

Greater Sydney Commission
**Macquarie Park Innovation
District Study**
Final Report

01

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This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Executive Summary

Arup was commissioned by the Greater Sydney Commission (GSC) to prepare an *Innovation District Study* to inform both the GSC and Department of Planning Industry and Environment's (DPIE's) preparation of the *Draft Macquarie Park Place Strategy* (the *draft Place Strategy*).

The study responds to the following key questions posed by the GSC:

1. What are the main industry/business specialisations that are prominent in Macquarie Park? Are there any business clusters?
2. What could be the future prime economic role or direction(s) for Macquarie Park particularly in the context of Westmead and Tech central?
3. What are the gaps in the economic structure of Macquarie Park that should be addressed to achieve the economic direction?
4. What are the actions to grow the economic structure of the innovation district and drive private investment?

The subject area for the draft Place Strategy and this report, is defined as the Macquarie Park Corridor (the Corridor) (Figure 1).

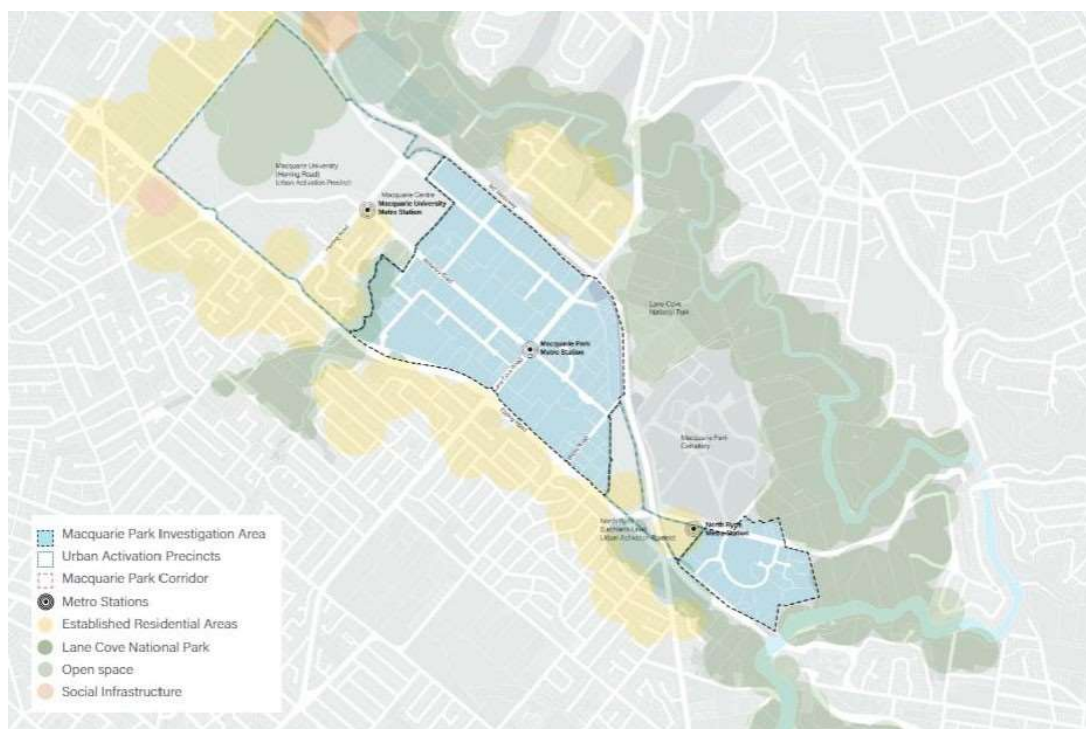


Figure 1: Macquarie Park Investigation Area (Arup¹, 2021)

¹ Defined by the Department of Planning, Industry and Environment, Macquarie Park Investigation Area Map, 2018

Economic profile and industry specialisations

Analysis shows that the following economic profile and industry specialisations currently exist at Macquarie Park:

Macquarie Park has access to a large, qualified labour pool, with a strong talent pipeline, further embedded through the University's presence. The Eastern Economic Corridor contains close to one-third of Greater Sydney's jobs. Being part of this corridor provides Macquarie Park businesses with proximity to skilled workers and firms. Further, Macquarie Park benefits from the presence of Macquarie University and Macquarie University Hospital.

The precinct has strong industry specialisations in knowledge intensive industries including technology (telecommunications, computer system design) and pharmaceuticals. There is strongest industry specialisation in Information Media and Telecommunications, followed by Wholesale Trade and Professional, Scientific and Technical Services, as compared to Australia. While there is a significant concentration of employment in Health Care and Social Assistance at Macquarie Park, it is lower than for Australia as a whole.

Clustering of businesses activity exists at the precinct, albeit over a large geographic area. Consistent with areas of industry specialisation at Macquarie Park, this includes an established presence of Medtech, pharmaceutical and biomedical services, as well as major telecommunications companies within the commercial core area. Technology firms at Macquarie Park are relatively evenly distributed, including a cluster located at the North Ryde Station precinct. There is a significant distance (Shrimptons Creek / the Macquarie shopping centre) between the University and Hospital and the Commercial Core. This physical separation can be a barrier to interaction and reduce opportunities for inter-business engagement.

Future employment growth at Macquarie Park is expected to be driven in professional, scientific and technical services, health, education, technology. Analysis of industry composition over time shows that the number of jobs in education, computer system design and retail-related sectors have increased most significantly at Macquarie Park.

Macquarie Park is home to fewer small and medium sized enterprises. Compared to Greater Sydney and Australia as a whole, there is a smaller share of SMEs in Macquarie Park. Given the role that SMEs play in growing jobs (small businesses accounted for just under 60 per cent of total employment growth in the private sector nationally between 2013 and 2018)², their importance in the evolution of innovation districts and growth of key industries (including Medtech, health and biomedical sciences), Macquarie Park would benefit from added diversity in scale of firms. High-grade, large floorplate development has driven the existing tenant profile at Macquarie Park - a potential barrier to growth in SMEs is the lack of flexible, appropriate and affordable commercial space.

² Commonwealth Government, Small Business Sector Contribution to the Australian Economy, 2020

Future economic role and direction

Analysis indicates that the potential future prime economic role and direction for Macquarie Park could align with the following high-growth innovation sectors and initiatives:

Education

Macquarie Park has a strong education specialisation relative to other innovation districts and competing precincts. Macquarie University and Macquarie University Hospital are strong future innovation cultivators and anchors. Coupled with the availability of health and medical educational offerings, including the cluster of pharmaceutical and health based businesses at Macquarie Park, there is further opportunity to leverage this education asset to generate more cognitively demanding and non-routine jobs through commercialisation of R&D, encourage innovation and support significant growth in this area of specialisation in future.

Medtech, health and biomedical sciences

‘Medical technology, health and biomedical sciences’ is recognised as a future growth industry for NSW³. Macquarie University has a long history of establishing partnerships and effective linkages between businesses, research and the health system (eg, Cochlear). There are important factors required to support future growth in this sector, including maximising opportunities for small and medium enterprises (SMEs) to start-up and scale up⁴. While there are established business clusters in this sector located in the commercial core, the Corridor is currently home to fewer SMEs compared to Greater Sydney and Australia. Addressing this and other barriers is required to support the establishment and scale up of Medtech SMEs and the further evolution and growth of this industry at Macquarie Park.

Health care

Australia is expected to see pronounced growth in Health Care and Social Assistance to serve the aging population⁵. A specialised health and education precinct with a major hospital and research centre, Macquarie Park is well positioned to grow in the health industries. There are also opportunities in the Corridor for purpose-built aged care, and medical facilities.

Advanced manufacturing

The NSW Advanced Manufacturing Industry Development Strategy (2019) recognises that the development of advanced manufacturing will be vital in NSW⁶. Manufacturing employment at Macquarie Park is highly specialised. The colocation of education and advanced manufacturing / R&D is key innovation success indicator in the Corridor. The precinct has the highest rates of specialisation in Sydney when combining the presence of education and industry. The proximity of Macquarie University to the advanced manufacturing R&D activities of industry at Macquarie Park also presents opportunities for transfer of knowledge between services and production in this sector.

³ NSW Treasury, Economic Blueprint 2040, 2019

⁴ NSW Government, Medical Technology Industry Development Strategy, 2018

⁵ NSW Treasury, Intergenerational Report, 2016; Commonwealth Government, Department of Jobs and Small Businesses, Employment Projections, 2018

⁶ NSW Government, NSW Advanced Manufacturing Industry Development Strategy, 2019

Digital and telecommunications

Digital technology is identified as one of the fastest growing sectors internationally and the NSW Government has recognised this sector as “*one of the most powerful enablers*” of economic growth, driving productivity in all industries and new industry challenges including workforce development and cyber security⁷. With strong existing specialisations in technology, including telecommunications and computer system design, this sector represents a potential high-growth innovation sector at Macquarie Park.

Improved urban vibrancy to attract high growth firms

There is a strong correlation between place-based vibrancy and the concentration of high-growth firms.⁸ Whilst, Macquarie Park scores well on some measures of vibrancy, including access to rail /transit, and is attractive to firms seeking ‘campus-style’ accommodation with good access to labour; the poor-quality pedestrian environment, an absence of amenities (with few options for activities after 5pm), limited visitor attractions and road congestion, limits Macquarie Park’s attractiveness for businesses, workers and residents. Addressing these issues, while maximising opportunity to enhance Macquarie Park’s unique natural landscape setting⁹ (a major point of difference relative to other employment centres in Sydney) is important for the precinct’s future economic success.

Macquarie Park’s success as an Innovation District



Realising the potential future prime economic role /direction for Macquarie Park is closely tied to the Corridor’s success as an innovation district – to “*spur productive, inclusive and sustainable economic development*” and “*provide a strong foundation for the creation and expansion of firms and jobs by helping companies, entrepreneurs, universities, researchers and investors – across sectors and disciplines – co-invent and co-produce new discoveries for the market*”³⁶.




Informed by global case studies, including lessons learned, an assessment of the key opportunities and gaps in the economic structure of Macquarie Park relative to the Corridor’s potential future success as an Innovation District, is summarised in the following tables.


⁷ NSW Treasury, NSW 2040 Economic Blueprint, 2019

⁸ For example, Malizia and Motoyama, Vibrant Centers as Locations for High-Growth Firms, 2018

⁹ Draft Macquarie Park Masterplan, 2021

| Innovation district success factors | Opportunities | Barriers |
|---|---|--|
| Talent and technology  | <ul style="list-style-type: none"> • Leverage the strong knowledge intensive innovation sector which has seen consistent growth – for example, pharmaceuticals, high tech, computing and technology and electronics with employers such as Johnson & Johnson, Microsoft, Sony, Optus, Cochlear and Foxtel. • Macquarie Park has access to a large, qualified labour pool as part of the Eastern Economic Corridor which contains close to one-third of Greater Sydney's jobs. • Leverage the number of strong existing innovation cultivators and anchors, such as Macquarie University, the Hospital and Macquarie University Incubator. | <ul style="list-style-type: none"> • Macquarie Park's sectors could be diversified to add economic resilience – a stronger mix of sectors could ensure there is not susceptibility of Macquarie Park to industry specific shocks and stresses. • Small representation of small and medium sized entrepreneurs – Macquarie Park accounts for a smaller share of SMEs when compared to Greater Sydney and Australia. SMEs play an important role in growing jobs. Macquarie Park could benefit from added diversity in scale of firms. |
| Inclusive growth  | <ul style="list-style-type: none"> • Leverage the global resident base – there is a strong international and cosmopolite dimension of Macquarie Park. • There is an opportunity to engage a growing and young population base – this age group is growing locally, which is positive trend for the local economy. | <ul style="list-style-type: none"> • Affordability poses a barrier to increasing employment diversity in Macquarie Park – with a larger proportion of residents who rent are in mortgage stress compared to the NSW average of 13%. • Lack of diversity in occupation – professionals account for the large majority of residents, with less managers and clerical and administrative workers in Macquarie Park compared to the City of Ryde and Greater Sydney. |

| Innovation district success factors | Opportunities | Barriers |
|---|---|---|
| Leadership  | <ul style="list-style-type: none"> • Combined government private sector leadership – there are a number of linkages between the City of Ryde and MPID for example, as well as connecting internationally with other innovation districts (for example through MIT REAP). | <ul style="list-style-type: none"> • Unclear leadership model - there are various institutions involved in setting the area objectives including City of Ryde, MPID and NSW State Government. While there is collective agreement as to the innovation focus of Macquarie Park, the individual roles, and responsibilities for each stakeholder on delivery has not clearly defined. |
| Vision  | <ul style="list-style-type: none"> • Recognised as a strategic employment centre by NSW Government - The State Government recognises Macquarie Park as a key health and education precinct. • Branding as an innovation district – the City of Ryde has helped to promote the area as an innovation district. | <ul style="list-style-type: none"> • There is no agreed vision for Macquarie Park - the vision and objectives for Macquarie Park as an innovation district have not been established. |
| Access to capital  | <ul style="list-style-type: none"> • Emerging structures and networks in place to widen access to venture capital / angel investment driven by Macquarie University and MPID - the Macquarie University Incubator and collaboration hubs have a platform in establishing Macquarie Park as an innovation district. MPID also participated in the MIT Regional Entrepreneurship Acceleration Program (MIT REAP) which is a program targeted at accelerating innovation activities including access to capital. • Structured approaches to supporting business growth and inward investment in Innovation District driven by the MPID and the City of Ryde - collaborative spaces, start up support programs and industry summits are all important ways to steward the innovation network. | <ul style="list-style-type: none"> • There needs to be greater emphasis on growing the scale and depth of capital in Macquarie Park – the Macquarie university incubator is an important asset but is one of the smaller incubators in Sydney. • The place-based infrastructure needs to evolve and requires ongoing funding - NSW Government / or MPID could consider fiscal mechanisms to capture local increases in development values and local taxes to provide a revenue stream to reinvest in infrastructure within Macquarie Park. • Need for networks to support business growth – support and build the public-private sector collaboration to build the right type of business space supporting business growth, particularly from SMEs. |

| Innovation district success factors | Opportunities | Barriers |
|--|---|---|
| Quality of place  | <ul style="list-style-type: none"> • Macquarie Park is seeing a growing mix of uses, opening the door to becoming a 18/7 neighbourhood • Increased vibrancy – The residential population has grown by 27% between 2011 and 2016. • Increased connectivity through additional transportation capacity – the Sydney Metro West project is forecasted to increase the capacity of the line running through Macquarie Park by approximately 7,000 people per hour by 2041. • Macquarie Park has unique access to the natural landscape - Residents, workers and students in Macquarie Park benefit from their proximity to Lane Cove National Park and natural settings within the Macquarie University campus. This is a major point of difference in Macquarie Park relative to other employment centres in Sydney. | <ul style="list-style-type: none"> • There is lack of flexible and affordable space to cater to the full array of innovation sector firms – where commercial office spaces within Macquarie Park have been developed to accommodate large scale corporate users, with a severe lack of affordable space for SMEs. • Lack of density - whilst some organisations within Macquarie Park seek the ‘campus’ style layout, the low- density physical layout is currently not dense enough for close concentrations of people, with the precinct lacking in energy and a buzz from low footfall. • Absence of amenities and identity limits attractiveness for workers and residents - there is a lack of leisure spaces, experimental and temporary sites that can create casual interactions and collaboration. One of the only major visitor attractors to Macquarie Park is the retail offering at Macquarie Centre on Herring Road. • Poor transportation options and road congestion make Macquarie Park an auto-centric environment with local car congestion being significant and a growing problem, with long delays and journey times during peak periods. |

Recommended key moves and actions

Drawing from the findings of this study, the following key moves and actions are recommended for the evolution of Macquarie Park as a successful innovation district, to support growth of the existing economic structure and drive private investment consistent with the vision and desired objectives of the Masterplan¹⁰.

Key Move 1: Support skills development to build resilience to external change (i.e. economic change, technological advances), with a focus on cutting-edge technologies and digital infrastructure.

Action 1.1 Invest in digital infrastructure and technology across Macquarie Park to create a high-quality platform for innovative firms and strengthen its networking assets

Action 1.2 Develop a purpose-built building in a strategic location within the commercial core which provides curated, affordable and agile office space for new and innovative enterprises

Key Move 2: Foster a strong collaborative relationship between government, local community, industry and investors to expand and broaden opportunities for a diverse range of people to work, live and play in Macquarie Park.

Action 2.1 Engage the private sector actively in events and programme development

Action 2.2 Promote entrepreneurship and provide opportunities for SMEs to increase their exposure to anchor institutions within Macquarie Park

Key Move 3: Develop a strong, consistent senior leadership team with clearly defined roles, to provide a coordinated and collaborative vision for Macquarie Park's future.

Action 3.1 Develop a high calibre dedicated team

Action 3.2 Promote outwards links (leveraging the Hearing Hub and medical research facilities) including local, regional and international networks to further develop Macquarie Park

Action 3.3 Develop a clear, governance structure

Key Move 4: Develop a cohesive, clear vision for Macquarie Park outlining a unique value proposition to support both inward and outward investment.

Action 4.1 Develop a clear vision

Action 4.2 Promote innovation outwards, including using Macquarie Park as a test bed to promote innovation and trial of new technologies

¹⁰ Draft Macquarie Park Masterplan, 2021

Key Move 5: Focus on growing the scale and depth of capital in Macquarie Park.

Action 5.1 Support business growth and inward investment through the provision of incentives to create live/work opportunities for entrepreneurs

Action 5.2 Develop funding strategy for investments within Macquarie Park

Action 5.3 Create a plan to intensify venture capital presence

Key Move 6: Deliver a range of social and transport infrastructure and services to support community diversity and wellbeing, enhancing the appeal and competitiveness of Macquarie Park for a range of users including residents, students, workers and visitors.

Action 6.1 Create high-quality pedestrian environment and public domain works

Action 6.2 Develop an 18-hour economy strategy

Action 6.3 Leverage off the National Park and other natural assets

Action 6.4 Develop an investment fund for programmed public spaces

Action 6.5 Provide social infrastructure, including open space and leisure amenity for children and young people

Action 6.6 Provide high- quality green infrastructure including creek restoration

Action 6.7 Develop an infrastructure priority list for Macquarie Park to shortlist the projects that will deliver the greatest economic impact

Action 6.8 Develop business case for transit links to Parramatta and Epping to meet long term demand and reduce car mode share

Action 6.9 Consider changes to the planning controls to encourage mixed-use

Action 6.10 Encourage an alternative built form in key areas which activates the ground plane, delivers a centre -based typology, and creates places and spaces for community and worker interaction

1 Introduction

1.1 This study

Arup was commissioned by the Greater Sydney Commission (GSC) to prepare an *Innovation District Study* to inform both the GSC and Department of Planning Industry and Environment's (DPIE's) preparation of the *Draft Macquarie Park Place Strategy* (the *draft Place Strategy*).

This report is underpinned by an *Economic Baseline Study* and *Economic Development Study* that were prepared between 2017 and 2021 to support the preparation of the Macquarie Park masterplan (draft April 2021).

Building on these prior reports, this study responds to the following key questions posed by the GSC:

- What are the main industry/business specialisations that are prominent in Macquarie Park? Are there any business clusters?
- What could be the future prime economic role or direction(s) for Macquarie Park particularly in the context of Westmead and Tech central?
- What are the gaps in the economic structure of Macquarie Park that should be addressed to achieve the economic direction?
- What are the actions to grow the economic structure of the innovation district and drive private investment?

1.2 Approach

An evidence-based approach underpins the development of the Macquarie Park masterplan and draft Place Strategy. The methodology, presentation of findings and supporting content of this Innovation District Study has been structured as follows (Figure 2). Appendix B shows the data and sources used in this analysis.

Recommendations are provided in conclusion to inform the draft Place Strategy's "vision" and "big moves" and help to set the direction for the planning framework to achieve the vision, including key objectives, planning priorities and actions in the draft Place Strategy and as aligned with the Macquarie Park masterplan (draft April 2021) (Table 1).

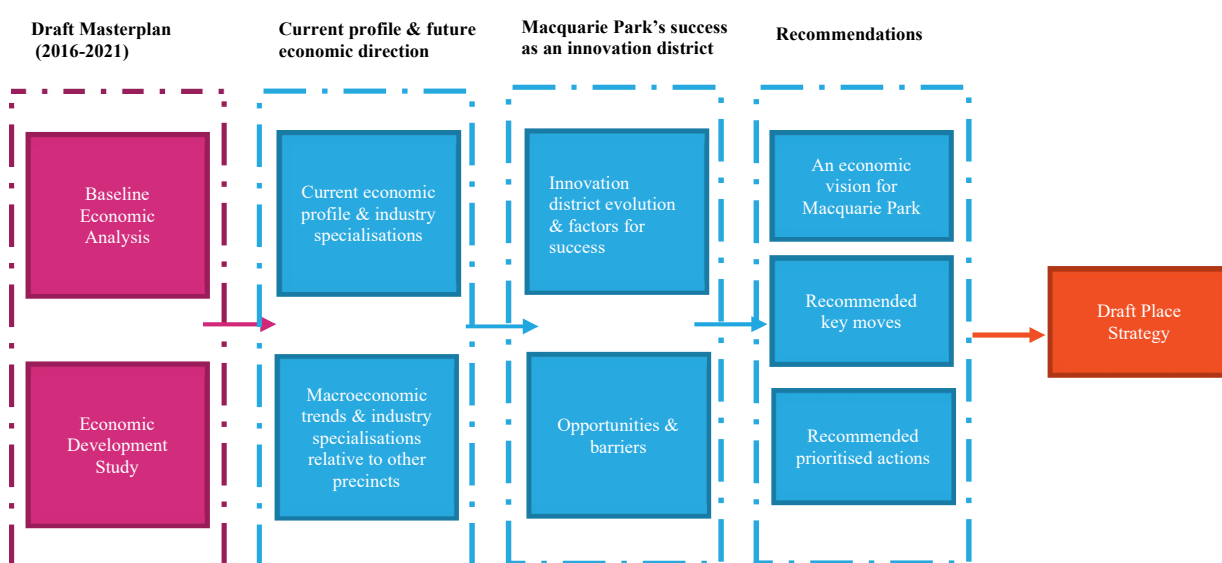


Figure 2: Methodology

Each section of this document has been structured in response to the key study questions as follows. Further analysis and case study findings are shown in Appendix A-C.

Table 1: Report structure and study questions

| Section | Study questions addressed |
|---------------------------------------|---|
| 1. Introduction | |
| 2. The Macquarie Park Corridor | What are the main industry/business specialisations that are prominent in Macquarie Park? Are there any business clusters? |
| 3. Future economic role and direction | What could be the future prime economic role or direction(s) for Macquarie Park particularly in the context of Westmead and Tech central? |
| 4. Success as an Innovation District | What are the gaps in the economic structure of Macquarie Park that should be addressed to achieve the economic direction? |
| 5. Recommendations | What are the actions to grow the economic structure of the innovation district and drive private investment? |

1.3 Study area

The subject area for the draft Place Strategy and this report, is defined as the Macquarie Park Corridor (the Corridor). The Corridor is bounded by Epping Road, Delhi Road, the M2 Motorway and Vimiera Road.

The area includes the Macquarie Park strategic investigation area¹ and two Urban Activation Precincts (UAPs) – Macquarie University (Herring Road) UAP (the ‘Herring Road Precinct’) and North Ryde Station UAP (the ‘North Ryde Station Precinct’) (Figure 3).

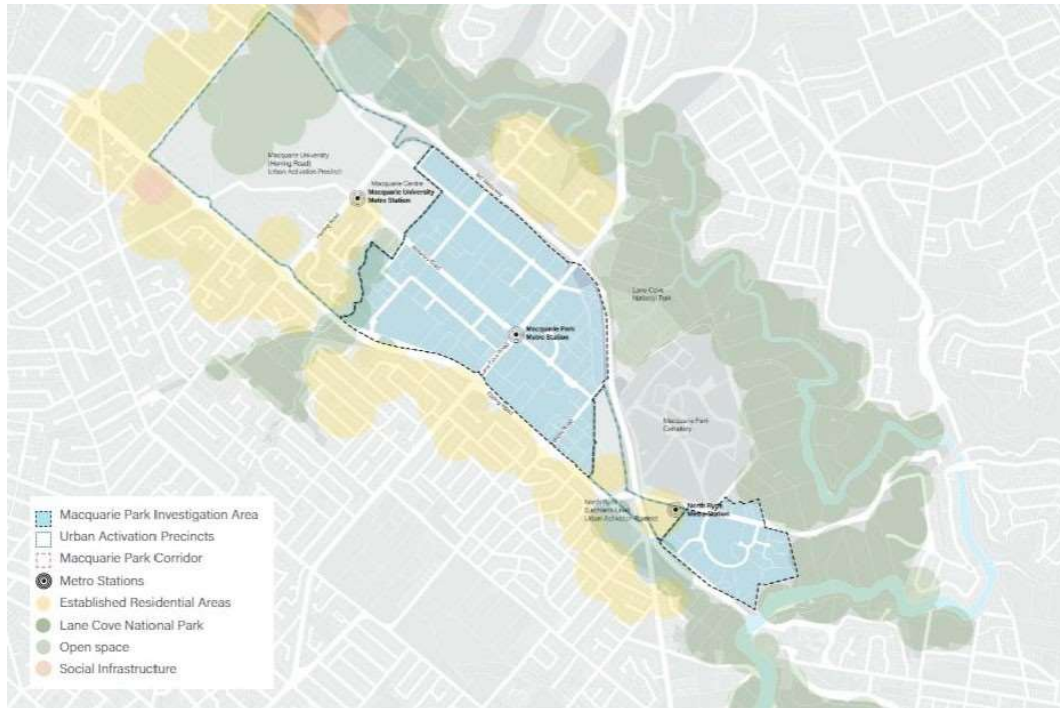


Figure 3: Macquarie Park Investigation Area (Arup¹¹, 2021)

¹¹ Defined by the Department of Planning, Industry and Environment, Macquarie Park Investigation Area Map, 2018

An established business park, Macquarie Park is located 12 kilometres from the Sydney CBD, and 13 kilometres from the Parramatta CBD within the City of Ryde local government area (LGA). Figure 4 shows Macquarie Park in the context of surrounding centres.

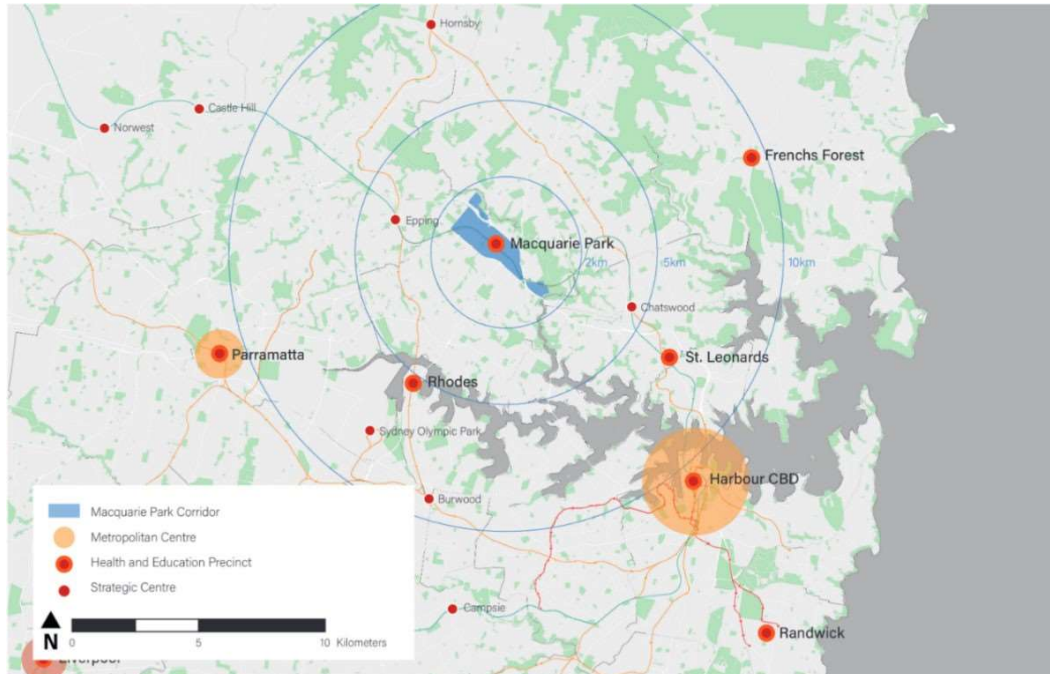


Figure 4: Macquarie Park and Surrounding Centres (Arup, 2021)

2 The Macquarie Park Corridor

The strategic context, economic profile and industry specialisations at Macquarie Park are first established in this section of the report, providing a foundation to understanding the potential future prime economic role and direction for Macquarie Park in Chapter 3.

2.1 Strategic Context

Macquarie Park forms part of the Eastern Economic Corridor, a priority corridor identified by the GSC in the *Greater Sydney Region Plan* (2018) (GSRP) (Figure 5). The Eastern Economic Corridor from Macquarie Park to Sydney Airport is “the State’s greatest economic asset – contributing two-thirds of NSW’s economic growth in the 2015-16 financial year”¹² and is recognised for its’ strong financial, business, professional services and innovation start up sectors and a focus on health and education.

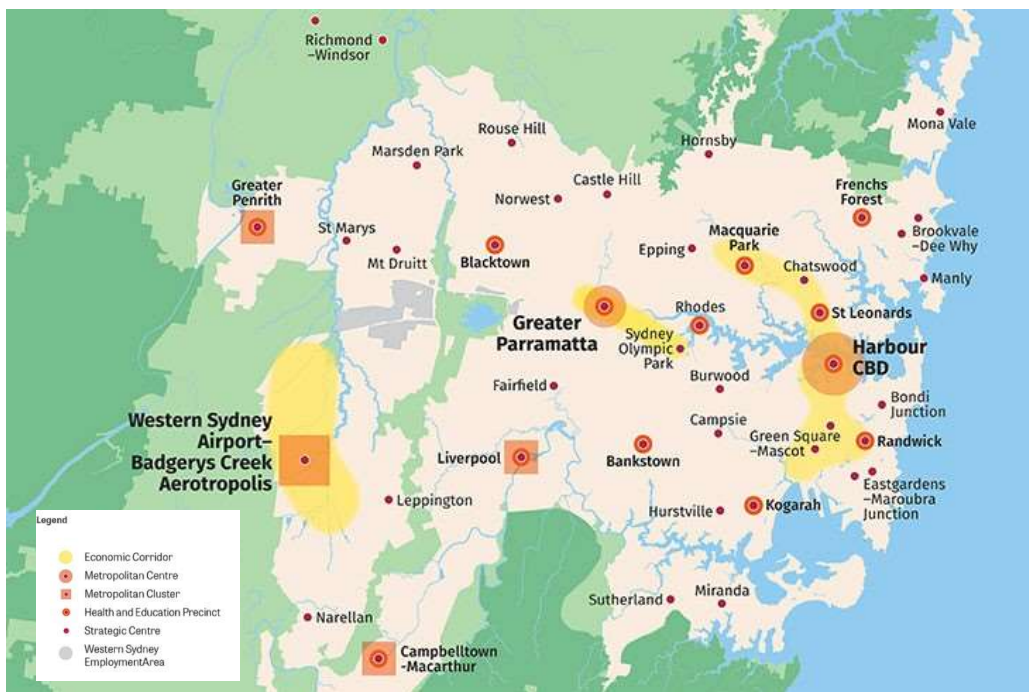


Figure 5: Macquarie Park in the context of surrounding centres (GSC, 2018)

The *North District Plan* (2018) further sets out the GSC’s strategic objectives to support Macquarie Park’s continued growth as a key economic and job creation engine-room for Greater Sydney, by building on its successes to date and transforming into its next phase of evolution as an health and education precinct - that is connected, productive and a vibrant place to live, work and play.

¹² Greater Sydney Commission, North District Plan, 2018

2.2 Economic profile and industry specialisations

Employment profile

Macquarie Park is a major employment cluster with approximately 47,540 jobs¹³. It is the fourth largest employment centre in the metropolitan area by number of employees and is the largest non-CBD office market in Australia¹⁴ (Table 2).

Table 2: Top sectors of employment in Sydney, by employment centre (ABS, 2016)

| Centre (SA2) ¹⁵ | Total employment (2016) |
|-------------------------------------|-------------------------|
| Sydney - Haymarket - The Rocks | 316,984 |
| Parramatta - Rosehill | 49,956 |
| North Sydney - Lavender Bay | 48,206 |
| Macquarie Park - Marsfield | 47,540 |
| Pymont - Ultimo | 36,437 |
| Surry Hills | 29,458 |
| St Leonards - Naremburn | 29,025 |
| Homebush Bay - Silverwater | 26,289 |
| Baulkham Hills (West) - Bella Vista | 23,337 |

¹³ Greater Sydney Commission, North District Plan, 2018

¹⁴ Greater Sydney Commission, North District Plan, 2018

¹⁵ Geographies of analysis are ABS administrative boundary (SA2), relative to the location of relevant Sydney commercial office precincts is shown in Appendix E. Due the granularity of the data available (SA2), which does not exactly match the perimeter of Macquarie Park but includes Marsfield, small variations in the numbers exist and should be interpreted with caution.

Business clusters

Macquarie Park is a specialised business park and has been since its first tenants arrived in the 1960s. Over the last two decades it has seen significant growth, transforming into a thriving business centre¹⁶.

The scale of the precinct is significant, covering approximately 170 hectares. From the north, Macquarie University and Macquarie Shopping Centre define the educational and retail uses. Along Waterloo Road (the ‘Commercial Core’) the uses are mostly large floorplate, campus style office, with dispersed retail and other ancillary use. Around Shrimptons Creek and to the south, a greater concentration of residential uses is found around North Ryde Metro Station. The corridor sits adjacent to the Lane Cove National Park (Figure 6).

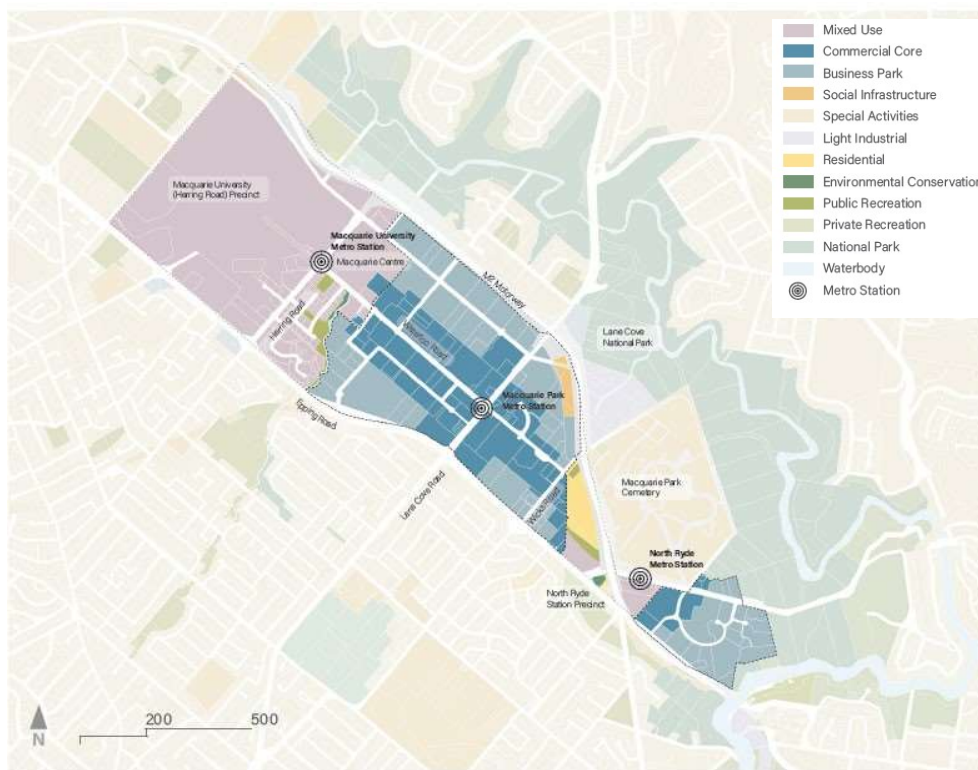


Figure 6: Existing Land Use (Arup, 2021)

¹⁶ <https://macquariepark.com.au/>, About Macquarie Park, 2021

In 2020, Macquarie Park contained approximately 894,000 sqm of office floorspace, 617,000 sqm of which is premium grade¹⁷. Macquarie Park is dominated by commercial office buildings that accommodate large scale corporate users. As demonstrated through the business and tenant profiles in Appendix C and D, high-grade large floorplate development, dominates at the business park. A lack of flexible spaces, and severe shortage of affordable and appropriate office space for Small and Medium Enterprises (SMEs) has been identified, with competing markets, including Chatswood and St Leonards, capturing significant demand from these firms¹⁸.

This large-scale commercial development concentrated in the ‘commercial core’ accommodates businesses from a range of related industries in knowledge intensive sectors. Specifically, the Corridor has a significant presence of pharmaceutical (19%), high tech, computing and technology (25%), electronics (20%) and telecommunication businesses (7%)¹⁹ (Figure 7).

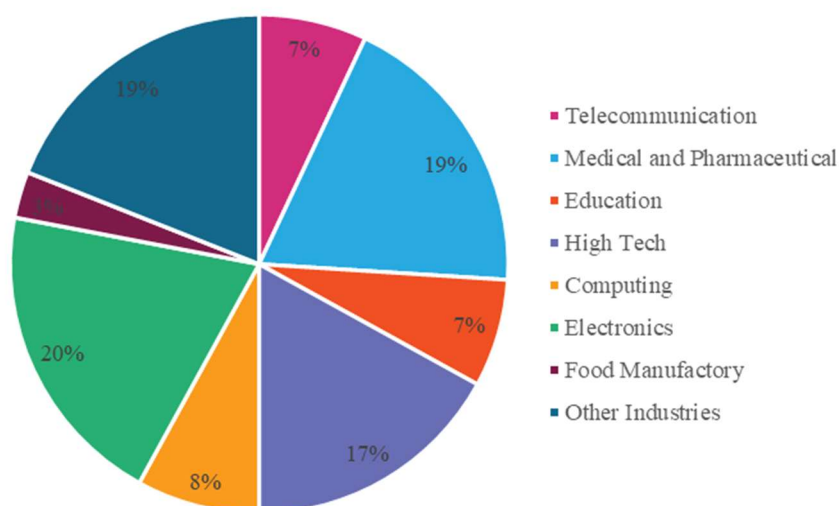


Figure 7: Percentage of companies per sector amongst largest firms (Arup, 2018²⁰)

¹⁷ Knight Frank, North Shore Office Market Report, October 2020

¹⁸ Stakeholder engagement conducted for draft Macquarie Park Masterplan 2021 (In preparing the Masterplan, City of Ryde, DPIE and the GSC have been in discussions with stakeholders on the future of the Macquarie Park corridor from 2016).

¹⁹ Adapted from City of Ryde, Macquarie Park Investment Prospectus, 2015

²⁰ Adapted from City of Ryde, Macquarie Park Investment Prospectus, 2015

When looking at the number of employees working in the largest firms located at Macquarie Park (Figure 8), the importance of the telecommunication sector for the local economy is pronounced. The telecommunication sector is composed of a few very large firms, including Optus with more than 6,500 employees for example. Medical and pharmaceutical also accounts for a significant proportion (20%) of employees working in the largest firms, including Sonic Health with more than 1,300 employees for example, as well as Cochlear, Johnson & Johnson, Astra Zeneca and Lavery Pathology, which each have between 700 and 800 staff. High-tech and computing also gain prominence in an analysis of the size of the firms and the number of people employed by sector.

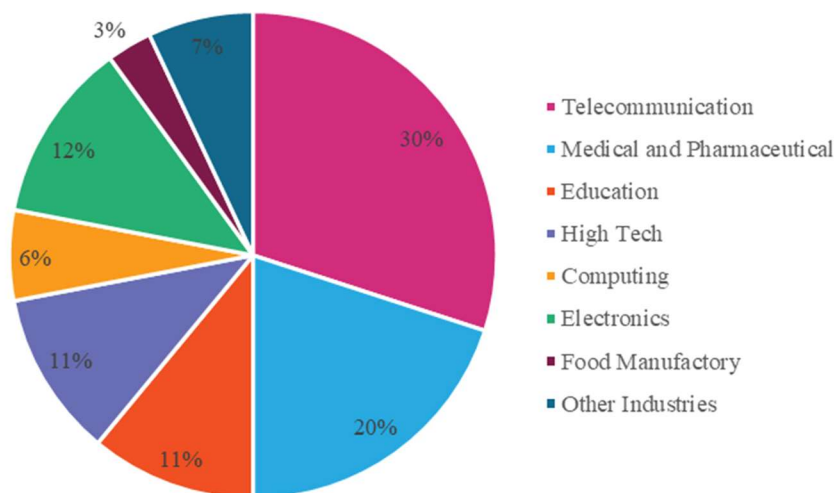


Figure 8: Percentage of employees per sector, largest firms (Arup, 2018²¹)

²¹ Adapted from City of Ryde, Macquarie Park Investment Prospectus, 2015

There is clustering of business activity within the precinct, albeit over a large geographic area, with an established presence of Medtech, pharmaceutical and biomedical services businesses closely situated in the commercial core, including Cochlear, Johnson & Johnson, AstraZeneca, Sanofi and Novartis (Figure 9).

Major telecommunications companies including Optus, and TPG are closely situated in the commercial core area within the area bounded by Epping Road, Lane Cove Road, Talavera Road and Herring Road. Technology firms at Macquarie Park are relatively evenly distributed within the Corridor, including a cluster located at the North Ryde Station precinct.

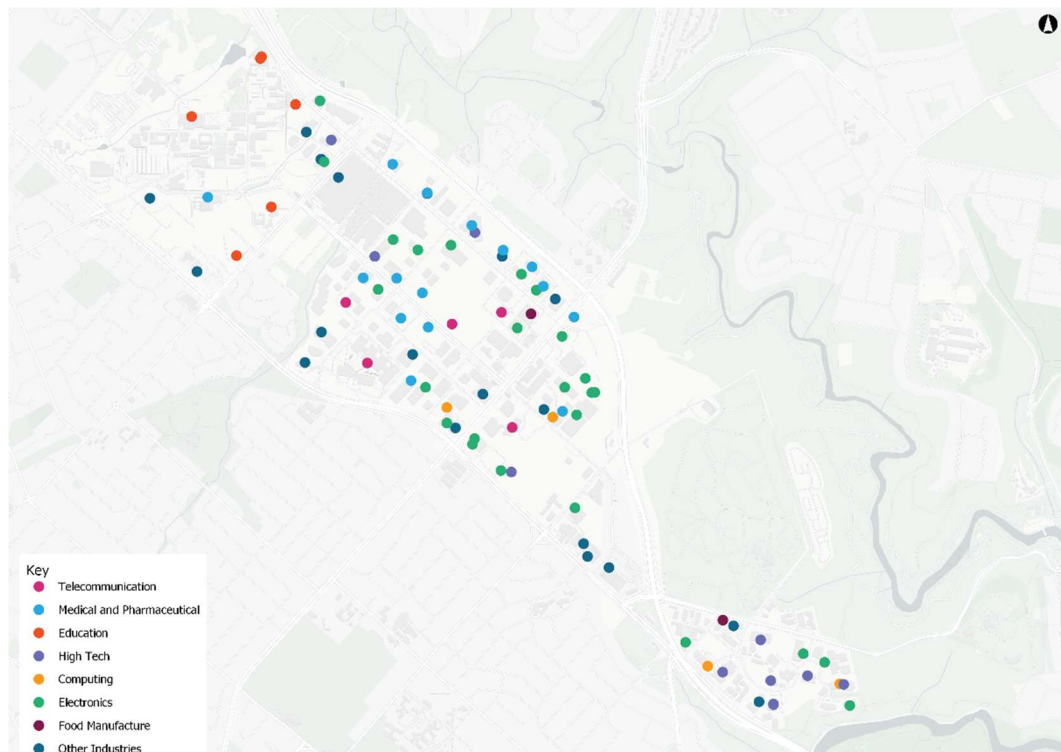


Figure 9: Location of businesses in Macquarie Park (Source: Arup, 2021²²)

Macquarie University and the Macquarie University Hospital are located on the periphery within the north-west Herring Road precinct. The University has approximately 45,000 students and 3,000 staff employed at the campus, and more than 9,300 graduates entering the job market each year²³. The Macquarie University Hospital is a private not-for-profit teaching hospital located on the University campus with approximately 500 staff. There is a significant physical divide (Shrimptons Creek and the Macquarie shopping centre) between the University / Hospital and the Commercial Core.

²² Arup analysis, using Google Maps, City of Ryde, Investment Prospectus, 2015 and Macquarie Park's Business Directory, <https://macquariepark.com.au/business-education/business-investment/business-directory/>, 2021

²³ Macquarie University, Annual Report, 2019

Sector and industry specialisation

Consistent with current business clustering activity described above, the highest concentrations of employment at Macquarie Park are in Wholesale Trade, Professional, Media and Telecommunications and Scientific and Technical Services and Information at Macquarie Park. While there is a significant concentration of employment in Health Care and Social Assistance at Macquarie Park, it is lower than Greater Sydney as a whole (Figure 10).

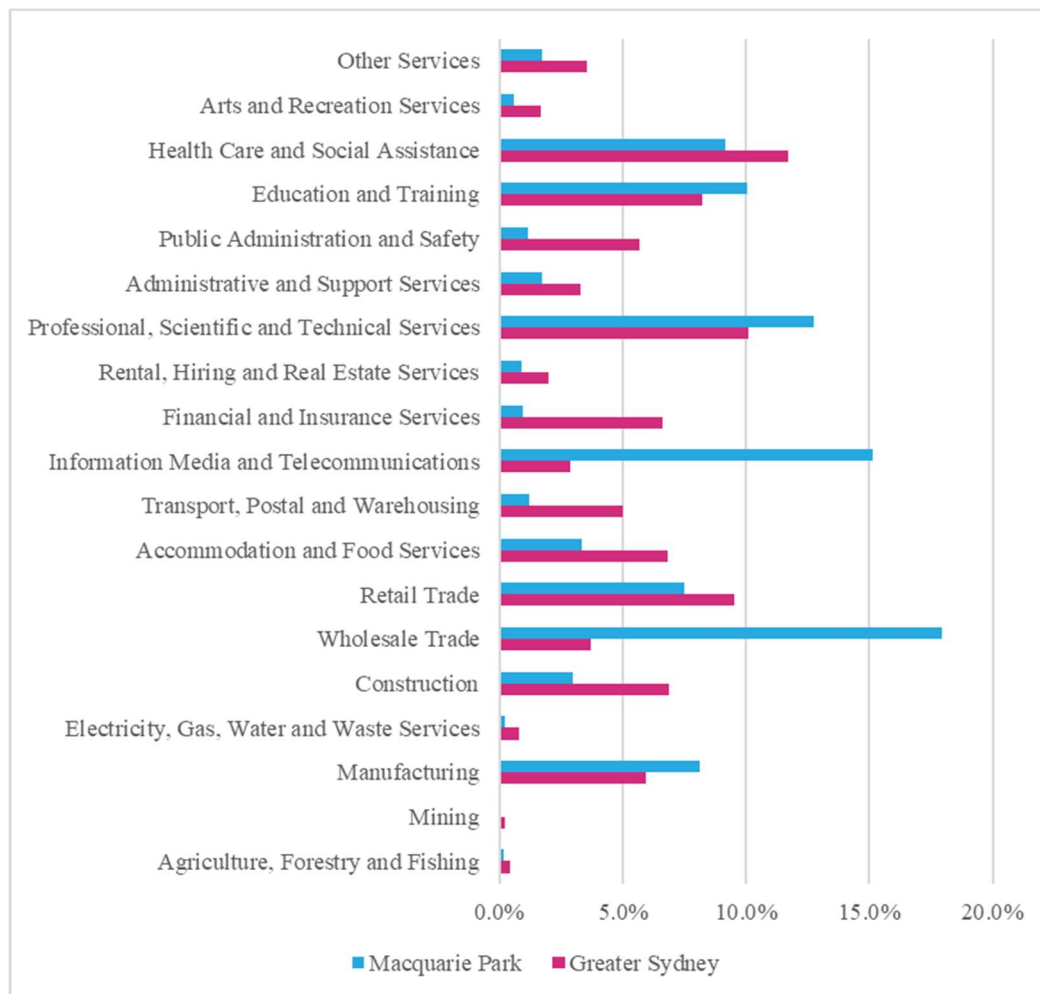


Figure 10: Percentage of businesses by industry in Macquarie Park compared to the Greater Sydney average (ABS, 2016)

Finer grain analysis of industry composition at Macquarie Park (Figure 11) shows the dominance of employment in 'Telecommunications Services' (Media and Telecommunications and Scientific and Technical Services and Information), 'Tertiary Education' (Education and Training), 'Computer System Design and Related Services' (Professional, Scientific and Technical Services) and 'Pharmaceutical and Toiletry Goods Wholesaling' and 'other machinery and equipment wholesaling' (Wholesale Trade) in particular. This reflects key employers at the precinct including Macquarie University, Microsoft/Sony, and Johnson & Johnson/Sanofi/Novartis attracting highly skilled workers.

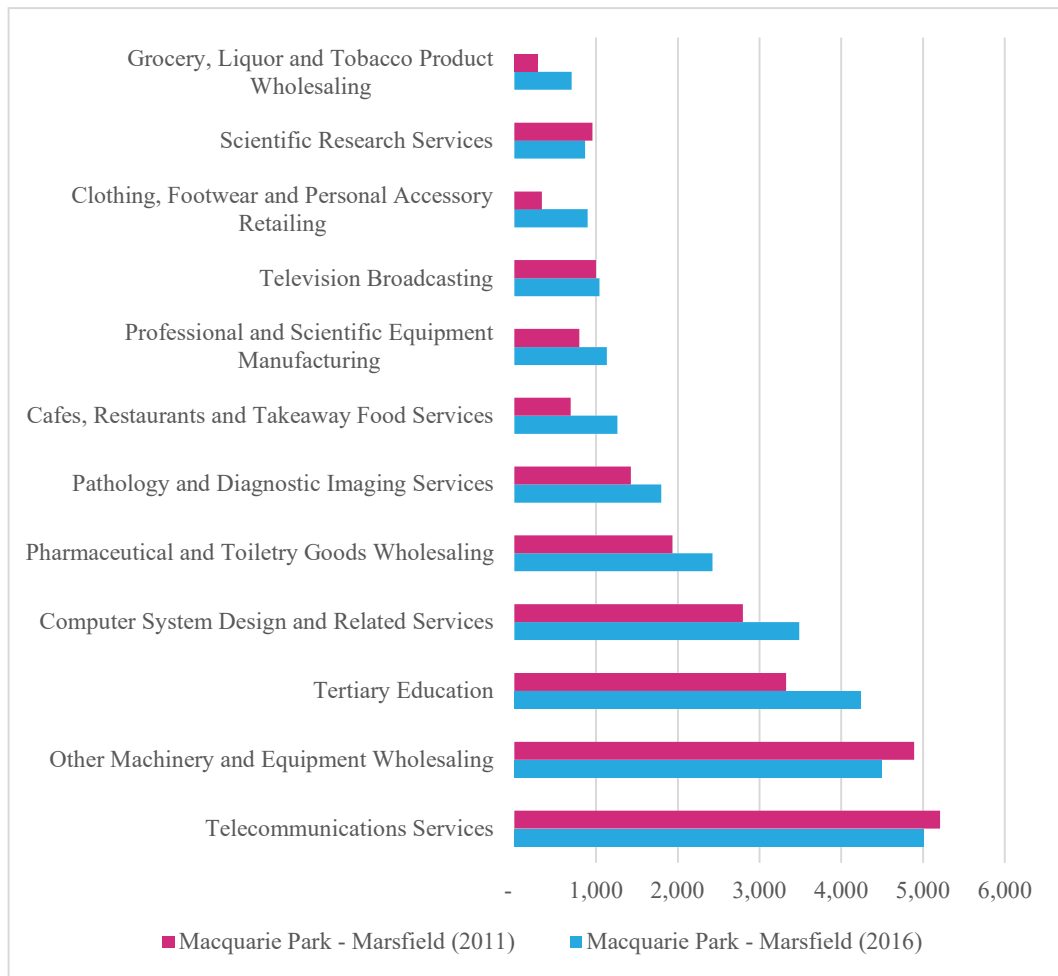


Figure 11: Total industry of employment (INDP3) (2011 – 16) (Arup, 2021)

To better understand each sector's relative importance to Macquarie Park, we have used a location quotient analysis (Figure 12 and Figure 13). This analysis expresses a sector's importance as a multiple of the national average²⁴ and shows that Macquarie Park has strongest industry specialisation in Information Media and Telecommunications, followed by Wholesale Trade and Professional, Scientific and Technical Services. These specialisations are explored further in Section 3.2, relative to other precincts, particularly in context of Westmead and Tech Central.

²⁴ For example, if a sector contributed 5% of all employment nationally, but 10% of employment locally, the employment quotient would be 2.0 ($10\% / 5\% = 2.0$). Sectors with a location quotient of less than 1 are under-represented in the local economy, whilst those with a score of over 1 are over-represented.

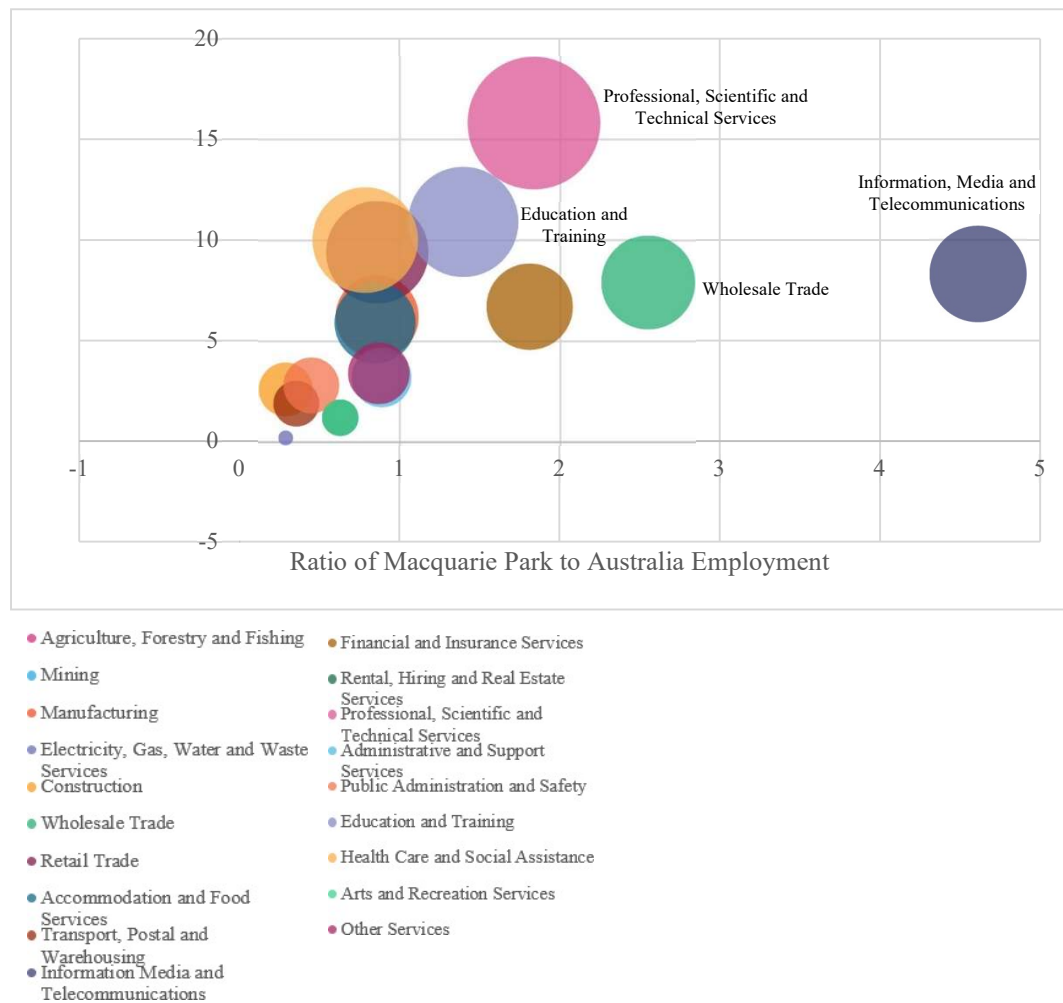


Figure 12: Macquarie Park sectoral concentration (clustering) compared to Australia
(Source: Arup analysis, data from ABS, Cat 5220.0, 2015-16)

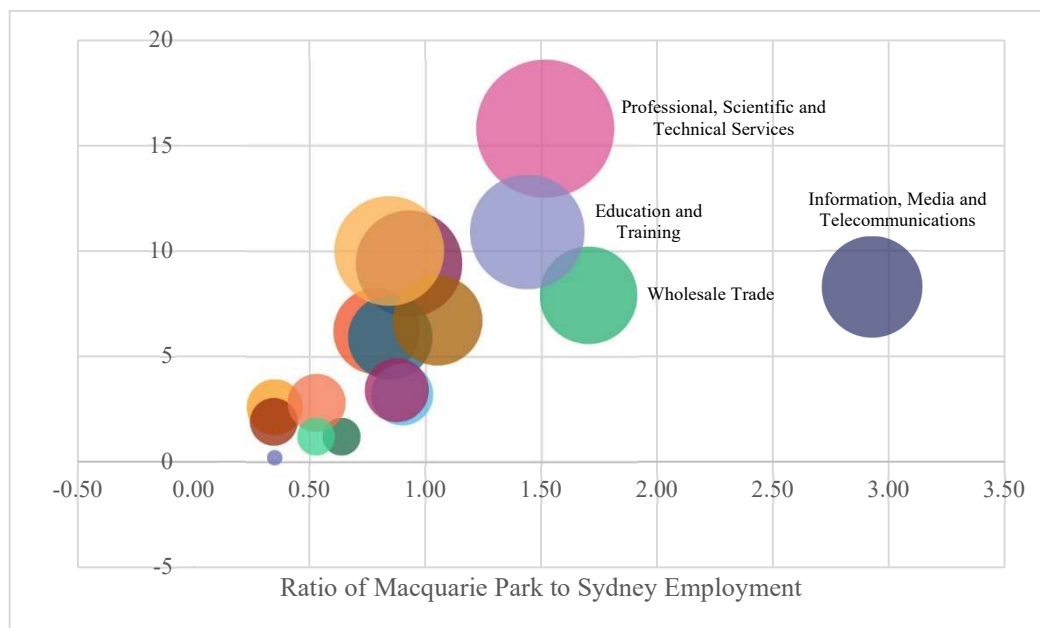


Figure 13: Macquarie Park sectoral concentration (clustering) compared to Sydney
(Source: Arup analysis, data from ABS, Cat 5220.0, 2015-16)

Growth by sectors and firm size

By 2036, the GSC has estimated that there will be approximately 14,500 additional jobs in Macquarie Park²⁵. Projected jobs growth by industry²⁶ shows that employment growth in Macquarie Park from 2016 to 2036 is expected to be driven by relatively large gains in employment in the following sectors:

- Professional, Scientific and Technical Services (5,306 new jobs, or 44% of new jobs)
- Health Care and Social Assistance (2,089 jobs, or 17.4% of new jobs)
- Education and Training (2,069 jobs, or 17.2% of new jobs); and
- Retail Trade (950 jobs, or 7.9% of new jobs).

Together, these four industries account for 87% of projected new jobs in Macquarie Park-Marsfield over the next twenty years and will account for the key business clusters in the region. These projections are based on the following assumptions:

- Job growth will be driven by new health and education facilities and ancillary businesses as well as technologically driven employment
- Accessibility to a skilled labour force will make Macquarie a competitive alternative to other centres.

²⁵ Greater Sydney Commission, North District Plan, 2018

²⁶ Macquarie Park - Marsfield SA2, Transport for NSW, TZIP2016 Employment by Industry and Travel Zone 2011-2056, 2016

New businesses continue to move into Macquarie Park, helping to strengthen the identity of the area as a place to invest and do business. In particular, the number of Professional, Scientific and Technical services firms increased between 2009 and 2016, growing a net 70 firms²⁷. The number of Information Media and Telecommunications, Education and Training, Health Care and Social Assistance firms located at Macquarie Park has remained consistent, indicating relative stability in their tenancy at Macquarie Park (Figure 14).

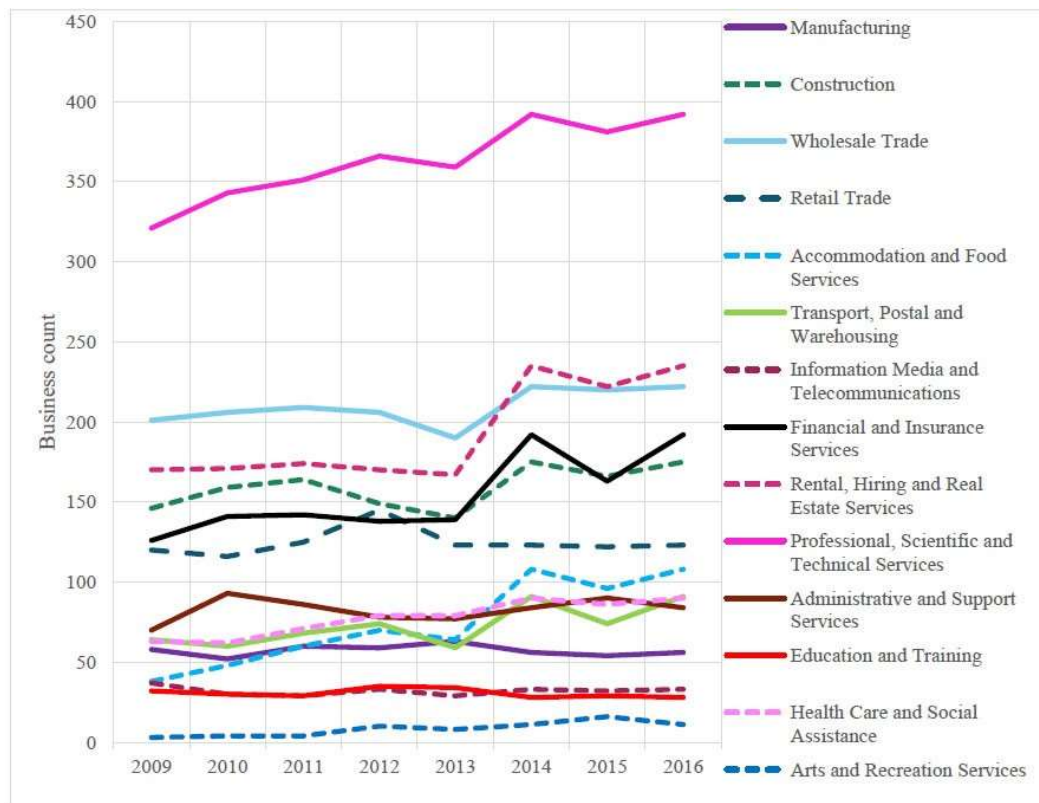


Figure 14: Business count by industry 2009-2016 in Macquarie Park – Marsfield (ABS, Cat 8165.0, 2016)

²⁷ ABS, Business Counts Cat 8165.0, 2016

Finer grain analysis of industry composition over time (Figure 15) shows that there has been growth across a number of service industries, in particular in Tertiary Education (Education and Training), Computer Design and Related Services (Professional, Scientific and Technical Services) and Pathology and Diagnostic Imaging Services (Health Care and Social Assistance). Employment in Telecommunications services and Wholesaling declined over the same period.

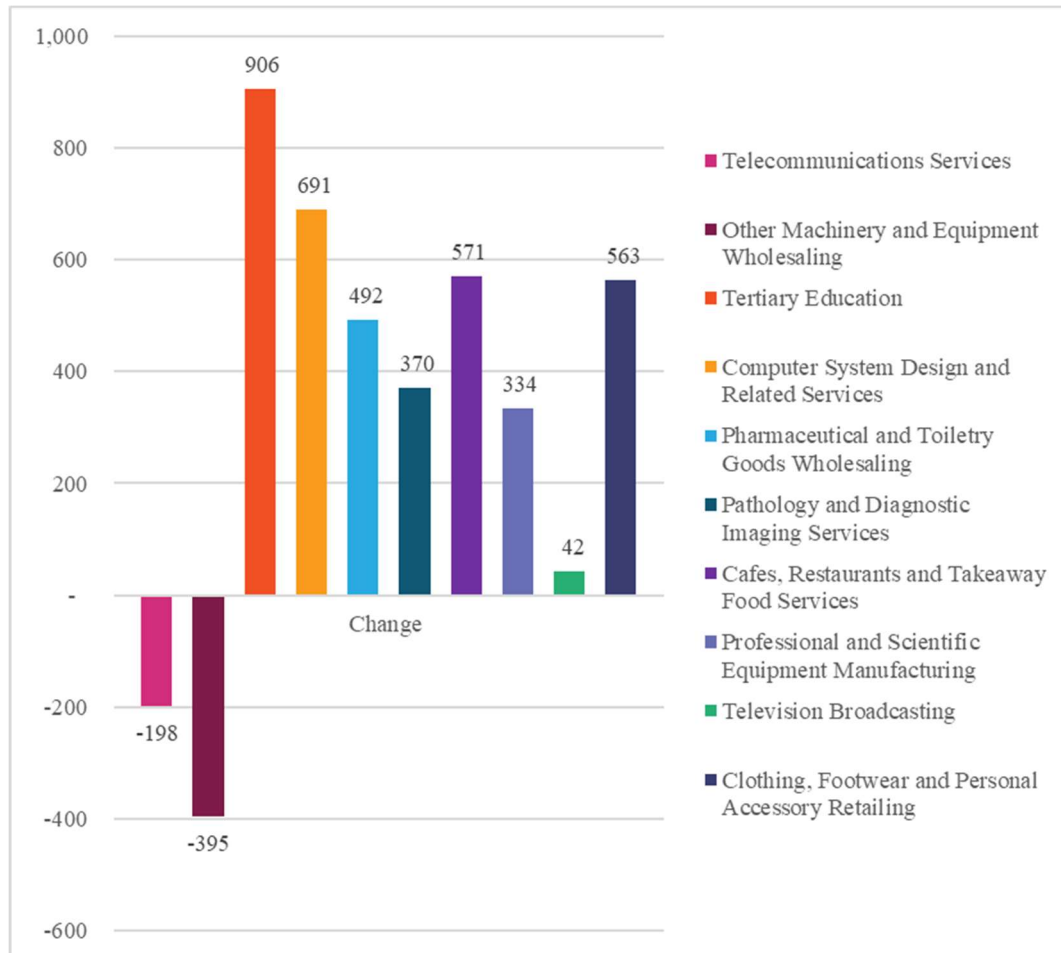


Figure 15: Changes in total employment (INDP3) (2011 – 16) (Arup, 2021)

Looking at firm size in more detail, while the number of small and medium firms (SMEs) has slightly increased over the period²⁸, compared to Greater Sydney and Australia as a whole, Macquarie Park has a smaller share of SMEs Figure 16).

Given the role that SMEs play in growing jobs (small businesses accounted for just under 60 per cent of total employment growth in the private sector nationally between 2013 and 2018)²⁹, their importance in the evolution of innovation districts and growth of key industries (including Medtech, health and biomedical sciences), Macquarie Park would benefit from added diversity in scale of firms. As previously noted, a potential barrier to location and growth in SMEs at Macquarie Park is the lack of flexible, affordable commercial space.

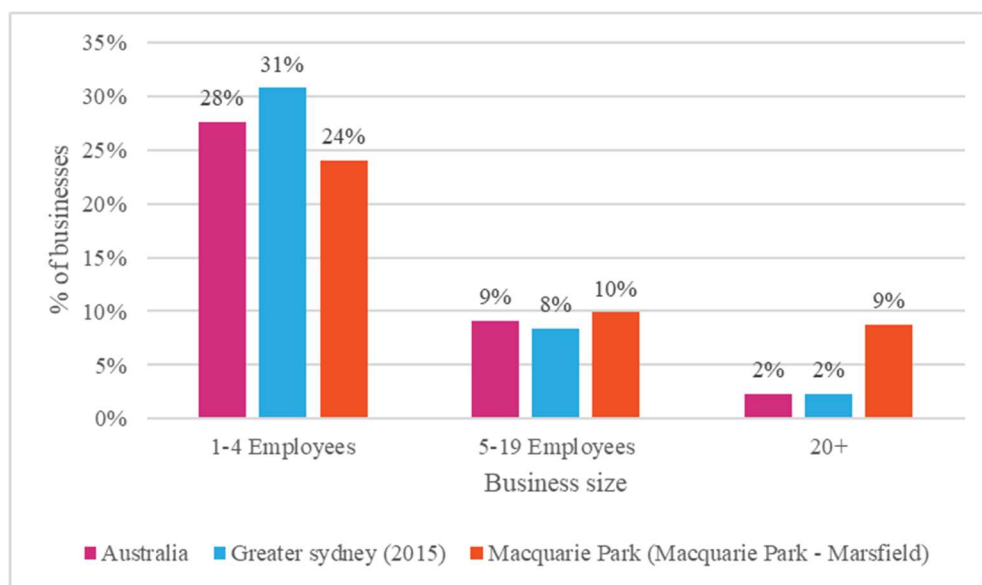


Figure 16: Business size in Australia, Greater Sydney and Macquarie Park, excluding non-employing firms (ABS, 2015)

²⁸ Due to the granularity of the data available, which does not exactly match the perimeter of Macquarie Park but includes Marsfield, small variations in the number of firms should be interpreted with caution.

²⁹ Commonwealth Government, Small Business Sector Contribution to the Australian Economy, 2020

2.3 Key findings

Drawing from the strategic context, economic profile, analysis of existing business clusters and industry specialisations at Macquarie Park described in this section of the report, below is a summary of findings:

- **Macquarie Park has access to a large, qualified labour pool, with a strong talent pipeline, further embedded through the University's presence.** The Eastern Economic Corridor contains close to one-third of Greater Sydney's jobs. Being part of this corridor provides Macquarie Park businesses with proximity to skilled workers and firms. Further, Macquarie Park benefits from the presence of Macquarie University and Macquarie University Hospital.
- **The precinct has strong industry specialisations in knowledge intensive industries including technology (telecommunications, computer system design) and pharmaceuticals.** There is strongest industry specialisation in Information Media and Telecommunications, followed by Wholesale Trade and Professional, Scientific and Technical Services, as compared to Australia. While there is a significant concentration of employment in Health Care and Social Assistance at Macquarie Park, it is lower than for Australia as a whole.
- **Clustering of businesses activity exists at the precinct, albeit over a large geographic area.** Consistent with areas of industry specialisation at Macquarie Park, this includes an established presence of Medtech, pharmaceutical and biomedical services, as well as major telecommunications companies within the commercial core area. Technology firms at Macquarie Park are relatively evenly distributed, including a cluster located at the North Ryde Station precinct. There is a significant distance between the University and Hospital and the Commercial Core. This physical separation can be a barrier to interaction and reduce opportunities for inter-business engagement.
- **Future employment growth at Macquarie Park is expected to be driven in professional, scientific and technical services, health, education, technology.** Analysis of industry composition over time shows that the number of jobs in education, computer system design and retail-related sectors have increased most significantly at Macquarie Park.
- **Macquarie Park is home to fewer small and medium sized enterprises. Compared to Greater Sydney and Australia as a whole, there is a smaller share of SMEs in Macquarie Park.** Given the role that SMEs play in growing jobs (small businesses accounted for just under 60 per cent of total employment growth in the private sector nationally between 2013 and 2018)³⁰, their importance in the evolution of innovation districts and growth of key industries (including Medtech, health and biomedical sciences), Macquarie Park would benefit from added diversity in scale of firms. High-grade, large floorplate development has driven the existing tenant profile at Macquarie Park - a potential barrier to growth in SMEs is the lack of flexible, appropriate and affordable commercial space.

³⁰ Commonwealth Government, Small Business Sector Contribution to the Australian Economy, 2020

3 Future economic role and direction

The possible future economic role and direction for Macquarie Park is explored in this Chapter with consideration to:

- Wider macroeconomic, industry/sector and other trends relevant to the Macquarie Park's future as an innovation district; and
- Current strengths and drivers of economic growth at Macquarie Park, as compared with Sydney innovation districts and competing precincts.

3.1 Wider macroeconomic and industry trends

This section draws from research and Commonwealth and State strategies, including the NSW Treasury 2040 Economic Blueprint³¹ along with other Commonwealth and NSW sector-specific strategies for economic growth as relevant to Macquarie Park.

Education

A high growth sector in NSW, the education sector is established as a key economic strength in NSW, with exports making up over half of the State's services exports (\$12 billion in 2018³²). The sector also supports significant consumption, as well as a pathway to skilled migration, generating further economic growth.

Australia's track record in university-business collaboration and in commercialising research and innovation is generally poor however, and the *NSW Treasury 2040 Economic Blueprint* identifies the following future priorities for this sector:

- A focus on producing graduates that are work-force ready, not just academically and technically strong, but ready to transition straight into productive jobs.
- Finding effective ways to integrate creativity in learning across the curriculum to prepare young people for future jobs as young people are learning and developing skills in a changing economy which increasingly values creativity, innovation, and critical thinking.

Consistent with the future growth of this sector, Macquarie University has, since its establishment in 1964, been a pioneer in collaboration with industry, business and the public sector. Macquarie University and the University Hospital have a strong track record in supporting the growth of individuals, firms and their ideas through, for example, partnerships with Cochlear and Optus as discussed in further detail below.

³¹ NSW Treasury, NSW 2040 Economic Blueprint, 2019. The Blueprint sets the direction for NSWs' continued economic success and makes recommendations about where efforts should be focused to capitalise on NSW's strengths. This section of the study draws from the five global megatrends and the 'likely industries of the future' identified in the Blueprint, relevant to the Macquarie Park corridor.

³² NSW Treasury, NSW 2040 Economic Blueprint, 2019

The University also performs particularly well in research and employability - ranked among the top 10 universities in Australia for employability³³. To facilitate recruitment opportunities and provide a specialised pool of graduates to local businesses within the Macquarie Park corridor, the University has also used its proximity with business to adapt its education offer and in 2019, approximately 24% of students were pursuing a course in disciplines aligned with the business park sectoral specialisation (Figure 17).

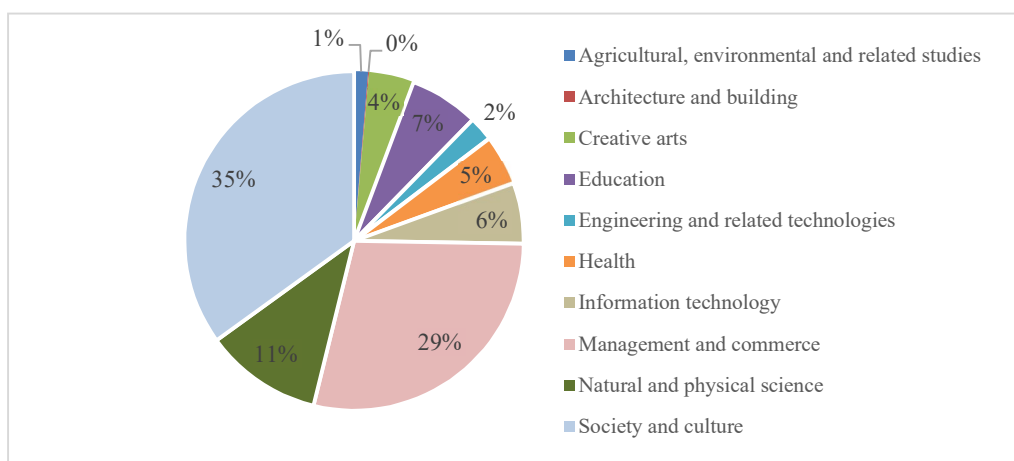


Figure 17: Macquarie student load by discipline in 2019 (Macquarie University, 2019)

Medtech, health and biomedical sciences

The NSW Treasury 2040 Economic Blueprint³⁴ recognises ‘medical technology, health and biomedical sciences’ as a future growth industry. The industry currently generates an estimated \$4.8 billion in revenue per year and employs around 7,000 people. By 2025, it is estimated that the medical technology industry has potential to expand through an additional 28,000 jobs and \$18 billion in GDP nationally³⁵.

Medtech, health and biomedical services produce a diverse range of products, innovation and technology ranging from common medicinal supplies to highly complex technologies such as hearing implants and medical software. Macquarie Park is home to medical technology companies such as Cochlear.

The NSW Medical Technology Industry Development Strategy (2018)³⁶, supports the development of the sector, emphasising the importance of the following for future growth:

- Supporting start-ups to establish and scale up – The ongoing generation of start-up activity is critical to ensuring the industry continues to develop and thrive

³³ Macquarie University, Annual Report, 2019

³⁴ NSW Treasury, NSW 2040 Economic Blueprint, 2019

³⁵ NSW Treasury, NSW 2040 Economic Blueprint, 2019

³⁶ NSW Government, Medical Technology Industry Development Strategy, 2018

- Maximising opportunities for SMES to stay onshore and manufacture locally – Including supporting more effective linkages with partners
- Supporting SMEs with access to the right facilities and accommodation – including encouraging the use of existing infrastructure to enable innovation and product delivery.

At Macquarie Park, the University formed a partnership with medical technology firm Cochlear, which allowed Cochlear to gain access to onsite research academics, and Macquarie University in return was able to increase its research funding income due to the ongoing partnership. However, while the University (MPID³⁷, Macquarie University Incubator and the Macquarie Hospital) are working with the private sector to bring benefits to all parties, there is significant opportunity to better coordinate through a structured programme to encourage collaboration and actively engage the private sector to support medical technology, health and biomedical sciences as a future growth industry at Macquarie Park.

Health Care

Australia has an ageing population. As stated in the NSW Intergenerational Report 2016³⁸, people of working age (15 to 64) now make up almost 66% of our population. Over the next 20 years, that ratio will fall to around 61%. The aged dependency ratio will also increase from 24% now to 42% by 2056, rising fastest over the next 15 years as the baby boomers retire.

According to Department of Jobs and Small Business (DJSB)³⁹, Australia will continue to shift towards higher skilled, knowledge economy jobs, as well as see pronounced growth in Health Care and Social Assistance to serve the aging population. This is consistent with employment projections for Macquarie Park-Marsfield⁴⁰ which show employment growth at Macquarie Park from 2016 to 2036 is expected to be driven by relatively large gains in Health Care and Social Assistant (2089 jobs, or 17.4% of new jobs).

³⁷ <https://mpid.com.au/>

³⁸ NSW Treasury, Intergenerational Report, 2016

³⁹ Australian Government, Department of Jobs and Small Businesses, Employment Projections, 2018

⁴⁰ Transport for NSW, TZP2016 Employment by Industry and Travel Zone 2011-2056, 2016

Advanced manufacturing

The NSW Advanced Manufacturing Industry Development Strategy (2019) recognises that manufacturing is undergoing a transformation and that supporting the development of advanced manufacturing will be vital to the ongoing profitability of the industry in NSW.⁴¹

The Federal Government has also released Modern Manufacturing Strategy (2021), there are several growth opportunities in advanced manufacturing:

- Resources Technology & Critical Minerals Processing
- Food & Beverage
- Medical Products
- Recycling & Clean Energy
- Defence
- Space

In supporting the development of the sector, the NSW advanced manufacturing industry development strategy emphasises the need to increase collaboration within industry (with a focus on SMEs) to pursue R&D and commercialisation partnerships with universities. Macquarie Park through the activities of Macquarie University, MPID and the Venture Café have played a key role in facilitating links between industry regarding emerging scientific technologies in advanced manufacturing through networking events (Advanced Manufacturing Breakfast series, Macquarie Park Space Innovation Summit).

Several firms in Macquarie Park support pre-production advanced manufacturing activities Cochlear, AstraZeneca, Schneider-Electric, CSIRO and Macquarie University, Smith & Nephew. The direct manufacturing value chain has three stages:

- pre-production (R&D and design)
- production
- post-production (logistics, sales and service)

The pre- and post-production stages represent higher value-add than production activities. Given the emergence of advanced manufacturing it is not readily classified as more conventional manufacturing industries using ABS ANZSIC classification but nonetheless is making significant contributions to the sector.

The proximity of Macquarie University to the advanced manufacturing R&D activities of industry at Macquarie Park presents opportunities for transfer of knowledge between services and production in advanced manufacturing.

⁴¹ NSW Government, NSW Advanced Manufacturing Industry Development Strategy, 2019

Digital and telecommunications

Digital technology is identified as one of the fastest growing sectors internationally⁴². The NSW Government has recognised this sector as “one of the most powerful enablers” of economic growth, driving productivity in all industries and new industry challenges including workforce development and cyber security. Cyber security in particular is recognised as a rapidly emerging challenge, requiring a steady supply of highly skilled employees with digital capabilities⁴³.

Further, the NSW Treasury 2040 Economic Blueprint recognises that NSW’s biggest comparative strengths, as compared to economies such as Singapore lies in business services and particularly the three knowledge-based fields of financial services; professional, scientific and technical services; and information, media and telecommunications.

In 2016, Macquarie University formed a partnership known as the Optus-Macquarie University Cyber Security Hub (Figure) which allowed Optus to conduct research with academics across multiple disciplines including computing, engineering, business, criminology, law and psychology, to tackle cyber security issues, an initiative that is strongly aligned with growth in these sectors and a strong foundation for future growth.



Figure 18: Optus Macquarie University Cyber Security Hub (Macquarie University, 2021⁴⁴)

⁴² Brookings Institute, Trends in the Information Technology Sector, 2019

⁴³ NSW Treasury, NSW 2040 Economic Blueprint, 2019

⁴⁴ Macquarie University, Leadership in Cybersecurity, 2021

Urban vibrancy attracts high growth firms

There is a strong correlation between place-based vibrancy and the concentration of high-growth firms. Malizia and Motoyama⁴⁵ considered the following measures in their 2018 study:

- Density and Compactness
- Diversity of land uses
- Walkable urban form
- Walkability to popular amenities including grocery stores, banks, schools, and parks
- Distance to transit
- Access to working age population within 45 minutes.

The study of 5,900 high-growth firms in 30 metropolitan areas of the US, found that these types of firms cluster in employment centres that are more dense, diverse, walkable, and well connected to popular urban amenities and housing. The role that residential and amenity play as part of the ‘maturity pathway’ in the evolution of innovation districts also supports this (refer section 4.1).

Macquarie Park scores well on some measures of vibrancy, including access to rail /transit and, as evidenced by the existing business and tenancy profile at Macquarie Park (see Appendix C and D), its’ proximity to the Sydney CBD and surrounding economic and physical infrastructure, is attractive to firms seeking good access to labour and the ability to share in the economic infrastructure of the surrounding area.

However, whilst some firms currently located within the Corridor seek ‘campus’ style accommodation, the physical layout of the precinct is currently not dense enough for close concentrations of people and the area is lacking in ‘energy’ and a ‘buzz’ from low footfall. The poor-quality pedestrian environment, an absence of amenities (with few options for activities after 5pm) and limited visitor attractions (eg, the Macquarie Centre being the only major retail offering), limits Macquarie Park’s attractiveness for businesses, workers and residents. Road congestion is also a significant problem.

Macquarie Park’s unique access to the natural landscape through proximity to Lane Cove National Park and natural settings within the Macquarie University campus is a major point of difference relative to other employment centres in Sydney with significant potential to be enhanced. Improving urban vibrancy at Macquarie Park by addressing the issues outlined above, while maximising opportunity for better connection to the natural landscape, will be important for the precinct to attract high growth firms in future.

⁴⁵ Malizia and Motoyama, Vibrant Centers as Locations for High-Growth Firms, 2018

3.2 Industry specialisations relative to other precincts

To further understand the future economic role and direction for Macquarie Park, it is useful to consider the current industry specialisations at Macquarie Park relative to other competing precincts, particularly in context of Westmead and Tech Central.

Location quotient analysis has been undertaken specific to precinct comparisons, (being relevant metropolitan and strategic centres with standalone office buildings and greater than 100,000 square metres of office floor space⁴⁶). Precincts with similar attributes to the Macquarie Park corridor have been selected (i.e. with good access to labour and employers and located in close proximity to education and health anchors). Westmead and Tech Central are currently evolving, and findings in this section are considered in context of the information relating to these two ‘lighthouse’ precincts over page.

⁴⁶ Greater Sydney Commission, Investment and Business Activity, 2018

Westmead Health and Education District | NSW, Australia

- 18,000 jobs
- 1,100 researchers
- 3,400 students
- Well-developed talent pool attracting \$79 million in medical research in 2015.

History:

Westmead has a long history of delivering healthcare with integrated medical research, education and private sector involvement, delivering health services to almost 10% of Australia's population. It has a well-established range of major health, education and research institutions and is a vital part of Western Sydney's rapid development.

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

Vision:

Continue to grow the research profile and presence of Westmead, with the purpose of translating discoveries into new therapeutics, improved clinical care, and improved hospital population health outcomes.

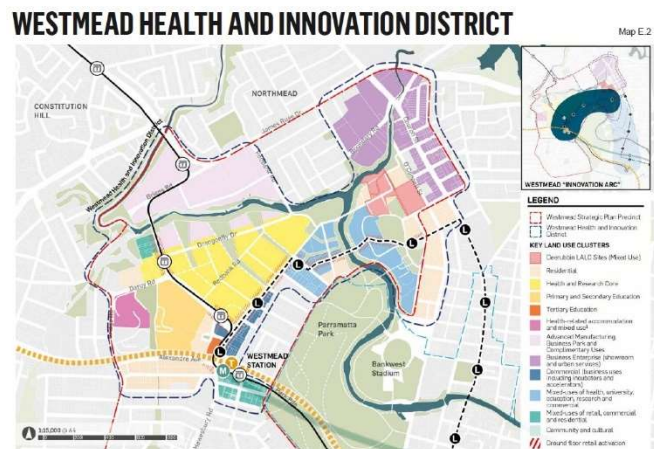
Background:

Westmead is an example on an 'anchor-plus' district model, as defined by the Brookings Institute. It is defined by the presence of multiple anchor institutions, that provides the best learning for rethinking about the future of Westmead. Westmead is also designated by NSW Govt as a Lighthouse Precinct where trade will be grown and diversified, new business investment will be stimulated, and innovation will be fostered to boost industry competitiveness.

Current industry specialisations:

Westmead is a mature designated health and education precinct with the following strengths:

- *Health and medical care* – preventative health, critical, complex and acute health care services
- *Education and training* – anchored by multi-disc university, focus on health and medicine (inc. sustainable health, patient-centred care, and translation health)
- *Research and development* – cell and gene therapy, biomarkers and disease modelling, developing minds, learning health systems, biobanking, phage therapies, particle therapy.



Future industry specialisations:

- *Health and medical care* – viral vectors, particle therapy, gene therapy, cell therapy
- *Education and training* – broaden over time to include STEM fields (i.e. science, engineering, data analytics, IT and physics) as well as arts, social science and business management including more education and training floorspace for primary, secondary and tertiary, including new mixed use multi-disciplinary university campus in Parramatta North
- *Research and development* – viral vectors, proteome diagnostics, genomics and e-health
- *Commercialisation and Industry* – gene and cell therapy, particle therapy, phage therapy, biobanking, infectious diseases and health technology

What can Macquarie Park learn from this case study:

"Right-level" collaboration allows for brilliant business development

Collaboration with the right stakeholder was instrumental to the success of Westmead, with precinct stakeholders forming the Westmead Alliance to create a shared vision and advocate for the interest of the precinct. Similar to the MPID, though on a much larger scale. The entrepreneurial culture is also supported through the Westmead Research Hub, which includes a collaboration of five organisations with expertise in medical research, health and education.

References:

NSW Treasury, NSW Innovation Precincts, 2018

Tech Central | NSW, Australia

Future Goals

- An additional 25,000 jobs by 2036
- Featuring 250,000 sqm of A-grade commercial space
- Government committed \$48.2 million

History:

Historically, an active precinct orientated around Royal Prince Alfred Hospital, the University of Sydney and the University of Technology Sydney. The precinct included internationally recognised research centres, the Sydney Innovation Hub (provides early stage support for start-ups) and HatchLab, which hosts incubator programs and educational events.

The area has since expanded from the 'Ultimo precinct' to include Surry Hills, Redfern and North Eveleigh, South Eveleigh and Camperdown Health & Education precinct.

Vision:

A future home of the innovation and technology community to thrive and create the jobs of the future.

Background:

In 2020, the NSW Government announced \$48.2 million funding package to kick-start Tech Central. The funding will allow the NSW Government to deliver up to 25,000 square metres of affordable space for start-ups and scale-ups over the next five years around Central station. This will create the biggest technology hub of its kind in Australia, expand Sydney CBD's commercial core to the south, and enhance Central Station's status as one of the key transport hubs in NSW.

The precinct has already secured an anchor tenant, the software developer Atlassian and the NSW Government. This partnership will create up to 4,000 jobs, with a strong focus on product development teams.

Tech Central is also defined as a lighthouse precinct, which means it demonstrates scale and ambition, innovation and knowledge, human capital, spatial and economic connectivity, comparative advantage, do-ability, impetus for Government intervention and vibrancy.

Prospective Precinct Area



Existing industry specialisations:

- Government
- Creative industries
- Information media and technology
- Education including higher education

Future industry specialisations:

- Science, Technology, Engineering and Mathematics (STEM), a focus of education providers
- Advanced technology
- Information and communication technology

What can Macquarie Park learn from this case study:

Focus on high quality infrastructure

As stated in the Global NSW strategy, Tech Central will be “underpinned by high-quality infrastructure” to “attract the brightest and best to Sydney, establishing an ambitious benchmark for generations to come”. Creating a “sense of place” will help Macquarie Park attract investment and contribute to the vibrancy of the precinct. This is one of the main attributes of a lighthouse precinct that is currently lacking in Macquarie Park – being an attracting place to live, work and play, and fostering economic activity.

References:

NSW Treasury, NSW Innovation Precincts, 2018
Global NSW, Tech Precinct Panel Report, 2021
Global NSW, Australia's global hub: connected, smart and vibrant, 2020

The following observations with regard to innovation sectors are based on the location quotient analysis in Table 3 (using latest Census data, 2016):

- **In terms of office-based knowledge employment concentration, Macquarie Park is behind only Central Sydney/Tech Central and St Leonards.** However, Macquarie Park is more specialised in this type of employment than other competing centres such as Homebush Bay or Baulkham Hills. Macquarie Park is a critical knowledge asset for the Eastern City. Specialisation in professional services is highest in the Eastern City noting Macquarie Park, St Leonards and Central Sydney area all located within a short journey time.
- **Macquarie Park is second only to Central Sydney in terms of its specialisation in information, media and telecommunications.** Macquarie Park's employment base in this sector is only slightly less specialised than part of Tech Central and Central Sydney.
- **Macquarie Park has a strong education specialisation, exceeded only by Ultimo.** Across the metropolitan centres only Macquarie Park and Ultimo have a specialisation greater than 1 indicating the innovation potential of these areas.
- **Macquarie Park has the highest rates of specialisation in Sydney when combining the presence of education and industry.** No other employment centre with an education employment quotient of over 1 has a manufacturing presence close to that of Macquarie Park. The colocation of education and advanced manufacturing / R&D is key innovation success indicator of Macquarie Park.
- **Manufacturing employment in Macquarie Park is highly specialised** (only Homebush Bay is more specialised across the comparison office markets) indicating key strengths in industry priorities such as advanced manufacturing (including pre-production R&D and design).

Based on the location quotient analysis showing change between 2011 and 2016 in Table 4, there are a number of observations with regard to innovation sectors relevant to Macquarie Park:

- **Between 2011 and 2016, Macquarie Park evolved into a more specialised business park in all but four sectors** (Financial and Insurance Services, Rental, Hiring and Real Estate Services, Health Care and Social Assistance and Construction). Specialisation rates increased almost across all sectors as the economic role and function become more innovation focused.
- **Macquarie Park became more specialised in key growth areas such as creative, health and education, population services and industrial** (including pre-production R&D and design) between 2011 and 2016 – while not indicating rapid increases in specialisation in any one of these sectors.
- **While Macquarie Park remained specialised in education (no change between 2011 and 2016) Central Sydney and Pyrmont increased their specialisation in the sector (but were still less specialised than Macquarie Park in 2016).** Macquarie Park and Pyrmont are the only two employment centres in Sydney with a location quotient of 1.2 or higher.
- **Across all employment centres in Sydney, only Surry Hills showed rapid growth in specialisation (amongst already specialised areas). This occurred in the Information Media and Telecommunications, Arts and Recreation Services sector.** Despite this rapid growth as at 2016, Macquarie Park was far more specialised in Information Media and Telecommunications than Surry Hills with a location quotient of 5.3 compared to 3.7. One possible reason for this is that Surry Hills compared to Macquarie Park is more amenable and accessible, making it more attractive to businesses in the media sector.

Table 3: 2016 Census based quotient analysis

| | | Macquarie Park | Tech Central (SA2 the rocks and Surry Hills) | Surry Hills Precinct | Ultimo Creative Industry Precinct (Pyrmont - Ultimo) | Westmead (SA2 Northmead) | Parramatta - Roschill | Baulkham Hills | Homebush Bay | St Leonards | Chatswood | Concord West | Erskineville - Alexandria |
|--------------------------------|---|----------------------------------|--|----------------------------------|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> |
| Office-based knowledge jobs | Financial and Insurance Services | 0.1 | 3.7 | 0.4 | 0.4 | 0 | 2.7 | 0.9 | 1.9 | 0.6 | 0.9 | 2.7 | 0.2 |
| | Rental, Hiring and Real Estate Services | 0.4 | 1.4 | 0.6 | 0.8 | 0.3 | 0.9 | 0.9 | 0.8 | 0.9 | 1.2 | 0.8 | 0.8 |
| | Public Administration and Safety | 0.2 | 1.4 | 2 | 0.3 | 0.4 | 4.4 | 0.5 | 1.3 | 0.2 | 1 | 0.1 | 0.5 |
| | Administrative and Support Services | 0.5 | 1.5 | 1.5 | 0.8 | 0.3 | 1.3 | 0.7 | 0.7 | 0.8 | 1 | 0.7 | 0.8 |
| | Professional, Scientific and Technical Services | 1.3 | 2.2 | 2.3 | 1.7 | 0.3 | 0.7 | 1.1 | 0.7 | 1.9 | 1.3 | 0.8 | 0.8 |
| | Information Media and Telecommunications | 5.3 | 1.6 | 3.7 | 6.7 | 0.1 | 0.4 | 0.5 | 0.5 | 3.4 | 2.1 | 1 | 0.8 |
| Creative, health and education | Education and Training | 1.2 | 0.4 | 1 | 1.9 | 0.6 | 0.4 | 0.4 | 0.2 | 0.4 | 0.5 | 0.4 | 0.2 |
| | Arts and Recreation Services | 0.3 | 0.9 | 2 | 6.4 | 0.2 | 0.6 | 0.6 | 3.3 | 0.5 | 0.6 | 0.5 | 1 |
| | Retail Trade | 0.8 | 0.5 | 0.7 | 0.5 | 0.4 | 0.8 | 1.9 | 0.6 | 0.5 | 1.6 | 0.6 | 1.6 |

| | | Macquarie Park | Tech Central (SA2 the rocks and Surry Hills) | Surry Hills Precinct | Ultimo Creative Industry Precinct (Pyrmont - Ultimo) | Westmead (SA2 Northmead) | Parramatta - Roschill | Baulkham Hills | Homebush Bay | St Leonards | Chatswood | Concord West | Erskineville - Alexandria |
|---------------------|--|----------------------------------|--|----------------------------------|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> | <i>LQ (Greater Sydney basis)</i> |
| Population Services | Accommodation and Food Services | 0.5 | 1 | 1.1 | 1 | 0.4 | 0.7 | 0.5 | 0.5 | 0.3 | 1.1 | 0.8 | 0.6 |
| | Wholesale Trade | 4.8 | 0.2 | 0.5 | 0.7 | 0.3 | 0.5 | 1.1 | 2.7 | 1.3 | 1.4 | 2.1 | 3 |
| | Health Care and Social Assistance | 0.8 | 0.2 | 0.6 | 0.2 | 5.7 | 0.6 | 1.4 | 0.2 | 2.1 | 0.8 | 1.6 | 0.4 |
| Industrial | Manufacturing | 1.4 | 0.1 | 0.2 | 0.1 | 0.9 | 0.3 | 1.6 | 2.1 | 0.8 | 0.5 | 1.5 | 1.4 |
| | Transport, Postal and Warehousing | 0.2 | 0.4 | 0.2 | 0.3 | 0.5 | 0.5 | 0.2 | 1.1 | 0.5 | 0.4 | 0.6 | 2.9 |
| | Construction | 0.4 | 0.5 | 0.3 | 0.5 | 0.2 | 0.6 | 1.4 | 1.4 | 0.7 | 0.9 | 0.6 | 1 |
| | Agriculture, Forestry and Fishing | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.9 | 0.3 | 0.1 | 0 | 0.2 |
| | Mining | 0.3 | 1.2 | 0.1 | 0.1 | 0 | 0.3 | 0.8 | 0.4 | 1.6 | 1.1 | 0.2 | 0.2 |
| | Electricity, Gas, Water and Waste Services | 0.3 | 0.7 | 0 | 1 | 0.2 | 3.5 | 0.7 | 2 | 0.4 | 1.1 | 1.4 | 0.6 |

Table 4: 2016 Census based quotient analysis – change between 2011 and 2016

| | | Macquarie Park | Central Station Precinct | Surry Hills Precinct | Ultimo Creative Industry | Westmead | North Sydney | Parramatta - Rosehill | Baulkham Hills | Homebush Bay | St Leonards | Chatswood | Concord West | Erskineville - Alexandria |
|--------------------------------|---|----------------|--------------------------|----------------------|--------------------------|----------|--------------|-----------------------|----------------|--------------|-------------|-----------|--------------|---------------------------|
| Office-based knowledge jobs | Financial and Insurance Services | | | | | | | | | | | | | |
| | Rental, Hiring and Real Estate Services | | | | | | | | | | | | | |
| | Public Administration and Safety | | | | | | | | | | | | | |
| | Administrative and Support Services | | | | | | | | | | | | | |
| | Professional, Scientific and Technical Services | | | | | | | | | | | | | |
| | Information Media and Telecommunications | | | | | | | | | | | | | |
| Creative, health and education | Education and Training | | | | | | | | | | | | | |
| | Arts and Recreation Services | | | | | | | | | | | | | |
| Population Services | Retail Trade | | | | | | | | | | | | | |
| | Accommodation and Food Services | | | | | | | | | | | | | |
| | Wholesale Trade | | | | | | | | | | | | | |

| | | Macquarie Park | Central Station Precinct | Surry Hills Precinct | Ultimo Creative Industry | Westmead | North Sydney | Parramatta - Rosehill | Baulkham Hills | Homebush Bay | St Leonards | Chatswood | Concord West | Erskineville - Alexandria |
|------------|--|----------------|--------------------------|----------------------|--------------------------|----------|--------------|-----------------------|----------------|--------------|-------------|-----------|--------------|---------------------------|
| | Health Care and Social Assistance | | | | | | | | | | | | | |
| Industrial | Manufacturing | | | | | | | | | | | | | |
| | Transport, Postal and Warehousing | | | | | | | | | | | | | |
| | Construction | | | | | | | | | | | | | |
| | Agriculture, Forestry and Fishing | | | | | | | | | | | | | |
| | Mining | | | | | | | | | | | | | |
| | Electricity, Gas, Water and Waste Services | | | | | | | | | | | | | |

Key

| Growth rate | Unspecialised (LQ < 1.2) | Slightly specialised (LQ > 1.2) | Very specialised (LQ > 2) |
|---|--------------------------|---------------------------------|---------------------------|
| Declining rapidly (2011-16 LQ CAGR* < -10%) | | | |
| Declining slowly (2011-16 LQ CAGR < -3%) | | | |
| Little growth or decline | | | |
| Growing slowly (2011-16 LQ CAGR > 3%) | | | |
| Growing rapidly (2011-16 LQ CAGR > 10%) | | | |

- *Compound Annual Growth Rate (CAGR)

3.3 Key findings

The above findings, coupled with analysis of existing business clusters and industry specialisations in Section 2, indicate that the potential future prime economic role /direction for Macquarie Park could align with the following high-growth innovation sectors and initiatives:

- **Education** Macquarie Park has a strong education specialisation relative to other innovation districts and competing precincts. Macquarie University and Macquarie University Hospital are strong future innovation cultivators and anchors. Coupled with the availability of health and medical educational offerings, including the cluster of pharmaceutical and health based businesses at Macquarie Park, there is further opportunity to leverage this education asset to generate more cognitively demanding and non-routine jobs through commercialisation of R&D, encourage innovation and support significant growth in this area of specialisation in future.
- **Medtech, health and biomedical sciences** ‘Medical technology, health and biomedical sciences’ is recognised as a future growth industry for NSW⁴⁷. Macquarie University has a long history of establishing partnerships and effective linkages between businesses, research and the health system (eg, Cochlear). There are important factors required to support future growth in this sector, including maximising opportunities for small and medium enterprises (SMEs) to start-up and scale up⁴⁸. While there are established business clusters in this sector located in the commercial core, the Corridor is currently home to fewer SMEs compared to Greater Sydney and Australia. Addressing this and other barriers is required to support the establishment and scale up of Medtech SMEs and the further evolution and growth of this industry at Macquarie Park.
- **Health care** Australia is expected to see pronounced growth in Health Care and Social Assistance to serve the aging population⁴⁹. A specialised health and education precinct with a major hospital and research centre, Macquarie Park is well positioned to grow in the health industries. There are also opportunities in the Corridor for purpose-built aged care, and medical facilities.
- **Advanced manufacturing** The NSW Advanced Manufacturing Industry Development Strategy (2019) recognises that the development of advanced manufacturing will be vital in NSW⁵⁰. Manufacturing employment at Macquarie Park is highly specialised. The colocation of education and advanced manufacturing / R&D is key innovation success indicator in the Corridor. The precinct has the highest rates of specialisation in Sydney when combining the presence of education and industry. The proximity of Macquarie University to the advanced manufacturing R&D activities of industry at Macquarie Park also presents opportunities for transfer of knowledge between services and production in this sector.
- **Digital and telecommunications** Digital technology is identified as one of the fastest growing sectors internationally and the NSW Government has recognised this sector as “one of the most powerful enablers” of economic growth, driving productivity in all industries and new industry challenges including workforce development and cyber security⁵¹. With strong existing specialisations in technology, including telecommunications and computer system design, this sector represents a potential high-growth innovation sector at Macquarie Park.

⁴⁷ NSW Treasury, NSW 2040 Economic Blueprint, 2019

⁴⁸ NSW Government, Medical Technology Industry Development Strategy, 2018

⁴⁹ NSW Treasury, Intergenerational Report, 2016; Australian Government, Department of Jobs and Small Businesses, Employment Projections, 2018

⁵⁰ NSW Government, NSW Advanced Manufacturing Industry Development Strategy, 2019

⁵¹ NSW Treasury, Economic Blueprint 2040, 2019

- **Improved urban vibrancy to attract high growth firms** There is a strong correlation between place-based vibrancy and the concentration of high-growth firms.⁵² Whilst, Macquarie Park scores well on some measures of vibrancy, including access to rail /transit, and is attractive to firms seeking ‘campus-style’ accommodation with good access to labour; the poor-quality pedestrian environment, an absence of amenities (with few options for activities after 5pm), limited visitor attractions and road congestion, limits Macquarie Park’s attractiveness for businesses, workers and residents. Addressing these issues, while maximising opportunity to enhance Macquarie Park’s unique natural landscape setting⁵³ (a major point of difference relative to other employment centres in Sydney) is important for the precinct’s future economic success.

⁵² For example, Malizia and Motoyama, Vibrant Centers as Locations for High-Growth Firms, 2018

⁵³ Draft Macquarie Park Masterplan 2021

4 Success as an Innovation District

Realising the potential future prime economic role /direction for Macquarie Park is closely tied to the Corridor’s success as an innovation district – to “*spur productive, inclusive and sustainable economic development*” and “*provide a strong foundation for the creation and expansion of firms and jobs by helping companies, entrepreneurs, universities, researchers and investors – across sectors and disciplines – co-invent and co-produce new discoveries for the market*”³⁶.

Informed by global case studies, including lessons learned (Appendix A), this section builds on earlier findings to assess the key opportunities and gaps in the economic structure of Macquarie Park relative to the Corridor’s potential future success as an Innovation District and includes a summary of:

- Innovation district evolution and key success factors relevant to Macquarie Park; and
- Opportunities and barriers to achieving success as an innovation district.

4.1 Innovation district evolution and success factors

The GSC has defined six phases of innovation district evolution, which is useful in demonstrating how different districts and precincts can evolve along a ‘Maturity Pathway’³⁷ (Figure 19). As noted in Section 3.1, urban vibrancy, residential and amenity are a key part of the ‘maturity pathway’ in the evolution of innovation districts.

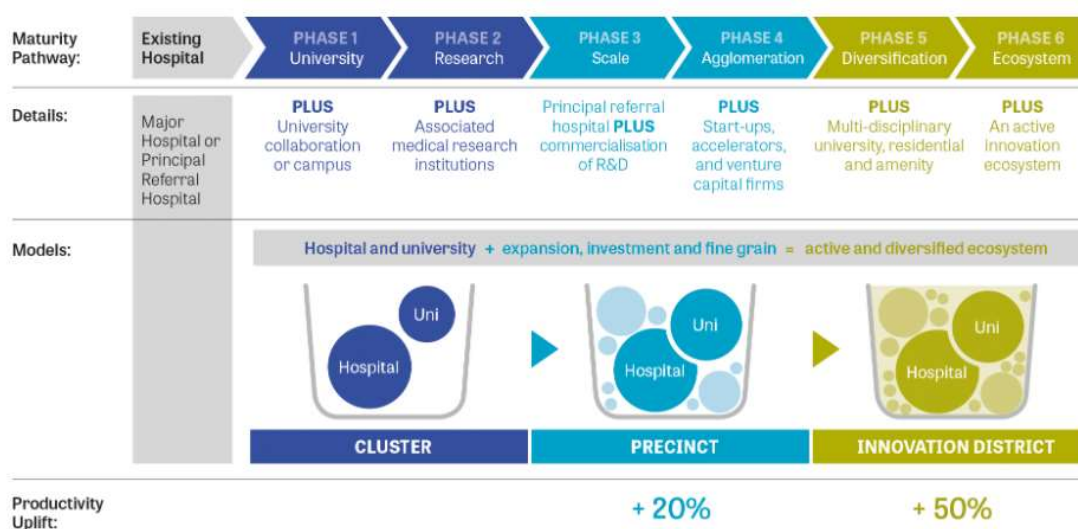


Figure 19: Innovation districts and the maturing pathway (GSC, 2018)

³⁶ Brookings Institute, The Rise of Innovation Districts: A New Geography of Innovation in America, 2014

³⁷ GSC, Metropolis of Three Cities, 2018

Building on the GSC's maturity pathway for health and education precincts and drawing from the innovation district framework developed by the Brookings Institute, along with lessons learned from global case studies (Appendix A), the 'Innovation Ecosystem Stakeholder System' is also important in considering Macquarie Park's future success as an innovation district (Figure Table 5).

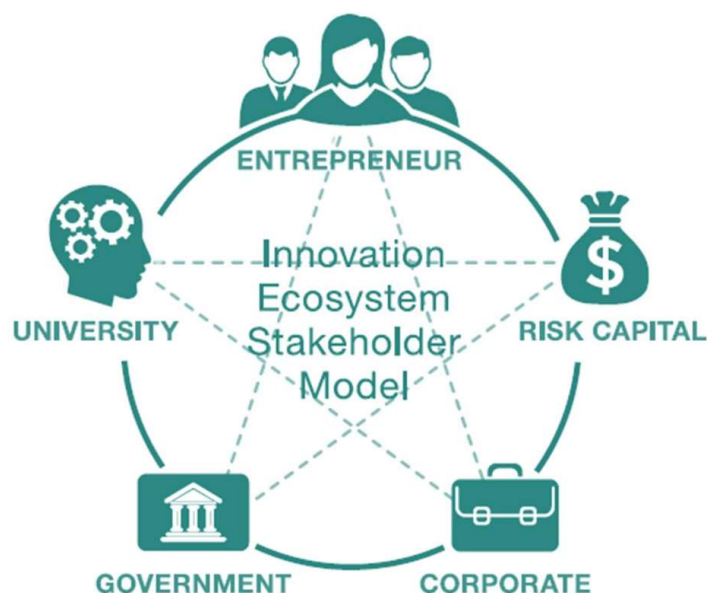






Figure 20: MIT REAP Framework (MIT, 2021)



Below is a profile of key supporting stakeholder-related initiatives at Macquarie Park:

- The **Macquarie Park Innovation District (MPID)**, created in 2015 is a membership-based business association aimed at encouraging innovation in the area. MPID plays an important role in integrating Macquarie University, Macquarie University Hospital, the Macquarie Incubator and more than 180 large and 200 small businesses to encourage collaboration and innovation. The founding partners of MPID include Abbott, AMP Capital, City of Ryde Council, Johnson and Johnson, Konica Minolta, Macquarie University, NAB, NSW State Government and Optus. ORIX and Cochlear have also joined as partners.
- The **MIT Regional Entrepreneurship Acceleration Program (REAP)** is a global initiative that engages with communities around the world to strengthen innovation-driven entrepreneurial ecosystems and transforms economies. The MIT REAP framework identifies five sectors to collaborate to achieve this vision as shown in Figure 20, including Entrepreneurs, Risk Capital, Corporate, Government and University. The Macquarie Park team has stakeholders representing all five sectors who seek to transform Macquarie Park from a traditional business park to a true innovation ecosystem. The team comprises of representatives from institutions such as Macquarie University, AMP Capital, EY, Kingsway Australia, Lend Lease and National Australia Bank.

There are various institutions involved in these initiatives, and in setting the area objectives, including the MPID, Ryde Council, NSW State Government. Although there is collective agreement as to the innovation focus of Macquarie Park, the leadership, individual roles and responsibilities for each stakeholder on delivery has not been clearly defined.

Table 5: Innovation district success factors (Arup, 2021)

| Innovation district success factors | | Factor for success at Macquarie Park |
|---|--|---|
|  Talent & Technology Pursue talent and technology, through initiatives to attract, retain and develop talented and skilled people. | | Emphasis on genuinely world class research capabilities – and a clear sector focus , whilst retaining flexibility |
| | | Advanced digital infrastructure |
|  Inclusive Growth Promote inclusive growth, through neighbourhood regeneration, increasing labour market participation, and stimulating local entrepreneurship. | | Structured programme of events and collaboration |
| | | Concerted approach to promoting entrepreneurship in collaboration with universities and other anchor institutions |
|  Leadership Build a collaborative leadership network, bring together the decision-makers and leaders from the organisations and sectors to cooperate formally on the design, delivery, investment, and promotion of the district. | | Strong, consistent senior leadership , supported by a high calibre dedicated team |
| | | Clear links and identification of roles across the Innovation District |
| | | Good local, regional, and international networks to further develop the district. |
| | | Clear planning policy framework |
| | | Public-private sector collaboration to build the right type of business space |
|  Vision Set a vision for growth, based on understanding competitive advantage, setting out how institutions can work together, and re-imagine the physical landscape, buildings and infrastructure. | | Clear vision and plan that can be flexible over time |
| | | Effective branding and identity |



| Innovation district success factors | | Factor for success at Macquarie Park |
|--|--|---|
|  Access to Capital Ensure access to capital, by leveraging public and private sector sources of funding to support the growth of innovation districts. | | Prioritisation of the Innovation District for investment and policy |
| | | Structures and networks in place to widen access to venture capital / angel investment |
| | | Structured approaches to supporting business growth and inward investment in Innovation District |
|  Quality of Place Create quality of place, with a diverse offer and amenities that can incentivise people to spend time and socialise, building a sense of community to inspire innovation. | | Substantial investment needed in infrastructure and place-shaping |
| | | Flexible and agile spaces to attract a diverse range of organisations and support a thriving eco-system and business environment |




4.2 Opportunities and barriers to success


Table 6 below summarises the key innovation district success factors, opportunities and barriers, relative to Macquarie Park's existing industry specialisations and potential future economic role and direction for growth.

This study is underpinned by an *Economic Baseline Study* and *Economic Development Study* prepared by Arup between 2017 and 2021 to support the preparation of the Macquarie Park masterplan (draft April 2021) and as such, key opportunities and barriers summarised below are considered in context of wider findings of these reports, and as aligned with the desired objectives of the Masterplan³⁹.

Table 6: Macquarie Park as an innovation district, opportunities and barriers

| Innovation district success factors | Opportunities | Barriers |
|---|---|--|
| Talent and technology  | <ul style="list-style-type: none"> • Leverage the strong knowledge intensive innovation sector which has seen consistent growth – for example, pharmaceuticals, high tech, computing and technology and electronics with employers such as Johnson & Johnson, Microsoft, Sony, Optus, Cochlear and Foxtel. • Macquarie Park has access to a large, qualified labour pool as part of the Eastern Economic Corridor which contains close to one-third of Greater Sydney’s jobs. • Leverage the number of strong existing innovation cultivators and anchors, such as Macquarie University, the Hospital and Macquarie University Incubator. | <ul style="list-style-type: none"> • Macquarie Park’s sectors could be diversified to add economic resilience – a stronger mix of sectors could ensure there is not susceptibility of Macquarie Park to industry specific shocks and stresses. • Small representation of small and medium sized entrepreneurs – Macquarie Park accounts for a smaller share of SMEs when compared to Greater Sydney and Australia. SMEs play an important role in growing jobs. Macquarie Park could benefit from added diversity in scale of firms. |
| Inclusive growth  | <ul style="list-style-type: none"> • Leverage the global resident base – there is a strong international and cosmopolite dimension of Macquarie Park. • There is an opportunity to engage a growing and young population base – this age group is growing locally, which is positive trend for the local economy. | <ul style="list-style-type: none"> • Affordability poses a barrier to increasing employment diversity in Macquarie Park – with a larger proportion of residents who rent are in mortgage stress compared to the NSW average of 13%. • Lack of diversity in occupation – professionals account for the large majority of residents, with less managers and clerical and administrative workers in Macquarie Park compared to the City of Ryde and Greater Sydney. |

| Innovation district success factors | Opportunities | Barriers |
|---|---|---|
| Leadership  | <ul style="list-style-type: none"> • Combined government private sector leadership – there are a number of linkages between the City of Ryde and MPID for example, as well as connecting internationally with other innovation districts (for example through MIT REAP). | <ul style="list-style-type: none"> • Unclear leadership model - there are various institutions involved in setting the area objectives including City of Ryde, MPID and NSW State Government. While there is collective agreement as to the innovation focus of Macquarie Park, the individual roles, and responsibilities for each stakeholder on delivery has not clearly defined. |
| Vision  | <ul style="list-style-type: none"> • Recognised as a strategic employment centre by NSW Government - The State Government recognises Macquarie Park as a key health and education precinct. • Branding as an innovation district – the City of Ryde has helped to promote the area as an innovation district. | <ul style="list-style-type: none"> • There is no agreed vision for Macquarie Park - the vision and objectives for Macquarie Park as an innovation district have not been established. |
| Access to capital  | <ul style="list-style-type: none"> • Emerging structures and networks in place to widen access to venture capital / angel investment driven by Macquarie University and MPID - the Macquarie University Incubator and collaboration hubs have a platform in establishing Macquarie Park as an innovation district. MPID also participated in the MIT Regional Entrepreneurship Acceleration Program (MIT REAP) which is a program targeted at accelerating innovation activities including access to capital. • Structured approaches to supporting business growth and inward investment in Innovation District driven by the MPID and the City of Ryde - collaborative spaces, start up support programs and industry summits are all important ways to steward the innovation network. | <ul style="list-style-type: none"> • There needs to be greater emphasis on growing the scale and depth of capital in Macquarie Park – the Macquarie university incubator is an important asset but is one of the smaller incubators in Sydney. • The place-based infrastructure needs to evolve and requires ongoing funding - NSW Government / or MPID could consider fiscal mechanisms to capture local increases in development values and local taxes to provide a revenue stream to reinvest in infrastructure within Macquarie Park. • Need for networks to support business growth – support and build the public-private sector collaboration to build the right type of business space supporting business growth, particularly from SMEs. |

| Innovation district success factors | Opportunities | Barriers |
|--|---|---|
| Quality of place  | <ul style="list-style-type: none"> • Macquarie Park is seeing a growing mix of uses, opening the door to becoming a 18/7 neighbourhood • Increased vibrancy – The residential population has grown by 27% between 2011 and 2016. • Increased connectivity through additional transportation capacity – the Sydney Metro West project is forecasted to increase the capacity of the line running through Macquarie Park by approximately 7,000 people per hour by 2041. • Macquarie Park has unique access to the natural landscape - Residents, workers and students in Macquarie Park benefit from their proximity to Lane Cove National Park and natural settings within the Macquarie University campus. This is a major point of difference in Macquarie Park relative to other employment centres in Sydney. | <ul style="list-style-type: none"> • There is lack of flexible and affordable space to cater to the full array of innovation sector firms – where commercial office spaces within Macquarie Park have been developed to accommodate large scale corporate users, with a severe lack of affordable space for SMEs. • Lack of density - whilst some organisations within Macquarie Park seek the ‘campus’ style layout, the low- density physical layout is currently not dense enough for close concentrations of people, with the precinct lacking in energy and a buzz from low footfall. • Absence of amenities and identity limits attractiveness for workers and residents - there is a lack of leisure spaces, experimental and temporary sites that can create casual interactions and collaboration. One of the only major visitor attractors to Macquarie Park is the retail offering at Macquarie Centre on Herring Road. • Poor transportation options and road congestion make Macquarie Park an auto-centric environment with local car congestion being significant and a growing problem, with long delays and journey times during peak periods. |

5 Recommendations

Drawing from the findings set out in this study, the following recommendations are structured to inform the GSC and DPIE's development of the "vision" and "big moves" for Macquarie Park within the draft Place Strategy, and to help to set the direction for the planning framework in achieving this vision, including key objectives, planning priorities and actions to realise the potential future prime economic role /direction for the Macquarie Park innovation district, as aligned with the vision and desired objectives of the Masterplan⁵⁴.

5.1 Vision

A growing home to innovative world class businesses, research, and education in a unique nature setting.

A growing home to world class businesses, research and education, Macquarie Park will be competitive and resilient strengthening its role within Sydney and Australia's future economy.

It will be a place for people; characterised by its connectivity and the unique setting of Wallumattagal Country – a place of rivers and fertile wetlands with a deep history of learning, trade and culture.

It will be a place that sparks ideas and fosters creativity through strong interconnected relationships between people, education and industry and a renewed connection to Country.⁵⁵

5.2 Key moves

- **Key Move 1:** Support skills development to build resilience to external change (i.e. economic change, technological advances), with a focus on cutting-edge technologies and digital infrastructure.
- **Key Move 2:** Foster a strong collaborative relationship between government, local community, industry and investors to expand and broaden opportunities for a diverse range of people to work, live and play in Macquarie Park.
- **Key Move 3:** Develop a strong, consistent senior leadership team with clearly defined roles, to provide a coordinated and collaborative vision for Macquarie Park's future.
- **Key Move 4:** Develop a cohesive, clear vision for Macquarie Park outlining a unique value proposition to support both inward and outward investment.
- **Key Move 5:** Focus on growing the scale and depth of capital in Macquarie Park.
- **Key Move 6:** Deliver a range of social and transport infrastructure and services to support community diversity and wellbeing, enhancing the appeal and competitiveness of Macquarie Park for a range of users including residents, students, workers and visitors.





⁵⁴ Draft Macquarie Park Masterplan, 2021

⁵⁵ Draft Macquarie Park Masterplan, 2021





5.3 Actions

The following actions are recommended for the evolution of Macquarie Park as a successful innovation district, supporting growth of the existing economic structure and driving private investment consistent with the direction of the draft Masterplan.



Key move 1: Support skills development to build resilience to external change (i.e. economic change, technological advances), with a focus on cutting-edge technologies and digital infrastructure.



| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|--|---|--|---------------------------------------|---|
| A1.1 Invest in digital infrastructure and technology across Macquarie Park to create a high-quality platform for innovative firms and strengthen its networking assets | NSW Government should investigate ways to lower network costs, expand superfast access to SMEs in Macquarie Park. Key to Macquarie Parks ‘brand’ is science and technology. Given the specialisation of digital and science in Macquarie Park, quality physical and digital infrastructure is essential. Providing fast, reliable, and high bandwidth digital infrastructure and access to advanced technology and equipment will support innovation activities. | NSW Government, City of Ryde | Medium term |   |
| A1.2 Develop a purpose-built building in a strategic location within the commercial core which provides curated, affordable and agile office space for new and innovative enterprises | Incubators and start up or scale up space plays an important role in creating a thriving eco-system and business environment. The creation of a multi-use building that provides an entry level flexible space for new enterprises could act as a catalyst for Macquarie Park’s development as an Innovation District, helping to attract SMEs, well-established co-working space providers, such as WeWork or Hub Australia and support a diverse array of businesses across industries. | DPIE, City of Ryde, INSW, Investment NSW | Short to Medium term catalyst project |   |
| Relevant innovation districts: In Kendall Square, MIT and Cambridge Innovation Centre provide affordable spaces and flexible terms for incubators, allowing thousands of start-ups in bioscience and life sciences to co-exist with major science corporation and research institutions. These firms are able to access mentorship, start-up capital, event programming, and various types of office space that encourage their growth. | | | | |

Key move 2: Foster a strong collaborative relationship between government, local community, industry and investors to expand and broaden opportunities for a diverse range of people to work, live and play in Macquarie Park.




| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|---|--|--|---|---|
| A2.1 Engage the private sector actively in events and programme development | Develop a structured programme and events to encourage collaboration and actively engage the private sector. | MPID | Short term / to be scaled up over the medium term |   |
| A2.2 Promote entrepreneurship and provide opportunities for SMEs to increase their exposure to anchor institutions within Macquarie Park | <p>The NSW Government or Council could provide further training, mentorship, advisory support and grants to entrepreneurs in a broader range of targeted sectors to grow and scale SMEs (arts, digital, advanced manufacturing).</p> <p>The Incubator currently run several training programs, clinics and events, and offer hot desks for temporary uses and co-working desks for start-ups and entrepreneurs, funded by the Boosting Business Innovation Program. There is an opportunity for deeper research-industry collaboration in the future by expanding the scope of this program.</p> | <p>The role here could be for the MPID as a facilitator or joint venture collaborator with local firms. This could increase the chances of success for resident SME and entrepreneurs and keep bigger tenants engaged.</p> <p>Procurement supply chains – work with major employers to ‘buy local’ which means sourcing services and products from SMEs within Macquarie Park where available.</p> | Short term |   |
| Relevant innovation districts: “Right-level” collaboration with the right stakeholder has been instrumental to the evolution of the Westmead precinct to date, with precinct stakeholders forming the Westmead Alliance to create a shared vision and advocate for the interest of the precinct. The entrepreneurial culture is also supported through the Westmead Research Hub, which includes a collaboration of five organisations with expertise in medical research, health and education. | | | | |

Key move 3: Develop a strong, consistent senior leadership team with clearly defined roles, to provide a coordinated and collaborative vision for Macquarie Park's future.

| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|--|--|---|--|---|
| A3.1 Develop a high calibre dedicated team | <p>Develop a strong, consistent senior leadership, supported by a high calibre dedicated team to bring together decision-makers and leaders from anchor organisations and sectors to cooperate formally on the design, delivery, investment and promotion of Macquarie Park.</p> <p>This should involve MPID and members from the MIT REAP Team, and be a fully resourced and funded team with an identified leader / champion for investment attraction, branding, programming and curation of the development and evolution of 'place', including coordination with investment in the urban realm.</p> | MPID, MIT REAP Team, DPIE, GSC, City of Ryde, Investment NSW and others | Short term |  |
| A3.2 Promote outwards links (leveraging the Hearing Hub and medical research facilities) including local, regional and international networks to further develop Macquarie Park | The MPID, Macquarie University Incubator and the Macquarie Hospital are working with private sector bringing benefits to all parties but in disjointed ways. There is a need to further build visibility and drive opportunities for collaborative work with organisations outside of Macquarie Park. | The MPID should be expanded to promote, attract and secure more of these partnerships in a targeted way. This could involve establishing a governance structure and decision-making board focusing on engagement. | Short term / to be scaled up over medium term when the innovation district vision is clearly defined |  |






| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|--|--|------------------------|------------|---|
| A3.3 Develop a clear, governance structure | The realisation of an innovation district in Macquarie Park will require a tailored governance approach, where the successful delivery of the masterplan and associated actions will only be achieved through coordinated area development with dedicated actors from the public sector (GSC, DPIE, Investment NSW, TfNSW), community (Indigenous Governance Committee), third sector (MPID) and private sectors working together. | State Government (GSC) | Short term |   |
| Relevant innovation districts: Regionally to the Wellcome Genome Campus, the Government has announced plans for the creation of the Oxford-Cambridge Arc. As an initial step, a growth body will be launched to provide economic leadership and work with local partners. The inclusion of the leadership body as a first step demonstrates the importance of consistent senior leadership in driving forth a vision. | | | | |

Key move 4: Develop a cohesive, clear vision for Macquarie Park outlining a unique value proposition to support both inward and outward investment.






| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|--|--|---|----------------------|---|
| A4.1 Develop a clear vision | Macquarie Park could benefit from a clear, well-defined vision for the future. There is an opportunity to work with key stakeholders to develop a clear vision and plan that can be flexible over time. This should also consider the future prime economic role and direction for Macquarie Park, drawing upon existing visions as developed by the City of Ryde. ⁴⁰ | DPIE, GSC, City of Ryde | Short term |  |
| A4.2 Promote innovation outwards, including using Macquarie Park as a test bed to promote innovation and trial of new technologies | Develop an innovation and investment strategy and brand that connects with Sydney's innovation activities and the wider national strategy. Provide an increased number of incubator spaces, flexible workspaces and advertising opportunities to interested parties from all industries: business, technology, arts, culture and science. This could involve using Macquarie Park as a test bed to promote innovation and trial of new technologies. | Private sector, RCG, MPID, City of Ryde, Investment NSW | Short to medium term |   |
| Relevant innovation district: Tech Central has a clear vision, leveraging its existing strengths as a creative and technology hub to be a place where start-ups, world-class universities and research institutions, high-tech giants and the community collaborate to solve problems, socialise and spark ideas that change the world and support the jobs of the future. Underpinned by high-quality infrastructure, it will be an innovation and technology precinct, attracting high-skilled workers to Sydney. | | | | |






⁴⁰ The City of Ryde has developed a tailored vision for Macquarie Park (4.2.1 Vision) that “Macquarie Park will mature into a premium location for globally competitive business with strong links to the university and research institutions. It will become a vibrant, accessible CBD that balances work, recreation and entertainment. Macquarie Park will be characterised by a high-quality, well-designed, safe and liveable environment that reflects the natural setting, with three accessible and vibrant train station areas providing focal points. Housing will be focused in the Urban Activation Precincts (North Ryde Station Precinct and Macquarie University Station Precinct) providing opportunities for people to live and work in the area with supporting services and events that will bring vibrancy to the area beyond office hours” – City of Ryde, Local Strategic Planning Statement, 2014





Key move 5: Focus on growing the scale and depth of capital in Macquarie Park.

| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|--|---|---|--|---|
| A5.1 Support business growth and inward investment through the provision of incentives to create live/work opportunities for entrepreneurs | Possible programs could include a Live/work residency program where people working in an innovation or arts field are provided a 18-month affordable apartment lease within areas of Macquarie Park. This would be similar to the City of Sydney live/work program in Waterloo for example, where people working in a creative field can apply for an 18-month lease for \$200 per week in a 1-bedroom apartment. Encouraging creative industries into the precinct could also help to stimulate off-peak activity such as arts markets on weekends. | State Government (DPIE), Create NSW, GSC, Ryde Coordination Group, City of Ryde | Medium term / investigations to commence in the short term |   |
| A5.2 Develop funding strategy for investments within Macquarie Park | Explore funding options to deliver place-based and non place-based interventions within Macquarie Park. Include exploration of value capture mechanisms. This could be in the form of special infrastructure contributions or other infrastructure funding mechanisms. | DPIE, TfNSW, City of Ryde | Medium term / investigations to commence in the short term |   |
| A5.3 Create a plan to intensify venture capital presence | The presence of a strong venture capital community can drive growth and accelerate commercialisation, creating opportunities for start-ups within Macquarie Park. Convening venture firms without a presence in the area to understand their barriers and motivations can be a first step. | MPID, Investment NSW | Medium term / investigations to commence in the short term |  |
| Relevant innovation district: A large presence of venture capital in Kendall Square has successfully facilitated commercialisation of ideas and become a key component of the innovation ecosystem, making Massachusetts the third highest state for venture capital funding. Local stakeholders have played significant roles in scaling up access to funding, with institutions like Cambridge Innovation Center having raised over \$1.4 billion in capital for start-ups in its incubation. | | | | |



Key move 6: Deliver a range of social and transport infrastructure and services to support community diversity and wellbeing, enhancing the appeal and competitiveness of Macquarie Park for a range of users including residents, students, workers and visitors.

| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|--|--|------------------------------|-------------|---|
| A6.1 Create high-quality pedestrian environment and public domain works | Investment in urban realm will help Macquarie Park better compete with other centres such as the CBD for both talent and tenants. Improvements should be prioritised based on delivering economic benefit. Of critical need to create direct routes between the metro station and destinations throughout the precinct (to support the 30-minute city concept). The pedestrian experience can be enhanced by providing more pedestrian crossings, and prioritisation of slow and low movements. Reducing the physical between the University / Hospital and opportunities for a diversity of small and large businesses to thrive in the commercial core is important. | DPIE, TfNSW, City of Ryde | Short term |   |
| A6.2 Develop an 18-hour economy strategy | The development of an 18-hour economy strategy will help to activate the precinct and ensure that visitors, workers, and residents have multiple options for activities after 5PM. The introduction of temporal differentiation to spaces throughout the day could activate an underutilised plaza for example at night with temporary uses and activities. | City of Ryde | Medium term |   |
| A6.3 Leverage off the National Park and other natural assets | Competing centres such as the CBD offer high amenity (i.e. parks, water, more public transport options, night economy). If the value proposition of Macquarie Park is not compelling, it will not attract or retain enough high value key anchors and supporting uses and attract more large-scale firms. | DPIE, NSW NPWS, City of Ryde | Short term |  |

| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|---|---|--------------------|---------------------------|---|
| A6.4 Develop an investment fund for programmed public spaces | <p>This could involve the development of funded design competitions, public artworks, cultural events, pedestrian public domain improvements along Waterloo Road.</p> <p>Use sponsorships and value capture mechanisms including levies to develop a revolving pot to deliver high quality public realm.</p> | DPIE, City of Ryde | Medium term |   |
| A6.5 Provide social infrastructure, including open space and leisure amenity for children and young people | <p>Consider the needs of the growing communities within and around Macquarie Park, providing new social infrastructure like library branches and community halls, that can activate the area at all times of the day.</p> <p>Macquarie Park will need to be a precinct for people. It will need services and infrastructure to meet communities' changing needs including demographic shifts in older people and younger people. It will need to optimise the use of available public land for social infrastructure.</p> | DPIE, City of Ryde | Short to medium term |   |
| A6.6 Provide high- quality green infrastructure including creek restoration | <p>Macquarie Park could be an exemplar resilient zero carbon energy economy underpinned by high quality green infrastructure. Supporting this could include provision of high-quality green infrastructure in the public realm, development of an energy performance standard to raise minimum standards, and ensure buildings perform as designed.</p> | DPIE, City of Ryde | Short term to medium term |  |

| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|---|--|---------------------------|---|---|
| A6.7 Develop an infrastructure priority list for Macquarie Park to shortlist the projects that will deliver the greatest economic impact | <ul style="list-style-type: none"> Reduced joblessness (ability to engage local workers) Ability to attract inward investment Increased open space for Macquarie Park | DPIE, TfNSW, City of Ryde | Short term to medium term |   |
| A6.8 Develop business case for transit links to Parramatta and Epping to meet long term demand and reduce car mode share | Longer term this project would support car mode share reduction projects and secure agglomeration and productivity benefits. It would place Macquarie Park at the centre of a networked city connecting to the west and east. | DPIE, TfNSW | Long term with infrastructure planning activities (including business cases) to commence in the medium term |  |
| A6.9 Consider changes to the planning controls to encourage mixed-use | Changes to Planning Controls in the City of Ryde, outside of the commercial core (as defined in the draft Masterplan 2021) ⁵⁶ , would allow for and encourage more mixed-use development, providing a residential development component, encouraging and helping to stimulate activity during off-peak times at the precinct. | City of Ryde, DPIE | Short term to medium term |  |

⁵⁶ Draft Macquarie Park Masterplan, 2021
01 | Final | 14 May 2021 | Arup

| Action | Importance and alignment | Responsibilities | Timeframe | Success factor |
|--|--|--------------------|----------------------|---|
| A6.10 Encourage an alternative built form in key areas which activates the ground plane, delivers a centre-based typology, and creates places and spaces for community and worker interaction | Neighbourhood and precinct planning for targeted areas in Macquarie Park could create new centres (activity hubs) and transform existing corridors into vibrant multi-purpose areas. This could be facilitated through neighbourhood masterplans and area specific development controls plans. Planning control changes may also be required to encourage redevelopment opportunities that support increased 'urban vibrancy' to support future economic growth. | City of Ryde, DPIE | Short to medium term |   |
| Relevant innovation district: In Kendall Square, MIT is investing over \$1 billion in the Kendall Square Initiative, a series of placemaking measures and mixed-use development, including additional 1.8 million square feet in housing and office space. There has also been continued streetscape improvements in the last few years including public space development, and support for food trucks, public art, and street programming. In the Knowledge Quarter Liverpool example, the management team created a new team fully dedicated to “place” development, with quality public realm development at its core, to improve people’s wellbeing. | | | | |

Appendix A - Innovation district case studies

Case Study 1: Knowledge Quarter Liverpool and its instrumental leadership team and consistent messaging | Liverpool, UK

Relevance to Macquarie Park's success factors:

- ● ● Talent and Technology
- ● ● Inclusive Growth
- ● ● Leadership
- ● ● Vision
- ● ● Access to Capital
- ● ● Quality of Place



History:

Liverpool's assets and strengths in science and health were little known beyond the boundaries of the Knowledge Quarter. This is why a repositioning strategy was initiated in 2016 to elevate Liverpool at the forefront of global innovation, ultimately growing the city economy and creating new employment. In 2021, KQ Liverpool launched its 5-year vision to power Liverpool's innovation-led economic recovery plan, a strategic plan driving forward mainly health, life sciences and tech innovation sectors.

Context and purpose:

As a team, Knowledge Quarter Liverpool is defining, creating and promoting the place and became the **single point of contact** for investors. It built a consistent messaging fostering clustering and knowledge transfer.

How it was delivered / operational practice:

KQ Liverpool brings together the city's key partners to collaborate in a creative environment – making the whole greater than the sum of its parts – with the capacity to respond quickly to opportunities. To illustrate this collaboration, it set up several programmes/initiatives including:

- The Liverpool Knowledge Quarter Sustainability Network (KQSN) identifying projects that support: energy, green infrastructures, local food growing, health, travel and low-carbon circular economy
- KQ Base: soft-landing programme which aims to de-risk inward investment for those companies looking to expand their business presence to the UK market for the first time.
- KQ Reward: Community Referral Scheme providing tiered rewards for successful introductions of new customers to KQ Liverpool.

On top of these initiatives KQ Liverpool has well identified and mapped the different “spaces” within the KQ as well as the different buildings with their unique specificities. All the information is available on their website, making it their best communicating tool.

Specificity of KQ Liverpool:

KQ Liverpool has benefited from a strong consistent senior leadership made of universities, city councils and corporate participants. This was instrumental in making the project happen and be successful in attracting relevant occupiers. The development team is often referred as being brilliant and agile at business development.

“Place-making” and efficient communication was also key in driving success of the KQ Liverpool, with well identified anchor buildings such as Liverpool Science Park and specific and specific interest to public-realm and its associated social benefits to the community.

Impact evaluated or intended impact:

The ongoing success of KQ Liverpool has in turn led to the creation of Sciontec, a commercial partnership between Liverpool City Council, the University of Liverpool, Liverpool John Moores University and Bruntwood SciTech, with plans to further develop Paddington Village, expand Liverpool Science Park, and create a tech cluster close to Sensor City at Copperas Hill in Upper Central. As Sciontec Liverpool takes forward much of the KQ Liverpool property development mantle, KQ Liverpool will itself focus even more on place making, improving people's lives and driving sustainable inclusive growth, through partnership and collaboration.

What can Macquarie Park learn from this case study:

[Leadership and Quality of Place] Consistent senior leadership with agile governance to meet growth needs of the KQ

The success of the KQ has driven KQ Liverpool management team to split and create a new team fully dedicated to property development with anchor buildings incl. Liverpool Science Park while the other one focuses on “place” development, with quality public realm development at its core, improving people's lives.

[Inclusive Growth] “Right-level” collaboration allowed for brilliant business development

Collaboration with the right stakeholder was instrumental to the success of the KQ in attracting new occupiers. Indeed, as outlined in the mission statement, KQ wants to “make the whole greater than the sum of its parts” and therefore incentivised organisations already in the KQ to participate to this “whole” but refereeing new organisations that would fit.

website

Knowledge Quarter Liverpool. Liverpool launch 2025 vision. KQ Liverpool website. 2020

Case Study 2: Leeds Innovation District mission-oriented approach to innovation and vision in diverse economy embodied by two flagship buildings | Leeds, UK

Relevance to Macquarie Park's success factors:

- ● ● Talent and Technology
- ● ● Inclusive Growth
- ● ● Leadership
- ● ● Vision
- ● ● Access to Capital
- ● ● Quality of Place



History and Context:

Leeds's Innovation District was set up on 2016 and built on the site already existing strengths, i.e. flourishing area of research, education, government, and enterprise. If few priority sectors were identified (health and life sciences, creative and digital, and advanced infrastructure and urban services), the vision for the new area highlighted the diversity of its economy.

Purpose:

Leeds Innovation District is about developing an exemplar for **high quality, sustainable, inclusive and productive urban development** by providing a range of business spaces and supporting commercial, conferencing, hotel, and residential development, linked by high quality public spaces and leading-edge physical, digital and energy infrastructures.

What's next: Leeds Innovation District mission statement: "By 2025, Leeds will be recognised as a world class location for innovation... The District is focused on delivering higher value knowledge-based activities and business applications with the potential for direct and positive benefits on productivity for Leeds and the wider city region".

How it was delivered / operational practice:

In order to realise maximum benefits and to provide a comprehensive and coherent operation, Leeds Innovation District is composed of three core layers:

- **Organisational:** with the creation of a single point of governance (LID Board Team) in charge of developing and delivering core strategic programmes, engage in new partnerships and enable an efficient "strategy to deliver" system and a single point of management (LID Management Team)
- **Digital:** efficient collection and dissemination of information and data to constituent members and the general public through a digital hub
- **Physical:** revitalised urban connective tissue to better connect key institutions and prioritise pedestrians wherever possible

Specificity of Leeds Innovation District:

Leeds Innovation District benefited from having a clear and strong vision and commitment from senior stakeholders to drive inclusive growth. It built a mission-oriented approach to innovation valuing its diverse economy and cross-cutting themes ultimately driving a culture of collaboration among main stakeholders in the area (inc. university of Leeds). In term of place-making and readability of the space, it went for a 2-stage approach to flagship buildings development:

- With Nexus as the first "innovation" cornerstone, a space for 60 cross-cutting technology-led businesses
- Then, Leeds General Infirmary (LGI), which is under a £250m development scheme for the Leeds Children's Hospital, and an extensive expansion of several departments including academic and research facilities

Impact evaluated or intended impact:

The Innovation District will help drive the economy of Leeds and the Leeds City Region by:

- Enhancing the ability to commercialise knowledge produced by local universities
- Helping retain and grow start-ups and scale-ups spun out from local universities through key account management, business development, access to finance, events and meet-ups
- Driving greater collaboration between industry, researchers, clinicians and public sector leaders
- Attracting new inward investment to the city
- Boosting growth of priority sectors
- Attracting a wide range of developers and investment

What can Macquarie Park learn from this case study:

[Inclusive Growth] Building the Innovation District was a coordination and communication exercise
Consistent and committed senior stakeholder allowed for efficient coordination and collaboration.

[Vision] Priority sectors identified while retaining flexibility to exploit wider opportunities

Recognising that Leeds is a broad-based economy and its universities have a wide range of capabilities, the innovation district encouraged flexible and agile strategy to attract new enterprises on an opportunity-based basis.

[Quality of Place] Easily readable buildings (i.e. incubator or workplace for innovative organisations) can embody an innovation district strategy

Buildings and place can act as the "cornerstone" of an innovation strategy, supporting and embodying strategies.

Reference:

Leeds Innovation District, *Leeds Growth Strategy*, 2017

Case Study 3: Kendall Square pipeline of investable businesses | Cambridge, Massachusetts, USA

Relevance to Macquarie

Park's success factors:

- ● ● Talent and Technology
- ● ● Inclusive Growth
- ● ● Leadership
- ● ● Vision
- ● ● Access to Capital
- ● ● Quality of Place



History and Context:

In the fall of 2008, a group of Cambridge leaders realized that Kendall had rapidly evolved into something extraordinary and that it was important to think about its future in a more deliberate way. Located on the eastern edge of MIT, Kendall Square is home to more than 450 start-up companies, incl. global tech firms like Amazon, Google and Microsoft, and biotechnology companies like Pfizer, Sanofi and Novartis. Spurred by coordinated development from MIT and private developers, rezoning changes to facilitate mixed-use uses, and strong branding and identity, Kendall Square has become a foremost biotech and IT innovation district.

Purpose:

Kendall Square calls itself: the “most Innovative Square Mile on the Planet” thanks to the gathering of some of the most innovative organisations in the world and efficient collaboration among them to drive the future of the area. It also emphasises that Kendall is more than a place — it is a perspective. It detaches itself from the place and highlight that collaboration is a perspective rather than something that is only place-based.

What's next: The area has a density of commercial research facilities, informal spaces and public realm, and nearly \$2 billion in planned investments for additional mixed-use development.

How it was delivered / operational practice:

Collaboration is delivered through Kendall Square Association, that connects organisations in the area, to discuss the Kendall Innovation Ecosystem's unique characteristics, how to improve, promote and connect it and drive these ideas forward.

It also sets up some unique strands of work and task forces based on timely needs. At the moment, Kendall Square association and partners are looking at the future of Mobility, how to improve diversity and inclusivity through professional development programmes and a Future of (how we) work task force was set up addressing topics including transportation, workplace safety, open space, and supporting small businesses.

Specificity of Kendall Square:

Benefiting from its extraordinary location close to the MIT and some of the most innovative tech and biotech organisation, Kendall Square has decided not to focus itself in attracting capital (e.g. VCs) but to focus on having good investable businesses in its pipeline. To do so, it puts emphasis on the value of collaboration between and within businesses.

Kendall Square Association is also an exemplar of how collaboration between over 150 organisations from major employers to local non-profit can drive positive change in a place.

Impact evaluated or intended impact:

This year, very much impacted by covid-19, the Kendall Square Association and community has leaned into issues around inclusion, striven to support struggling businesses, and developed programs to overcome the loneliness and anxiety that have followed sudden changes in life and work.

In terms of actual outcome, bellow are few initiatives that the association has delivered this year:

- Build connective tissue in Kendall. From new employees to senior leaders, we help our members connect across Kendall Square to build critical collaborations and partnerships.
- Champion change. From Diversity Equity and Inclusion to transportation, KSA empowers members to tackle issues that matter.
- Live up to our motto – The Future Lives Here. KSA collects, shapes, and distributes our community success stories to promote Kendall's ground-breaking work globally.

What can Macquarie Park learn from this case study:

[Access to Capital] Having a good pipeline of investable businesses will attract capital naturally

Readily investable businesses attract capital and not the other way around.

[Inclusive growth] Robust organisations association with agile and flexible priorities based on timely needs drives success

Organisations associations within Innovation districts and their priorities and initiatives reflect the level of innovation and commitment to make things better that the whole area is committed to. It is the best communication and business development tool to attract new occupiers.

References:

Kendall Square website
M. Blanding. *The Past and Future of Kendall Square*. MIT Technology Review, 2015
Z. Winn. *Annual KSA meeting envisions Kendall Square coming back “better than ever”*. MIT News on campus around the world, 2021

Case Study 4: Queen Elizabeth Olympic Park as an Inclusive Innovation District and Urban Testbed | London, UK

Relevance to Macquarie

Park's success factors:

- ● ● Talent and Technology
- ● ● Inclusive Growth
- ● ● Leadership
- ● ● Vision
- ● ● Access to Capital
- ● ● Quality of Place



History and Context:

Queen Elizabeth Olympic Park (QEOP) is located in East London and situated adjacent to the Stratford City Development.

Eight years on from the success of the 2012 Games, Queen Elizabeth Olympic Park is a thriving cluster of global names in business, education, leisure, culture and technology combined in an ecosystem of start-ups and creative industries.

What's next: 40,000 jobs by 2025 and 100,000 people living within LLDC administrative boundaries by 2036 and commitment to continue hosting testbed activities aligned with their latest mission statement.

Purpose:

This ecosystem is shaped by an overarching commitment to inclusive growth under a guiding star of '**purposeful collaboration**', resulting in a new model of an Inclusive Innovation District coordinated by the London Legacy Development Corporation (LLDC).

As an innovation district since 2020, now building its vision and objectives (~2021), QEOP is committed to "*Shape an inclusive innovation district*".

How it was / will it be delivered - operational practice:

Core pillars of QEOP activities as an Innovation District:

- Fair and good work
- Good quality sustainable careers
- Demand-led employment and skills programmes (East Works)
- Education and youth engagement via youth board and outreach programmes
- Mission-led innovation and testbed activities
- Communities shaping research questions with "Park Champions" among users (residents, workers or visitors) and Park Panel resident steering group
- Network diversity with diverse talent pipeline and organisations
- Environmental sustainability commitment to protect the Park natural assets

Specificity of QEOP:

QEOP welcomes testbed activities since several years now. Its rationales/logics to do so are:

- Testbeds as an enabler of the mayor's good growth Agenda and tackling the UK's Grand Challenges
- Testbeds as a resilience solution
- Testbeds after covid-19: build back better

Targeted sectors for testbed activities include: AVs, active travel, EV charging, micromobility, circular economy, cleantech, healthcare, community research, buildings and urban forms, sport. Plexal and SMLL leading the operational side of testbeds.

Impact evaluated or intended impact:

Innovation districts are platform / cluster that can create:

- Hotspots for research and development
- Intensive commercialisation of research
- Increased rate of business start ups
- Increased rate of business growth
- Faster route to product / service to market
- Creating a critical mass and competitive adv.
- Foster mixed-used developments – better placemaking
- Encourages shared resources
- Promote a joined-up place-based story
- Support inward investment
- Increase global profile
- Drive positive public – private – academic partnerships

What can Macquarie Park learn from this case study:

[Inclusive Growth] Linking innovative growth with inclusive growth as a mission-based statement

Despite valuable benefits, innovation districts are criticised globally because of their exclusivity. Making it collaborative and inclusive can unlock valuable direct and indirect benefits, encouraging knowledge clusters to connect with local communities.

[Leadership] LLDC has been instrumental in driving success of QEOP as a testbed and soon to be an Innovation District

A team dedicated to innovation at LLDC has been in charge of testbed activities and visions for QEOP.

[Talent and Technology] Testbed activities as a resilient activity

Welcoming testbed activities both drives the innovation strategy forward and supports skills development to build resilience to external change (i.e technological change).

References:

London Legacy Development Corporation. *QEOP: shaping an inclusive innovation district*, 2020
 NLA, *QEOP inclusive Innovation District*, 2020
 R. Unger, I. Stanley, M. Gabriel, G. Mulgan. *Imagination unleashed: democratising the knowledge economy*, Nesta, 2019

Appendix B - Data and sources

This Study has been prepared by Arup and summarises findings from data and research from Australia and global, along with work undertaken from 2016 to 2021 to support the preparation of the Baseline Economic Analysis Report and Economic Development Study as part of the Macquarie Park Masterplan.

The report draws on the following primary and secondary data and information sources, along with information received from the GSC.

Key Sources

- Australian Bureau of Statistics (ABS), Census for Population and Housing, 2016
- Australian Bureau of Statistics (ABS), Counts of Australian Businesses Cat: 8165.0, 2018
- Brookings Institute, The Rise of Innovation Districts: A New Geography of Innovation in America, 2014
- Department of Jobs and Small Businesses, Employment Projections, 2019
- Greater Sydney Commission (GSC), Metropolis of Three Cities, 2018
- Greater Sydney Commission (GSC), North District Plan 2056, 2018
- Kendall Square, Kendall Square, 2021
- KQ Liverpool, KQ Liverpool Launch 2025 Vision, 2020
- Leeds Innovation District, Leeds Growth Strategy, 2017
- Macquarie University, Macquarie University Annual Report, 2019
- NSW Government, NSW Advanced Manufacturing Industry Development Strategy, 2019
- NSW Treasury, Intergenerational Report, 2016
- NSW Treasury, NSW Innovation Precincts, 2018
- NSW Treasury, NSW 2040 Economic Blueprint, 2019
- UK Government, Queen Elizabeth Olympic Park: Shaping an inclusive innovation district, 2020

Appendix C - Businesses at Macquarie Park




| Category ⁵⁷ | Business |
|----------------------------|-------------------------------|
| Telecommunications | Optus |
| | Foxtel |
| | Ericsson |
| | TPG |
| Medical and Pharmaceutical | Sonic Health |
| | Lavery Pathology |
| | Johnson & Johnson |
| | Cochlear |
| | Astra Zeneca |
| | Novartis |
| | Sanofi |
| | MSD |
| | Medtronic Australasia Pty Ltd |
| | Boehringer Ingelheim |
| | Smith & Nephew |
| Education | Macquarie University |
| | Macquarie University Hospital |
| | MGSM |
| | Morling College |
| High Tech | Oracle |
| | BOC Gases |
| | Siemens |
| | 3M |
| | CSIRO |
| | Raytheon |
| | Komatsu Australia |
| | Dupont |
| | Schenk |
| | BAE Systems |





⁵⁷ Source: As categorised in City of Ryde, Investment Prospectus

| Category ⁵⁸ | Business |
|------------------------|------------------------------|
| Computing | Microsoft |
| | CSC |
| | Honeywell |
| | CA Technologies |
| | Compuware |
| Electronics | Schneider Electric |
| | Fujitsu |
| | Toshiba |
| | Canon |
| | Fuji Xerox |
| | Konica Minolta |
| | Philips |
| | Panasonic |
| | Epson |
| | Kyocera |
| | Seiko |
| | Brother |
| Food Manufacture | Goodman Fielder |
| | George Weston Foods |
| Other | Macquarie Centre |
| | Aristocrat |
| | Luxottica |
| | Procter and Gamble Australia |
| | Baptist Community Services |
| | Hyundai |
| | Orix |
| | Avaya |
| | Omron |
| | Revlon |
| | Colmar Brunton |

⁵⁸ Source: As categorised in City of Ryde, Investment Prospectus

Appendix D - Tenant profiles by category

| | Tenant | Key facts |
|----------------------------|---|---|
| Telecommunications | Company: Optus  | <ul style="list-style-type: none"> • Employs approx. 6,500 staff • Approx. floorspace: Occupies 84,000 square metres of floorspace across six low-rise buildings set on seven hectares – has several community facilities including medical, gym and childcare • Approx. floorplate: Average 3,000m² - one of the largest single tenant workplaces in Australia • Includes parking for 2,100 vehicles • Moved to Macquarie Park in 2007 |
| Medical and Pharmaceutical | Company: Cochlear  | <ul style="list-style-type: none"> • Employs approx. 700 staff • Approx. floorplate: 4,740sqm • Drawn to Macquarie Park because of their vision to develop and gain from a strong collaboration with the University. • This collaboration has driven the development of the Hearing Hub on University land |
| Education | Company: Macquarie University  | <ul style="list-style-type: none"> • Employs approx. 2,000 staff • Approximately 45,000 students • Site area: 125 hectares • Founded in 1964, as the third university established in the metropolitan area of Sydney |

| | Tenant | Key facts |
|------------------|--|---|
| High Tech | <p>Company: 3M</p>  | <ul style="list-style-type: none"> • Employs approx. 300 staff • Approximate floor plate: 2,100sqm |
| Computing | <p>Company: Microsoft</p>  | <ul style="list-style-type: none"> • Employs approx. 800 staff • Approximate floor plate: 2,700sqm |
| Electronics | <p>Company: Toshiba</p>  | <ul style="list-style-type: none"> • Employs approx. 470 staff • Approximate floor plate: 2,000sqm |
| Food Manufacture | <p>Company: Goodman Fielder</p>  | <ul style="list-style-type: none"> • Employs approx. 500 staff • Approximate floor plate: 1,410sqm • Company headquarters, and manufacture brands such as Meadow Lea, Praise, White Wings, Pampas, Mighty Soft, Helga's and Wonder White |

Appendix E - Comparative commercial office precincts

Geographies of analysis (ABS administrative boundary (SA2)), relative to the location of each commercial office precinct is shown in Table 7 and shown spatially in Figure below.

Table 7: Commercial precincts in Sydney

| Commercial Office Precinct | | ABS Statistical Area 2 (SA2) Geography ⁵⁹ |
|----------------------------|---|--|
| Sydney CBD and surrounds | Sydney CBD (including future Tech Central) | Sydney - Haymarket - The Rocks |
| | Surry Hills (including future Tech Central) | Surry Hills |
| | Pymont - Ultimo (including Campbelltown Collaboration Area) | Pymont - Ultimo |
| | North Sydney (including Harbour CBD) | North Sydney - Lavender Bay |
| Metropolitan Centres | Parramatta CBD | Parramatta - Rosehill |
| | Westmead | Northmead |
| | Macquarie Park | Macquarie Park – Marsfield |
| | Norwest (and future Bella Vista) | Baulkham Hills (West) - Bella Vista |
| | Sydney Olympic Park/ Homebush | Homebush Bay – Silverwater |
| | St Leonards (including Royal Northshore Hospital) | St Leonards - Naremburn |
| | Chatswood | Chatswood (East) - Artarmon |
| | Rhodes | Concord West - North Strathfield |
| | Green Square - Mascot | Ersleville - Alexandria |

⁵⁹ Due of the granularity of the data available, which does not exactly match the perimeter of Commercial parks, but includes Marsfield, small variations in the numbers exist and should be interpreted with caution.



Figure 21: Commercial Office Precincts (Arup, 2021)