation tasks identified in individual chapters of the Vision, the following encapsulates key steps to achieving the Vision. These steps to implementation are a series of small measurable and achievable steps, that when combined will deliver on the overarching Vision of Westmead as a globally recognised Innovation District, and a jobs engine for Western Sydney.

Steps are also underpinned by a clear market assessment of investor and industry potential to collaborate with, or invest in Westmead. They are also cognisant of the roles and levers available to government in supporting Westmead’s growth, including new ways of supporting jobs in Western Sydney.

1. Securing Government support for the Vision
   “Government leadership and innovation in the way it plans for and delivers investment at Westmead will be critical if the objectives of this vision are to be achieved. A major goal of Government investment at Westmead needs to be the integration of the private sector in the delivery of health services, education and medical research.”
   Who: NSW Government
   - Continue working with the NSW Minister for Planning and the Greater Sydney Commission to review the planning and land use requirements of Westmead to ensure consistency with the Vision of Westmead as a globally recognised Innovation District
   - Work with the NSW Government to facilitate the promotion of key public surplus lands within the Innovation District for future use and development by Health Technology enterprises, and other complementary health and medical uses consistent with the Vision
   - Encourage all future hospital redevelopment plans at Westmead to consider the participation of the private sector, particularly larger Health Technology enterprises and other complementary health and medical uses consistent with the Vision
   - Assist with the creation of a ‘New City Deal’ from Westmead to consider the participation of the private sector, particularly larger Health Technology enterprises, and other complementary health and medical uses consistent with the Vision.
   Who: Australian Government
   - Work with the Australian Government to promote Westmead as a policy focus through its Industry Growth Agenda, and Cities Agenda including the establishment of an Australian Government innovation office at Westmead to:
     - Advise on policies that minimise regulatory hurdles for business investment
     - Encourage engagement with international partners
     - Deliver various tax incentives for business investment in health innovations
     - Act as a catalyst for bridging the gap between Australia’s medical research output and commercialisation
     - Assist with the creation of a ‘New City Deal’ from the Australian Government as a priority to deliver infrastructure improvements required to unlock jobs and investment within Westmead Innovation District.

2. A new model of investment attraction
   “Westmead has a growing model of investment and partnerships with investors and enterprises that actively work to cultivate new opportunities across service delivery, medical research and education. These collaborations are also externally focussed, with a growing eye towards how Westmead engages with business investment. Doing this however, will require new approaches to be adopted.”
   Who: Westmead Alliance Partners
   - Support new “economic cultivator” collaborations to facilitate investment attraction and delivery over the next five years, and beyond
   - Creation of a Westmead Innovation District investment program including:
     - Marketing collateral for target sectors and new anchors identified in the Vision
     - A series of industry forums to identify market requirements to invest at Westmead
   - Distribution of the Vision to national and global target companies
   - Funding of a Westmead project coordinator to support the facilitation of investment to Westmead in partnership with Westmead Alliance partners.

3. Removing barriers to future investment
   “If Westmead is to grow a range of barriers to investment must be removed. Most notably, transport access, parking and urban amenity must be addressed to make Westmead an easier place to get two along with a high attractive place to live, study and work.”
   Who: Westmead Alliance Partners
   - Being able to get from CBD to Westmead within ten minutes
   - Consideration of new public transport thoroughfares into and through Westmead to reduce ingress and egress congestion
   - Development of a new Westmead Innovation District Public Domain improvement plan
   - A Westmead wide program to encourage a shift towards greater public transport use for work travellers
   - Exploration of infrastructure funding mechanisms for Westmead Innovation District such as: value capture, special infrastructure contribution schemes, or other public-private funding models
   - Alliance partners to focus activities on promoting the enhancement of residential and accommodation development as described in this Vision.

4. Building our innovation eco system
   “Westmead possesses a range of economic anchor institutions already involved in innovation. Westmead’s innovation eco system will be boosted by the attraction of new business investment that funds the ideas and health technologies that will drive our future economy.”
   Who: Westmead Alliance Partners
   - Develop a workplace integrated learning program that secures industry placements for university students studying at Westmead
   - Creation of a Westmead Innovation District Medical Research Commercialisation Plan to align research conducted at Westmead Research Hub with global trends in health innovations (as outlined on page 23). Plan to also include new ways to fund the expansion of research spaces and facilities of Westmead Research Hub
   - Creation of new programs to support Westmead researchers, clinicians, students and small to medium enterprises to develop commercial skills necessary to translate a research discovery into a new product
   - Initiating an annual Westmead Innovation District public data forum where relevant public health entities provide open access to codified health data to local entrepreneurs
   - Westmead Innovation District Partners to establish greater formal research partnerships with other health and education precincts in Western Sydney.

5. Monitoring progress
   “What gets measured; improves. Delivery of the vision for Westmead to become a globally recognised Innovation District will be measured by an annual scorecard that tracks Westmead’s progress against other world leading Innovation Districts.”
   Who: Westmead Alliance Partners
   - Production of an Annual Westmead Innovation District Scorecard to measure progress against targets identified on page 37
   - Annual updating of the Westmead Family Tree introduced on page 28 in efforts to understand and promote the large range of potential partners located at Westmead to investors and enterprises.

36
**Investment checklist**

*Reasons to invest in Westmead*

- **The dream demographic of talented workers:** A quarter of all Sydney residents aged between 20-34 who hold postgraduate qualifications in health, science, IT, engineering live within 25-30 minutes of Westmead. Over 10,000 specialised health and education workers come to work each day at Westmead.

- **Leading edge anchor institutions:** Westmead is home to 10 leading anchor institutions in health, education, medical research and private industry. Two of Australia’s largest and most prestigious Universities are based at Westmead, along with four medical research institutes that house numerous research centres or groups.

- **Precinct leadership with a Vision for growth:** The Vision for Westmead to become a world leading Innovation District is being led by the Westmead Alliance, a precinct leadership group that has come together to develop and advance the growth of Westmead over the next two decades.

- **Proximity to research infrastructure:** Westmead is home to multiple medical research institutes, and over 1,000 full time equivalent (FTE) health and medical researchers. Westmead has numerous core research technologies available for commercial use provided through initiatives led by the Westmead Research Hub.

- **Space to start up and grow:** A number of new affordable commercial start up and business accelerator spaces will be available at Westmead over the next few years. These new services are being designed to encourage collaboration between entrepreneurs, researchers, students and academia. Over 1.3 million square metres of commercial gross floor area is estimated to be developed at Westmead over the next decade and a half.

- **Accommodation:** Multiple development plans at Westmead will see a large number of new accommodation options, from affordable student housing to executive living constructed within the next five years.

- **Amenity:** Over the five years the urban amenity and street level activation of the Precinct will be improved through a range of new public domain improvements such as new open spaces, streets, pedestrian links, laneways and public spaces.

- **Accessibility:** Westmead is directly serviced by both rail and transit-bus services. Accessibility of Westmead will be further enhanced by the completion of the Parramatta Light Rail to Westmead in 2024. A range of new roads and local road upgrades have also been identified for improvement around Westmead.

- **Access to world class clinical and scientific advice:** With over 170 leading clinical scientists working across multiple entities, Westmead provides an environment where new and existing businesses can connect with and work alongside world leading clinicians and scientists.

- **Track record of success:** Westmead has an enviable track record in the successful integration of medical research with education and health care service delivery.

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**Measurements of success**

Our score card of accountability

The following includes a list of targets that have been set for Westmead. Progress against these targets will be measured annually through release of a Westmead score card.

<table>
<thead>
<tr>
<th>2016</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>18,000 jobs</td>
<td>50,000 jobs</td>
</tr>
<tr>
<td>2,000 tertiary students</td>
<td>9,000 tertiary students</td>
</tr>
<tr>
<td>1,100 researchers</td>
<td>2,500 researchers</td>
</tr>
<tr>
<td>12,400 residents</td>
<td>20,000 residents</td>
</tr>
<tr>
<td>350 employing businesses</td>
<td>1,100 employing businesses</td>
</tr>
<tr>
<td>147th ranked suburb for walkability in Sydney</td>
<td>Top 20 ranked suburb for walkability in Sydney</td>
</tr>
<tr>
<td>76% workers who arrive to work by car</td>
<td>60% workers who arrive to work by car</td>
</tr>
<tr>
<td>8% of workers arrive to work by public transport</td>
<td>30% of workers arrive to work by public transport</td>
</tr>
<tr>
<td>4% workers walk or cycle to work</td>
<td>8% of workers who walk or cycle to work</td>
</tr>
<tr>
<td>600 PhD students pa</td>
<td>1,200 PhD students pa</td>
</tr>
<tr>
<td>400 clinical trials pa</td>
<td>1,200 clinical trials pa</td>
</tr>
<tr>
<td>750 research publications</td>
<td>1,750 research publications</td>
</tr>
<tr>
<td>46,180 sqm research floor space</td>
<td>110,000 sqm research floor space</td>
</tr>
<tr>
<td>140 accommodation beds</td>
<td>600 accommodation beds</td>
</tr>
<tr>
<td>$79 million public research funding pa</td>
<td>$250 million public research funding pa</td>
</tr>
<tr>
<td>$1.9 billion of economic output</td>
<td>$4.7 billion of economic output (2016 prices)</td>
</tr>
</tbody>
</table>