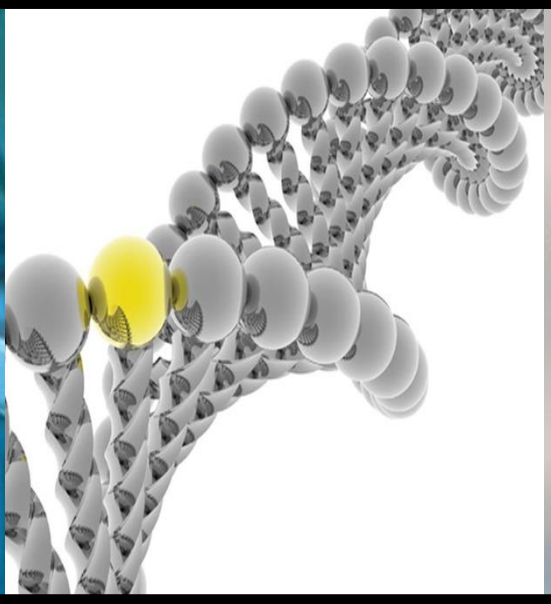
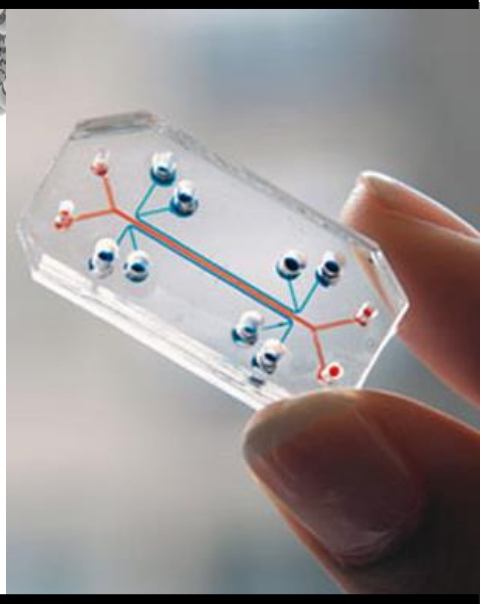
Sydney Science Park - Economic and Retail Analysis

PREPARED FOR

APP Corporation Pty Limited

December 2013

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EXECUTIVE SUMMARY

Hill PDA was commissioned by APP Corporation Pty Limited (APP) to undertake an economic and retail analysis (hereafter referred to as the Study) in relation to the proposed Sydney Science Park (SSP) in Luddenham. The purpose of the Study is to assist in the determination of a planning proposal for the rezoning of the site.

The Study establishes the following:

Total Employment

Upon completion the estimated total permanent employment in the SSP could comprise nearly 12,000 workers by 2041 as follows:

- 9,714 jobs in the research and development;
- 1,282 workers in education; and
- 1,000 workers in retail operations.

Additional workers will be employed during the construction stage, equivalent to an estimated 7,270 job years directly provided on the Subject Site.

Total Residents

The residential component of the SSP is an integral part of the overall offer of the SSP. This is expected to accommodate 3,400 dwellings in a mixture of types including student accommodation. It will house some 6,910 residents.

Total Students

Education uses in the SSP will accommodate 10,000 students by 2041.

Employment Lands Demand

The assessment of employment lands demand associated with research and development uses has indicated that:

- The SSP is unique in Australia. Internationally there is no one-size-fits-all model for science, research and technically parks with each being developed commensurate with local particularities and the nature of end user demand. Ultimately, we expect the format of the SSP to be driven by end users who will have particular and individual land use requirements that will be reflected in the development;
- As the SSP becomes more successful, a higher intensity of development may be expected leading to higher employment densities. The SSP can thus be expected to go through a reiteration as the Region grows and it evolves to meet changing demand, supporting a transposition to higher density development form. To stay competitive in the international market the SSP must have the capacity to grow, adapt and readapt over time. Flexibility in planning for the SSP should be ensured to allow for this; and

- Understanding the centre will need to evolve and revolve over time to remain competitive and respond to market demand should underpin future planning for the SSP.

The retail floorspace demand forecasts have established the following:

- The SSP should be supported by a main activity centre and a number of smaller, localised retail facilities;
- Demand for retail facilities will come from four sources:
    - Workers in the SSP – expected to generate retail expenditure of at least $31.5m per annum in 2041 (excluding workers in retail uses on site) which could be captured by on-site facilities. This will primarily be related to food catering and some convenience shopping;
    - Residents in the SSP – who are forecast to generate $213m of retail expenditure per annum in 2041 of which around $84m or 39% would be available to be captured by retail facilities in the SSP;
    - Students studying in the SSP – who are anticipated to generate $17m of retail expenditure per annum in 2041 which will largely be directly towards catering, convenience shopping and personal services; and
    - Visitors to the SSP – who could contribute a further 20% to the turnover of retail facilities in the SSP equivalent to $26.5m per annum in 2041.
- By applying target turnover rates to the total $159m of retail expenditure in 2041 which retail facilities in the SSP could capture this equates to some 21,480sqm GLA of retail floorspace. This excludes any allowance for non-retail shopfront uses such as medical facilities, banks, travel agents, estate agents and professional services or the provision of a Discount Department Store for which we believe there is justification in the longer term;
- Up to 30,000sqm GFA of retail floorspace is planned in the main activity centre in the SSP by 2041. Retail provision is anticipated ahead of demand which is an approach we support given that retail is essential supporting infrastructure for residents and workers. We advocate the incorporation of a variety of other non-retail uses as part of the main activity centre, commensurate with centre principles of consolidation of uses and given its supporting role for the SSP. These uses could include a library, leisure centre, hotel/ service apartments, conference centre and/ or a cinema. We expect small retail centres to be provided elsewhere in the SSP to serve localised demand. A Village Centre would also be provided at the proposed public transport node; and
- The centre is defined as a Potential Local Centre in the Broader WSEA. In our view there is scope for the centre to be identified as a Potential Specialised Precinct in the context of the wider research and development related uses in the SSP, its role in attracting labour from an international market and its potential to act as a catalyst for the Broader WSEA. This is justifiable based on its scientific, research and development related role which would be a distinct offer differentiated from that to be provided in the two Potential Specialised Centres already identified in the Broader WSEA.

Economic Spin-Offs

Economic spin-offs and value-add opportunities associated with the SSP are identified as follows:

- Attracting international investment;
- Catalyst for the Broader WSEA;
- Economic Value Add;
- Direct Employment;
- Supporting additional housing;
- Positive trading impact upon existing and planned centres in the wider area as on-site retailer floorspace would capture less than half of total resident demand;
- Indirect economic multipliers and employment associated with construction;
- Support for the NSW educational base; and
- Privately funded so minimal risk to Government.

Benefits to Penrith LGA

Economic benefits to Penrith LGA which will include:

- The creation of high value jobs which will:
    - Create significant additional retail expenditure locally of which less than half would be captured by new retail facilities in the SSP thereby potentially improving the trading performance of existing centres;
    - Support demand for additional dwellings in Penrith LGA including in Penrith CBD;
    - Support the construction industry directly and indirectly;
    - Support jobs in industries catering for demand from future workers and residents including hospitality, servicing, retail and transportation;
    - Diversify the socio-economic profile of residents and jobs in the Penrith LGA;
    - Increase the number of skilled jobs provided in the LGA;
    - Support further investment in other employment uses locally associated with the research and development supply change and manufacturing processes;
    - Support the role of Penrith CBD as the gateway to the North West Subregion by increasing demand for higher order retail, servicing, administrative, cultural, entertainment and civic functions which it provides and which will not be provided in the SSP
- Increasing the resident and worker catchment of Penrith CBD as the Regional Centre for the North West Subregion;

- Assisting the LGA to attract an additional 40,000 jobs between 2009 and 2031 as targeted in the City Strategy[1];
- Increasing the financial and economic viability of investment in transport and public infrastructure (such as schools, hospitals etc.) in Penrith LGA from which all residents would benefit;
- Raising the profile of Penrith LGA at a metropolitan, State, national and international level as a place to live, work, study and invest;
- Increasing the number of visitors attracted to the LGA in order to work, study or live;
- Diversifying access to a range of jobs and further education opportunities for residents in Penrith LGA and improving their skills base; and
- Potentially increasing the job containment ratio of Penrith LGA (i.e. the number of residents who both live and work in Penrith).

Benefits to Western Sydney

Economic benefits to Western Sydney which will include:

- The potential for the SSP to act as a catalyst for the development of the Broader WSEA and an exemplar of what the area can achieve. It would represent a vote of confidence in the future potential of this area and support a substantial number of new jobs, many of which will be high value. These high value jobs will in turn support other spin-off employment opportunities in the surrounding area including manufacturing, light industry, retail and support services;
- Assist Western Sydney and the North West Subregion to the achieve the minimum targeted jobs in the draft Metropolitan Strategy for Sydney to 2031;
- Attract new residents into Western Sydney and support demand for housing in LGAs such as Penrith. This will stimulate further development and support direct jobs in the construction industry and indirect jobs through economic multipliers;
- Support the financial and economic rationale for investment in transport and other infrastructure such as schools, hospitals and parklands in Western Sydney from which all residents would benefit;
- Diversity the employment and residential base in Western Sydney and widen access to a range of job and educational opportunities for residents; and
- Increase the profile of Western Sydney as a place to invest on a national and an international scale. The SSP would allow the area to compete for high-value jobs worldwide and be at the forefront of food security, energy and health related research.

[1] Source: City Strategy, Penrith City Council (2013)

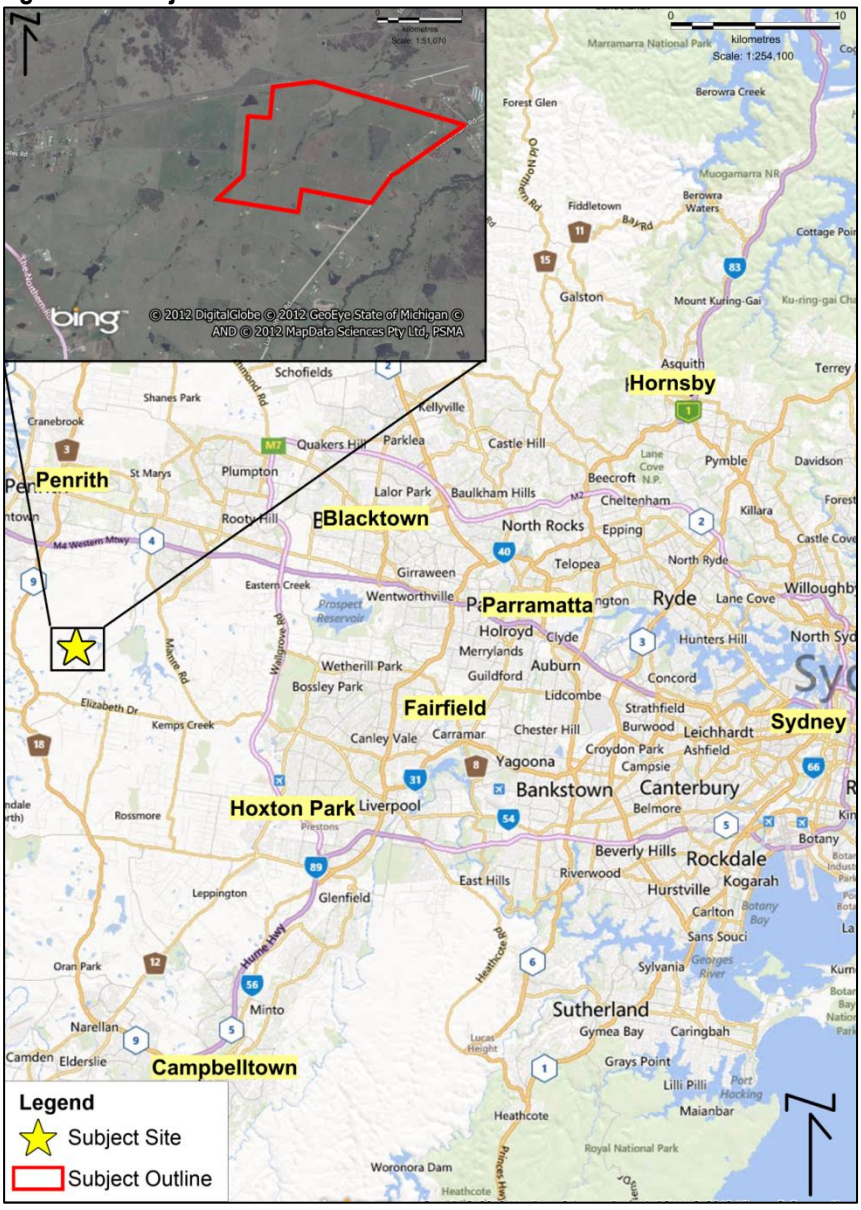
1. INTRODUCTION

Hill PDA was commissioned by APP Corporation Pty Limited (APP) to undertake an economic and retail analysis (hereafter referred to as the Study) in relation to the proposed Sydney Science Park (SSP) in Luddenham. The purpose of the Study is to support the rezoning of the site to allow for a new integrated employment, education, research and development, retail and residential specialised centre within Western Sydney at Luddenham.

1.1 THE SUBJECT SITE

The site which is subject to the proposed rezoning, hereafter referred to as the Subject Site, is depicted in Figure 1. It is located in the Luddenham suburb and within the City of Penrith Local Government Area (LGA). The Subject Site is currently used for pastoral purposes.

Figure 1 - Subject Site Location



Source: APP (2013)

1.2 THE SYDNEY SCIENCE PARK

Overview

The vision for the Subject Site is for a world class, 'first of its kind' research and development park in Australia. The SSP will provide research and development related employment and educational opportunities for Western Sydney based on three fundamental principles:

- Food security;
- Energy; and
- Health.

The Master Plan for the SSP is shown in Figure 2. It forms part of the Broader Western Sydney Employment Area (WSEA) which will accommodate a significant amount of employment growth over the next 30 years and more. Stage 1 will include the Baiada Poultry Pty Limited headquarters and laboratory.

The Planning Proposal

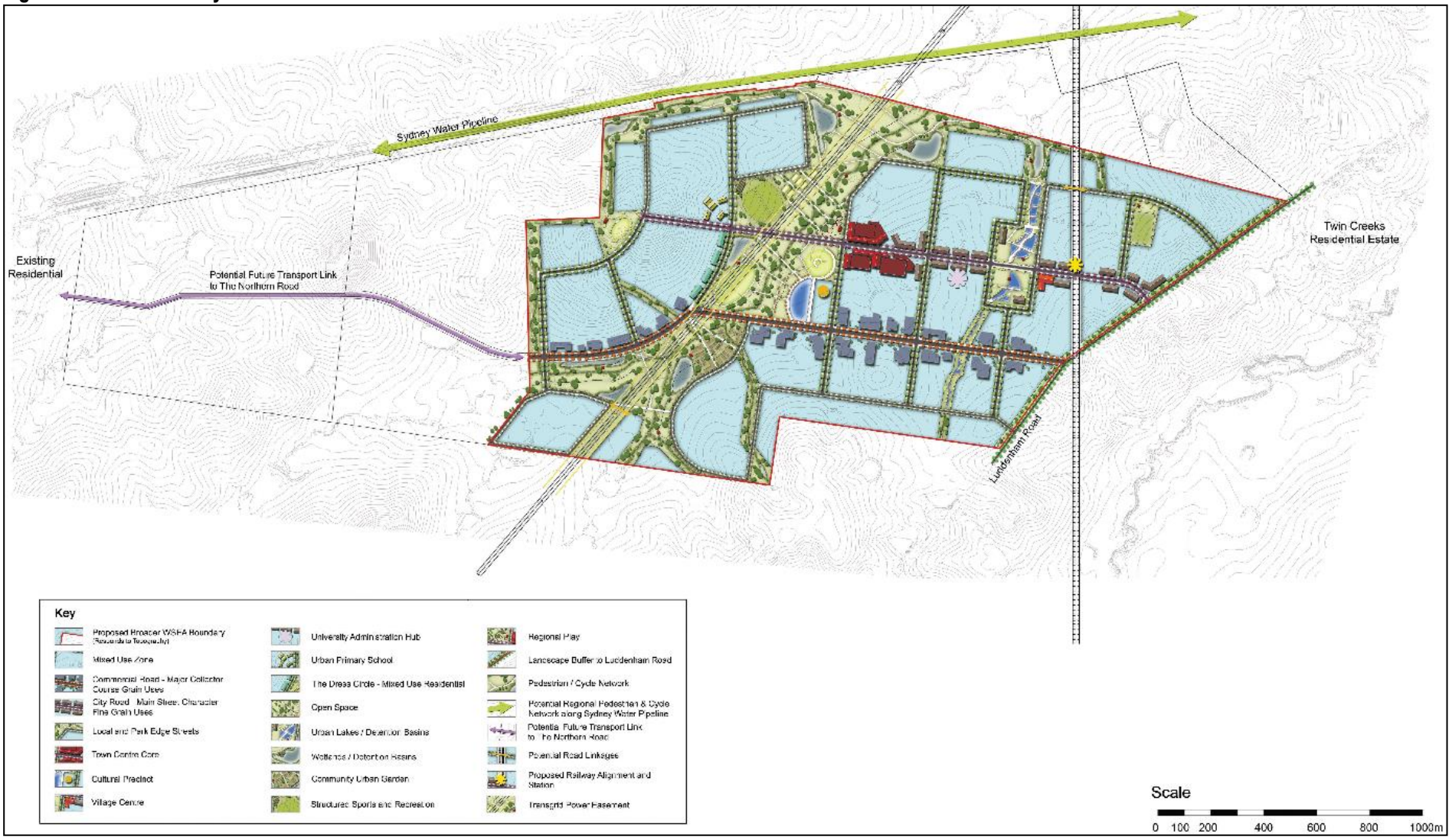
The Planning Proposal is submitted to Penrith City Council (Council), on behalf of E.J. Cooper & Son Pty Limited (EJC), in support of an amendment to the Penrith Local Environmental Plan (LEP) 2010. The proposal is to rezone a 288 hectare parcel of land at 565-609 Luddenham Road, Luddenham to accommodate a new integrated mixed use research and development, employment, education, retail and residential specialised centre.

The Planning Proposal is supported by a Master Plan, which represents the overall planning framework and preferred outcome for Sydney Science Park. The Master Plan includes:

- Approximately 340,000sqm gross floor area (GFA) of research and development floor space;
- Approximately 100,000sqm GFA of education floor space;
- A Town Centre including a 30,000sqm GFA mix of retail floor space and residential apartments;
- 3,400 dwellings including student housing;
- A primary school;
- New roads and infrastructure; and
- Sporting fields and parks.

The planning proposal addresses site servicing and environmental conditions. It is also accompanied by an offer to enter into Voluntary Planning Agreements with State Government and Council for the delivery of infrastructure and community facilities that are required to meet the future demands of the SSP. This includes road network improvements, district and local open space and a community facility.

Figure 2 - Indicative Layout Plan



Source: Sydney Science Park Indicative Masterplan, Design IQ (2013)

1.3 THE BRIEF

Hill PDA's brief in undertaking this Study was as follows:

- Review relevant strategic land use policies and consider the relationship of these to the development of the SSP;
- Prepare estimates of recent, current and future population levels;
- Prepare retail spending forecasts (based on above population estimates);
- Describe the future competitive context in which the main activity centre at the SSP will operate;
- Prepare a market assessment for the development of the main activity centre;
- Advise on the potential size of the main activity centre in gross leasable area (GLA)[2] and land requirements;
- Advise on the appropriate location for activity centre in the SSP (include implications to other existing and planned activity centres, if any)
- Provide an employment land demand assessment for the SSP; and
- Provide employment potential estimates for the SSP.

1.4 STUDY STRUCTURE

To meet the requirements of the project brief, the Study is structured in the following manner:

- Chapter 2 undertakes a review of relevant background planning policy and legislative information;
- Chapter 3 examines existing population and employment statistics for the Subject Site and considers future population, employment and student growth potential;
- Chapter 4 undertakes an employment lands demand assessment to provide advice on potential lot sizes, take up rates and employment densities associated with the SSP;
- Chapter 5 examines in detail the main activity centre for the SSP including its potential role and function, trade area, size and floorspace mix, location and scope for additional supporting land uses;
- Chapter 6 identifies and where possible quantifies economic spin-offs and industry value add associated with the SSP for the local, metropolitan, State and national economies; and
- Chapter 7 summaries the Study and the main conclusions.

[2] Note: Gross Lettable Area (GLA) is the common measure used for lease and for other descriptive purposes in retail centres and shops. It is usually defined as the total area of the lease and includes back of house, storage, offices and mezzanine levels but usually excludes loading docks and common mall spaces. GLA is more commonly used in the industry because it defines the area of the lease. Shopping centre owners report rents and turnover figures on the leased area and benchmarking is usually made on the GLA. For the purpose of Hill PDA's demand modelling all floor areas expressed are in GLA

2. CONTEXTUAL REVIEW

This Chapter explores the context of the SSP relevant to matters of economic and retail analysis by considering State, Metropolitan, Subregional and LGA wide planning policies and guidance. Appendix 1 of the Study sets out in detail the documents reviewed to inform the Study with the main findings and implications distilled in this Chapter.

2.1 ANALYSIS OF RESEARCH PARKS

Hill PDA completed an analysis of international research parks to inform the Master Plan in January 2013. The *'Research Park Case Study Analysis'* sought to define the characteristics which defined successful research parks and consider in particular the extent to which residential uses were an integral factor. The Study found that research parks compete on an international scale for highly skilled, qualified and specialist workers who command high salaries. These workers are attracted not by job prospects alone but also by the quality of life offer which research parks make. A crucial component of this quality of life offer is high quality residential dwellings located in close proximity to avoid the need for long commutes. All six of the successful international research parks examined provided or proposed proximate, high quality and well-linked residential areas.

Implications of this previous research for the SSP are as follows:

- Residential uses are a fundamental part of the overall *'pitch'* of research and technology parks internationally. These research parks must make a strong lifestyle offer to prospective workers, in addition to attractive employment opportunities, in order to be successful. Workers require proximate access to their place of employment and high quality housing choices;
- Because many of the workers in the research and development related component of the SSP will be highly qualified, specialised and vying in an international market for employment opportunities, they will command relatively high salaries; and
- Residential uses are a necessary part of the supporting infrastructure of the SSP. We expect the residential offer to include a proportion of high quality executive style homes commensurate with the expected household incomes associated with future workers of the SSP.

Other desirable attributes of successful research parks were identified in the Study which included:

- Provision of industry anchors;
- Government support;
- Strong links to high-grade universities;
- Provision for start-ups;
- Physical capacity to accommodate expansion;
- High quality of life offer;
- Efficient transportation network;

- On site facilities; and
- Proximity to a major metropolitan area.

Research parks thus contain a mix of uses not just limited to employment. In addition to residential uses these normally include educational/ university uses, retail/ entertainment facilities, hotels/ conference facilities, high quality parkland, public transport connections and direct access onto major roadways. We would expect a similar range of uses to be provided within the SSP.

2.2 EMPLOYMENT OPPORTUNITIES

Planning policy guidance places strong emphasis on the need for additional employment opportunities to be provided in the City of Penrith and the wider North West Subregion and Metropolitan area. The Broader WSEA will be a critical component in providing new jobs to meet demand emerging out of population growth in Western Sydney, promoting economic opportunity, economic development and more sustainable travel patterns. The Broader WSEA is identified as one of nine 'City Shapers' that will influence the direction of Sydney's future development[3]. The Broader WSEA is expected to accommodate +57,000 additional jobs between 2016 and 2046 of which around 36,000 (63%) will be industrial jobs and 21,000 (37%) will be office jobs[4]. The majority of these jobs will be in freight, logistics and other industrial sectors[5]. The encouragement of innovation in the Broader WSEA will be strongly supported.

Research undertaken to support the draft Broader WSEA Structure Plan (2013), which seeks to guide future development in the area, indicates that the NSW and Australian economy as a whole is undergoing structural change with a shift from primary industries towards a more knowledge based service economy. Opportunities to support knowledge-based employment within the Broader WSEA are advocated. In particular, the development of agglomerated industry clusters or *'hubs'* are recognised as offering significant potential to secure higher employment densities and drive greater job diversity in the Broader WSEA.

A potential cluster of uses which could act as a catalyst to stimulate development and employment for the Broader WSEA is identified as:

- "*A food science and technology hub building upon the area's history of poultry farming and horticulture*[6]*".*

The SSP is entirely consistent with this advice and provides a real opportunity to act as a catalyst for the wider development in the Broader WSEA. It doing so it would stimulate development in the Broader WSEA area. A flexible approach towards development is promoted by State Government in the Broader WSEA to allow it to respond to market demand.

The draft Metropolitan Strategy for Sydney (2013) identifies *'Specialised Precincts'* (Specialised Centres under the Metropolitan Plan for Sydney 2036 (2010)) as major employment clusters which *'perform vital economic, research*

[3] Source: Draft Metropolitan Strategy for Sydney to 2031, NSW Department of Planning & Infrastructure (2013)

[4] Source: Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)

[5] ibid

[6] Source: Page 19, Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)

and employment roles across the metropolitan area'[7]. These precincts contain over 8,000 jobs with potential for over 12,000 jobs and provide employment uses of metropolitan-wide importance. Potential Specialised Precincts are acknowledged as areas which could become significant locations for concentrated employment growth and which should support by existing/ planned public transport and linked by motorways. In this context, the SSP is entirely consistent with the definition of a Potential Specialised Precinct in view of its nationally important role and its employment generating potential.

2.3 RETAIL CENTRES

State planning policy guidance mandates a flexible and positive approach towards planning for new centres. It recognised that centres should be allowed to grow and new centres to form as appropriate and in response to market demand, subject to such development complementing rather than detracting from the retail hierarchy.

Three centres are currently identified in the Broader WSEA as follows[8]:

- A specialised centre located on the Commonwealth land south of Elizabeth Drive and on the potential passenger rail corridor;
- A specialised centre located at the proposed intersection of Aldington Road and the Erskine Park Southern Link Road; and
- A local centre located along the potential passenger rail corridor close to the intersection of the potential Outer Sydney Orbital corridor and Luddenham Road. This centre is within the proposed SSP.

Based on the advice contained in the *'Broader Western Sydney Employment Area Economic Issues and Drivers Study'* retail provision within the SSP is expected to be focused on serving the local workforce, although if residential uses were also provided a larger supermarket based centre is justifiable[9]. As shown in the Master Plan provided at Figure 1, one main retail centre is planned for the SSP which will be connected to the planned retail station supporting an integrated approached towards transport and retail delivery as advocated by planning policy.

As residential uses would be provided as part of the SSP, a larger centre than one which just serves the local workforce is required. As noted in Section 2.1 our analysis of research parks internationally of the type which would be provided in the SSP has indicated that both retail provision and residential uses are an integral part of their success[10]. Both are essential infrastructure supporting the primary employment function of research parks.

[7] Source: Page 106, Draft Metropolitan Strategy for Sydney to 2031, NSW Department of Planning & Infrastructure (2013)

[8] Source: Page 6, Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)

[9] Source: Broader Western Sydney Employment Area Economic Issues and Drivers Study, Urbis (2013)

[10] Source: Research Park Case Study Analysis, Hill PDA (2013)

3. POPULATION, EMPLOYMENT & STUDENTS

The purpose of this Chapter is to examine existing population and employment provision within the SSP and the Broader WSEA and consider future growth projections, including for students. The purpose of this analysis is to provide context for the latter stages of this Study in identifying the potential employment impacts and demand for retail facilities in the SSP. As recognised in the draft Broader WSEA Structure Plan, the Broader WSEA and the Subject Site itself is dominated by low intensity rural activities and intermittent rural residential uses currently.

3.1 POPULATION

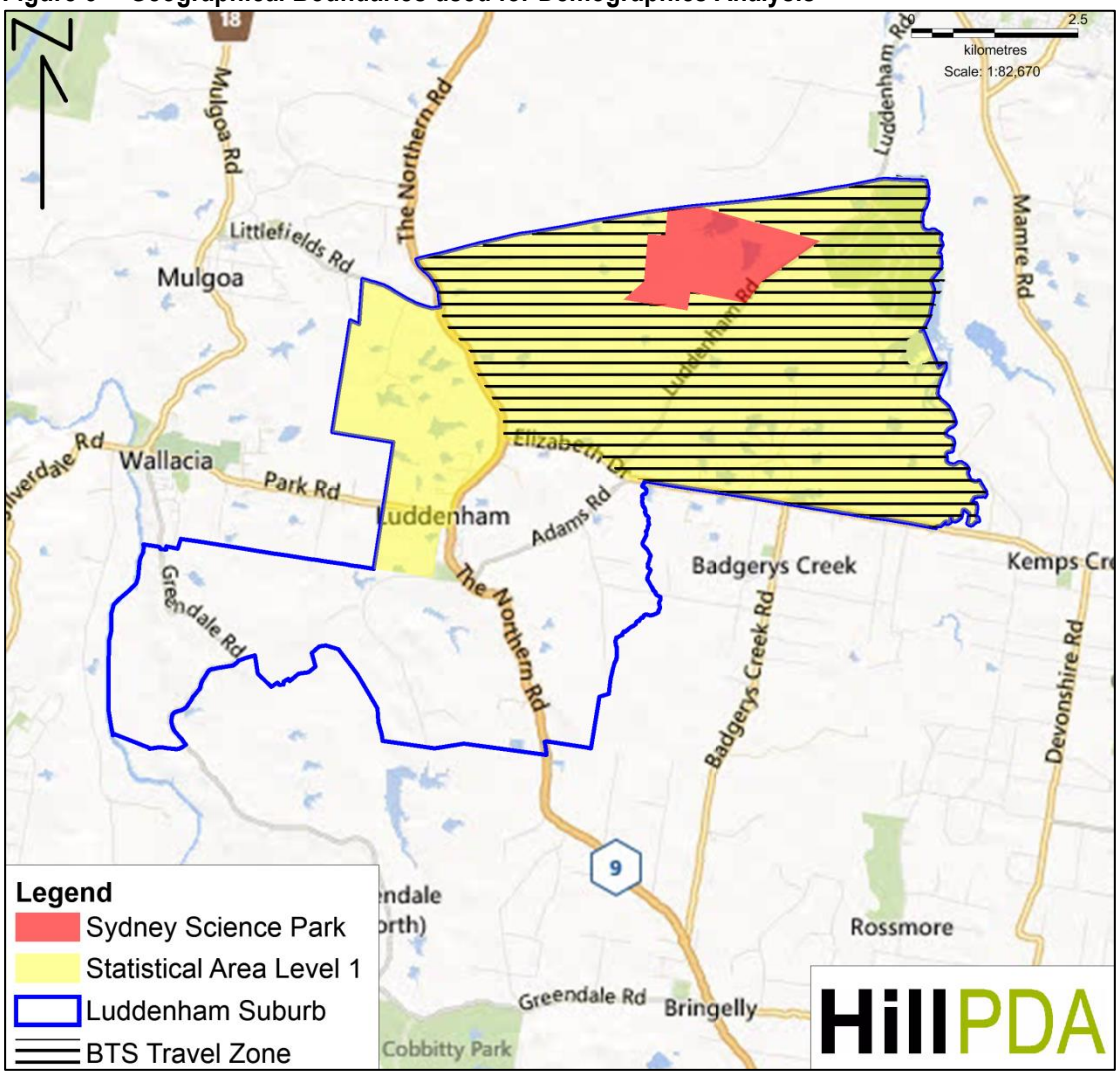
Existing

For the purposes of this analysis, demographic data was sourced from the 2011 ABS Census for the Statistical Area 1 (SA1) which most closely aligns with the SSP[11], the wider Luddenham suburb within which it is located and the Greater Sydney metropolitan area to provide a benchmark. A map showing these areas in relation to the Subject Site is provided in the following figure which also depicts the travel zone boundary[12] used for the purposes of population and employment projections considered later in this Chapter.

[11] Note: The Statistical Area Level 1 (SA1) is the second smallest geographic area defined in the Australian Statistical Geography Standard, the smallest being the Mesh Block. The SA1 has been designed for use in the Census of Population and Housing as the smallest unit for the processing and release of Census data. For the 2011 Census, there are approximately 54,000 SA1s throughout Australia. For the purposes of this analysis SA1- 1146308 has been used. A

[12] Note: A Travel Zone is a small geographic area used as the basis for NSW Bureau of Transport Statistics modelling and data analysis. Travel Zones provide a level of analysis between Census Collection District and Statistical Local Areas as defined by the Australian Bureau of Statistics.

Figure 3 - Geographical Boundaries used for Demographics Analysis



Source: Map produced by Hill PDA using MapInfo 12.0

The detailed demographic summary data derived for this Study is included at Appendix 2. The main findings of this data are as follows:

- The SA1 contained 640 residents at the time of the 2011 ABS Census and the Luddenham suburb some 1,500 residents. These were predominately located in the Luddenham conurbation situated west of the Subject Site;
- The SA1 accommodated 225 private dwellings and the Luddenham suburb contained 442. Based on the resident population this equated to an average household size of 3.3 and 3.2 in the SA1 and the Luddenham suburb respectively, well above the Greater Sydney median of 2.7;
- Separate houses dominated dwelling types in the SA1 and the Luddenham suburb;
- The median age of residents in the SA1 and the Luddenham suburb was broadly comparable to that in Greater Sydney;
- Families dominated households within the SA1 and the Luddenham suburb and couple families with children dominated family types;

- Working residents in the SA1 and the Luddenham suburb exhibited a greater propensity to be employed than those in the Greater Sydney Area with the most prolific occupations being *'clerical and administrative workers'* and *'managers'*; and
- Median weekly household incomes in the SA1 and the Luddenham suburb were greater than the median for Greater Sydney and it contained a lower proportion of very low earning households (earning less than $600/ week).

Future Demographics

The NSW Bureau of Transport Statistics (BTS) provides population and employment projections at travel zone level for the Sydney Metropolitan Area. These are used by Government to inform land use planning. Population and dwelling growth data for the travel zone which most closely aligns with the SSP (TZ 1882) is depicted in Table 1.

Table 1 - Population and Occupied Private Dwelling Forecasts

TZ 1882	2011	2016	2021	2026	2031	2036	2041	2046	Growth 2011-46
Population	542	1,162	1,307	1,615	1,956	2,277	2,645	3,022	+2,481
Dwellings	174	380	431	538	658	772	904	1,039	+865

Source: NSW Bureau of Transport Statistics Population and Dwelling Forecasts (August 2012 release)

Although detailed assumptions related to population projections for this travel zone are not provided by BTS, we have assumed that it excludes residential development associated with the SSP.

Given the relatively high levels of affluence we expect from future households associated with their employment in the SSP, we expect them to have a greater than average spending on retail goods and services. This will manifest in both more purchases in total and higher value purchases compared to lower income households.

Dwelling and Population Forecasts

The proposed dwelling mix, staging, household occupancy and estimated resident population of the SSP are shown in the table below.

Table 2 - SSP Dwelling and Population Forecast

	Persons per Dwelling^	2021	2026	2031	2036	2041
Dwellings						
Detached		50	150	225	300	300
Terrace/ Townhouse		50	300	850	1,200	1,200
Apartment		50	450	575	875	1,500
Student Housing		50	125	200	300	400
Total		**200**	**1,025**	**1,850**	**2,675**	**3,400**
Population						
Detached	3.0	482	450	675	900	900
Terrace/ Townhouse	2.3	115	690	1,955	2,760	2,760
Apartment	1.9	95	855	1,093	1,663	2,850
Student Housing	1.0	50	125	200	300	400
Total		**742**	**2,120**	**3,923**	**5,623**	**6,910**

Source: Elton Consulting (2013)
^ Source: ABS Census of Population and Housing (2011) and Elton Consulting (2013)
Note: these estimates are approximate and subject to change during the design process.

Based on the data presented above the SSP will contain a resident population of 6,910 persons in 3,400 dwellings upon completion in 2041. Dwellings will be a mixture of types with apartments and terrace/ townhouses accounting for the majority (44% and 35% of total dwellings respectively). The SSP will contain a modest component of student housing with a population of 400.

3.2 EMPLOYMENT

BTS provides estimates of existing and projected future employment at travel zone level. For the travel zone which most closely aligns with the SSP as depicted previously the following table provides employment estimates.

Table 3 - Population and Occupied Private Dwelling Forecasts

TZ 1882	2011	2016	2021	2026	2031	2036	2041	2046	Growth 2011-46
Employment	104	106	110	1,107	2,099	2,098	2,102	2,184	+2,080

Source: NSW Bureau of Transport Statistics Population and Dwelling Forecasts (August 2012 release)

The BTS projections were published prior to the release of the draft Broader WSEA and we assume that they do not make any allowance for the development of the SSP. Our employment projections for direct jobs sustained in the SSP are analysed subsequently in the Study.

3.3 STUDENTS

The SSP makes provision for university related educational provision to be associated with the University of Sydney and the University of New South Wales (UNSW), both of whom have expressed a commitment to the SSP.

Based on using an indicative student ratio of 10sqm per student[13], the 100,000sqm of university floorspace will ultimately accommodate some 10,000 students. To estimate employment numbers we have applied the same worker per student ratio from the UNSW at 7.8 workers per student[14]. Using this assumption 10,000 students would support some 1,282 university related jobs in the SSP.

The estimated development staging of educational uses in the SSP is provided in Table 4.

Table 4 - University Development Staging in the SSP

	2021	2026	2031	2036	2041
Floorspace (sqm)^	10,000	30,000	60,000	80,000	100,000
Students	1,000	3,000	6,000	8,000	10,000
Employment	128	385	769	1,026	1,282

Source: ^ APP (2013). Note: these estimates are approximate and subject to change during the design process.

3.4 SUMMARY

Existing residential population and employment provision within the Subject Site and the Broader WSEA is limited. By 2041 we expect the SSP to accommodate the following:

- 3,400 dwellings in a mixture of dwelling types including student accommodation;
- 6,910 residents;
- 10,000 students and 1,282 workers associated with educational and university related uses;
- Significant additional jobs associated with research and development and retail uses which are quantified subsequently in the Study.

[13] Note: As advised by APP (2013)

[14] Source: Volume 1 Annual Report 2012, UNSW (2013). Based on 44,238 student enrolments and 5,654 academic and professional staff in 2012

4. EMPLOYMENT LAND DEMAND

The purpose of this Chapter is to consider the nature of demand for employment lands within the SSP associated with the research and development related uses. This includes examination of lot sizes from locations which may be comparable to the SSP.

4.1 COMPARABLE MARKET ASSESSMENT

The SSP is unique in Australia. Internationally there is no one-size-fits-all model for science, research and technology parks with each being developed commensurate with local particularities and the nature of end user demand. Ultimately, we expect the format of the SSP to be driven by end users who will have particular and individual land use requirements that will be reflected in the development. Indeed, we expect most development to be undertaken in response to specific demand rather than being speculative.

For the purposes of this Study, comparative data has been derived from examination of CSIRO sites within Sydney and NSW and from international examples of modern science, technology and research parks which focus on food and scientific research. These are explored below.

Sydney and NSW Comparables

For the purposes of this Study Hill PDA has identified and derived data on the following CSIRO sites in Sydney and NSW:

- FD McMaster Laboratory, Armidale – Livestock related research park seeking to improve sustainability, productivity and competitiveness. It includes office floorspace, laboratories, a library, conference centre, industrial workshops, limited residential uses and an associated field station;
- Cotton Research Unit, Myall Vale (Narrabri) – Cotton related research park comprising office and laboratory floorspace in addition to a field station;
- CSIRO Energy Centre, Newcastle – A research facility specialising in renewable energy and low emission fossil fuel research. Land uses comprise offices and laboratory floorspace;
- Lindfield Laboratories, West Lindfield – Focused on the development of energy-efficient motors and other engineering related research. Comprises predominately laboratory floorspace designed specifically for physics-based experiments and including a lecture theatre;
- Lucas Heights Science and Technology Centre, Lucas Heights – This facility undertakes research into energy, environment and minerals. Land use is dominated by office and laboratory floorspace;
- CSIRO North Ryde (Macquarie Park) – Research related to mining, minerals, food, manufacturing, service industries, health, sustainability, water, oceans and petroleum; and
- Radio Physics Laboratory, Marsfield – A research park dedicated to astronomy, space science and computational informatics. The predominant land use in this site is laboratories.

The derived data for each of these sites is provided in the following table.

Table 5 - Comparable Sydney and NSW CSIRO Sites

Name	Land Area	Building Form	Employees	Employees/ ha	At grade parking
FD McMaster Laboratory	12ha*	1-2 storeys	60	5	✓
Cotton Research Unit	20ha*	1-storey	70	4	✓
CSIRO Energy Centre	5ha	2-3 storeys	110	22	✓
Lindfield Laboratories	7ha	2-storeys	90	11	✓
Lucas Heights Science and Technology Centre	3.4ha	2-storeys	80	24	✓
CSIRO North Ryde	8.5ha	2-5 stories	1,500	59	✓
Radio Physics Laboratory	4.5ha	2-storey	210	47	✓

Source: Hill PDA (2013), CSIRO, NSW Department of Lands Sixviewer
Note * Excludes associated field stations

Table 5 demonstrates that each of the examined CSIRO sites is unique in terms of the role and function that it performs, its urban form and employment density. The CSIRO sites situated in metropolitan Sydney (North Ryde, Marsfield and North Ryde) sustain the greatest employment densities and the most intense form of development. We would expect the SSP to display characteristics that are akin to the metropolitan CSIRO sites given that it will be part of an urban extension to Sydney, within the Broader WSEA and abutting the South West Growth Centre.

Note that we have included this analysis for contextual purposes only. Because the product which will be provided by the SSP is unique and not comparable to any existing provision in NSW or indeed Australia, we do not believe that it is appropriate to use the employment ratios in Table 5 to inform our modelling.

Lot Sizes Comparables

To consider lot sizes in more detail we have sourced comparable date from a number of established employment locations in Sydney as shown below. Note that the uses in these locations are not directly comparable to the research and development related functions of the SSP which will have unique demand requirements associated with users. They nevertheless provide a useful informative of potential approaches towards lot sizes.

Table 6 - FSR, Heights and Lot Size Comparison

	Maximum FSR	Building Height Limit	Minimum Lot Size
Norwest Business Park*	1:1 for employment uses 1.49:1 for local centre	116m	8,000sqm for employment 600sqm for retail core
Macquarie Park**			
Current	*Largely 1:1 and 2:1*	*Largely 37m*	*n/a*
Proposed	*Largely 2:1 and 3:1*	*45m to 65m*	*n/a*
Sydney Business Park***	0.5:1 to 1:1	16m	Largely 2,000sqm

Source: * North West Rail Link Norwest Station Draft Structure Plan, Hill PDA and Cox Richardson (2013)
** Macquarie Park Plan Review Recommendations Paper, Architectus (2013)
*** State Environmental Planning Policy (Sydney Region Growth Centres) 2006, NSW Department of Planning and Infrastructure

As shown in the table above FSRs in the three employment centres vary from between 0.5:1 to 2:1 although a significant uplift in Macquarie Park is proposed to account for upgraded public transport infrastructure. Height limits are variable with Norwest Business Park allowing for the greatest heights of up to 116m. This has been

reflected in the form of urban development in the area. Minimum lot sizes are under 1ha in the case of all the comparable employment precincts examined in Table 6.

The Macquarie Park experience indicates that, over time as employment hubs mature, there is scope to adjust FSR and height limits as appropriate to seek to capitalise on the success of these locations and to stimulate denser development associated with transport major infrastructure.

International Comparables

For the purposes of this Study we have focused on two research parks which have been developed within the last 10 years (most research parks have been established for a longer period), have achieved a sizeable level of development and are focused on areas which may be comparable to that envisaged for the SSP. These are:

- Biopolis, Singapore – a 310,000sqm biomedical research and development cluster[15]; and
- North Carolina Research Campus, Kannapolis – an 83,600sqm research park focused on human health, nutrition and agriculture[16].

Each of these is explored in turn below.

Biopolis, Singapore

The first phase of Biopolis was developed in 2003 and it has been subject to five further stages to date. Biopolis is a modern research park incorporating on-site laboratories that can be shared between public and private biomedical researchers, enabling cost savings and supporting entrepreneurs. This approach may be similar to that fostered in the SSP and the development process and nature of demand may also be comparable.

The phased development of Biopolis is summarised in the following table.

Table 7 - Biopolis Development Phasing

Location	Floor Area (sqm)	Lot Size	Building Form	Total Employees	Sqm/ employee	Employees/ ha	Date Built	FSR
Phase 1	185,000	4ha	7 x 8-13 storey				2003-04	4.6
Phase 2	37,000	1ha	2 x 7-storey				2006	3.7
Phase 3	41,505	1ha	1 x 5 storey 1 x 7 storey				2011	4.2
Phase 4 & 5	46,200	1ha	2 x 10 storey	400	116		2014 (expected)	4.6
Total	**309,705**	**7ha**		**4,700**	**66**	**671**		**4.4**

Source: Research Park Case Study Analysis, Hill PDA (2013)

The high-density nature of Biopolis reflects the broader characteristics of Singapore as a densely developed and intensely populated island. FSRs across the site equate to an average of 4.4:1 and job densities are high, equivalent to around 671 employees per hectare. The form of development is between 5 and 13 storeys. It is interesting to note the phasing of the development which saw some 60% of the total floorspace constructed in Phase 1 to create a catalyst to establish a biomedical hub in this location. Subsequent development has been

[15] Source: Research Park Case Study Analysis, Hill PDA (2013)

[16] Source: Boosting the Personal and Economic Health of North Carolina, NC Search Campus (2013)

more modest at between 37,000sqm and 46,200sqm on 1ha lots. This demonstrates the need for a large quantum of research park related floorspace to be developed early on to assist in establishing a *'critical mass'* of employment floorspace capable to acting as a catalyst for future stages. This is consistent with the establishment and development patterns in other research parks internationally which Hill PDA has examined.

North Carolina Research Campus, Kannapolis

The North Carolina Research Campus in Kannapolis was established in 2008 on the site of a former textile mill. It seeks to improve science, discovery and product development related to human health, nutrition and agriculture through collaborative research. The establishment of the research campus was envisaged and driven personally by David H Murdock, the owner of a fresh food Dole Food Company, although development has been enabled by public-private partnerships with State Government and seven universities in North Carolina. A significant monetary commitment of $600m (USD)[17] was required by the founder to start the project with Government, university and other private funding subsequently being secured.

The Research Campus comprises a total land area of 142ha and provides approximately 600 jobs[18]. This equates to a low job density although this is reflective of the early stage of the development. Based on the total quantum of 83,600sqm floorspace currently provided[19], the overall worker ratio is 1 employee per 139sqm. The urban form of development so far has been predominately 4-storey.

The first development phase was facilitated by the relocation of the owner's own companies Dole Foods and Castle & Cooke into the 29,200sqm David H. Murdock Core Laboratory[20]. This sought to establish a momentum which has slowly been building, allowing the development to reach its current level once majority pre-commitments have been secured. The scale of subsequent development has been slow with typical incremental development of 6,000sqm floorspace or less. The Research Campus includes a retail centre, a cinema, a medical corridor and future hotel, conference facilities and 700 dwellings are planned commensurate with market demand.

Implications for the SSP

From the examples examined above, the implications for the SSP are as follows:

- End users will drive floorspace requirements dependent upon their individual needs. In the early stages of the SSP floorspace may require pre-commitments from end-users and design/ land requirements tailored accordingly. We note that research parks of this nature are usually initially anchored by major industry players and/ or government or academic research institutions;
- The benefit of the SSP is the opportunity it provides for co-location and shared access to services and knowledge. Some end users may have commercial sensitivities concerning competition, production of research and so on which will need to be considered in design;
- Science, technology and research parks vary in density and format dependent upon local factors; and

[17] Source: Boosting the Personal and Economic Health of North Carolina, NC Search Campus (2013)
[18] ibid
[19] ibid
[20] ibid

- Successful technology and research parks must evolve and reinvent themselves over time in a continuous process. This is because:
    - They are in competition which new and existing research parks internationally and must adapt to stay competitive;
    - Market requirements change over time as technology and research methods alter; and
    - The requirements of tenants evolve. Technology and research parks which remain the same fall behind.
- This mandates the application of a flexible approach towards planning for the SSP in the future.

4.2 FORECASTS FOR THE SSP

To inform this Study employment demand forecasts have been estimated by APP. Ultimately the staging of employment lands will be determined by the market and the manner in which demand in the SSP matures over time, however we believe that these estimates are reasonable in the context of the case study analysis undertaken previously.

To estimate employment densities an employee ratio of 1 worker per 35sqm GFA has been used as advised by APP. Note that this a greater density than that being achieved by Biopolis in Singapore as previously examined, but we understand that this is based on the expectation that predominantly office floorspace will be provided. An employment density of 1 worker per 35sqm is a lower employment ratio that metropolitan office locations as some allowance is included for laboratories and other less dense employment floorspace associated with the SSP. If the majority of floorspace that will ultimately be provided in the SSP is office uses, we consider this employment ratio to be reasonable. By way of comparison, Norwest Business Park is achieving an employment ration of around 1 worker per 16sqm[21].

This is a high-level indicative employment estimate only and will vary significantly depending upon the nature of employment floorspace to be provided and the quantum of other types of floorspace (e.g. hotels, commercial offices and so on). Some of these uses could be accommodated in the commercial centre which is examined in Chapter 5.

This employment density is applied to the floorspace development staging in the table below.

Table 8 - SSP Employment Precinct Staging

	2016	2021	2026	2031	2036	2041
Floorspace (sqm GFA)	10,000	50,000	120,000	190,000	290,000	340,000
Employment ^	286	1,429	3,429	5,429	8,286	9,714

Source: APP (2013). Note: these estimates are approximate and subject to change during the design process.

[21] Source: Research Park Case Study Analysis, Hill PDA (2013)

In designating planning controls for the site, flexibility is key in order to allow development to respond to market demand which is an aspiration of the Broader WSEA. This will also allow the SSP to evolve, adapt and be reinvented over time to allow it to remain competitive internationally and respond to market trends in this sector.

5. PROPOSED ACTIVITY CENTRE

The purpose of this Chapter is to consider the potential, role, function, size and location of the main activity centre forming part of the SSP.

5.1 EXISTING AND PLANNED CENTRES

The following activity centres are identified as forming part of the Broader WSEA in the Draft Structure Plan:

- Potential Local Centre located along the potential passenger rail corridor close to the intersection of the potential Outer Sydney Orbital corridor and Luddenham Road and forming part of the SSP;
- Potential Specialised Centre located on Commonwealth Land south of Elizabeth Drive and on the potential passenger rail corridor. It is anticipated that this location could provide a catalyst for higher order employment uses. This site is situated around 3.5km due south of the SSP[22]; and
- Potential Specialised Centre located at the proposed intersection of Aldington Road and the Erskine Park Southern Link Road which could promote higher order employment uses in this location. This is situated around 7.5km east of the SSP[23].

These centres all have distinct roles and functions which differ from each other.

The nearest existing centres to the SSP are located 8-10km distant although not current well connected by road. These are:

- Glenmore Park Local Centre to the north-west comprising 8,000sqm of retail floorspace including a 4,300sqm Woolworths supermarket. This serves the surrounding residential suburb[24];
- St Clair Local Centre to the north-east which provides approximately 14,200sqm of retail floorspace including a full-line Woolworths (3,800sqm)[25]. It serves localised demand in the St Clair suburb; and
- Erskine Park Local Centre to the northeast which provides 6,000sqm of retail floorspace including an ALDI (1,560sqm) and IGA (1,455sqm). It serves a localised residential catchment.

These local centres are modest in size, located some distance from the SSP and cater for localised demand emerging from the residential uses that surround them. We do not expect that these centres would be impacted in any way by a centre in the SSP. This is because the future centre in the SSP will cater specifically for the demand created by future students, workers and residents in the SSP which would not exist were it not for the proposed development. It is thus not dependent upon redirecting trade away from other centres which would have captured it in the absence of the SSP. It is responding only to demand in the SSP.

[22] Source: Measured using NSW Department of Lands Sixviewer

[23] ibid

[24] Source: Property Council of Australia Shopping Centres Directory (2012/2013)

[25] ibid

5.2 MARKET ASSESSMENT: THE CENTRE POTENTIAL

To gain an indication of the need for and potential role of a centre in the SSP we have considered the presence of comparable centres in Sydney which predominately cater for demand from major employment and university precincts:

Norwest Business Park

Norwest Business Park is a major employment area in Sydney providing approximately 312,000sqm of business floorspace and accommodating over 20,000 workers[26]. Norwest includes two commercial centres:

- Marketown Shopping Centre of 9,500sqm GLA anchored by a full-line Coles supermarket (3,700sqm) and 36 specialty shops[27]. It is centrally located on a single plot within the Norwest Business Park and is of single-storey construction with at grade car parking on a 2.4ha site[28]. It serves a trade area comprising employees in the Norwest Business Park and residents in the wider are, including Bella Vista Waters. The shopping centre forms part of an 8ha B2 Local Centre zoning[29] which includes the Hillsong Church, petrol filling station, commercial office uses and the Sydney Ice Arena; and
- Circa Retail Shopping Centre comprising a 3,045sqm Woolworths and 1,800sqm in 21 specialty shops[30]. The shopping centre is a single storey construction on a 1.14ha site with 324 at grade car parking bays. It largely serves the adjacent employment precinct which includes Norwest Hospital as well as residents in the wider area.

Frenchs Forest

Frenchs Forest Business Park is a major employment area in the North East Subregion, providing some 325,000sqm of employment floorspace predominately in the form of warehousing with ancillary office uses[31]. Demand emanating from the local workforce is predominantly catered for by Frenchs Forest Small Village Centre which is situated 3km west of the employment precinct and which also serves demand from residents in the suburbs which adjoin it.

Retail provision in this centre is anchored by the 9,600sqm Forestway Shopping Centre which includes a Woolworths (2,660sqm) and ALDI in addition to 44 speciality shops[32]. This is provided on a 2.1ha site which incorporates 437 multi-decked car parking spaces with the shopping centre itself being of single storey construct. Uses immediately adjacent to the shopping centre include a primary school, childcare centre, medical centre, a gym, shopfront commercial uses such as real estate agents and a veterinary surgery and a place of workshop.

[26] Source: Research Park Case Study Analysis, Hill PDA (2013)
[27] Source: Cencorp Property Group (2013)
[28] Source: Measured off NSW Department of Lands Sixviewer
[29] ibid
[30] Source: Property Council of Australia Shopping Centres Directory (2012/2013)
[31] Source: Hill PDA floorspace survey (2013)
[32] Source: Property Council of Australia Shopping Centres Directory (2012/2013)

Macquarie Park

The Macquarie Park Specialised Centre includes a major retail shopping centre in the Macquarie Centre. It currently provides 83,400sqm GLA of retail floorspace including Myer, Big W, Target, a full-line Woolworths and Franklins and 231 specialty stores in addition to a further 13,500sqm GLA of entertainment related floorspace[33]. The centre is being expanded to deliver a further 35,000sqm of retail floorspace inclusive of a David Jones[34].

The Macquarie Centre serves a significantly larger trade area than that expected of the SSP, including Macquarie Park workers, students and a significant residential area. As such, it is not comparable to the future role of the centre envisaged for the SSP but we have nevertheless included it here for consideration.

UNSW Kensington

For informative purposes we have examined the provision of retail floorspace in the UNSW Kensington campus and found that it contains six small retail centres focused primarily on the provision of catering services (cafes, snacks, restaurants, coffees) in addition to other retail offerings including an IGA, bookshops, print services, banking, medical and health services and Australia Post.

5.3 Potential Role and Function

The provision of an activity centre to act as the focus for the SSP is integral to the successful operation of the SSP and the planned residential component which it would contain. Future workers and residents will demand access to retail goods and services locally. Without such provision residents, workers and students will need to travel greater distances to meet their daily and weekly shopping needs which is contrary to sustainable development principles and could increase externalities such as travel time, travel cost, pollution, traffic, congestion and so on. Beyond this, the provision of a centre would diversify employment opportunities within the SSP and provide a focal point for social interaction. Indeed, previous research undertaken by Hill PDA has established that on site facilities including a retail offer is an important component of successful research parks[35].

Given that the SSP is at a more advanced stage of planning comparative to the Broader WSEA, it has the potential to support early demand eventuating out of workers in the area, including construction workers. It therefore provides an opportunity to support the functioning and development of the Broader WSEA.

The trade area served by the centre would largely comprise workers, students and residents in the SSP. The nature of demand from these sources will differ. Workers and students require their daily shopping needs to be met including fast-food/ take-away options, top-up convenience shopping and personal services such as Australia Post, dry cleaners, travel agents and banks. Residents may make use of such facilities but will also require access to weekly convenience shopping and a wider range of retail services including a larger supermarket, evening and weekend dining and fast-food/ take-away options and a broader range of personal services. The role of the centre is thus to meet demand emanating from workers, students and residents of the SSP.

[33] Source: 2012/2013 Shopping Centre Directory NSW/ ACT Property Council of Australia

[34] Source: Macquarie Shopping Centre Expansion Stage 1, August 2012

[35] Source: Research Park Case Study Analysis, Hill PDA (2013)

We recognise the findings of the Broader WSEA Economic Issues and Drivers Study in this regard which states that:

- *"Retail offer within Broader WSEA would likely be focused on servicing the local workforce, therefore dominated by convenience food and beverage with a likely mix of:*
  - *Smaller food catering tenancies such as cafés*
  - *Fast food/drive through take-away outlets; and*
  - *Service stations servicing passing auto traffic.*
- *A larger supermarket based centre could only be considered in a business park setting also supported by a local resident population"*[36].

On this basis the main activity centre should provide a range of convenience focused retail facilities to include a full-line supermarket. We would expect a strong dining and entertainment offering to include cafes and restaurants reflecting the anticipated affluence of residents and workers in the SSP and their commensurate spending patterns. A sizable component of non-retail shopfront uses will also be required including estate agents, banks and other commercial office uses that support the SSP including legal services and travel agents. Provision for childcare should also be included.

Note that, because this centre is largely serving demand emanating out of future uses on the SSP it would not be expected to compete with the planned specialised centres elsewhere in the Broader WSEA to any great extent.

5.4 Sources of Demand

Trade to support the future Activity Centre in the SSP would be derived from four main sources as follows:

- Workers in the SSP;
- Residents in the SSP;
- Students studying in the SSP; and
- Visitors.

The potential quantum of expenditure from each of these sources is considered individually below.

Local Workers

As indicated in Chapter 4 we expect the employment lands to support around 9,714 workers by 2041 with a further 1,282 workers associated within the educational precinct. This equates to a total of 10,996 workers associated with these two uses.

There is very little data concerning the level of expenditure generated by workers close to their place of employment. There is anecdotal evidence suggesting that around 15% of total household expenditure is spent close to the place of work but the true figure is greatly influenced by a number of factors – the main one being the level of retail offer. In Sydney CBD for example the figure is substantially higher.

[36] Source: Page 62, Broader Western Sydney Employment Lands Area Economic Issues and Drivers Study, Urbis (2013)

For the purposes of this Study, we have assumed that workers will spend around $2,000 each per annum in 2011 on local goods and services[37]. This is applied to estimated workers over the 2016 to 2041 period commensurate with the worker forecasts derived previously and it is estimated that by 2041 some $31.5m of expenditure will be generated by workers as shown in Table 9.

Table 9 - Worker Related Retail Expenditure ($2013)

	2016	2021	2026	2031	2036	2041
Workers^	286	1,557	3,813	6,198	9,311	10,996
Proportional Capture (15%)	2,182	2,305	2,435	2,572	2,716	2,869
Total Expenditure Capture	0.6	3.6	9.3	15.9	25.3	31.5

Source: ^ Includes workers in both the employment and educational precincts. Note: these estimates are approximate and subject to change during the design process

This expenditure will be directed largely towards convenience items such as top-up food shopping, cafes, take-aways, restaurants and coffee bars. Retail workers employed in the centre itself will bolster this expenditure further.

Future Residents

As indicated in Chapter 3 the population of the SSP will be equivalent to an estimated 6,910 residents by 2041. These residents will have a mix of socio-demographic characteristics reflecting the anticipated dwelling mix, although residents in the non-student dwellings are expected to be affluent with most being employed in the SSP itself. For the purposes of this Study we have assumed that residents in the non-student dwellings will exhibit the same retail expenditure patterns as existing residents of the Bella Vista Wasters suburb which we believe would be comparable.

Using data from Marketinfo 2009 data[38] and the ABS Household Expenditure Survey (HES) we estimate that residents will spend some $17,342 per person on retail goods and services per annum by 2016. This is well above the Sydney metropolitan average ($13,983 in 2016) reflective of the affluence of residents in Bella Vista Waters and the future SSP.

Previous work undertaken by Hill PDA and informed by student surveys has indicated that students spent approximately $10,600 per capita on retail expenditure per annum in 2011[39]. However, to be conservative we have assumed a lower spend of $8,000 per capita for the purposes of estimating retail expenditure associated with the student accommodation proposed. This is projected to increase by 1.1% per annum reflecting the historic long term trend[40].

The future centre in the SSP can expect to capture a proportion of resident-related expenditure as it relates to convenience and lower order facilities, with higher order shopping demand for items such as bulky goods, clothing

[37] Note: This is calculated based on 15% of estimated per capita income in across the Greater Sydney Metropolitan Area based on Marketinfo 2009 and Hill PDA's assumed real expenditure increase of 1.1% per annum. Given the expected greater than average earnings of many workers in the SSP reflective of their highly skilled and specialised backgrounds this is a conservative approach

[38] Note: Based on retail expenditure for the Census Collection District 1260306 given that Marketinfo 2009 is based on 2009 ABS Census boundaries and the Bella Vista Waters suburb did not exist at that time.

[39] Source: 157- 163 Cleveland Street Sydney Socio-Economic Impact Assessment, Hill PDA (2011)

[40] Note: Not all students will be studying full-time and retail expenditure levels will vary. For the high level purposes of this Study we consider this to be a reasonable per capita retail expenditure rate for students.

and footwear and department stores/ discount department stores being met by larger centres in the wider area such as the Planned Major Centre at Leppington or the Specialised Centres in the Broader WSEA.

The following table calculates retail expenditure by retail store type and applies capture rates estimated by Hill PDA to derive the residential expenditure which a centre in the SSP could capture. Note that these capture rates are dependent upon an appropriate retail floorspace offering being provided.

Table 10 - Forecast Expenditure by Retail Store Type: Future SSP Residents ($2013)

Retail Store Type		2021	2026	2031	2036	2041
Total Expenditure	**Proportional Spend^**					
Supermarkets & Grocery Stores	27.1%	4.9	15.0	29.5	44.6	57.7
Specialty Food Stores	9.2%	1.7	5.1	10.0	15.1	19.6
Fast-Food Stores	7.9%	1.4	4.4	8.6	13.1	16.9
Restaurants, Hotels and Clubs*	9.4%	1.7	5.2	10.3	15.5	20.1
Department Stores	8.7%	1.6	4.8	9.5	14.4	18.6
Clothing Stores	6.0%	1.1	3.3	6.5	9.8	12.7
Hardware and Bulky Goods Stores	14.5%	2.7	8.1	15.8	23.9	31.0
Other Personal & Household Goods	13.9%	2.5	7.7	15.2	22.9	29.7
Selected Personal Services**	3.3%	0.6	1.8	3.6	5.4	7.0
Total Expenditure	-	**18.3**	**55.5**	**109.0**	**164.8**	**213.2**
Potential Captured Expenditure	**Capture Rate^^**					
Supermarkets & Grocery Stores	75%	3.7	11.3	22.1	33.4	43.3
Specialty Food Stores	60%	1.0	3.1	6.0	9.1	11.8
Fast-Food Stores	50%	0.7	2.2	4.3	6.5	8.4
Restaurants, Hotels and Clubs*	50%	0.9	2.6	5.1	7.8	10.1
Department Stores	0%	0.0	0.0	0.0	0.0	0.0
Clothing Stores	0%	0.0	0.0	0.0	0.0	0.0
Hardware and Bulky Goods Stores	0%	0.0	0.0	0.0	0.0	0.0
Other Personal & Household Goods	25%	0.6	1.9	3.8	5.7	7.4
Selected Personal Services**	40%	0.2	0.7	1.4	2.2	2.8
Total Captured Expenditure	**39%**	**7.2**	**21.8**	**42.8**	**64.7**	**83.7**

Source: Marketinfo (2009), ABS HES 2003-04 (updated to 2013), Hill PDA (2013)

Note: * Turnover relating only to consumption of food and liquor (excludes all other types of revenue such as accommodation, gaming and gambling)

** Selected Personal Services includes hair and beauty, laundry, clothing hire and alterations, shoe repair, optical dispensing, photo processing and hire of videos. Forecast assumes 1.1% real growth in retail spend per capita per annum in line with historic trend since 1986.

^ Assumed comparable to residents in the Bella Vista Waters suburb as derived from Marketinfo data

^^ Estimated by Hill PDA

In total residents in the SSP are projected to generate some $18m of retail expenditure by 2021 which will increase significantly to $213m by 2041 as a result of population and real expenditure growth. Using our assumed capture rates retail floorspace within the SSP could expect to capture some $84m or 39% of the total retail expenditure generated by residents in 2041.

Note that the Study has already made an allowance for retail expenditure which could be a captured from workers in the SSP. Many residents of the SSP will also be workers in the SSP. However, we have applied conservative capture rates to resident expenditure in Table 10 to allow for trade direction to other localities some of which will relate to retail facilities close to resident workplaces. This avoids the potential for double-counting. The capture rates have been determined based on Hill PDA's professional judgement in view of the anticipated role and function of the future centre in serving the top-up and some weekly shopping needs of residents.

Students

Educational uses in the SSP will accommodate approximately 10,000 students by 2041. To calculate demand for retail floorspace associated with students the following assumptions have been made:

- Students will have per capita expenditure levels equivalent to $8,000 per capita in 2011 which will increase by 1.1% per annum; and
- Students spend the same quantum of their personal expenditure as workers (i.e. around 15%) near to their place of study.

These assumptions are applied to the estimated number of students on site in the following table.

Table 11 - Student Related Retail Expenditure ($2013)

	2021	2026	2031	2036	2041
Students^	1,000	3,000	6,000	8,000	10,000
Per Capita Expenditure	$9,122	$9,635	$10,177	$10,749	$11,353
Proportional Capture (15%)	$1,368	$1,445	$1,527	$1,612	$1,703
Total Expenditure Capture	$1.4	$4.3	$9.2	$12.9	$17.0

^ Source: APP (2013)

By 2041 students studying within the educational precinct will generate in the order of $17m of expenditure for retail floorspace locally. As reflected in retail provision in the UNSW Kensington campus, student expenditure will largely relate to food catering facilities and convenience goods, with a component of retail service related expenditure and demand for other non-retail shopfront uses (e.g. banks and travel agents).

Visitors

The SSP will host a variety of visitors associated with the university and employment related uses. These include day visitors and over-night visitors to the area associated with the expected conference facilities and hotel/ serviced apartment uses that will be developed in the SSP offer as it matures. We estimate that at least a further 20% of turnover to the centre will be derived from visitors. This would include workers in the wider Broader WSEA who do not have access to other proximate retail facilities.

Total Demand

Based on the four sources of expenditure identified above we estimate that there is demand for some $159m by 2041 which would be available to be captured by retail facilities in the SSP once it is fully developed and occupied. Our assumed expenditure breakdown by retail store types is shown in the following table.

Table 12 - Total Potential Expenditure Capture for Retail Floorspace in the SSP ($m2013)

Retail Store Type	2016	2021	2026	2031	2036	2041
Supermarkets & Grocery Stores	0.2	6.2	18.4	35.6	53.9	69.4
Specialty Food Stores	0.1	2.1	6.1	11.7	17.8	22.8
Fast-Food Stores	0.1	2.1	5.9	11.2	17.0	21.8
Restaurants, Hotels and Clubs*	0.1	1.9	5.6	10.7	16.2	20.8
Other Personal & Household Goods	0.0	1.4	3.9	7.6	11.5	14.7
Selected Personal Services**	0.1	0.9	2.5	4.7	7.2	9.2
Total Capture	**0.7**	**14.6**	**42.5**	**81.5**	**123.5**	**158.8**

Note that this expenditure will not necessarily all be captured by the main activity centre in the SSP, it is likely that a number of smaller centres will be developed to serve more localised needs from workers, students and residents. These capture rates are also dependent upon appropriate floorspace provision being provided.

5.5 Retail Floorspace Demand

Target turnover rates can be applied to total available retail spend to estimate demand for floorspace by retail store types. Based on the sources of expenditure above and our assumptions regarding the nature of demand, the following table estimates the potential floorspace in the SSP. This is largely expected to be accommodated in the main activity centre as well as over a number of smaller retail centres within the SSP.

Table 13 - Total Floorspace Demand (sqm GLA)

Retail Store Type	Target Turnover Rate ($/sqm)^	2021	2026	2031	2036	2041
Supermarkets & Grocery Stores	11,000	536	1,541	2,899	4,270	5,352
Specialty Food Stores	7,500	265	752	1,401	2,066	2,584
Fast-Food Stores	7,500	260	725	1,339	1,976	2,465
Restaurants, Hotels and Clubs*	4,500	405	1,144	2,128	3,139	3,923
Other Personal & Household Goods	4,500	286	808	1,506	2,220	2,776
Selected Personal Services**	3,200	261	721	1,322	1,952	2,431
Total Retail	**-**	**2,013**	**5,692**	**10,595**	**15,624**	**19,531**
Non-Retail Commercial Uses***	-	201	569	1,059	1,562	1,953
Total Shopfront Floorspace	**-**	**2,214**	**6,261**	**11,654**	**17,186**	**21,484**

Source: ^ ABS Retail Survey 1998-99 (escalated to 2013 dollars), Urbis Retail Averages, Hill PDA and various consultancy studies. Increased by applying expected floorspace efficiency increase of 0.55% per annum

* Turnover relating only to consumption of food and liquor (excludes all other types of revenue such as accommodation, gaming and gambling)

** Selected Personal Services includes hair and beauty, laundry, clothing hire and alterations, shoe repair, optical dispensing, photo processing and hire of videos. Forecast assumes 1.1% real growth in retail spend per capita per annum in line with historic trend since 1986.

*** The proportion of non-retail commercial uses provided within centres varies markedly depending upon the centre. Given the future role anticipated for this centre in supporting the SSP, we consider 10% to be a reasonable estimate[41]

[41] Note: The proportion of non-retail commercial uses provided within total shopfront floorspace varies significantly depending upon the centre. Non-retail uses are typically lower rent payers and therefore such uses are found in greater proportions in strip retail and poorer performing centres, within which such uses can account for up to 15% of total floorspace. In large shopping centres, such as Westfield Parramatta, and in well performing centres where demand for representation from specialty retailers is stronger, the proportion of non-retail commercial uses is much lower and can be less than 5%.

Retail facilities will have access to high net worth workers and residents. We expect this to be reflected in its ultimate *'pitch'* through the provision of high quality, high price-point retailers and dining options and by providing a well-landscaped environment.

A key challenge for the centre will be ensuring activation outside of normal working hours i.e. in the evening and at weekends. A strong entertainment and dining component would help to diversity its role sufficiently to attract users throughout the week and weekend.

Provision for retail uses as part of the SSP is shown in Table 14.

Table 14 - Planned Retail Floorspace (sqm GFA)

Retail Store Type	2021	2026	2031	2036	2041
Retail Floorspace	7,000	12,000	18,000	-	30,000

Source: APP (2013). Note: these estimates are approximate and subject to change during the design process

Note that the figures in Table 14 are GFA rather than GLA used to calculate demand in Table 13. We would expect GLA to account for around 85% of GFA in this location and therefore 21,500sqm GLA of demand in 2041 would equate to around 25,300sqm GFA. On this basis it is evident that the retail floorspace provision in the SSP is planned ahead of demand. This is a prudent approach. Retail floorspace is essential infrastructure which supports residential and employment uses and providing supply in advance of demand allows early workers and residents to access retail floorspace without driving significant distances to existing provision elsewhere. It can also serve demand emanating from local construction workers employed in developing the SSP.

Due to the significant market potential of the trade area which retail facilities in this location would serve, tenants would likely be willing to commence trading early prior to substantial demand being available locally to secure their place in the future centre. This is evident in recent large residential schemes including Central Park and Oran Park (opening in 2014) with retail facilities provided in advance of a sizeable residential population being present. We would expect a full-line supermarket to be provided at an early stage.

Notwithstanding this the staging of retail floorspace in Table 14 may be optimistic based on the sources of demand identified. It may be that this floorspace is developed over a longer-time period or a wider range of retail uses and other uses could be provided.

In this regard our assumptions have not assumed any capture associated with department stores/ discount department stores (DDS). As the centre develops given the potential of the trade area it may be appropriate for a DDS to be provided within the centre which would require at least 6,000-8,000sqm GLA of retail floorspace over and above the demand calculated previously. A centre of 18,000-20,000sqm GLA for example would typically include a full-line supermarket and a DDS for example:

- Carnes Hill Marketplace – Providing 17,200sqm GLA retail floorspace anchored by Big W (7,301sqm) and Woolworths (4,414sqm)[42];
- Casula Mall – Providing 20,050sqm of retail floorspace anchored by a Kmart (7,815sqm) and Coles (5,307sqm GLA)[43]; and

[42] Source: Shopping Centre Directory NSW/ ACT 2012/13, Property Council of Australia

- Bonnyrigg Plaza – Providing 20,716sqm of retail, floorspace anchored by Big W (8,373sqm) and Woolworths (4,030sqm)[44].

The ultimate size of centre-related floorspace will also vary dependent upon the extent to which other complementary uses are provided such as a hotel/ serviced apartments, medical centre, gym, childcare centre and so on.

As with the functioning of the research and technology related uses, the retail floorspace provided must also be adaptable to allow it to change over time as the nature of demand evolves. This includes through changing consumer preferences and retail trends and as a result of changes in the constitution of the trade area in terms of the numbers of residents, workers, students and visitors within it. Flexibility in planning and design is critical to allow this evolution process to occur given the long-term nature of this project.

5.6 Job Creation

Retail floorspace will sustain permanent employment in operations. Given that the ultimate mix of retail floorspace is unknown at this stage, to estimate the extent of job creation associated with the SSP an indicative worker ratio of 1 job per 30sqm[45]. On this basis the proposed retail floorspace would support an estimated 1,000 full, part time and casual workers by 2041.

5.7 Other Retail Centre Advice

Centre Locations

The location of the main retail centre should be centrally located to ensure that it would be easily accessible to the trade area it would serve. We would expect a number of smaller retail centres to be provided elsewhere in the SSP serving dedicated catchments associated with university, residential and employment uses. This would include a Village Centre focused on the planned public transport interchange due to the high volume of footfall which will be accommodated in this area.

The location of the smaller centres will ultimately be determined by development staging and market demand. The proposed mixed use zoning would allow retail premises to be developed commensurate with demand. These centres will respond to localised demand only and would not of a size or scale to undermine or compete with the main activity centre.

Complementary Uses

As previously identified, a challenge for the retail centre will be to support activation throughout the day and the week in view of the diversity of roles that it will perform. The centre would benefit from a main anchor/s to support

[43] Source: Shopping Centre Directory NSW/ ACT 2012/13, Property Council of Australia

[44] ibid

[45] Source: Job per square metre of GFA. Sourced from the ABS Retail Census and Hill PDA

its economic viability and urban activation by broadening its functions beyond purely retail. This would be mutually beneficial by providing localised accessible retail facilities to support users of the anchor/s and consistent with activity centre principles which encourage a diverse role. Anchors provided within or immediately abutting the centre could include:

- A library;
- A leisure centre;
- Hotel/ serviced apartments;
- Conference centre; and
- Cinema.

Centre Definition

The retail centre in the SSP is identified as a 'Potential Local Centre' in the Broader WSEA Structure Plan however this was designated on the basis that the Broader WSEA would not make any allowance for residential uses. As recognised in the Broader Western Sydney Employment Area Economic Issues and Drivers Study a larger centre is supportable if residential uses were provided and indeed such uses are recognised as being justified. The SSP includes provision of residential uses are essential to supporting the successful operation of the SSP and supporting its economic viability. The inclusion of this residential component changes the nature of the future centre as has been explored above, broadening its role beyond workers.

The Draft Metropolitan Strategy (2013) identifies *'Local Centres'* as comprising either of the following:

- Town Centres – A large group of retail, business of office premises;
- Village Centres – A group of retail, business of office premises;
- Neighbourhood Centres – A small group of retail, business or office premises[46].

Specialised Precincts are also identified focused around specific employment uses comprising:

- Airport;
- Port;
- Metropolitan Business Park/ Office Cluster; and
- Education/ Health.

In isolation, the size and composition of the centre identified for the SSP is comparable to the role of a Town Centre in view of the above definitions and the extent of demand identified. However, in the context of the wider research and development related uses in the SSP, its role in attracting labour from an international market and its potential to act as a catalyst for the Broader WSEA, its identification as a Potential Specialised Precinct is justifiable. This would be focused on its scientific, research and development related role.

[46] Source: Page 16, Draft Metropolitan Strategy for Sydney to 2031, NSW Department of Planning and Infrastructure (2013)

Existing/ Planned Centre Context

It is critical that the centre does not compete with the other two defined Specialised Centres in the Broader WSEA. The key in this respect is differentiating the role of the centre from that of other planned centres in the locality. Given that the SSP is at a more advanced stage of planning there is scope for it to be developed as a Specialised Centre ahead of the other centres and serve early demand emanating out of workers in the area. It would provide a distinct offer which would not detract from that which could be provided by the other two Potential Specialised Centres in the Broader WSEA and indeed could complement their future role.

It is also essential that the future centre does not compete with Penrith CBD or other centres in the existing hierarchy, including the Nepean Health Centre or Councils planned development in Werrington. Because the Potential Specialised Precinct and the main activity centre within it is dedicated solely towards catering for demand emanating from workers, residents and students who will form part of the SSP, it is not reliant on diverting trade or investment away from existing or planned centres such as Penrith CBD. It is serving demand which would not exist without the SSP and therefore which would not otherwise be satisfied in existing or proposed centres and employment clusters locally. The focus on food security, energy and non-human health is not an offering currently provided in this locality and would therefore not compete with existing employment clusters which cater for a different sector of the market.

For the reasons outlined above we do not expect the SSP to compete with Penrith CBD. Penrith CBD would remain the highest order centre in this area and the only Regional City. The SSP will provide only one main activity centre with 30,000sqm GFA of floorspace. By comparison Penrith CBD contains 264,747sqm GLA of retail floorspace and 315,487sqm GLA of commercial floorspace in total at the time of Hill PDA's latest survey in 2010[47]. Retail floorspace in the SSP will not be of a scale to compete with that of Penrith CBD and it will lack higher order retail provision such as a department stores and bulky goods floorspace. As such, Penrith CBD is likely to be able to capture some expenditure from future residents in the SSP and as such would increase its trading levels as a result.

Beyond purely retail, Penrith CBD will remain the hub of services and employment functions for the LGA. The employment role it provides not be threatened by the SSP which is targeting a different employment market and indeed Penrith CBD, as the civic, cultural, entertainment and administrate centre for the LGA will capture increased patronage as a result of the SSP. In this manner the SSP will support the role of Penrith CBD as the gateway to the North West Subregion.

[47] Source: Economic Impact and Land Use Analysis, Hill PDA (2010)

6. ECONOMIC IMPACTS AND MULTIPLIERS

This Chapter summarises the main economic impacts and multipliers associated with the SSP. Economic impacts associated with the SSP that have not previously been considered are identified and where possible quantified. Economic multipliers or indirect impacts associated with the SSP are also recognised and quantified as far as possible.

6.1 ECONOMIC BENEFITS AND MULTIPLIERS

The main economic benefits and multipliers associated with the SSP are as follows:

- **Attracting international investment**. The SSP would be an Australian first and would compete with science, research and technology parks worldwide. As such the investment, scientists and skilled workers that it will attract would not otherwise be attracted to Australia. It will thus be net additional investment to Australia and will not be at the expense of other local, regional or national destinations;
- **Catalyst for the Broader WSEA**. The SSP would act as a catalyst for the wider development of the Broader WSEA, stimulating further development and supporting the economic viability of planned infrastructure. It would also assist in promoting and marketing the potential that the Broader WSEA offers. Indeed the Broader WSEA Economic Issues and Drivers Study states that the provision of an employment 'hub' such as *"a food science and technology hub building upon the area's history of poultry farming and horticulture"*[48] could act as a catalyst to kick-start development in the area;
- **Economic Value Add**. Science, technology and research parks are usually supported by Government and the development process itself is normally loss leading. However, because of the significant and wide ranging economic value add which knowledge-based industries support for national economies this initial loss can be justified in economic terms. This is because new technologies support a whole range of further employment and economic opportunities in manufacturing, production and knowledge industries that create significant economic multipliers for local, regional and national economies. The SSP would allow Sydney, NSW and Australia to benefit from these opportunities whilst being a nil capital cost and thus nil risk prospect to Government, given that it would be entirely funded by the private sector. Note that scientific research in Australia already employs around 11,500 people and provides just over $1 billion of added value to the Australian economy every year[49];
- **Direct Employment**. Our high-level calculations estimate that the SSP could support 9,714 jobs directly in research and development, 1,000 jobs in retail operations and 1,282 in education by 2041. Total jobs directly supported could thus be 11,996 by 2041. This is in addition to indirect jobs supported in support services (public transport, servicing and so on) and jobs sustained during the construction process itself. These will largely be high value jobs that are net additional to Australia and reflect the demographic shift towards a more knowledge-based economy. This direct employment will support economic value add for the wider economy. It will also diversify employment opportunities in the Broader WSEA. It would

[48] Source: Page 101, Broader Western Sydney Employment Lands Area Economic Issues and Drivers Study, Urbis (2013)

[49] Source: IBIS World

support significant numbers of indirect jobs off-site associated with economic multipliers. Stage 1 will include the Baiada Poultry Pty Limited headquarters and laboratory;

- **Supporting Additional Housing**. The provision of housing is recognised by State Government as being a contributor towards economic development and a major challenge facing Sydney. The SSP would provide 3,400 dwellings to meet the specific demand emanating out of the development and contribute towards the housing targets set out in State, Metropolitan, Subregional and local planning documents;
- **Resident Expenditure**. Our calculations have estimated that total retail expenditure associated with the residential component of the SSP could be equivalent to some $84m per annum by 2041 as a result of 6,910 residents. Less than half of this (39%) is assumed to be captured by retail facilities in the SSP. The residual expenditure generated by residents but not captured by retail facilities on site will be available to be captured by existing and planned commercial centres in the City of Penrith, the Broader WSEA and beyond only;
- **Trading Impact**. The future main activity centre would largely cater for demand emanating out of future workers, residents and students on the SSP (i.e. it is demand which would not exist in the absence of the SSP). On this basis it would not be at the expense of trade which would otherwise be directed towards existing or planned centres in the Broader WSEA or beyond and is thus not expected to adversely impact upon any other centres to any significant extent;
- **Construction**. Our very high level estimate of construction costs associated with this project is approximately $2.55bn (constant 2012 dollars)[50]. In terms of economic multipliers associated we estimate that:
    - $2.55bn in direct construction costs will generate a further $3.4bn in production induced multiplier impacts and a further $2.5bn in consumption induced multiplier impacts[51]. Total economic activity would amount to $8.4bn; and
    - $2.55bn of construction will generate 7,270 job years[52] directly in construction[53]. A further 9,727 job years would be generated in production induced impacts and 9,727 job years in consumption induced impacts resulting from construction of the total SSP. Total job years generated will be 26,724 spread over the construction period[54].
- **Educational Support**. The SSP would underpin Sydney's reputation as a world-class destination for university education and learning by accommodated an estimated 10,000 students by 2041. This in turn will support the economy of Sydney, NSW and Australia particular as universities attract the greatest number of visitors per square metre of floorspace than any other employment use. It will also provide greater support for the knowledge-based economy that Sydney needs to development to allow it be more competitive nationally and internationally.

[50] Note: This is a very high level cost estimate only used to inform this Study. The cost estimates will change as the masterplan evolves.
[51] Source: Hill PDA and ABS Australian National Accounts: Input-Output Tables 2008-09 (ABS Pub: 5209.0)
[52] Note: A *'Job Year'* is equivalent to one full time job for one full year
[53] Source: Hill PDA and ABS Australian National Accounts: Input-Output Tables 2008-09 (ABS Pub: 5209.0)
[54] ibid

6.2 BENEFITS TO PENRITH

The particular economic benefits to Penrith LGA are examined below. These have been considered in the context of Council's future aspirations as set out in the City Strategy (Penrith City Council, 2013) which collates and syntheses the findings of previous Council strategies and studies.

The primary economic benefits would be:

- The creation of high value jobs which will:
    - Create significant additional retail expenditure locally of which less than half would be captured by new retail facilities in the SSP. The residual retail expenditure would be available to be captured by existing and planned centres in the area including Penrith CBD and could assist to improve their trading performance;
    - Support demand for additional dwellings in Penrith LGA including in Penrith CBD where the promotion of housing is a priority for Council;
    - Support the construction industry by creating demand for construction workers directly and yielding indirect economic multiplier impacts;
    - Support jobs in industries catering for the demands of future workers and residents including hospitality, servicing, retail and transportation;
    - Diversify the socio-economic profile of residents and jobs in the Penrith LGA;
    - Increase the number of skilled jobs provided in the LGA which is a key aim of the City Strategy;
    - Support further investment in other employment uses locally associated with the research and development supply change and manufacturing processes;
    - Support the role of Penrith CBD as the gateway to the North West Subregion by increasing demand for higher retail, servicing, administrative, cultural, entertainment and civic functions which it provides and which will not be provided in the SSP.
- Increasing the resident and worker catchment of Penrith CBD as the Regional Centre for the North West Subregion;
- Assisting the LGA to attract an additional 40,000 jobs between 2009 and 2031 as targeted in the City Strategy[55];
- Increasing the financial and economic viability of investment in transport and public infrastructure (such as schools, hospitals etc.) in Penrith LGA from which all residents would benefit;
- Raising the profile of Penrith LGA at a metropolitan, State, national and international level as a place to live, work, study and invest;
- Increasing the number of visitors attracted to the LGA in order to work, study or live;

[55] Source: City Strategy, Penrith City Council (2013)

- Diversifying access to a range of jobs and further education opportunities for residents in Penrith LGA and improving their skills base. This is important in the context of the City Strategy which acknowledges that jobs growth in the LGA has not kept pace with population growth with fewer than 40 jobs for every 100 working residents in the LGA and the desire to create more jobs in growth industries focused on health and well-being[56]; and
- Potentially increasing the job containment ratio (i.e. the number of residents who both live and work in Penrith). This will support more sustainable travel patterns and lower demands on existing transport infrastructure associated with a reduction in commuting distances.

Consideration of the contribution of the SSP to the *'Jobs and Economy'* related aspirations of the City Plan is provided in Table 15.

Table 15 - Contribution of SSP to the Jobs and Economy Goals of the City Plan

Goals		Does the SSP Assist this to be achieved?	
J1	An additional 40,000 jobs between 2009 and 2031	✓	The SSP would create an estimated 6,798 jobs by 2031 and contribute 17% towards achieving the additional jobs target in the City Plan.
J2	Businesses that adapt to emerging needs and opportunities	✓	The SSP would be focused on research and development related uses which would be at the forefront of the knowledge based economy and stimulate significant multiplier job opportunities locally.
J3	A diverse economy that provides a range of employment opportunities	✓	The SSP would diversify employment opportunities in this locality including both high value jobs, educational roles and jobs in construction, retail, servicing and other industries.
J4	Infrastructure that improves economic opportunities for existing and new businesses	✓	The SSP has the potential to support significant multiplier impacts from which existing and new businesses will benefit including infrastructure investment.
J5	Rural and agricultural activities play a key part in the City's economic development	✓	The SSP would be focused on non-human poultry research and food security. This will benefit the agricultural industry.
J6	Growth and investment targets new and emerging employment sectors	✓	The SSP would primarily target research and development related jobs and investment.
J7	An effective transport network that links the City and the region	✓	The SSP would be integrated with planned transport infrastructure and will increase the economic and financial viability of investment in links to Penrith CBD and the broader area.
J8	Improved public transport connections to neighbouring growth centres and the Central West, to support Penrith's role as a regional hub servicing these areas	✓	The SSP would support the economic and financial justification for improving transport links to the local area where many workers will live.
J9	Employment land uses are planned to integrate with the existing and proposed transport network, and reduce dependence on long-distance road transport.	✓	The SSP represents a fully integrated approach to planning and infrastructure with the planned rail access being a focal point for the Master Plana and will include a Village Centre.

[56] Source: City Strategy, Penrith City Council (2013)

6.3 BENEFITS TO WESTERN SYDNEY

Economic benefits to the broader Western Sydney area associated with the SSP would include:

- The potential for the SSP to act as a catalyst for the development of the Broader WSEA and an exemplar of what the area can achieve. It would represent a vote of confidence in the future potential of this area and support a substantial number of new jobs, many of which will be high value. These high value jobs will in turn support other spin-off employment opportunities in the surrounding area including manufacturing, light industry, retail and support services;
- Assist Western Sydney and the North West Subregion to the achieve the minimum targeted jobs in the draft Metropolitan Strategy for Sydney to 2031;
- Attract new residents into Western Sydney and support demand for housing in LGAs such as Penrith. This will stimulate further development and support direct jobs in the construction industry and indirect jobs through economic multipliers;
- Support the financial and economic rationale for investment in transport and other infrastructure such as schools, hospitals and parklands in Western Sydney from which all residents would benefit;
- Diversity the employment and residential base in Western Sydney and widen access to a range of job and educational opportunities for residents; and
- Increase the profile of Western Sydney as a place to invest on a national and an international scale. The SSP would allow the area to compete for high-value jobs worldwide and be at the forefront of food security, energy and health related research.

7. SUMMARY AND CONCLUSIONS

This Study has examined employment and retail demand associated with the SSP. It has established the following:

Total Employment

Upon completion the estimated total permanent employment in the SSP could comprise nearly 12,000 workers by 2041 as follows:

- 9,714 jobs in the research and development;
- 1,282 workers in education; and
- 1,000 workers in retail operations.

Additional workers will be employed during the construction stage, equivalent to an estimated 7,270 job years directly provided on the Subject Site.

Total Residents

The residential component of the SSP is an integral part of the overall offer of the SSP. This is expected to accommodate 3,400 dwellings in a mixture of types including student accommodation. It will house some 6,910 residents.

Total Students

Education uses in the SSP will accommodate 10,000 students by 2041.

Employment Lands Demand

The assessment of employment lands demand associated with research and development uses has indicated that:

- The SSP is unique in Australia. Internationally there is no one-size-fits-all model for science, research and technically parks with each being developed commensurate with local particularities and the nature of end user demand. Ultimately, we expect the format of the SSP to be driven by end users who will have particular and individual land use requirements that will be reflected in the development;
- As the SSP becomes more successful, a higher intensity of development may be expected leading to higher employment densities. The SSP can thus be expected to go through a reiteration as the Region grows and it evolves to meet changing demand, supporting a transposition to higher density development form. To stay competitive in the international market the SSP must have the capacity to grow, adapt and readapt over time. Flexibility in planning for the SSP should be ensured to allow for this; and
- Understanding the centre will need to evolve and revolve over time to remain competitive and respond to market demand should underpin future planning for the SSP.

The retail floorspace demand forecasts have established the following:

- The SSP should be supported by a main activity centre and a number of smaller, localised retail facilities;
- Demand for retail facilities will come from four sources:
    - Workers in the SSP – expected to generate retail expenditure of at least $31.5m per annum in 2041 (excluding workers in retail uses on site) which could be captured by on-site facilities. This will primarily be related to food catering and some convenience shopping;
    - Residents in the SSP – who are forecast to generate $213m of retail expenditure per annum in 2041 of which around $84m or 39% would be available to be captured by retail facilities in the SSP;
    - Students studying in the SSP – who are anticipated to generate $17m of retail expenditure per annum in 2041 which will largely be directly towards catering, convenience shopping and personal services; and
    - Visitors to the SSP – who could contribute a further 20% to the turnover of retail facilities in the SSP equivalent to $26.5m per annum in 2041.
- By applying target turnover rates to the total $159m of retail expenditure in 2041 which retail facilities in the SSP could capture this equates to some 21,480sqm GLA of retail floorspace. This excludes any allowance for non-retail shopfront uses such as medical facilities, banks, travel agents, estate agents and professional services or the provision of a Discount Department Store for which we believe there is justification in the longer term;
- Up to 30,000sqm GFA of retail floorspace is planned in the main activity centre in the SSP by 2041. Retail provision is anticipated ahead of demand which is an approach we support given that retail is essential supporting infrastructure for residents and workers. We advocate the incorporation of a variety of other non-retail uses as part of the main activity centre, commensurate with centre principles of consolidation of uses and given its supporting role for the SSP. These uses could include a library, leisure centre, hotel/ service apartments, conference centre and/ or a cinema. We expect small retail centres to be provided elsewhere in the SSP to serve localised demand. A Village Centre would also be provided at the proposed public transport node; and
- The centre is defined as a Potential Local Centre in the Broader WSEA. In our view there is scope for the centre to be identified as a Potential Specialised Precinct in the context of the wider research and development related uses in the SSP, its role in attracting labour from an international market and its potential to act as a catalyst for the Broader WSEA. This is justifiable based on its scientific, research and development related role which would be a distinct offer differentiated from that to be provided in the two Potential Specialised Centres already identified in the Broader WSEA.

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5. Due care has been taken to prepare the attached financial models from available information at the time of writing, however no responsibility can be or is accepted for errors or inaccuracies that may have occurred either with the programming or the resultant financial projections and their assumptions.

6. This report does not constitute a valuation of any property or interest in property. In preparing this report Hill PDA has relied upon information concerning the subject property and/or proposed development provided by the Client and Hill PDA has not independently verified this information except where noted in this report.

Appendix 1 - **POLICY AND GUIDANCE REVIEW**

State Policies and Guidance

NSW Draft Centres Policy (2009)

Over the past few years there has been a growing awareness and investigation of barriers to competition in Australia, particularly in the retail industry. As a result of these investigations the Australian Government directed State government and planning authorities to review the flexibility of planning regulations and policies regarding retail development. In response the NSW Department of Planning and Infrastructure (DoPI) released the NSW Draft Centres Policy in April 2009. Although it has never been formerly adopted, for the purposes of assessing new retail and commercial developments the DoPI nevertheless uses the previsions of the Draft Policy.

The NSW Draft Centres Policy focuses around six key principles as described in the following table.

Table A1.1 - NSW Draft Centres Policy Key Principles

Principle	Direction	Description
Principle 1	Retail and commercial activity should be located within centres.	Reinforces the longstanding strategy to concentrate the predominant share of retail and business floor space within town centres. The clustering of uses within centres is justified for environmental and economic reasons. By way of example, focusing uses within centres makes efficient use of existing infrastructure, can improve business efficiency and productivity and allow for a range of uses to be provided to meet consumer needs.
Principle 2	Centres should be able to grow and new centres form.	The Draft Centres Policy identifies that areas experiencing significant increases in population and real income must be dynamic and respond to *"prevailing market demands"* through the extension of existing centres or the growth of new ones. Principle 2 of the Draft Centres Policy notes that increases in population and real incomes and a constantly changing and evolving economy means that the planning system needs to respond dynamically to prevailing market demand.
Principle 3	Market determines need for development, planning regulates location and scale.	Identifies that the market is best placed to determine demand for retail and commercial development. Accordingly, the role of the planning system is not to assess the appropriateness of development on the basis of demand, but rather to make an assessment as to the external costs and benefits. It also notes that the planning system should be flexible and enable new centres to form which may mean that new centres may form and compete with more established centres.
Principle 4	Ensuring the supply of floor space accommodates market demand.	Emphasises the importance of competition between retailers. The key intention of this principle is to create better quality, cheaper and more accessible goods for all consumers through enhanced competition. To support opportunities for greater competition, the Draft policy requires councils to ensure that there is sufficient zoned land to enable additional (and new) large format retailers to enter the NSW retail market.
Principle 5	Support a wide range of retail and commercial premises and contribute to a competitive retail market.	Subject to meeting the appropriate location and design criteria, the zoning and development assessment process should not consider impacts between existing and proposed retailers as a planning consideration.
Principle 6	Contributing to the amenity, accessibility, urban context and sustainability of centres.	Centres should be well designed for functionality, providing ambience, convenience and accessibility and well integrated with surrounding land uses.

Source: NSW Draft Centres Policy, NSW Department of Planning and Infrastructure (2009)

NSW 2021: Plan to make NSW Number 1, NSW Government (2012)

The NSW 2021 Plan aims to rebuild the NSW economy, provide quality services, renovate infrastructure, restore government accountability and strengthen NSW's local environment and communities. The Plan comprises five key strategies. The main strategy of relevance to this Study is "*Rebuild the Economy"* which seeks to secure new jobs and ensure that more land is made available for housing in order to support economic growth. A key goal of the NSW 2021 Plan is to drive economic growth by Plan targeting an additional +100,000 new jobs by 2021 in addition to population growth.

Metropolitan Policies and Guidance

Draft Metropolitan Strategy for Sydney to 2031, NSW Department of Planning & Infrastructure (2013)

The Draft Metropolitan Strategy (2013) recognises the Broader Western Sydney Employment Area (WSEA) as Sydney's single largest new employment area and reflective of this it is identifies as one of nine *'City Shapers'*. The identified priorities for the Broader WSEA are as follows:

- Investigate a potential south west expansion of the WSEA of up to 10,000 hectares through a structure planning process;
- Encourage critical industries that support the economy's global functioning and promote employment which could include research and development related functions in addition to industrial uses, freight, logistics and agribusiness/ food production;
- Identify opportunities to improve transport connections to the area;
- Identify and protect opportunities for a major intermodal terminal at Eastern Creek; and
- Investigate opportunities for better connections with surrounding centres including Mt Druitt, Fairfield and Leppington.

At least +625,000 new jobs are targeted across Sydney by 2031 of which 50% (+312,500 jobs) are to occur in Western Sydney.

Metropolitan Plan for Sydney 2036, NSW Department of Planning & Infrastructure (2010)

The Metropolitan Plan for Sydney 2036 targets an additional +760,000 new jobs in Sydney over the period to 2036 of which half (+380,000) will be accommodated in Western Sydney. An additional +770,000 homes are also targeted over the period. Specifically in the North West Subregion, of which the City of Penrith forms part, an additional +145,000 new jobs and +169,000 new dwellings are targeted to 2036.

In order to meet employment lands demand, the Metropolitan Plan identifies that 10m sqm of additional commercial floorspace, 5m sqm of additional retail floorspace and 8,500ha of employment lands may be required by 2036. The provision of employment related floorspace is to be focused on strategic centres. The Metropolitan Plan is supportive of a flexible approach towards centres which allows them to grow and change over time.

Specialised centres are to be a particular focus of high growth and high value employment sectors and the emergence of new clusters will be supported (Action E2.5). Action E2.6 specifically seeks to promote the development of education, research and development (R&D) clusters.

Subregional Policies and Guidance

Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)

The draft Broader WSEA Structure Plan was guided by policies contained within the NSW 2021 A Plan to Make NSW Number One and the draft Metropolitan Strategy for Sydney to 2031. The purpose of the draft Structure Plan is to guide future development in the Broader WSEA by delivering a structural framework for land use, transport and infrastructure planning. It reconciles the findings of a number of technical documents on the future of the Broader WSEA.

Within the Broader WSEA, the draft Structure Plan identifies potential for +57,000 additional jobs between 2016 and 2046 on 2,600ha of land. The entire Broader SWEA encompasses some 10,690ha. The draft Structure Plan recognises (based on the supporting Economic Issues and Drivers Study which is considered below) that employment demand will be largely directed towards freight and logistics related employment uses.

The draft Structure Plan acknowledges that there are potential opportunities for Federal and State Government to intervene in the development of the Broader WSEA through catalyst projects which could increase land demand and job density. This includes the potential establishment of a business hub related to advanced manufacturing, agribusiness or food technology.

Scope for three centres is identified in the draft Structure Plan as follows[57]:

- A specialised centre located on the Commonwealth land south of Elizabeth Drive and on the potential passenger rail corridor.
- A specialised centre located at the proposed intersection of Aldington Road and the Erskine Park Southern Link Road; and
- A local centre located along the potential passenger rail corridor close to the intersection of the potential Outer Sydney Orbital corridor and Luddenham Road. This centre is within the proposed SSP.

Potential staging scenarios are identified as follows[58]:

- Extension of the industrial development in Existing WSEA to the south-west.

[57] Source: Page 6, Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)
[58] ibid

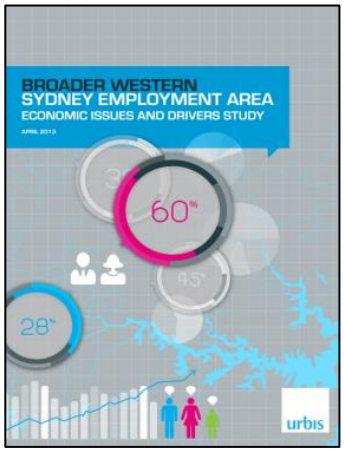
- The possibility of development occurring from two fronts: An anchor or catalyst driver in the south-west could generate development northward combined with the extension of Existing WSEA driving development from the north to the south.
- Out of sequence development within a variety of locations subject to the availability and cost-effectiveness of services and progress at no cost to the government.

Economy and employment related development principles are outlined in the draft Structure Plan to capitalise on the potential of the Broader WSEA to serve the significant population growth in Western Sydney. A diverse range of employment opportunities is sought. Specific principles are[59]:

- *"The Broader WSEA delivers employment and investment opportunities to surrounding local and regional areas.*
- *Infrastructure and services are provided to facilitate development in a timely manner.*
- *A range of employment types and densities are accommodated in the Structure Plan.*
- *The Broader WSEA attracts a range of business profiles and business activities from logistics and distribution centres to business parks and innovative technologies.*
- *The draft Structure Plan provides clear guidance and a framework for development, but also allows for flexibility to respond to market demands.*
- *The draft Structure Plan considers agribusiness and food production.*
- *The surrounding local areas benefit from increased community facilities and infrastructure as Broader WSEA develops".*

Broader Western Sydney Employment Area Economic Issues and Drivers Study, Urbis (2013)

The Employment Area Economic Issues and Drivers Study was undertaken to inform the draft Structure Plan. The purpose of it was to examined economic and impacts and drivers related to the Broader WSEA.



The Economic Issues and Drivers Study notes that the Australian economy is undergoing structural change which is seeing a shift from primary industries such as agriculture and manufacturing towards a more knowledge based service economy. As previously mentioned this Study establishes that employment demand is expected to be focused on freight and logistics and general industrial sectors although there are opportunities for intervention to driver greater job densities.

The Economic Issues and Drivers Study compares employment land supply to forecast demand, concluding that there will uptake of some 2,080ha of employment land within the Broader WSEA between 2016 and 2046 of which the majority (1,850ha or 89%) will be related to industrial uses.

[59] Source: Page 33, Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)

Opportunities for Government intervention to drive employment density and diversity in the Broader WSEA are recognised. These comprise *'infrastructure delivery'* and *'catalyst projects'*. Under the latter interaction, the potential for a catalyst project in the form of a *'hub'* is identified i.e. a business agglomeration or cluster focusing on a particular area. The advantages providing a hub are associated with their ability to facilitate the benefits of knowledge sharing and foster innovation and productivity. It is also consistent with the movement towards a knowledge based economy previously recognised.

Four potential industry focuses for a hub are identified comprising[60]:

- *"An advanced manufacturing hub with a focus on the development of technologies for advanced and digital manufacturing;*
- *A renewable energy and sustainable industry hub, drawing upon the strengths of the area in terms of land availability and large expanses of roof which could be utilised for the capture of both rainwater and solar power;*
- *A food science and technology hub building upon the area's history of poultry farming and horticulture; and*
- *A second Sydney Digital Precinct, should early NBN services be provided to the area".*

With respect to retail, the Economic Issues and Drivers Study states the following[61]:

- *"The Broader WSEA is well positioned to attract demand for larger distribution centres including 'Black Box' distribution centres as occurs in the existing WSEA.*
- *Retail offer within Broader WSEA would likely be focused on servicing the local workforce, therefore dominated by convenience food and beverage with a likely mix of:*
    - *Smaller food catering tenancies such as cafés*
    - *Fast food/drive through take-away outlets; and*
    - *Service stations servicing passing auto traffic.*
- *A larger supermarket based centre could only be considered in a business park setting is also supported by a local resident population".*

Draft North West Subregional Strategy, NSW Department of Planning & Infrastructure (2007)

The Draft North West Subregional Strategy (2007) encompasses the LGAs of Baulkham Hills, Blacktown, Blue Mountains, Hawkesbury and Penrith LGAs. The draft Subregional Strategy seeks to facilitate the development of an additional +80,000 new dwellings outside of the North West Growth Centre (NWGC), +60,000 new dwellings in the NWGC and +130,000 new jobs in the Subregion by 2031. Of these some +25,000 dwellings (outside of the NWGC) and +28,000 jobs are to be provided in the City of Penrith.

[60] Source: Page 19, Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)
[61] Source: Page 10, Draft Broader Western Sydney Employment Area Structure Plan, NSW Department of Planning & Infrastructure (2013)

Other Reports of Relevance

Research Park Case Study Analysis, Hill PDA (2013)

This Study comprised an analysis of research parks internationally and the extent to which residential uses were an integral factor contributing towards their success. It found that research parks compete on an international scale for highly skilled, qualified and specialist workers who command high salaries. There workers are attracted not just by job prospects but also by the quality of life offer which research parks make, a crucial component of which is high quality residential dwellings located in close proximity to avoid the need to commute over long distances.

Other desirable attributes of successful research parks were identified in the Study which included:

- Provision of industry anchors;
- Government support;
- Strong links to high-grade universities;
- Provision for start-ups;
- Physical capacity to accommodate expansion;
- High quality of life offer;
- Efficient transportation network;
- On site facilities; and
- Proximity to a major metropolitan area.

Appendix 2 - **2011 ABS CENSUS BASED DEMOGRAPHIC CHARACTERISTICS**

This Appendix examines data from the 2011 ABS Census in the area around the SSP to gain an insight into existing residential characteristics. The ABS areas at which we have derived our analysis are as follows:

- Statistical Area 1 (SA1) 1146308 - The SA1 level is the smallest geographic boundary that the ABS provides demographic data;
- Luddenham suburb – Comprises a larger area than the SA1 1146308 and includes the Luddenham conurbation; and
- Greater Sydney – Comprising the Greater Sydney Greater Capital City Statistical Areas as defined by ABS. This provides a benchmark against which to assess the demographics of the SA1 1146308 and the Luddenham suburb.

The following tables detail the population and dwelling characteristics, house characteristics and employment and income characteristics for the three areas. The implications of this data is considered in Chapter 3 of the Study.

Table A2.1 Population and Dwelling Characteristics

	SA1 1146308	Luddenham	Greater Sydney
Population and Dwellings			
Total Population	640	1,496	4,391,676
Total Private Dwellings	225	495	1,640,199
Occupied Private Dwellings	190	442	1,521,398
Occupied Private Dwellings (%)	84%	89%	93%
Average Household Size	*3.3*	*3.2*	*2.7*
Age Distribution			
0-14	23.8%	22.2%	19.2%
15-29	19.1%	20.7%	21.0%
30-44	22.2%	19.7%	22.5%
45-59	18.4%	18.5%	19.2%
60-74	13.1%	14.8%	11.9%
75+	3.4%	4.1%	6.1%
Median Age	*35*	*36*	*36*

Source: 2011 ABS Census

Table A2.2 Household Characteristics

	SA1 1146308	Luddenham	Greater Sydney
Home Ownership			
Owned or Being Purchased	67.2%	68.9%	65.2%
Rented	28.9%	27.8%	31.6%
Other/Not Stated	3.9%	3.4%	3.2%
Household Structure			
Family Households	78.0%	77.0%	73.1%
Lone Person Households	20.0%	20.0%	22.6%
Group Households	2.0%	3.0%	4.3%
Family Type			
Couple family w. children	52.6%	50.9%	48.9%
Couple family w/o children	26.4%	31.4%	33.5%
One parent family	19.3%	15.9%	15.7%
Other family	1.8%	1.8%	1.9%
Dwelling Type			
Separate house	69.2%	61.9%	60.9%
Townhouse	16.4%	12.2%	12.8%
Flat-Unit-Apartment	13.8%	25.2%	25.8%
Other dwelling	0.4%	0.5%	0.5%

Source: 2011 ABS Census

Table A2.3 Employment and Income Characteristics

	SA1 1146308	Luddenham	Greater Sydney
Labour Force by Occupation			
Managers	17.3%	15.5%	12.5%
Professionals	11.9%	10.9%	24.1%
Technicians & Trade Workers	13.5%	14.0%	11.5%
Community & Personal Services Workers	9.1%	7.9%	8.3%
Clerical and Administrative Workers	18.9%	15.6%	15.2%
Sales Workers	10.1%	9.9%	8.5%
Machinery Operators & Drivers	4.7%	10.0%	5.4%
Labourers	6.9%	10.2%	6.9%
Inadequately described or N.S.	2.8%	2.0%	1.8%
Unemployment	4.7%	4.0%	5.7%
Weekly Household Income			
$0-$599	16.9%	13.3%	18.2%
$600-$1,249	20.1%	21.9%	21.2%
$1,250-$2,499	23.3%	26.5%	26.6%
$2,500-$3,999	22.2%	19.2%	18.2%
$4,000+	6.3%	5.0%	5.5%
Partial income stated	5.8%	8.8%	7.9%
All incomes not stated	5.3%	5.2%	2.4%
Median Weekly Household Income	*$1,833*	*$1,562*	*$1,447*

Source: 2011 ABS Census