

Parramatta North Urban Renewal Economic Impact Assessment

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Executive Summary


Introduction and Background



AEC Group (AEC) has been engaged by UrbanGrowth NSW to prepare an Economic Impact Assessment (the Study) relating to the proposed amendment to the planning framework applying to the study area. The assessment has been undertaken to inform a State Significant Site study (the Study), which is investigating potential amendments of the statutory planning controls applying to the Cumberland and Sports and Leisure Precincts of the PNUR.



Parramatta North Urban Renewal area (PNUR) is located to the west and north-west of the Parramatta CBD, Sydney's second CBD. Parramatta is located in the geographical heart of Sydney and plays a significant role in the Greater Metropolitan area as the economic focal point for Western Sydney. The PNUR is located to the east of the Westmead Health campus, separated by the Parramatta River. The PNUR is also within close proximity to the Rydalmere Education Precinct and transport links.



This Study relates only to the Cumberland and Sports and Leisure precincts in the PNUR.

- The Sports and Leisure Precinct (SLP) is located centrally within the PNUR. The SLP is delineated to the west and south by the meander of the Parramatta River, O'Connell Street to the east and Grose Street to the north.
- The Cumberland Precinct (CP) is the northern most part of the PNUR and is broadly delineated by the meander of the Parramatta River to the west and north, O'Connell Street to the east and Grose Street to the south.

Combined, the two precincts comprise the areas of the PNUR to the east of the Parramatta River and west of O'Connell Street. The lands to the west of the Parramatta River contain Parramatta Park, including Old Government House and Domain.

Land uses and facilities currently located within the SLP include Parramatta Stadium and associated facilities, Parramatta public pool, Parramatta Leagues Club, open space parkland and venue car parking. These built facilities and associated structures occupy predominantly the north eastern two thirds of the precinct. The balance of the precinct, nestled inside the meander of the Parramatta River, is predominantly landscaped open space with some incursion of at grade car parking.

Land uses within the CP include the Cumberland Hospital, the NSW Linen Service, allied health related uses and NGOs and the former Parramatta Gaol. The precinct contains buildings of State and local heritage significance as well as potential Aboriginal archaeological sites. Buildings are dispersed though the precinct serviced by an irregular transport access network and broadly surrounding a central oval. These clusters of buildings are interspersed with vegetation and are framed by an almost continuous band of vegetation framing the eastern bank of the Parramatta River.

The Proposal

The Study has been undertaken to prepare an appropriate suite of planning controls to guide the urban renewal of the area and future development. This has led to an Indicative Layout Plan (ILP) guiding future open space, transport links and building footprints, as well as zoning and height of building controls, which are to be implemented in conjunction with site specific Development Control Plan provisions to guide the fine grain development of the area.

The ILP envisages the creation of a mixed use area within the CP that accommodates new development for housing, employment, cultural and community uses in new buildings and through the adaptation of existing heritage buildings. For the SLP, the ILP envisages the strengthening of the current role of the area as a major sports venue and the introduction of allied retail and commercial uses to support the role of Parramatta Stadium as a major sport and entertainment venue for Parramatta and greater western Sydney.

The Study proposes amendments to the planning framework, including revisions to the development controls that will facilitate a mixed use residential redevelopment of the study area. The proposed amended planning framework will facilitate the lodgement of future development applications for the land in the study area which are anticipated to achieve the following development yields:

Cumberland Precinct

- Approximately 4,100 dwellings.
- Approximately 28,000sqm GFA of adaptive reuse of retained heritage buildings.
- Up to 4,000sqm GFA of retail space.

Sports and Leisure Precinct

- Approximately 34,000sqm GFA of mixed-use (likely to be predominantly commercial).

We understand the development is anticipated to occur over a 15-20 year period. On this basis we have assumed for the purposes of this Study that construction activities across the development would commence in 2015 and continue until 2035.

Retail Impact Assessment

For the purposes of this retail impact assessment, "retail impact" on existing centres is defined to mean the probable reduction in retail turnover at various existing centres resulting from the introduction of new competition in the form of new retail floorspace on the PNUR site.

The modest amount of new retail floorspace proposed for the PNUR site (circa 4,000sqm GFA) results in a geographically small catchment area from which it would expect to draw trade, resulting in a locally based catchment servicing the daily needs of the PNUR population.

This assessment examined the likely current and future catchment of the PNUR site and focuses on *qualitatively* addressing the retail impacts likely to result from the Proposal.

Having established the benchmark capacity metrics, retail demand as a result of the PNUR proposal was estimated at approximately 39,000sqm (bulky and traditional retail demand). 28,500sqm of this demand will relate to 'traditional' retail floorspace typically found in centres (as opposed to bulky goods floorspace) and at least 5,250sqm will relate to supermarket floorspace sufficient to sustain nearly two full-line supermarkets.

On this basis, the provision of a 4,000sqm centre as part of the PNUR site is easily justified in the context of demand growth. It would account for only 10% of total demand growth and 14% of non-bulky goods retail demand growth. The residual demand would be available to support existing and new retail facilities in centres in the surrounding area.

Consequently, there is expected to be minimal adverse impact on existing retail centres, conversely the impact identified to be net positive from the pool of expenditure available for other centres to capture would eventuate.

Economic Impact Assessment

Construction of the PNUR (planned to be developed over a 15 to 20 year period) is estimated to directly inject around \$772.9 million into local businesses in Parramatta LGA, and a further \$846.7 million spent on goods and services provided by businesses located elsewhere in NSW, totalling and estimated \$1.62 billion in capital expenditure over the development period.

This injection is estimated to support around \$755.8 million in gross value added (GVA) activity within the Parramatta LGA economy over the course of 15 to 20 year construction period (including both direct and flow-on activity). In NSW, approximately \$1.3 billion in GVA activity is estimated to be supported in total (inclusive of Parramatta LGA).

An estimated 5,600 FTE jobs for Parramatta residents are estimated to be supported as a result of construction over the 15 to 20 year period (including direct and flow-on impacts), equating to an average of approximately 280 to 375 FTE jobs per annum. In NSW more

than 10,200 FTE jobs are estimated to be supported (inclusive of Parramatta LGA), equating to an average of approximately 510 to 680 FTE jobs per annum.

Table ES.1. Total Economic Activity Supported by the PNUR Project during 15 to 20 Year Construction Period, Parramatta LGA and NSW

Impact	Output (\$M)	Gross Value Added (\$M)	Incomes (\$M)	Employment (FTEs)
Parramatta LGA				
Direct	\$772.9	\$186.5	\$85.5	2,063
Type I Flow-On	\$647.1	\$303.5	\$185.3	1,957
Type II Flow-On	\$460.1	\$265.7	\$114.4	1,577
Total	\$1,880.1	\$755.8	\$385.1	5,597
NSW				
Direct	\$1,619.6	\$401.5	\$188.3	4,388
Type I Flow-On	\$995.9	\$454.4	\$269.3	3,025
Type II Flow-On	\$776.0	\$421.2	\$193.1	2,807
Total	\$3,391.5	\$1,277.1	\$650.7	10,220

Note: Totals may not sum due to rounding.

Source: ABS, (2014), ABS (2013), ABS (2012), NPC, AEC.

Ongoing economic activity associated with the development will be supported through a combination of new commercial/ retail operations on the PNUR site, as well as household expenditure associated with people residing in the 4,100 dwellings developed.

Once fully established and occupied (i.e., whereby all dwellings and commercial space has been developed and is fully utilised), the PNUR Project is estimated to support around \$692.0 million in additional GVA activity per annum in the Parramatta LGA economy, and approximately 4,500 FTE jobs paying a total of \$361.0 million in incomes each year (including both direct and flow-on activity). In NSW, the PNUR Project is estimated to support around \$924.8 million in GVA activity per annum, and over 6,500 FTE jobs.

Table ES.2. Annual Ongoing Economic Activity Supported by the PNUR Project Once Fully Established and Occupied, Parramatta LGA and NSW

Impact	Output (\$M)	Gross Value Added (\$M)	Incomes (\$M)	Employment (FTEs)
Parramatta LGA				
Direct	\$544.2	\$296.7	\$173.2	2,129
Type I Flow-On	\$262.8	\$139.9	\$77.9	851
Type II Flow-On	\$442.3	\$255.4	\$109.9	1,516
Total	\$1,249.2	\$692.0	\$361.0	4,496
NSW				
Direct	\$626.3	\$340.3	\$200.7	2,676
Type I Flow-On	\$414.6	\$211.0	\$116.0	1,348
Type II Flow-On	\$688.1	\$373.5	\$171.2	2,489
Total	\$1,728.9	\$924.8	\$487.9	6,513

Note: Totals may not sum due to rounding.

Source: ABS, (2014), ABS (2013), ABS (2012), ABS (2011), AEC.

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1. Introduction

1.1 Background

Parramatta North Urban Renewal area (PNUR) is located to the west and north-west of the Parramatta CBD, Sydney's second CBD. Parramatta is located in the geographical heart of Sydney and plays a significant role in the Greater Metropolitan area as the economic focal point for Western Sydney. The PNUR is located to the east of the Westmead Health campus, separated by the Parramatta River. The PNUR is also within close proximity to the Rydalmere Education Precinct and transport links.

Figure 1.1. Location Plan



Source: AJ+C

AEC Group (AEC) has been engaged by UrbanGrowth NSW to prepare an Economic Impact Assessment (the Study) relating to the proposed amendment to the planning framework applying to the study area. The investigations relate only to the Cumberland and Sports and Leisure Precincts within the PNUR. The assessment has been undertaken to inform a State Significant Site study (the Study) which is investigating potential amendments of the statutory planning controls applying to the Cumberland and Sports and Leisure Precincts of the PNUR.

PNUR includes many locational and site specific attributes, including frontage to the Parramatta River and a rich history of Aboriginal, early colonial, nineteenth and twentieth century uses. The potential exists to deliver housing and employment opportunities in a precinct that will embrace and interpret these heritage attributes to make them a focus of the urban environment that will emerge through future development and facilitate their retention and re-use.

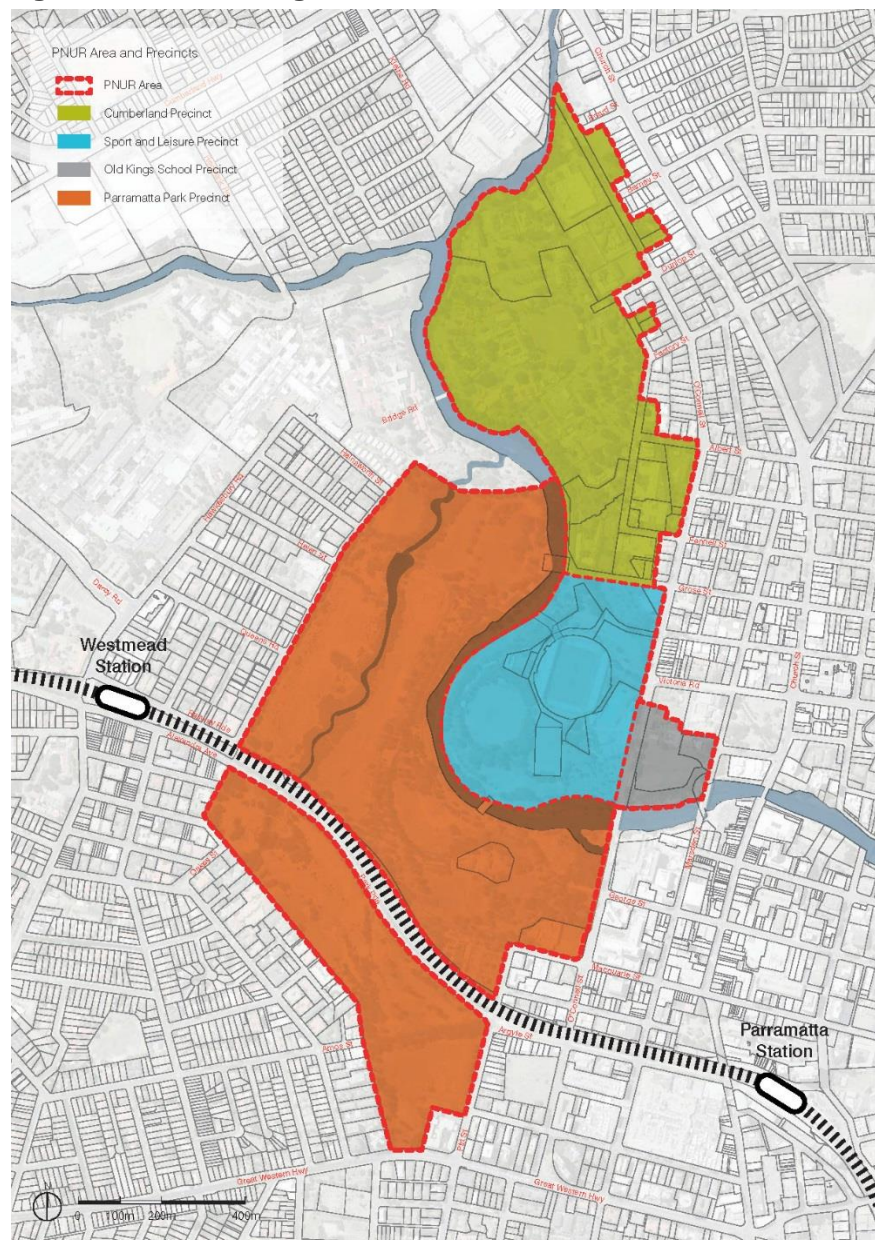
The amendment to the statutory planning provisions is anticipated to be undertaken via a State Environmental Planning Policy (SEPP) to amend the provisions of Parramatta City Centre LEP 2007 and Parramatta LEP 2011. Site specific Development Control Plan (DCP) provisions are also proposed to be prepared to guide future development. Amendment of the planning framework will facilitate the lodgement of future Development Applications with Parramatta City Council to be assessed and determined under the provisions of Part 4 of the *Environmental Planning and Assessment Act 1979*.

1.2 The Site

The PNUR is a 146 Ha site and has been divided into four distinct Precincts comprising:

- The Cumberland Precinct (40ha);
- Sport and Leisure Precinct (21ha);
- Old Kings School Precinct (4ha); and
- Parramatta Park Precinct (8ha).

Figure 1.2. Precinct Diagram



Source: AJ+C

This Study has been prepared in order to identify how best to plan for the urban renewal of the Cumberland Precinct and the Sports and Leisure Precinct only. The recommended planning controls have been prepared recognising the locational advantages of the PNUR to the Parramatta CBD, the Westmead Health Precinct, the Rydalmere Education Precinct, and transport options.

The renewal of the area provides exceptional opportunities for the delivery of housing cultural and community uses, and the capacity to protect, enhance and re-use significant heritage buildings and structures.

The Study relates to the Cumberland and Sports and Leisure precincts within the PNUR.

- The Sports and Leisure Precinct (SLP) is located centrally within the PNUR. The SLP is delineated to the west and south by the meander of the Parramatta River, O'Connell Street to the east and Grose Street to the north.
- The Cumberland Precinct (CP) is the northern most part of the PNUR and is broadly delineated by the meander of the Parramatta River to the west and north, O'Connell Street to the east and Grose Street to the south.

Combined, the two precincts comprise the areas of the PNUR to the east of the Parramatta River and west of O'Connell Street. The lands to the west of the Parramatta River contain Parramatta Park, including Old Government House and Domain.

1.2.1 Existing Land Uses

Land uses and facilities currently located within the SLP include Parramatta Stadium and associated facilities, Parramatta public pool, Parramatta Leagues Club, open space parkland and venue car parking. These built facilities and associated structures occupy predominantly the north eastern two thirds of the precinct. The balance of the precinct, nestled inside the meander of the Parramatta River, is predominantly landscaped open space with some incursion of at grade car parking.

Land uses within the CP include the Cumberland Hospital, the NSW Linen Service, allied health related uses and NGOs and the former Parramatta Gaol. The precinct contains buildings of State and local heritage significance as well as potential Aboriginal archaeological sites. Buildings are dispersed throughout the precinct serviced by an irregular access network and broadly surrounding a central oval. These clusters of buildings are interspersed with vegetation and are framed by an almost continuous band of vegetation framing the eastern bank of the Parramatta River.

1.2.2 Surrounding Areas

The PNUR study area is located to the immediate west and north-west of the Parramatta CBD. The north-eastern area of the CBD is emerging as a mixed use residential precinct with residential tower forms.

To the east of the study area, uses range from educational uses, residential accommodation in forms ranging from single dwellings to three storey residential flat buildings, interspersed with non-residential uses of former dwellings. Further east a spine of retail and commercial uses are located along Church Street and Victoria Road.

To the north east of the site, generally along O'Connell Street building forms are typically three storey residential flat buildings and commercial and retail land uses in the areas to the east of the former Parramatta Gaol.

To the north of the Cumberland Precinct on the opposite bank of the Parramatta River is the Northmead industrial area including large format industrial buildings.

To the north west of the Cumberland Precinct is a small pocket of single storey cottages bound by further industrial development to the west and three storey residential flat buildings fronting Briens Road, Northmead.

To the west of the Cumberland Precinct beyond Parramatta Park is the Westmead Medical Precinct, which is adjoined by a residential area bound generally by Hawkesbury Road, Hainsworth Street, Park Avenue and Railway Parade. Development in this area is predominantly three storey residential flat buildings interspersed with higher density

residential flat buildings. This residential pocket of land is separated from the lands that are the subject of this Study by Parramatta Park.

1.3 The Proposal

The Parramatta North Urban Renewal (PNUR) area provides opportunities to protect and enhance heritage significant sites, and deliver housing, cultural uses and employment on the edge of the Parramatta CBD. The area is also exceptionally well located in close proximity to the Westmead Health and Rydalmere Education specialised precincts, as well as existing and planned transport.

The location at the edge of the Parramatta CBD also places the area at the western extent of the Global Economic Corridor and Parramatta Road Corridor. These locational advantages, in concert with the proximity to the Western Sydney Employment Area, underline the strategic merits of the urban renewal of the area. PNUR includes many locational and site specific attributes, including frontage to the Parramatta River and a rich history of Aboriginal, early colonial, nineteenth and twentieth century uses. The potential exists to deliver housing and employment opportunities in a precinct that will embrace and interpret these heritage attributes to make them a focus of the urban environment that will emerge through future development.

The Study has been undertaken to prepare an appropriate suite of planning controls to guide the urban renewal of the area and future development. This has led to an Indicative Layout Plan (ILP) guiding future open space, transport links and building footprints, as well as zoning and height of building controls, which are to be implemented in conjunction with site specific Development Control Plan provisions to guide the fine grain development of the area.

This suite of controls has had regard to the site's heritage, environmental values and physical constraints.

The ILP envisages the creation of a mixed use area within the Cumberland Precinct that accommodates new development for housing, employment, cultural and community uses in new buildings and through the adaptation of existing heritage buildings. For the Sports and Leisure Precinct, the ILP envisages the strengthening of the current role of the area as a major sports venue and the introduction of allied retail and commercial uses to support the role of Parramatta Stadium as a major sport and entertainment venue for Parramatta and greater western Sydney. The Sports and Leisure Precinct may also accommodate ancillary retail to support the resident and employee population to be accommodated in the PNUR.

The Study proposes amendments to the planning framework, including revisions to the development controls that will facilitate a mixed use residential redevelopment of the study area. The proposed amended planning framework will facilitate the lodgement of future development applications for the land in the study area which are anticipated to achieve the following development yields:

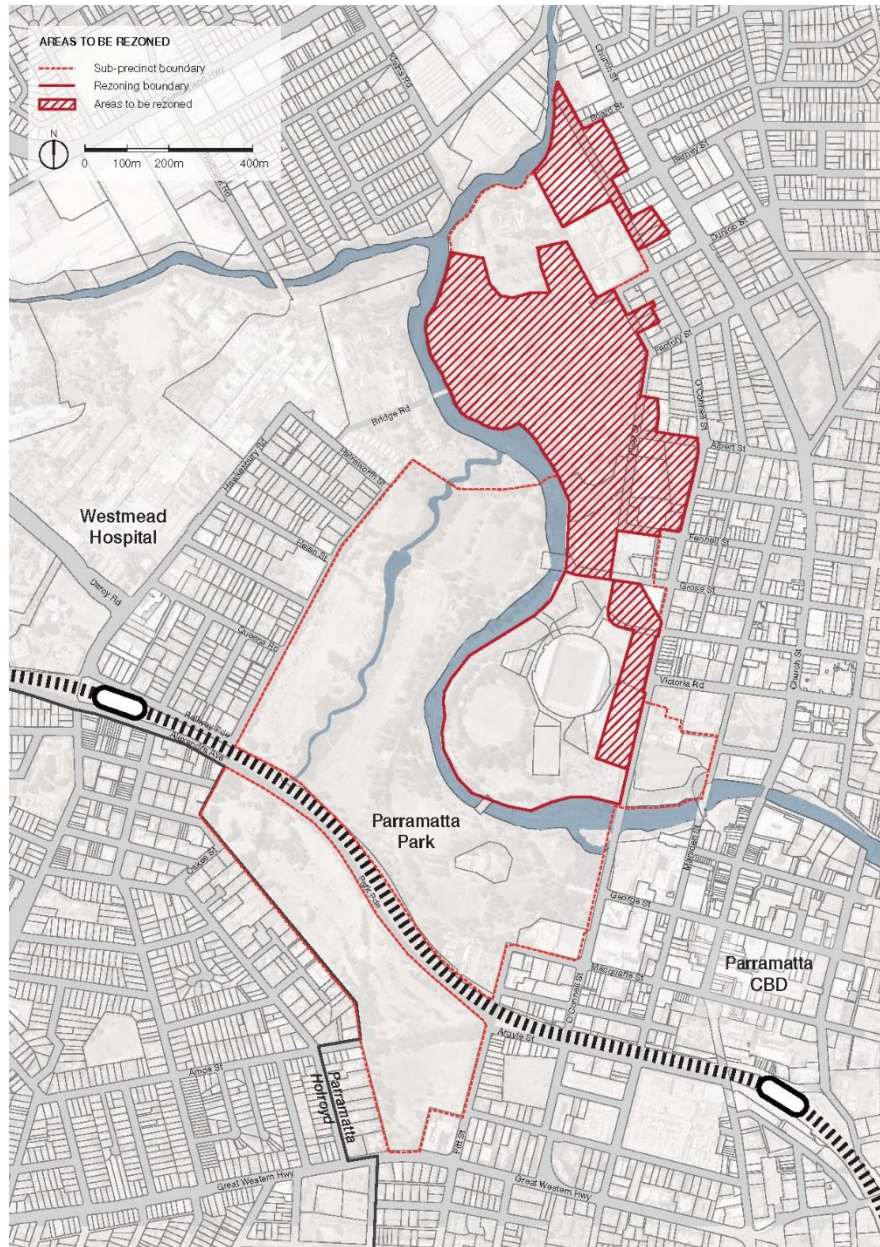
Cumberland Precinct

- Approximately 4,100 dwellings.
- Approximately 28,000sqm GFA of adaptive reuse of retained heritage buildings.
- Up to 4,000sqm GFA of retail space.

Sports and Leisure Precinct

- Approximately 34,000sqm GFA of mixed-use (likely to be predominantly commercial).

Figure 1.3. Rezoning Boundary



Source: AJ+C

We understand that the development is anticipated to occur over a 15-20 year period. On this basis we have assumed for the purposes of this Study that development would commence in 2015 and continue until 2035.

1.4 Purpose and Structure of the Study

The purpose of this Study is to consider whether the direct economic impacts of the proposed development are greater than those of the existing uses. The Study is accordingly structured in the following manner:

- Chapter 2 reviews the planning context and strategies relevant to the Study.
- Chapter 3 reviews and comments on expected retail impacts.
- Chapter 4 quantifies the economic impacts of the proposed development on the Site and considers the economic multipliers and construction-related economic impacts.

- Chapter 5 considers the economic costs and benefits of the Proposal against the base case to determine which would yield the greater net economic impact from a community perspective.

1.5 Assumptions and Limitations

Benchmark capacity metrics and per capita retail demand benchmarks are used in estimating generic floorspace demand likely to result from the anticipated increase in new resident population. This is described in section 3.4.

The estimation of generic floorspace demand does not account for the nuances of socio-demographic statistics or levels of affluence. Furthermore, the drivers of retail floorspace demand are likely to change over time (in the context of online retailing, changing retail formats, etc.), these dynamic factors not reflected in generic benchmark assumptions.


Input-Output modelling has been used in assessing the economic impacts of the PNUR, and this methodology is subject to a range of assumptions and limitations. An overview of the broad assumptions and limitations of Input-Output modelling is presented in Appendix A.

In addition to the general assumptions and limitations inherent in Input-Output modelling, assumptions have been made regarding where goods and services are likely to be sourced during construction of the PNUR (see section 4.2.1). Assumptions have also been made regarding the proportion of ongoing activity that represents enabled activity in the Parramatta LGA and NSW economies (i.e., represents additional activity). These assumptions are outlined in section 4.2.2. The accuracy of the estimated economic impacts are limited by the accuracy of the assumptions used for construction and ongoing enabled activity.




2. Planning Context

2.1 Strategic and Centres Planning




In NSW strategic and centres planning is carried out at the State level, there have been successive metropolitan strategies defining the framework for accommodating and managing Sydney's future growth. Strategic policy has consistently provided for retail and commercial development to be located within centres to generate economic activity that leverages infrastructure, to be close to employment and to contribute to the amenity and liveability of centres.



The Metropolitan Strategy for Sydney to 2031 comprises the strategic planning framework to promote and manage Sydney's growth (D&PE, 2013). It envisages a network of centres that is to be the focus of economic development and growth, helping to set priorities for State and local infrastructure investment.

2.2 Metropolitan Strategy for Sydney to 2031



The Metropolitan Strategy for Sydney to 2031 (DP&E, 2013) was released in draft in March 2013, updating the 2005 Metropolitan Strategy, hereinafter referred to as the draft Strategy.

Economic Growth

The draft Strategy supports facilitating diverse and competitive employment growth opportunities by renewing and growing Parramatta CBD (and its surrounds) in order to provide higher order services and job opportunities for Western's Sydney's growing population. As a corollary to this objective, the draft Strategy recognises that a network of centres facilitate people's access to shops, offices, businesses and civic uses, this network comprised of strategic centres and local centres.

The largest centres (Strategic Centres) in the draft Strategy are identified as the main focus for development. These strategic centres are envisaged to "...create an important network of places across Sydney, providing high-end retailing, businesses and services". The growth and success of the strategic centres are a major priority of the Strategy.

The draft Strategy identifies a hierarchy of centres, each type of centre playing a different economic and employment role. The NSW Government is identified as having a strategic interest in the success of these centres and leads their planning in conjunction with local government. Strategic centres include the following centre types:

- **Global Sydney**
Primary focus for national and international business. A cultural, recreation and entertainment destination for the Sydney Metropolitan Area.
- **Regional Cities**
Operate as the capitals of their subregions and contain the full range of services and activities.
- **Specialised Centres**
Areas that contain major airports, ports, hospitals, universities, etc. that perform vital economic, research and employment roles across the metropolitan area.
- **Major Centres**
The main shopping, business and civic centres for their subregions.

Parramatta is identified as one of three Regional Cities in Sydney, the other two being Penrith and Liverpool. Furthermore, the draft Strategy states the greatest economic spillovers (market externalities that stimulate technological improvements through innovation) come from employment focused in Strategic Centres and Specialised Precincts. It targets that 4% of all jobs are in Parramatta, Penrith and Liverpool where there are concentrations of employment in public administration, finance/insurance and healthcare.

Local centres are those centres where planning is led by local government in conjunction with NSW Government. Local centres are defined to include the following centre types:

- **Town Centres**

A large group of retail, business or office premises, typically comprising more than 50 commercial premises and services with supermarkets, sometimes with a shopping mall. Town centres tend to be a residential location and typically have capacity to service around 9,500 dwellings.

- **Village Centres**

A group of retail, business or office premises, typically comprising commercial premises and services for daily shopping needs. These are serviced by strategic bus and local bus networks at a minimum and have the capacity to service around 5,500 dwellings.

- **Neighbourhood Centres**

A small group of retail, business or office premises. These comprise only a small number of commercial premises and are serviced by local and/or strategic bus networks. They have capacity to service around 500 dwellings.

Housing and Population Growth

The draft Strategy recognises that in order to meet the needs of Sydney's growing population, additional housing that is supported by transport networks and social infrastructure is needed. In support of the objective to deliver sufficient and appropriate housing, it seeks to achieve the following:

- **Deliver new housing to meet Sydney's growth**

New housing will be encouraged in areas close to existing and planned infrastructure in both infill and greenfield areas, with the supply of housing in established urban areas and zoned release areas to be fast-tracked.

- Build confidence in centres all over Sydney to attract investment, **through good design and urban renewal.**

- **Create socially inclusive places** that encourage people to come together formally and informally and stimulate cultural and recreational activities.

- **Deliver accessible and adaptable recreation and open space**

The protection and use of heritage assets will be planned for in urban renewal or establishing new centres.

Priorities for Parramatta

Parramatta is Sydney's premier regional city and accounts for the single largest concentration of employment outside Global Sydney and is expected to be the fastest growing centre outside Global Sydney over the next 20 years (D&PE, 2013).

The draft Strategy expects Parramatta to grow beyond its own CBD boundaries into the surrounding precincts of Westmead, North Parramatta, Harris Park, Rydalmere (including the University of Western Sydney campus) and Rosehill/Camellia.

A number of priorities are identified for Parramatta, including, *inter alia*, "to identify, promote and connect the separate precincts that comprise Parramatta City including North Parramatta and Rydalmere, while recognising important local heritage."

The strengthening of cultural and recreation assets are also identified as priorities, including of Parramatta River and its foreshore, Parramatta Park, Bicentennial Park and colonial heritage around Parramatta.

2.3 Central West Subregion Subregional Strategy (2007)

The 10 subregional strategies for Sydney were prepared with the objective of translating the strategic objectives and policies of the metropolitan strategy and to facilitate implementation across local government areas and the local level.

At the time of their drafting, the applicable metropolitan strategy was the Metropolitan Strategy for Sydney (2005). In the absence of more recent subregional strategic policy, the Central West subregional strategy (DP&E, 2007) is considered the most relevant.

The Central West subregion covers the municipalities of Parramatta, Holroyd, Auburn, Fairfield and Bankstown. The subregional Strategy adopts the common strategic policy section of the then applicable metropolitan strategy and the same classification of centres into a typology for policy and local planning.

- **Strategic Centres**

These are, and are expected to continue to be the focus of economic development. Within the subregion, they are expected to collectively accommodate over one million jobs by 2031.

Given their significant roles, strategic centres are to be the focus for State Government and local government planning and will be priority locations for government infrastructure investment.

There are five designated strategic centres in the Central West subregion: Parramatta (Regional City), Bankstown (Major Centre) Olympic Park-Rhodes, Westmead and Bankstown Airport-Milperra (Specialised Centres). Prairiewood, Fairfield and Cabramatta are identified as Potential Major Centres.

- **Local Centres**

The subregional Strategy identifies almost 100 smaller local centres, these categorised as Towns, Villages, Small Villages and Neighbourhood Centres. Town centres located within the subregion include Merrylands, Wentworthville, Granville, Bonnyrigg, Auburn, Chester Hill, Revesby, Lidcombe and Epping.

- **Corridors**

Opportunities for corridors to play a role in accommodating growth and economic development are identified.

Owing to its proximity to the Parramatta CBD and the Westmead Campus, the PNUR site is within the Parramatta Regional City catchment, as indicated in Figure 2.1.



Figure 2.1. Map of Parramatta Regional City



Source: DP&I (2007)

As a Regional City, Parramatta is recognised as the second CBD of Sydney. At the time of the subregional Strategy Parramatta provided for approximately 41,500 jobs and was expected to provide for an additional 27,500 jobs by 2031. This target has subsequently been updated by the draft Metropolitan Strategy for Sydney to 2031, providing for 49,000 jobs at the time of its drafting, with the expectation that an additional 21,000 jobs would be provided for by 2031 (to a target of 70,000 jobs by 2031).

Residential living is seen as helping to enliven the city centre, however, the importance of retaining Parramatta's primary role as a commercial hub providing the full range of business, government, retail, cultural, entertainment and recreational activities is acknowledged.

2.4 Parramatta 2038 Community Strategic Plan

Parramatta 2038 (PCC, 2013) is Parramatta LGA's strategic plan to guide its development and growth over the next 25 years.

Parramatta 2038 acknowledges that while the City includes the surrounding precincts of the CBD (Auto Alley, Harris Park, Camellia, Rydalmere and UWS, Westmead and hospitals, North Parramatta and the Parramatta River foreshore), growth beyond the current boundaries of Parramatta CBD is inevitable. The concept of 'Greater Parramatta' is therefore one of the focuses of Parramatta 2038.

Supported by an efficient light rail network, North Parramatta is among the places identified as having potential to be better connected to education, entertainment and work opportunities.

Six strategic objectives underpin the vision of Parramatta 2038. These include Economic, Environment, Connectivity, People, Culture and Leadership. The renewal of the heritage

area along the Parramatta River that include Old Kings School, Cumberland Hospital and Parramatta Gaol are identified to be important to achieving the strategic objective of celebrating its cultural heritage.

2.5 Summary

A key objective of the Metropolitan Strategy for Sydney is to establish Parramatta's role as the second CBD of Sydney. A number of priorities are identified to achieve this objective for Parramatta. Connectivity to North Parramatta's is identified as important, particularly considering the importance of strengthening cultural and recreation assets as well as the colonial heritage around Parramatta.

In this context, the proposed renewal of the PNUR site will contribute to strengthening the role of Parramatta and Greater Parramatta by facilitating *inter alia*, the conservation of its cultural heritage, consolidation of the role of Parramatta Regional City by delivering needed additional housing and accommodating for employment opportunities.



3. Retail Impact Assessment

For the purposes of this retail impact assessment, 'retail impact' on existing centres is defined to mean the probable reduction in retail turnover at various existing centres resulting from the introduction of new competition in the form of new retail floorspace on the PNUR site.

The modest amount of new retail floorspace proposed for the PNUR site (circa 4,000sqm GFA arranged on ground level) results in a geographically small catchment area from which it is expected to draw trade. This assessment examines the likely current and future catchment of the PNUR site and focuses on *qualitatively* addressing the retail impacts likely to result from the Proposal.

3.1 Catchment Area and Growth Projections

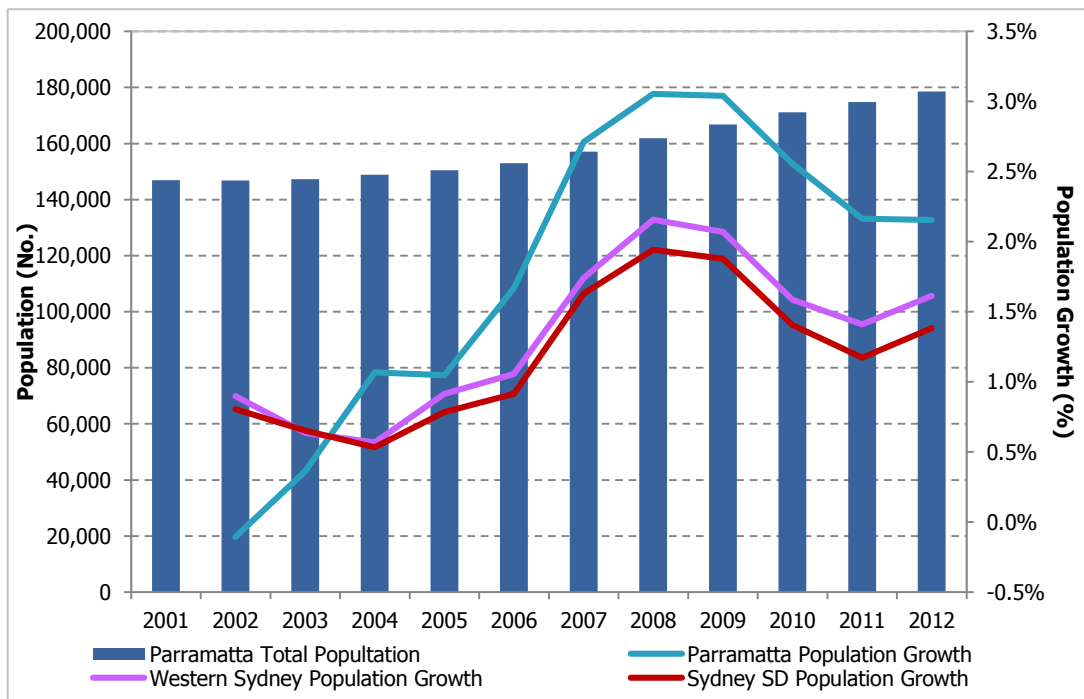
North Parramatta's strategic location in the established and rapidly growing Parramatta is relevant for this assessment. Although the amount of new retail floorspace proposed on PNUR site is modest, the site is within the Parramatta Regional City catchment, located some 2km north of the Parramatta CBD which is the region's, primary commercial and retail centre.

The super-regional shopping centre Westfield Parramatta is located in the Parramatta CBD, however, the catchment area of Westfield Parramatta is many-fold larger than that of the subject site given its retail offer and position in the retail centre hierarchy. Westfield draws trade from beyond the LGA, its trade area likely to include other municipalities of Bankstown, Fairfield, Blacktown and The Hills Shire.

For the purposes of this assessment population growth projections in the Parramatta LGA are examined. A key driver of Parramatta's economic growth has been the notable rate of population growth that occurred in the last decade.

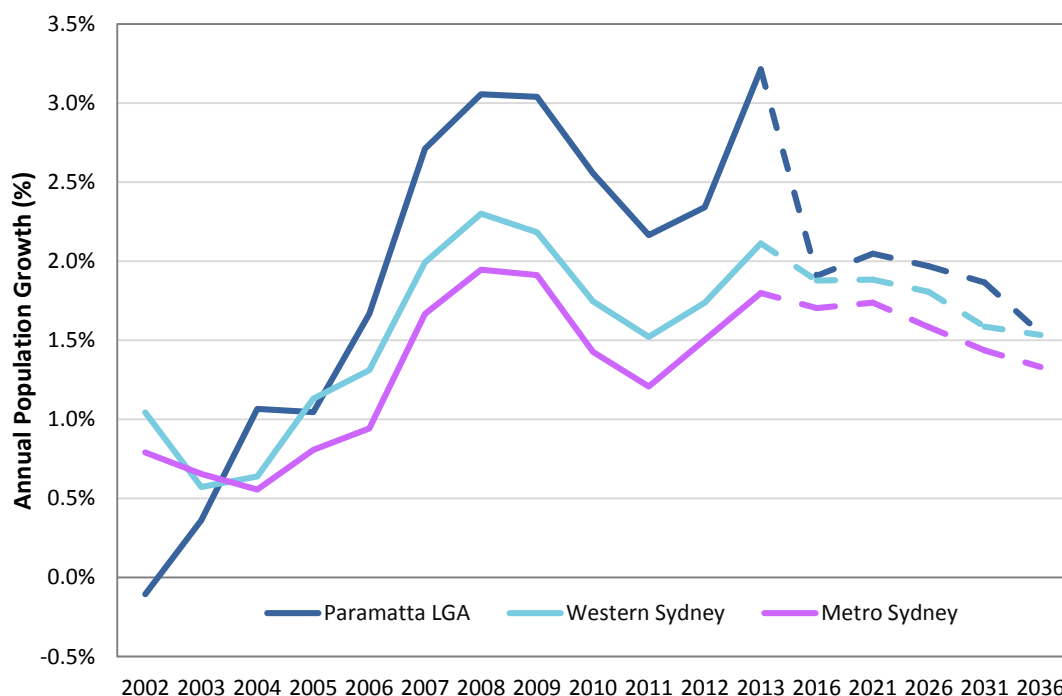
Population growth in Parramatta peaked in 2008 at almost 3% per annum compared to Western Sydney and Sydney SD at around 2.25% and 2.30% per annum respectively (see figure below). Population growth has since moderated, however, Parramatta's growth is still above that of Western Sydney and Sydney SD at around 2.0% per annum.

Figure 3.1: Population Growth (2001-2012)



Source: AEC (unpublished)

Figure 3.2: Annual Population Growth Rates, Actual and Projected (2001-2036)



Note: dotted lines depict projection period
Source: AEC, DPE (2014)

Parramatta's growth has been significantly greater than other parts of Western Sydney since 2005, projected growth rates also expected to exceed other parts of Western Sydney and metropolitan Sydney.

Average household size in Parramatta LGA increased from 2.6 (2006) to over 2.8 (2011), this is projected to gradually fall to around 2.7 by 2036.

Looking forward, based on projected population growth and anticipated household sizes (DP&E, 2014), an average of 1,600 additional dwellings are required per annum over the next 15-20 years, in order to accommodate projected population growth.

3.2 Profile and Role of Existing Centres

Within Parramatta City, retail supply is dominated by Westfield Parramatta and the retail/commercial area of the CBD. A collection of a small number of businesses and commercial premises are located at Iron Street in North Parramatta and are within 1km from the PNUR site.

- **Westfield Parramatta**

Parramatta Regional City contains a sizable retail offer anchored by Westfield Parramatta, which is a large regional shopping centre comprising approximately 120,000sqm of retail floorspace (PCA, 2013). The shopping centre is anchored by two department stores (Myer and David Jones), two discount department stores (Target and Kmart) and two supermarkets (Coles and Woolworths).

Westfield Parramatta is the region's largest concentration of higher order retailing with a strong focus on comparison and other discretionary shopping.

- **Parramatta CBD**

The retail/commercial area of the Parramatta CBD is focused on Church Street. This non-shopping centre retail plays a service role to the large business and commercial sector, with an abundance of cafés, restaurants, florists and other ancillary support services. Specialist medical and GP services are also readily available in the CBD precinct.

While strip retail in the CBD has struggled in parts of the centre, particularly following the expansion of Westfield, a resurgence of Church Street has given parts of the northern portion of the City a renewed vibrancy.

Strip retail in the Parramatta CBD plays a prominent role to support the growing commercial sector, providing the requisite worker amenity to complement commercial floorspace. This includes catering to daytime needs as well as the night-time economy present in any major regional city.

- **Iron Street, North Parramatta**

A cluster of around 10 shops on Iron Street about 1km east of the PNUR site serves a local convenience role. Retailers therein include a small convenience store, bakery, newsagent, chemist and takeaway food outlet.

The role of this cluster of retail shops is akin to that of a neighbourhood centre as outlined in the Metropolitan Strategy, identifying a service capacity of 500 dwellings (DP&E, 2013). The number of dwellings in North Parramatta (suburb) exceeded in 5,000 in 2011 (ABS, 2011).

The retail offer in the rest of the Parramatta CBD is largely focused on catering to the needs of the local business sector.

The retail strip along Iron Street serve the localised catchment with a strong focus on convenience retailing, this is evidenced by the mix of retailers located therein.

3.3 Anticipated/ Proposed Retail Development

The following major retail developments are either currently ongoing or proposed in the Parramatta CBD and surrounds.

- **Parramatta Square**

This major project is expected to deliver more than 150,000sqm of commercial and retail floorspace over six stages. Between 6,000sqm and 7,000sqm of potential retail floorspace in later stages of the project.

- **Westfield Parramatta**

Westfield Parramatta proposes the addition of around 25,000sqm of retail floorspace in Stage 1, to comprise an additional discount department store, relocated Woolworths, mini-majors and speciality stores.

In addition to the above major retail projects, numerous mixed use developments across the city incorporate a modest retail component, primarily located at ground level.

3.4 Retail Impact of PNUR Development

The PNUR Proposal envisages new retail space in the order of 4,000sqm in the Cumberland Precinct. The trade catchment area to be served by the PNUR site is expected to be primarily a locally based one.

Benchmark capacity metrics are suggested in the draft Metropolitan Strategy for Sydney 2031 for various types of local centres, 5,500 dwellings and 500 dwellings the required capacity for village centres and neighbourhood centres respectively.

At a simplistic level, the addition of 4,100 additional dwellings on the PNUR site could arguably support a village centre based on this definition, although it should be noted that these definitions are indicative only and do not intend to be prescriptive or restrictive. Nevertheless it is not unreasonable to conclude that owing to the modest amount of total new retail space envisaged (4,000sqm), the PNUR site will play relatively minor retail role and will mainly address retail convenience need.

Retail demand in NSW is currently estimated by the industry to be at around 2.2sqm per capita¹. Of this around 1.7sqm per capita is devoted towards traditional retail floorspace of the type typically found in commercial centres and 0.5sqm for bulky goods floorspace. Retail floorspace demand can be broken down further given that a full-line supermarket normally ranges from 3,000sqm to 4,000sqm and in metropolitan areas is typically

¹ Various industry sources including Deep End Services, Location.id, Macroplan

sustained by approximately 10,000 residents. On this basis, supermarket demand per capita equates to around 0.35sqm per capita.

In advising on undertaking floorspace supply and demand assessments, the Department of Planning and Environment's NSW Draft Centres Policy (2009) proposes applying a 0.1sqm per capita increase in retail demand (on the benchmark of 2.2sqm per capita) every five years consistent with the 25-year historic trend. Although this Policy has never been formally adopted it has been consistently used by the Department as a means of assessing commercial rezoning proposals.


Having established the benchmark capacity metrics, retail demand as a result of the PNUR proposal is estimated. Assuming 15,000 new residents will ultimately be accommodated on the PNUR site by 2031, there is expected to be demand for some 2.6sqm of retail floorspace per capita, in total of additional retail floorspace. This equates to approximately 39,000sqm (bulky and traditional retail demand). 28,500sqm of this demand will relate to 'traditional' retail floorspace typically found in centres (as opposed to bulky goods floorspace) and at least 5,250sqm will relate to supermarket floorspace sufficient to sustain nearly two full-line supermarkets.

On this basis, the provision of a 4,000sqm centre as part of the PNUR site is easily justified in the context of demand growth. It would account for only 10% of total demand growth and 14% of non-bulky goods retail demand growth. The residual demand would be available to support existing and new retail facilities in centres in the surrounding area. There would be no adverse impact on centres in the surrounding area as a result because it is reliant solely on demand generated by new residents and a significant net positive impact on the pool of expenditure available for other centres to capture would eventuate.





4. Economic Impact Assessment

4.1 Approach



Economic modelling in this section estimates the economic activity likely to be supported by the proposed PNUR project, during both construction and ongoing activities enabled by the development. An Input-Output model is used to examine the direct and flow-on² activity expected to be supported within the Parramatta LGA and NSW economies. Modelling drivers used in the assessment are described in section 4.2. A description of the Input-Output modelling framework used is provided in **Appendix A**, as well as an overview of the assumptions and limitations inherent in Input Output modelling.

Input-output modelling describes economic activity by examining four types of impacts:

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- **Output:** Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.
 - **Value added:** Refers to the value of output after deducting the cost of goods and services inputs in the production process. Value added defines the true net contribution and is subsequently the preferred measure for assessing economic impacts.
 - **Income:** Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.
 - **Employment:** Refers to the part-time and full-time employment positions generated by the economic stimulus, both directly and indirectly through flow-on activity, expressed in full time equivalent (FTE) positions³.

Development of the PNUR will require relocation of the existing public swimming pool in the Sports and Leisure Precinct. The relocation of the pool has not been included in the economic modelling for the following reasons:

- There is limited information available currently to understand when and where the pool will be relocated to, nor the potential cost of relocation. It is understood the pool would be relocated at some point in the near future irrespective of the PNUR development.
- In the long run, operations of the relocated swimming pool should be effectively equivalent to existing activity. As such, it has been assumed in the long run there is negligible change in economic activity resulting from operation of the swimming pool before and after relocation.

4.2 Model Drivers

4.2.1 Construction Drivers

The PNUR project has planned construction activity extending over 15 to 20 years, worth a combined total of around \$1.62 billion. A breakdown of development costs is presented below.

Total Development Costs

Estimates of overall development costs were provided by NPC (2014), for demolitions, remediation, infrastructure and dwelling development, adaptive reuse renovation and refurbishment, and project management. For modelling purposes, the capital outlay was disaggregated into relevant industries represented in the Input-Output model (based on

² Both Type I and Type II flow-on impacts have been presented in this report. Refer to **Appendix A** for a description of each type of flow-on impact.

³ Where one FTE is equivalent to one person working full time for a period of one year.

the Australian and New Zealand Standard Industrial Classification (ANZSIC) categories). This breakdown was developed based on types of activities associated with construction and assumptions regarding the most appropriate industries for each use.

A summary of expenditure for development of the PNUR project is outlined in the table below, broken down by relevant industry.

Table 4.1. Construction Costs by Industry

Industry	Total
Waste Collection, Treatment and Disposal Services	\$15.0
Residential Building Construction	\$1,291.5
Non-Residential Building Construction	\$56.0
Construction Services	\$79.6
Professional, Scientific and Technical Services	\$177.5
Total	\$1,619.6

Source: NPC, AEC.

Of the above capital outlay, not all activity will be undertaken within the Parramatta LGA economy. For example, some design and engineering services are likely to be sourced from outside the local economy. However, it can be reasonably assumed that all construction activity can be undertaken by NSW businesses.

The following table outlines assumptions used in the modelling to identify where (i.e. the physical location) relevant activity is anticipated occur.

Table 4.2. Location of Construction Phase Activity by Industry

Industry	Within Parramatta LGA	Elsewhere in NSW
Waste Collection, Treatment and Disposal Services	100%	100%
Residential Building Construction	100%	100%
Non-Residential Building Construction	100%	100%
Construction Services	100%	100%
Professional, Scientific and Technical Services	25%	75%

Source: AEC.

In interpreting the above table, it is important to recognise the location of where activity occurs can differ from where the labour or services used to undertake the activity are sourced from. For example, construction activity will (effectively) all occur on site. However, it may be that some labour and services are required to be sourced from outside Parramatta LGA.

The following table outlines the assumptions used in the modelling regarding where goods and services are sourced from.

Table 4.3. Source of Construction Phase Activity by Industry

Industry	Within Parramatta LGA	Elsewhere in NSW
Waste Collection, Treatment and Disposal Services	100%	0%
Residential Building Construction	50%	50%
Non-Residential Building Construction	50%	50%
Construction Services	50%	50%
Professional, Scientific and Technical Services	25%	75%

Source: AEC.

In undertaking economic modelling, the direct activity associated with the construction phase is based on where activity occurs (Table 4.2) rather than strictly where labour for these services is sourced from (Table 4.3). However, the amount of activity that is retained in the local economy is best considered in terms of where labour, goods and services are sourced, rather than where the activities they undertake are located. This refers to a 'retention' of incomes and profits within an economy, and reflects that labour and companies sourced from outside the Parramatta economy are more likely to spend incomes earned within their local area than within Parramatta.

For the purposes of modelling, it has been assumed construction companies and sub-contractors sourced from outside the Parramatta LGA will contribute approximately one quarter (25%) of the level of Type I (production induced) flow-on activity within the Parramatta economy that a locally sourced company does, and approximately 5% of Type II (consumption induced) flow-on activity. This reflects that construction companies working on site but sourced from outside Parramatta will contribute to local Parramatta supply chains in terms of sourcing some goods and services they require locally (Type I), as well as spending some wages and salaries locally on items such as food and drink (Type II).




4.2.2 Ongoing Activity Enabled Drivers

The following modelling drivers have been used to assess the enabled economic activity associated with the ongoing uses of the PNUR site.



Household Activity and Expenditure



The population of Metro Sydney is projected to grow by around 80,000 people per annum between 2013 and 2036, an overall increase of more than 1.8 million people (DP&E, 2014). Western Sydney is projected to account for 22,500 new residents per annum to 2036, of which more than 4,000 per annum are currently projected to reside in Parramatta LGA. Additional dwellings are required in Parramatta LGA to meet projected population growth. To 2036 it is estimated, based on current and anticipated changes in household sizes, over 36,500 additional dwellings will be required in Parramatta (198,000 dwellings in Western Sydney).

The PNUR project will provide circa 4,100 dwellings to assist in meeting population growth demands in Western Sydney (approximately 2.3% of the future additional estimated dwellings in Western Sydney), with a take up rate of around 225 to 300 dwelling per annum over a 15 to 20 year period expected. This assessment examines the economic stimulus and ongoing impacts of household activities and expenditure associated with accommodating this population growth in Parramatta LGA.

Data from the most recent Australian Bureau of Statistics' Household Expenditure Survey (ABS, 2011) was used to develop an indicative estimate of the household expenditure activity that may be associated with households residing in the 4,100 dwellings proposed to be developed as part of the PNUR project. Average NSW household expenditure data was used, broken down by expenditure item⁴ and inflated to 2013-14 prices using CPI (ABS, 2014). This approach resulted in an estimated average household expenditure of approximately \$1,200 per week (\$62,400 per annum).

Expenditure items were allocated to the most relevant industry represented in the Input-Output model. There is limited information available to understand what proportion of household expenditure of Parramatta LGA residents is typically spent locally (i.e., in Parramatta LGA) and how much is spent within NSW. Estimates of local and state retention of expenditure have been developed by comparing type II flow-on multipliers (i.e., household consumption impacts) from Input-Output transaction tables for Parramatta LGA and NSW, compared to Australia, for each relevant industry (refer to **Appendix A** for a description of how multipliers were developed). This provides a modelled estimate of retention of household expenditure for an equivalent economic stimulus in the three economies of Parramatta LGA, NSW and Australia.

A breakdown of household expenditure by industry in Parramatta LGA and NSW is presented in **Appendix B**. In total, household expenditure associated with 4,100 new dwellings in Parramatta LGA as part of the PNUR project is estimated to support approximately \$170.0 million in industry output in Parramatta LGA per annum (once dwellings are fully developed and occupied), and approximately \$252.1 million in NSW (inclusive of Parramatta LGA).

⁴ Some expenditure items have been excluded from the assessment as they do not represent genuine economic activity. For example, interest payments on loans have been excluded.

New Commercial/ Retail Space

The PNUR will provide 34,000sqm of new commercial floorspace and 4,000sqm of new retail space, which would not otherwise be developed. To understand the ongoing economic impacts of the PNUR, modelling has been undertaken examining a scenario of potential enabled activities in this new commercial/ retail space.

For the purposes of modelling, and to avoid double counting, the retail space component has not been included as retail uses can reasonably be expected to primarily cater to expenditure of the additional 4,100 households.

The 34,000sqm of commercial space is estimated to be able to accommodate approximately 1,133 employees, assuming a ratio of gross floor area per employee of 30sqm. It is unknown at this stage the exact industries these employees may be employed in. For the purposes of modelling, it has been assumed that these jobs will include a mix of professional, scientific and technical services (e.g., architect/ engineering, legal, accounting, marketing style occupations) (50%), computer systems design and related services (15%), financial (10%) and insurance (10%) services, and administrative services (15%).

Input-Output multipliers of output per employee (ABS, 2013) were used to estimate the level of direct output and flow-on activity associated with this level of employment. In total, the 34,000sqm of new commercial space is estimated to support approximately \$374.2 million in industry output per annum.

Adaptive Reuse Commercial Space

While the PNUR project will deliver 28,000sqm of adaptive reuse commercial space, for the purposes of understanding the net additional ongoing economic activity enabled by the PNUR project this component has not been included. This is because the 28,000sqm of adaptive reuse commercial space will involve the relocation of the existing health sector uses of the site. It is not currently well understood where the health precinct will relocate to (new development or an existing site). If the health precinct relocates to an existing commercial or similar area, the adaptive reuse commercial space can be conservatively considered a replacement for commercial space requirements of the relocated health precinct elsewhere in Parramatta LGA.

Where the commercial space represents a net increase in commercial space available (i.e., if health services were to relocate to a new premises), then the economic activity associated with the commercial and other uses of the 28,000sqm of adaptive reuse space can reasonably be considered net additional ongoing economic activity enabled by the PNUR project. Exclusion of the adaptive reuse area is a conservative assumption.

4.3 Results

4.3.1 Construction Impact Assessment

The approximately \$1.62 billion construction of the PNUR (planned to be developed over a 15 to 20 year period) is estimated to directly generate \$772.9 million in industry output for businesses in Parramatta LGA (with the entire \$1.62 billion in construction spend assumed to be captured within the NSW economy). Estimates of the economic contribution to the Parramatta and NSW economies both directly and indirectly (through flow-on activity) from the PNUR project are outlined in Table 4.4.

A total of around \$755.8 million in gross value added (GVA) activity is estimated to be supported within the Parramatta LGA economy over the course of 15 to 20 year construction period, including both direct and flow-on activity. In NSW, approximately \$1.3 billion in GVA activity is estimated to be supported in total (inclusive of Parramatta LGA).

An estimated 5,600 FTE jobs for Parramatta residents are estimated to be supported as a result of construction over the 15 to 20 year period (including direct and flow-on impacts), equating to an average of approximately 280 to 375 FTE jobs per annum. In NSW over 10,200 FTE jobs are estimated to be supported (inclusive of Parramatta LGA), equating to an average of approximately 510 to 680 FTE jobs per annum.

Table 4.4. Total Economic Activity Supported by the PNUR Project during 15 to 20 Year Construction Period, Parramatta LGA and NSW

Impact	Output (\$M)	Gross Value Added (\$M)	Incomes (\$M)	Employment (FTEs)
Parramatta LGA				
Direct	\$772.9	\$186.5	\$85.5	2,063
Type I Flow-On	\$647.1	\$303.5	\$185.3	1,957
Type II Flow-On	\$460.1	\$265.7	\$114.4	1,577
Total	\$1,880.1	\$755.8	\$385.1	5,597
NSW				
Direct	\$1,619.6	\$401.5	\$188.3	4,388
Type I Flow-On	\$995.9	\$454.4	\$269.3	3,025
Type II Flow-On	\$776.0	\$421.2	\$193.1	2,807
Total	\$3,391.5	\$1,277.1	\$650.7	10,220

Note: Totals may not sum due to rounding.

Source: ABS, (2014), ABS (2013), ABS (2012), NPC, AEC.

4.3.2 Ongoing Activities Enabled Impact Assessment

Once fully established and occupied (i.e., whereby all dwellings and commercial space has been developed and is fully utilised), the PNUR Project is estimated to directly generate a total level of industry output of around \$544.2 million per annum in Parramatta LGA, and \$626.3 million in NSW (inclusive of Parramatta LGA). This activity will be supported through a combination of new commercial operations as well as household expenditure associated with the 4,100 new households residing in the dwellings developed as part of the PNUR.

Economic modelling indicates this level of direct activity could support around \$692.0 million in additional GVA activity per annum in the Parramatta LGA economy, and approximately 4,500 FTE jobs paying a total of \$361.0 million in incomes each year (including both direct and flow-on activity). In NSW, the PNUR Project is estimated to support around \$924.8 million in GVA activity per annum, and approximately 6,500 FTE jobs.

Table 4.5. Annual Ongoing Economic Activity Supported by the PNUR Project Once Fully Established and Occupied, Parramatta LGA and NSW

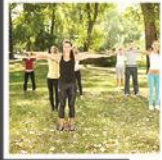
Impact	Output (\$M)	Gross Value Added (\$M)	Incomes (\$M)	Employment (FTEs)
Parramatta LGA				
Direct	\$544.2	\$296.7	\$173.2	2,129
Type I Flow-On	\$262.8	\$139.9	\$77.9	851
Type II Flow-On	\$442.3	\$255.4	\$109.9	1,516
Total	\$1,249.2	\$692.0	\$361.0	4,496
NSW				
Direct	\$626.3	\$340.3	\$200.7	2,676
Type I Flow-On	\$414.6	\$211.0	\$116.0	1,348
Type II Flow-On	\$688.1	\$373.5	\$171.2	2,489
Total	\$1,728.9	\$924.8	\$487.9	6,513

Note: Totals may not sum due to rounding.

Source: ABS, (2014), ABS (2013), ABS (2012), ABS (2011), AEC.

It should be noted the impacts outlined above represent the additional annual economic activity estimated to be supported once all elements of the project are fully developed and utilised. It is expected the development and sale of the 4,100 dwellings could be undertaken over a 15 to 20 year timeframe, and the full impact outlined may not be realised until this time.

It is possible the ongoing economic activity estimates outlined in Table 4.5 may overstate economic impacts due to some small double counting of impacts. This may occur where people working in the new commercial area also reside in one of the 4,100 new dwellings. Where this occurs, the type II flow-on impacts (household consumption induced) associated with the wages paid to worker(s) in the new commercial space would also be counted in the household expenditure direct activity.




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Appendix A: Input-Output Methodology

Input-Output Model Overview



Input-Output analysis demonstrates inter-industry relationships in an economy, depicting how the output of one industry is purchased by other industries, households, the government and external parties (i.e. exports), as well as expenditure on other factors of production such as labour, capital and imports. Input-Output analysis shows the direct and indirect (flow-on) effects of one sector on other sectors and the general economy. As such, Input-Output modelling can be used to demonstrate the economic contribution of a sector on the overall economy and how much the economy relies on this sector or to examine a change in final demand of any one sector and the resultant change in activity of its supporting sectors.

The economic contribution can be traced through the economic system via:

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- **Direct impacts**, which are the first round of effects from direct operational expenditure on goods and services.
 - **Flow-on impacts**, which comprise the second and subsequent round effects of increased purchases by suppliers in response to increased sales. Flow-on impacts can be disaggregated to:
 - **Industry Support Effects (Type I)**, which represent the production induced support activity as a result of additional expenditure by the industry experiencing the stimulus on goods and services in the intermediate usage quadrant, and subsequent round effects of increased purchases by suppliers in response to increased sales.
 - **Household Consumption Effects (Type II)**, which represent the consumption induced activity from additional household expenditure on goods and services resulting from additional wages and salaries being paid within the economic system.

These effects can be identified through the examination of four types of impacts:

- **Output:** Refers to the gross value of goods and services transacted, including the costs of goods and services used in the development and provision of the final product. Output typically overstates the economic impacts as it counts all goods and services used in one stage of production as an input to later stages of production, hence counting their contribution more than once.
- **Value added:** Refers to the value of output after deducting the cost of goods and services inputs in the production process. Value added defines the true net contribution and is subsequently the preferred measure for assessing economic impacts.
- **Income:** Measures the level of wages and salaries paid to employees of the industry under consideration and to other industries benefiting from the project.
- **Employment:** Refers to the part-time and full-time employment positions generated by the economic shock, both directly and indirectly through flow-on activity, and is expressed in terms of full time equivalent (FTE) positions.

Input-Output multipliers can be derived from open (Type I) Input-Output models or closed (Type II) models. Open models show the direct effects of spending in a particular industry as well as the indirect or flow-on (industrial support) effects of additional activities undertaken by industries increasing their activity in response to the direct spending.

Closed models re-circulate the labour income earned as a result of the initial spending through other industry and commodity groups to estimate consumption induced effects (or impacts from increased household consumption).

Model Development

Multipliers used in this assessment are derived from sub-regional transaction tables developed specifically for this project. The process of developing a sub-regional transaction table involves developing regional estimates of gross production and purchasing patterns based on a parent table, in this case, the 2009-10 Australian transaction table (ABS, 2013).

Estimates of gross production (by industry) in the study area were developed based on the percent contribution to employment (by place of work) of the study area to the Australian economy (ABS, 2012), and applied to Australian gross output identified in the 2009-10 Australian table.

Industry purchasing patterns within the study area were estimated using a process of cross industry location quotients and demand-supply pool production functions as described in West (1993).

Where appropriate, values were rebased from 2009-10 (as used in the Australian national IO transaction tables) to 2014 values using the Consumer Price Index (ABS, 2014).

Modelling Assumptions

The key assumptions and limitations of Input-Output analysis include:

- **Lack of supply-side constraints:** The most significant limitation of economic impact analysis using Input-Output multipliers is the implicit assumption that the economy has no supply-side constraints so the supply of each good is perfectly elastic. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
- **Fixed prices:** Constraints on the availability of inputs, such as skilled labour, require prices to act as a rationing device. In assessments using Input-Output multipliers, where factors of production are assumed to be limitless, this rationing response is assumed not to occur. The system is in equilibrium at given prices, and prices are assumed to be unaffected by policy and any crowding out effects are not captured. This is not the case in an economic system subject to external influences.
- **Fixed ratios for intermediate inputs and production (linear production function):** Economic impact analysis using Input-Output multipliers implicitly assumes that there is a fixed input structure in each industry and fixed ratios for production. That is, the input function is generally assumed linear and homogenous of degree one (which implies constant returns to scale and no substitution between inputs). As such, impact analysis using Input-Output multipliers can be seen to describe average effects, not marginal effects. For example, increased demand for a product is assumed to imply an equal increase in production for that product. In reality, however, it may be more efficient to increase imports or divert some exports to local consumption rather than increasing local production by the full amount. Further, it is assumed each commodity (or group of commodities) is supplied by a single industry or sector of production. This implies there is only one method used to produce each commodity and that each sector has only one primary output.
- **No allowance for economies of scope:** The total effect of carrying on several types of production is the sum of the separate effects. This rules out external economies and diseconomies and is known simply as the "additivity assumption". This generally does not reflect real world operations.
- **No allowance for purchasers' marginal responses to change:** Economic impact analysis using multipliers assumes that households consume goods and services in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This equally applies to industrial consumption of intermediate inputs and factors of production.
- **Absence of budget constraints:** Assessments of economic impacts using multipliers that consider consumption induced effects (type two multipliers) implicitly assume that household and government consumption is not subject to budget constraints.

Despite these limitations, Input-Output techniques provide a solid approach for taking account of the inter-relationships between the various sectors of the economy in the short-term and provide useful insight into the quantum of final demand for goods and services, both directly and indirectly, likely to be generated by a project.

In addition to the general limitations of Input-Output Analysis, there are two other factors that need to be considered when assessing the outputs of sub-regional transaction table developed using this approach, namely:

- It is assumed the sub-region has similar technology and demand/ consumption patterns as the parent (Australia) table (e.g. the ratio of employee compensation to employees for each industry is held constant).
- Intra-regional cross-industry purchasing patterns for a given sector vary from the national tables depending on the prominence of the sector in the regional economy compared to its input sectors. Typically, sectors that are more prominent in the region (compared to the national economy) will be assessed as purchasing a higher proportion of imports from input sectors than at the national level, and vice versa.



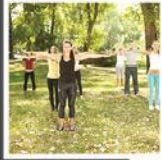
Appendix B: Household Expenditure by Industry

The following table provides estimates of household expenditure by industry in Parramatta LGA and NSW associated with 4,100 additional dwellings in Parramatta LGA as part of the PNUR project.

Table B.1. Total Household Expenditure by Industry (\$M), Parramatta LGA and NSW

	Parramatta	NSW
Retail Trade	\$80.08	\$127.35
Food and Beverage Services	\$11.21	\$18.30
Personal Services	\$2.10	\$3.03
Ownership of Dwellings	\$19.77	\$20.28
Electricity Transmission, Distribution, On Selling and Electricity Market Operation	\$1.19	\$5.51
Gas Supply	\$0.21	\$0.89
Water Supply, Sewerage and Drainage Services	\$0.07	\$0.07
Primary and Secondary Education Services (incl Pre-Schools and Special Schools)	\$2.98	\$5.12
Construction Services	\$1.53	\$2.78
Telecommunication Services	\$6.31	\$7.78
Postal and Courier Pick-up and Delivery Service	\$0.25	\$0.34
Residential Care and Social Assistance Services	\$1.76	\$1.80
Other Repair and Maintenance	\$0.53	\$0.82
Health Care Services	\$4.74	\$4.82
Road Transport	\$0.94	\$1.37
Rail Transport	\$0.57	\$0.64
Water, Pipeline and Other Transport	\$0.02	\$0.21
Building Cleaning, Pest Control and Other Support Services	\$0.64	\$1.23
Sports and Recreation	\$1.69	\$3.01
Gambling	\$1.53	\$1.11
Motion Picture and Sound Recording	\$0.27	\$0.55
Heritage, Creative and Performing Arts	\$0.41	\$1.13
Professional, Scientific and Technical Services	\$1.10	\$2.05
Public Administration and Regulatory Services	\$2.35	\$2.66
Accommodation	\$1.39	\$2.89
Air and Space Transport	\$0.17	\$2.31
Non-Residential Property Operators and Real Estate Services	\$0.05	\$0.09
Other Services	\$1.55	\$1.57
Automotive Repair and Maintenance	\$2.54	\$3.85
Rental and Hiring Services (except Real Estate)	\$2.49	\$5.02
Technical, Vocational and Tertiary Education Services (incl undergraduate and postgraduate)	\$1.44	\$1.83
Arts, Sports, Adult and Other Education Services (incl community education)	\$0.67	\$0.99
Finance	\$0.80	\$0.91
Insurance and Superannuation Funds	\$14.76	\$15.57
Employment, Travel Agency and Other Administrative Services	\$0.71	\$1.12
Broadcasting (except Internet)	\$0.53	\$1.25
Internet Service Providers, Internet Publishing and Broadcasting, Websearch Portals and Data Processing	\$0.68	\$1.86
Total	\$170.03	\$252.10

Source: ABS (2011, 2013, 2014), AEC



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