

Tallawarra Lands employment strategy

Final report

TRUenergy

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1 Executive summary

Introduction

SGS Economics and Planning (SGS) has been commissioned by TRUenergy to undertake an Employment Strategy for the Tallawarra Lands site in Wollongong LGA. A Part 3A application has been prepared, including an economic impact study which focuses on the retail component. Outside of the application process, HillPDA have prepared a high level employment lands demand assessment.

This Employment Strategy investigates industrial development opportunities on the site. It considers the economic conditions and policy framework in Wollongong and Shellharbour LGAs, along with local market dynamics and the competitive offer of the Tallawarra Lands site.

Location

The Tallawarra Lands site is located in the south of Wollongong LGA, approximately 13 kilometres from Wollongong CBD, and is bordered by:

- Koonawarra suburb to the north, which contains mostly residential properties
- the Southern Freeway (F6) to the west
- Lake Illawarra to the east
- Haywards Bay suburb to the south

The site covers 572.1 hectares, with the Tallawarra Gas Power Station occupying 36.25 hectares of the total. Major infrastructure in the region includes Port Kembla, Illawarra Regional Airport, and BlueScope Steelworks.

Context

The advantages of Wollongong LGA include its close proximity to Sydney, availability of land, and skilled workforce. The economy of the area has become considerably more diversified over the last 20 years, moving slowly away from traditional industries. There has been a resurgence in logistics uses related to the port and mining technology, and growth in support services for the mining industry, including specialised consultants, machinery repairs and servicing. However, general domestic manufacturing in the region is currently affected by the strong Australian dollar. Additionally, the industrial property market in the Illawarra region has been performing badly over the last year, and depressed prices and slow sales are predicted to continue for the coming year.

The vision for Wollongong LGA is to retain its existing industries and further develop the marketing of the area to attract new investment through relocation and expansion. Consultation with state government agencies revealed that a slight shift away from traditional industries is anticipated over the next five to ten years in the Illawarra region; however, manufacturing will continue to have a

major role in the economy with firms such as BlueScope steel creating opportunities for economic development in the region through its supply chain and specialised markets.

Emerging industries include those that are service-based (focussing around IT, education and health), and knowledge-based industries such as financial and support services. There is also expected to be growth in the high-tech light industrial industries as well as aeronautical related services. The transport and logistics industry is likely to rise in importance due to the expansion of Port Kembla.

Green industries are likely to grow in importance, with the University of Wollongong currently seeking to develop a green industries cluster based around research and development, and the private sector investing in the market in order to capitalise on the rising cost of raw materials. This may lead to opportunities in: manufacturing, fabrication and pilot plants for alternative energy sources such as solar and wind farms; repairs and servicing; and establishment of niche sectors.

Additionally, a significant increase in the population of Wollongong and Shellharbour LGAs is expected over the next 25 years, which suggests a growing need for population serving local industries and therefore suitable sites on which these uses can locate.

Strategy and policy framework

Regional policies

Regional policies have been geared towards supporting employment and housing growth in the Illawarra region. The Illawarra Regional Strategy outlines a further 30,000 jobs to be accommodated in the region by 2031, and the protection of 270 hectares of employment land to meet this target.

Opportunities exist around further private sector industry development, particularly in the manufacturing sector, supply chain services and R&D associated with the university and TAFE. Major infrastructure projects, including the TRUenergy gas fired power station, the upgrade to Port Kembla, and the development of Illawarra Regional Airport, all provide opportunities for business growth.

Analysis of available employment lands in 2009 identified a sufficient supply of land (although consultation with investors and real estate agents in the region suggests there is a notable shortage of good quality land), with a potential 424 hectares of vacant employment land in the Illawarra region after the rezoning of the Illawarra Regional Business Park and release of land at West Dapto. Serviced employment lands with access to road connections, public transport and proximity to centres are to be seen to have high development potential.

Wollongong LGA

Economic development is a key driver of Wollongong LGA policies. The LGA requires a broadening of service-based industries to help future employment growth. Industry development should be focused on manufacturing uses, particularly steel production and engineering services. Attracting

high value added manufacturing industries and knowledge-based activities, along with strengthening Wollongong centre as a regional service centre, will ensure future employment growth. Current threats to employment in the LGA include insufficient infrastructure, an inability to obtain infrastructure funding and skills shortages.

The Wollongong Employment Lands Strategy 2006 notes that the shortage of good quality employment land is a constraint to future growth and competitiveness. This is driven by significant population growth and major infrastructure projects, creating increased demand. Consultation from the Strategy revealed limited demand for business parks in the south of the LGA but strong demand for business incubators for small operators.

Shellharbour LGA

Shellharbour LGA's employment lands cover an area of 151.3 hectares, with an additional 313.3 hectares used for special uses such as the Illawarra Regional Airport.

The LGA has a need to diversify its base economy through the promotion of more technology and research industries. Affiliations could occur with Wollongong University or Illawarra Regional Airport. Future land surrounding the airport should have flexible controls to allow aviation uses, support services and light industries.

Tallawarra site

Tallawarra Lands has been identified as a key strategic asset that will support future employment growth in the Illawarra region. Economic development will be influenced by port activities and the BlueScope steelworks. It is vital that these industries remain located in Wollongong LGA and do not move elsewhere within the region. Future employment will be driven by Port Kembla, the growth in support services and freight and logistics industries.

The *Tallawarra Employment Lands Demand Assessment* indicated demand for heavy manufacturing uses, and large lot sizes between 5,000 sqm and 20,000 sqm. It identified Tallawarra Lands as the only significant parcel of land with the potential to accommodate such uses in the short to medium term.

Key employment development areas on Tallawarra Lands (from the Masterplan) include:

- 20,000 sqm of gross floorspace for large format retailing, covering a 5.9 hectare site (initial development area, with a further three hectares for expansion)
- 15,000 sqm of gross floorspace for business park activities, covering a 3.1 hectare site
- 14 hectares of industrial zones for light and general industrial activities, plus an area for potential future industrial expansion.

Assessment of retail uses shows the site is expected to be able to accommodate a small 500 sqm supermarket and supporting speciality stores. It is estimated that 20,000 sqm of bulky goods uses will be supportable on the site by 2016 assuming development commences in 2011.

TRUenergy has placed an emphasis on the sustainable design, construction and operation of the site. This includes a quality residential component that matches the unique setting and environmental qualities of the site, and integrated and innovative development that allows for diverse, complementary uses.

Land use study

Local service industry

It is estimated that Tallawarra Lands will require 302 local jobs to service the assumed incoming population. The retail industry accounts for 40 percent of this total. These employment forecasts have been converted into floorspace requirements. Approximately 2,200 square metres of Local Light industrial floorspace and 2,300 square metres of Light Manufacturing floorspace will be required from 2021, when it is assumed that residential development on the site will be completed.

It is recommended that development of industrial land for local service industry commences with, or shortly after, residential development on the site. Positioning the areas allocated for local service industry in clearly visible and accessible locations will assist in attracting business.

Strategic industry

On the demand side, high employment growth is predicted for Wollongong and Shellharbour LGAs. The forecasted data suggest a shift in the employment composition moving from a focus on manufacturing to service-based industries including health care and retail. However, a loss of employment in the manufacturing sector does not necessarily suggest a decline in the industry, as mechanisation of the factory floor increases and progress is made in less labour-intensive fields of manufacturing.

Councils have noted that a high proportion of residents of Wollongong and Shellharbour LGAs leave the region for employment, particularly in Sydney. This educated and skilled local workforce may further change the profile of these LGAs by attracting new industries and firms, and offer the potential for higher-order employment in the area.

On the supply side, the Tallawarra site is well positioned to meet demand for good quality industrial land, given that it offers level ground with good access to the freeway and infrastructure and is not impacted by surrounding land uses. It is anticipated that the release of the site onto the local market may shift market perceptions and strategic industries or firms that may not have considered the region due to constraints in the availability of suitable land may be attracted by the offer of the Tallawarra site. The foremost competitors to Tallawarra Lands are the West Dapto Release Area and Albion Park Rail.

It is recommended that light manufacturing uses are targeted for Tallawarra Lands. Although the site is ideal for freight and logistics uses, these have low employment density and are not likely to be the best use of the land. Given the expected growth of interest in business park developments, a specialised industrial park focused on manufacturing would be a good fit for the site. This could take the form of a cluster of firms of a similar industry.

Recommendations to attract such firms to Tallawarra Lands are:

- provision of business support infrastructure
- a focus on sustainable development in economic, social and environmental terms
- development of executive housing on site
- consideration of workforce amenity, including landscaping
- flexibility in terms of lot sizing
- effective marketing
- provision of good truck access, turning circles and wide frontages
- appropriate pricing for the local market
- securing an initial anchor target
- public transport servicing.

Suggested industries for further investigation are green industries and food product manufacturing. These potential targets would not adversely impact on the surrounding residential development and are likely to be attracted by the site's excellent transport links and proximity to regional infrastructure and population centres. They fit with the existing policy framework for the Illawarra and utilise higher order skills than traditional manufacturing in the region.

Given the current shortage of land supply in the region and the forecasted commencement of residential development in 2016, it is recommended that TRUenergy would be better positioned to release industrial land on Tallawarra Lands in the short term. This approach would reduce the likelihood of the site competing directly against the West Dapto Release Area and Albion Park Rail.

2 Introduction

SGS Economics and Planning (SGS) has been commissioned by TRUenergy to undertake an Employment Strategy for the Tallawarra Lands site in Wollongong LGA. A Part 3A application has been prepared, including an economic impact study which focuses on the retail component. Outside of the application process, HillPDA have prepared a high level employment lands demand assessment.

This Employment Strategy investigates industrial development opportunities on the site. It considers the economic conditions and policy framework in Wollongong and Shellharbour LGAs, along with local market dynamics and the competitive offer of the Tallawarra Lands site.

3 Site and context assessment

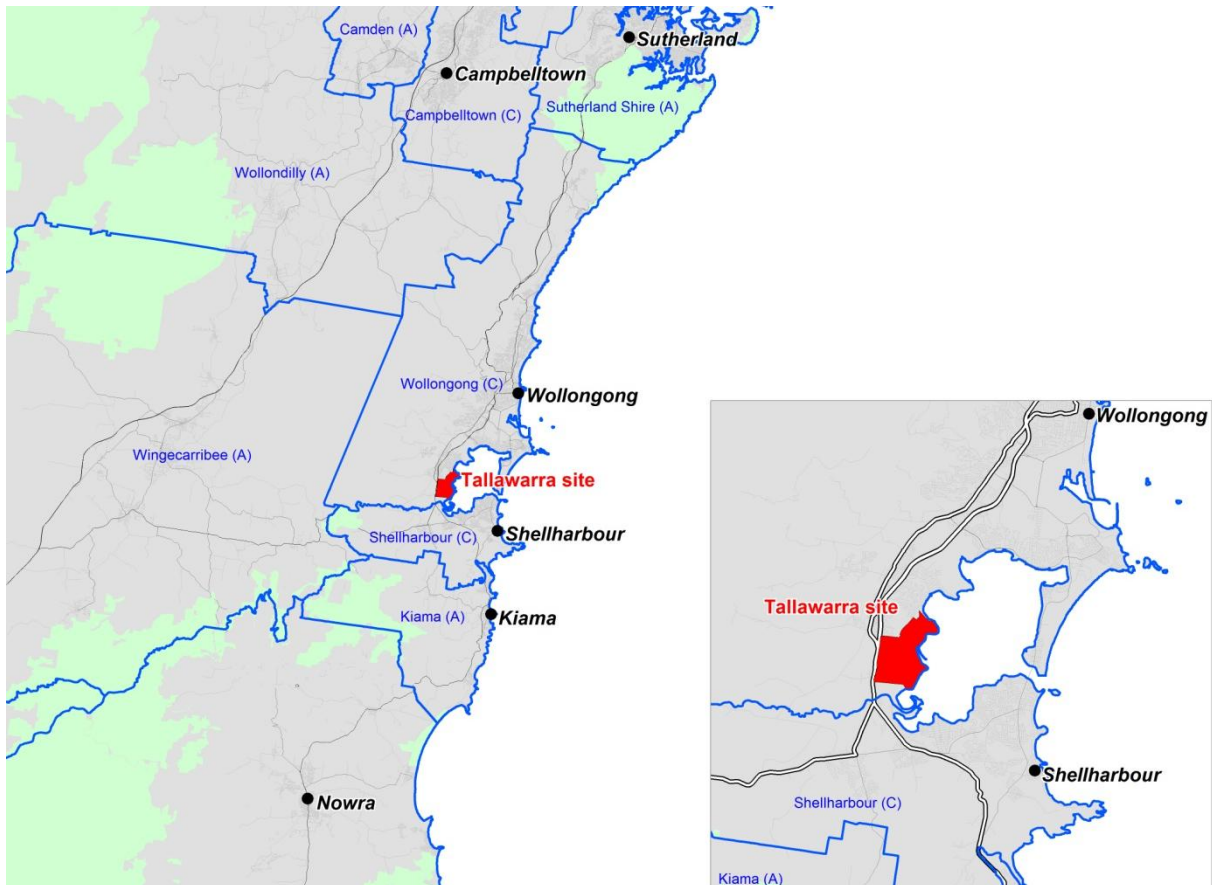
3.1 Site assessment

Location

The Tallawarra Lands site is located in the south of Wollongong LGA, approximately 13 kilometres from Wollongong CBD (Figure 1), and is bordered by:

- Koonawarra suburb to the north, which contains mostly residential properties
- the Southern Freeway (F6) to the west
- Lake Illawarra to the east
- Haywards Bay suburb to the south

Figure 1. Context map



Source: SGS (2011)

The site covers 572.1 hectares, with the Tallawarra Gas Power Station (Figure 2) occupying 36.25 hectares of the total.

Figure 2. Tallawarra power station

Source: SGS (2011)

Vision for Tallawarra

TRUenergy has developed a vision for the development of Tallawarra Lands in collaboration with the Community Liaison Group. These are the principles of the vision:

- Accessible open spaces that focus on the connection with the lake, and provide for a range of recreational needs
- Leading practice sustainability initiatives that enhance the natural and urban environment
- Provide opportunities to appreciate and learn more about the environmental qualities of the site
- A quality residential component that capitalises upon and complements the unique scenic and environmental qualities of the site
- Integrated and innovative development that creates shared benefits, and allows diverse, yet complementary uses
- Creation of a significant regional amenity
- Engagement processes that create a high level of community acceptance and ownership over project outcomes
- A project that returns value to TRUenergy and enhances the company's corporate reputation.

The proposed Concept Plan for the site is shown in Figure 3.

Figure 3. Concept plan for Tallawarra lands



Source: TRUenergy (2010)

Regional infrastructure

Major infrastructure in the Illawarra region includes:

Port Kembla

Port Kembla, established in the 1890s, services regional industries including coal and steel and is the closest working port to Sydney. It recently underwent a major expansion, which saw the construction of three new berths and the development of 53 hectares of land. Its trade base now includes general and bulk cargo, containers and motor vehicle imports.

Port Kembla directly and indirectly supports 3,500 jobs. In 2009/2010, the port received 31 million tonnes of trade throughput –

an increase of 18 percent from the previous year. Coal exports accounted for 13.7 million tonnes and grain exports for 0.68 million tonnes¹.

Illawarra Regional Airport Illawarra Regional Airport (also known as Wollongong Aerodrome) is owned and operated by Shellharbour City Council, which is seeking to actively promote employment growth by encouraging industry to develop in the area. The airport has a growing light aeronautics industry, including maintenance and engineering services, and contains approximately 17 businesses. Significant public investment in the form of construction of airport hangars has meant that the light-aircraft industries occupying the spaces are now at 100% capacity with further hangars being constructed to meet additional demand.

The airport is well connected to transport links, with direct access to the F6 and South Coast Railway Line to Sydney.

BlueScope Steelworks BlueScope Steelworks is located at Port Kembla and has the capacity to produce approximately 5.3 million tonnes of crude steel. The steelworks is also the largest manufacturer and supplier of flat steel in Australia, and employs approximately 6,000 full-time workers. It has a coating and painting facility at the adjacent Spring Hill site.

3.2 Economic trends and drivers

Globalisation

Globalisation has brought a rapid increase in global trade in goods and services and in particular capital flows. This has been facilitated by technological innovation in transport and communications, the promotion of deregulation in particular industry sectors, the removal of trade restrictions and exchange controls and innovation in the management and pricing of transaction risks (insurance, hedging, partnership formation and so on).

Globalisation is likely to continue to drive a separation between the 'thinking' part of the value chain (design, brokerage, marketing, strategy formulation) and the 'making' (manufacturing) and 'distribution' (transport, logistics, after sales service) aspects. Key services within the thinking part of the value adding process are showing increasing tendencies to centralise within one or two centres in advanced countries. This is evident in Australia, with Sydney being the pre-eminent national dispenser of advanced business services.²

¹ Port Kembla Port Corporation (2010) Annual Report 2009/2010

² Spiller, M. (2004) Urban Agglomeration of Advanced Business Services in Australia – Some Policy Implications, State of Australian Cities Conference, Sydney, December 2003

More countries are opening up their economies and seizing the opportunities that come from closer integration into the global economy. China and India, as well as other countries such as Russia, Brazil and Mexico, are growing rapidly.

Further, as communication and technology continue to improve, global production networks are becoming increasingly flexible, specialised and dispersed across continents. In an era where resources, technology and ideas can be moved rapidly to the most productive location, no economy can rely on its past strengths or traditional expertise.

These trends have significant implications for the developed world. Under the globalisation paradigm, the current and future economic context is one of increased global competition, albeit also one of increasing interdependence of national and urban economies. For Australia the specific implications include:

- increased competition in lower order tertiary sectors of the economy
- opportunities for increased trade (namely in resources, advanced manufacturing and sophisticated services)

The burgeoning middle classes in developing countries like China and India are providing new markets for very high quality manufactured goods from the developed world. For example, high end fashion and footwear manufacturers in Italy are now targeting high income customers in key locations such as Shanghai and Beijing.

Cities

In the absence of trade barriers, the underlying characteristics and resources of nations have come to determine the activities in which they specialise. In general, more labour-intensive, lower-technology production is taking place in countries with an abundance of low-cost labour, whilst advanced economies with higher labour costs, and more developed skills and physical capital, concentrate on the production of high-value, knowledge-based goods and services. Importantly, these knowledge driven sectors rely on productivity and innovation for their competitive advantage.

High-value, knowledge based jobs have an acute preference for locating in cities. This is because cities provide the most productive business environment and enhance firms' propensity to innovate as a result of agglomeration economies. Cities are now being increasingly recognised for the benefits simply arising from workers and firms being located close together.

However, cities themselves develop their own specialities in global high value supply chains, and not all cities have benefitted equally from the recent era of globalisation. Sydney, for example, contains Australia's critical global gateway infrastructure (Sydney airport and port), and has carved out a competitive role in the global trade network providing financial services to the Australian commodity trade (metals, mining and so on), financial brokerage in the NZ/Pacific region and financial brokerage into the Australian consumption economy.

The attraction and retention of high-value, knowledge-based sectors are crucial to long-term prosperity. Successful national economies are increasingly measured by their capacity to generate wealth through innovation and productivity, and to attract the labour and capital to support an innovation based economy. Because these functions are concentrated in cities, the efficiency, amenity and quality of life available in cities is an increasingly important factor in economic success.

Competitiveness

An indicative list for assessing 'local' competitiveness includes the following:

- Enabling infrastructure: 'hard' infrastructure such as transport systems, but also 'soft' infrastructure including R&D institutions, governance frameworks for economic development and peak body representation
- Education and health, which underpins a productive workforce and a lifelong learning and well-being agenda
- Adequate labour pool, within a reasonable geographic reach (which has implications for transport connections and adequacy)
- Business sophistication, which relates to the quality of business leadership and management, which also includes maximising performance from sound locational decisions where clustering and agglomeration economies can be maximised
- Innovation and technological readiness, which refers to the ability of the economy to develop new technologies or 'cutting-edge' products in order to grow and maintain a competitive advantage, and/or adapt to existing technologies to enhance the productivity of its industries;
- Sustainability, which will become increasingly relevant in 'competitiveness' judgements
- Quality of life, covering lifestyle, amenities, access to recreation and quality residential offerings.

While not necessarily definitive the variables do however display clear linkages, strengthening the assertion that competitiveness is the product of a range of interlocking factors.

Local economy

The advantages of Wollongong LGA include its close proximity to Sydney, availability of land, and skilled workforce. The economy of the area has become considerably more diversified over the last 20 years, moving slowly away from traditional industries. There has been a resurgence in logistics uses related to the port and mining technology, and growth in support services for the mining industry, including specialised consultants, machinery repairs and servicing. However, general domestic manufacturing in the region is currently affected by the strong Australian dollar.

In the future, it is expected that the way businesses communicate will shift and this will have an effect on their location decisions. While infrastructure in the local area will play a role, a site's proximity to transport links may be of lesser importance. However, there will be many industries for which location is paramount and firms require physical proximity to local populations, other businesses, good infrastructure and transport nodes.

The vision for Wollongong LGA is to retain its existing industries and further develop the marketing of the area to attract new investment through relocation and expansion.

Growth industries for the Illawarra

Consultation with state government agencies revealed that a slight shift away from traditional industries is anticipated over the next five to ten years in the Illawarra region; however, manufacturing will continue to have a major role in the economy with firms such as BlueScope steel creating opportunities for economic development in the region through its supply chain and specialised markets.

Emerging industries include those that are service-based (focussing around IT, education and health), and knowledge-based industries such as financial and support services. There is also expected to be growth in the high-tech light industrial industries as well as aeronautical related services. The transport and logistics industry is likely to rise in importance due to the expansion of Port Kembla.

Colliers suggested that the University of Wollongong is targeting medical uses, in line with Wollongong Hospital, which may provide the Tallawarra site with the opportunity to attract other types of logistical and research uses. These industries are currently locating in the Innovation Campus; however, as they develop it is expected that there will be less emphasis on such institutions acting as catalysts.

Green industries are likely to grow in importance, with the University of Wollongong currently seeking to develop a green industries cluster based around research and development, and the private sector investing in the market in order to capitalise on the rising cost of raw materials. This may lead to opportunities in: manufacturing, fabrication and pilot plants for alternative energy sources such as solar and wind farms; repairs and servicing; and establishment of niche sectors.

3.3 Strategy and policy framework

Key findings from the review of relevant strategy and policy documents relating to the Illawarra Region, Wollongong and Shellharbour LGAs, and the West Dapto Release Area are as follows. 'Appendix A: Strategy and policy framework' contains a more detailed review.

Regional policies

Regional policies have been geared towards supporting employment and housing growth in the Illawarra region. The Illawarra Regional Strategy outlines a further 30,000 jobs to be accommodated in the region by 2031, and the protection of 270 hectares of employment land to meet this target.

Opportunities exist around further private sector industry development, particularly in the manufacturing sector, supply chain services and R&D associated with the university and TAFE. Major infrastructure projects, including the TRUenergy gas fired power station, the upgrade to Port Kembla, and the development of Illawarra Regional Airport, all provide opportunities for business growth. The Tallawarra site, if utilised for freight purposes, may face the challenge of aligning freight transport links southward in the LGA.

Analysis of available employment lands in 2009 identified a sufficient supply of land³, with a potential 424 hectares of vacant employment land in the Illawarra region (after the rezoning of the Illawarra Regional Business Park and release of land at West Dapto). Serviced employment lands with access to road connections, public transport and proximity to centres are to be seen to have high development potential. The Illawarra and South Coast Employment Lands Audit 2004 states the Tallawarra Lands site is earmarked for technology uses and light industry⁴.

Wollongong LGA

Economic development is a key driver of Wollongong LGA policies. The LGA requires a broadening of service-based industries to help future employment growth. Industry development should be focused on manufacturing uses, particularly steel production and engineering services. Attracting high value added manufacturing industries and knowledge-based activities, along with strengthening Wollongong centre as a regional service centre, will ensure future employment growth. Current threats to employment in the LGA include insufficient infrastructure, an inability to obtain infrastructure funding and skills shortages.

Two key recommendations from the Wollongong Economic Development Strategy with the potential

³ However, consultation suggests that there is currently a shortage of good quality land

⁴ This has since been revised.

to impact on the types of industries attracted to the Tallawarra Lands site are that:

- consideration is given to the incentives (from Council and State Government) that could be used to encourage non-port related businesses located in proximity to the port to relocate to other suitable industries areas in the LGA
- when planning the development of West Dapto, Council continues to include a focus on employment lands and developing local jobs in the areas, including unlocking employment lands at Kembla Grange.

The Wollongong Employment Lands Strategy 2006 notes that the shortage of good quality employment land is a constraint to future growth and competitiveness. This is driven by significant population growth and major infrastructure projects, creating increased demand. Consultation from the Strategy revealed limited demand for business parks in the south of the LGA but strong demand for business incubators for small operators.

In the future, Port Kembla may have the potential to take up underutilised land around the port. However, some of this land is earmarked for future general cargo and motor vehicle imports or has issues with multiple ownership.

Shellharbour LGA

Shellharbour LGA's employment lands cover an area of 151.3 hectares, with an additional 313.3 hectares used for special uses such as the Illawarra Regional Airport. The key guiding principles identified for industrial land in Shellharbour include:

- encouragement of light industry to provide residential support services
- provision of a range of lot sizes
- preservation of land that can accommodate relatively large floorplates
- not permitting bulky goods retailing in industrial areas.

The LGA has a need to diversify its base economy through the promotion of more technology and research industries. Affiliations could occur with Wollongong University or Illawarra Regional Airport. Future land surrounding the airport should have flexible controls to allow aviation uses, support services and light industries.

West Dapto Release Area

A local environmental plan (LEP) has been prepared for the West Dapto Release Area. It acknowledges that the site will contain a mixture of land uses including residential, commercial, conservation, open space and employment-generating activities. The site is expected to contain the following employment zones:

- B6 – Enterprise Corridor
- IN2 – Light Industrial
- IN3 – Heavy Industrial

The West Dapto Release Area is anticipated to require local and regional infrastructure with a cost of \$1.2 billion. This will include roads, public transport, water cycle management, community and recreation facilities, environment protection, and water and sewerage.

The site could potentially take up to 40 years to develop, depending on the rate of land take-up. From a servicing viewpoint, development may commence in the north of the study area.

Tallawarra site

Tallawarra Lands has been identified as a key strategic asset that will support future employment growth in the Illawarra region. Economic development will be influenced by port activities and the BlueScope steelworks. It is vital that these industries remain located in Wollongong LGA and do not move elsewhere within the region. Future employment will be driven by Port Kembla, the growth in support services and freight and logistics industries.

The *Tallawarra Employment Lands Demand Assessment* indicated demand for heavy manufacturing uses, and large lot sizes between 5,000 sqm and 20,000 sqm. It identified Tallawarra Lands as the only significant parcel of land with the potential to accommodate such uses in the short to medium term.

Key employment development areas on Tallawarra Lands (from the Masterplan) include:

- 20,000 sqm of gross floorspace for large format retailing, covering a 5.9 hectare site (initial development area, with a further three hectares for expansion)
- 15,000 sqm of gross floorspace for business park activities, covering a 3.1 hectare site
- 14 hectares of industrial zones for light and general industrial activities.

Assessment of retail uses shows the site is expected to be able to accommodate a small 500 sqm supermarket and supporting speciality stores. It is estimated that 20,000 sqm of bulky goods uses will be supportable on the site by 2016 assuming development commences in 2011.

TRUenergy has placed an emphasis on the sustainable design, construction and operation of the site. This includes a quality residential component that matches the unique setting and environmental qualities of the site, and integrated and innovative development that allows for diverse, complementary uses.

Tallawarra Lands Part 3A Concept Plan Application: Economic Impact Assessment (2010)

The *Tallawarra Lands Part 3A Concept Plan Application – Economic Impact Assessment* was produced by PitneyBowes Business Insight in October 2010 for TRUenergy. The report provides an independent assessment of the proposed retail and bulky goods uses on the Tallawarra Lands Site (TLS).

The assessment identifies the main and secondary retail trade areas. The main trade area is a localised area reflecting the convenience-based activities that have been proposed. The trade areas will be influenced by the existing population along with new residential developments in the main trade area (potentially 1,210 new dwellings), and secondary trade areas (approximately 150 new dwellings). The assessment assumes development will commence in 2011 and will be completed by 2021. It is also expected that the TLS will contain a worker population that will contribute to the trade area's spending.

Based on resident and worker population assumptions, a full-line supermarket would not be supportable on the TLS within the forecast period. The site is better positioned to contain a convenience retail centre including a small supermarket of approximately 500 sqm and supporting speciality stores. When fully operational, the TLS convenience centre is likely to employ approximately 52 people. The net additional increase is estimated to be 51 jobs.

The key influences on the bulky goods trade area include the site's proximity to major arterial routes and existing bulky goods areas. The main trade area is expected to experience steady population growth, particularly in greenfield developments. An increase of 12,375 people, from 142,350 to 154,725, is projected in the main trade area by 2021. An average trade level assumption of \$3,500 per sqm has been adopted for bulky good floorspace in the trade area.

The bulky good main trade area is estimated at 94,676 sqm, which is likely to increase by 26,660 sqm to 121,336 sqm by 2021. This is an additional 2,424 sqm of bulky goods floorspace per annum. The report estimates total bulky goods provision in the main trade area of 90,400 sqm, representing an undersupply of 4,276 sqm of floorspace. By 2021, continued population growth will lead to a shortage of approximately 31,000 sqm of bulky goods floorspace if no further floorspace is added. It is therefore estimated that 20,000 sqm of floorspace is supportable on the TLS in 2016.

The bulky goods floorspace would create an additional 220 jobs upon completion, representing a net additional increase of 215 jobs.

Tallawarra Lands Part 3A Concept Plan: Sustainability Report (2010)

The *Tallawarra Lands Sustainability Report* was prepared by Urbis in December 2010 and outlines "the sustainability principles, outcomes and actions that will facilitate the delivery of a more sustainable development at Tallawarra Lands through the design, construction and operational phases". It assesses the value of sustainability to the project. The concept plan includes:

- approximately 1,000 lots supported in the current residential zone. Lot sizes will likely range from conventional lots of 450 sqm to 550 sqm, larger lots over 7600 sqm and large hillside lots of 1 hectare.
- potential opportunity for retirement living of approximately 200 units.

The Tallawarra Lands site has Director General's requirements through the Part 3A concept approval. It outlines "the environmental assessment (EA) shall detail how the development will incorporate ESD principles in the design, construction and ongoing operation phases of the development and comply with SEPP (Building Sustainability Index: BASIX) 2004. Including commitments of sustainability through:

- a) lot orientation
- b) water reuse
- c) waste minimisation
- d) minimisation of energy use
- e) reducing car dependency
- f) the use of flood compatible design and building materials where relevant."

TRUenergy has a commitment to reducing its carbon intensity. In 2006 it launched its environmental policy and in 2007 it launched its climate change strategy. The climate change strategy sets a target for the company to reduce its emissions by 60 percent by 2050.

The sustainability vision for Tallawarra Lands includes:

- leading practice sustainability initiatives that enhance the natural and urban environment
- a quality residential component that capitalises upon and complements the unique scenic and environmental qualities of the site
- integrated and innovative development that creates shared benefits and allows diverse yet complementary uses
- a project that returns value to TRUenergy and is in line with the company's commitment to sustainability.

The sustainability framework for the Tallawarra Lands site outlines five key principles, namely to:

- enhance liveability
- create opportunities for economic prosperity
- foster environmental responsibility
- embrace design excellence
- demonstrate visionary leadership and strong governance.

Relevant points from the framework are shown in Table 1 below.

Table 1. Desired sustainability outcomes for Tallawarra Lands

Economic Prosperity			
	Desired sustainability outcomes	Concept plan actions to address desired outcomes	Considerations for future actions
Employment	Local employment opportunities are considered	Tallawarra Lands is likely to create 2,000 jobs locally when developed. This will include employment associated with the following: <ul style="list-style-type: none"> • School • Aged care • Retail • Commercial • Tourism • Future employment lands 	<ul style="list-style-type: none"> • Identify opportunities to generate a range of different and innovative employment opportunities for locals or others within the employment lands and the town centre.
Investment	Investment will be attracted into the area through the provision of business facilities.	<ul style="list-style-type: none"> • TRUenergy is considering the provision of optical fibres throughout the development to enable improved connection of businesses and the new community. • TRUenergy is investigating opportunities to partner with Integral in installing Smart Grid technologies to enable greater energy certainty for businesses and the new community. 	<ul style="list-style-type: none"> • Consider opportunities to sponsor business start-up space or retail to get early provision. • Consider opportunities for investment through the use of future planning agreements. • Incorporate diversity in communications services/providers to maintain options for future development and technologies.

Source: Tallawarra Lands Part 3A Concept Plan Sustainability Report (2010)

Tallawarra Power Station Lands – Employment Lands Demand Assessment (2006)

The *Tallawarra Power Station Lands – Employment Lands Demand Assessment* was prepared by Hill PDA for the NSW Department of State and Regional Development and Wollongong City Council in December 2006. The main objectives of the study were to identify the requirement of industrial employment lands in the Illawarra Region, and to provide recommendations based on the types of industries the site could attract, the area of land for each zoning and the type of lot sizes.

The current employment lands, both occupied and vacant, by zoning in Wollongong LGA are:

- 4(a) – 562 hectares with an average lot size of approximately 0.44 hectares
- 4(b) – 1,348 hectares with an average lot size of approximately 3.6 hectares
- 4(c) – 227 hectares with an average lot size of approximately 8.74 hectares.

Developed and undeveloped employment lands across Wollongong, Shellharbour and Kiama LGAs are shown in Table 2.

Table 2. Available employment lands

LGA	Developed	Undeveloped	Total
Wollongong	1,803	449.8	2,252.8
Shellharbour	940	44.4	984.4
Kiama	146.3	6.5	152.8
Total	2,889.3	500.7	3,390

Source: Stage 1: Illawarra and South Coast Employment Lands Audit Report, SGS (2004) and ABS Census Data (2001)

The subject site of Tallawarra is located 18 kilometres south-west of Wollongong CBD, and has been identified as a key strategic asset by the NSW Government and Wollongong City Council, with the intention of supporting future employment growth in the Illawarra Region.

Current employment trends indicate a focus around the port industries and manufacturing, along with a well established engineering industry. The manufacturing sector is influenced by BlueScope Steel and associated support activities. Wollongong must maintain a good supply of land to ensure that as these industries grow and expand they do not relocate elsewhere in the region.

Key drivers of future employment include the \$140 million upgrade of Port Kembla, and the growth of support services including freight and logistics businesses. The assessment also indicates significant demand for heavy manufacturing uses, and large lot sizes typically between 5,000 to 20,000 sqm. Currently there is no minimum lot size for 4(a) and 4(b) zoned lands, with subdivision presenting a threat. Of potentially developable employment lands, Tallawarra is the only significant site which can accommodate heavy industrial uses on large lots in the short to medium term.

Tallawarra Lands Urban Design Masterplan (2010)

The Tallawarra Lands Masterplan was developed in September 2010 by Warren Lee Urban Design. The Masterplan divides the site into three precincts – Northshore, Central and Lakeside. The Tallawarra Power Station and grounds are excluded from this assessment. An overview of the features of each precinct is shown in Table 3.

Table 3. Precinct characteristics

Precinct	Precinct Area	Developed Area	Characteristics
Northshore	110 hectares	<ul style="list-style-type: none"> • 22.3 hectares proposed developed area • 87 hectares of green space 	<ul style="list-style-type: none"> • Elevated precinct • Well suited to housing use, connected to existing housing areas to the west • Long ridge from Tallawarra Point to Mount Brown • Lake Illawarra foreshore
Central	210 hectares	<ul style="list-style-type: none"> • 95 hectares of proposed developed area <ul style="list-style-type: none"> ○ 48 hectares – employment/industry ○ 2.5 hectares – tourism ○ 27 hectares – residential ○ 11 hectares – hillside residential ○ 4.25 hectares – neighbourhood centre ○ 2.5 hectares – connector streets • 115 hectares of green space 	<ul style="list-style-type: none"> • Varied topography and natural features • Accessible but elevated mixed use precinct • Duck Creek corridor • Lake Illawarra foreshore and Wollingurry Point
Lakeside	215 hectares	<ul style="list-style-type: none"> • 51.2 hectares of proposed developed area <ul style="list-style-type: none"> ○ 12 hectares – employment/enterprise ○ 23.2 hectares – residential ○ 11.2 hectares – possible retirement living ○ 3 hectares – possible primary school ○ 1.8 hectares – connector spaces • 164 hectares of green space 	<ul style="list-style-type: none"> • High level of amenity will be established • Mixed use urban precinct with an enhanced natural landscape • South-west wetlands and Duck Creek corridor • Artificial wetlands and buffer to Haywards Bay • Reinstated waterways

More specifically, the characteristics of the zones for industrial activity, large format retailing, and business park activity are shown in Table 4 and Table 5.

Table 4. Central precinct

Characteristics	Industrial zones
Site area (ha)	14.0
Building height	IN2 Zone – maximum 16m IN1 Zone – 20m
Minimum lot size	IN2 Zone – 0.2 ha IN1 Zone 2.0 ha

Source: Tallawarra Lands Urban Design Masterplan (2010)

Table 5. Lakeside precinct

Characteristics	Large format retailing	Business park
Initial development site area (ha)	5.9	3.1
Future expansion area (ha)	3.0	-
Indicative site coverage	40%	50%
Gross floorspace (sqm) (initial development only)	20,000	15,000
Car parking	1,000	525
Building Height	Maximum 16m (generally single and double storey)	Maximum 16m (generally double storey)

Source: Tallawarra Lands Urban Design Masterplan (2010)

The development areas of the site will also include:

- tourism across a 2.5 hectare site
- approximately 1,000 residential lots, covering a 72.5 hectare site
- 10 one hectare hillside residential lots, covering an 11 hectare site
- 200 retirement living units, covering an 11.2 hectare site
- a primary school, covering a three hectare site
- a local centre to incorporate 1,000 to 1,500 sqm of retail space and a medical or childcare centre, covering a 1.25 hectare site (future expansion to cover a three hectare site).

Tallawarra Lands Traffic Impact Assessment (2010)

The Tallawarra Lands Traffic Impact Assessment report assesses the requirements outlined by the Director General. The traffic and parking requirements include:

- Traffic generation in accordance with the RTA's Guide to Traffic Generating Developments
- Road/intersection upgrades
- Access
- Loading dock(s)
- Car parking arrangements
- Impacts upon public transport (including school bus routes)
- Measures to promote public transport usage
- Measure to promote pedestrian and cycle linkages
- Staging and funding of road/intersection upgrades
- Adequacy of parking

From the 2009 Masterplan Cox Richardson supplied the number of residential lots to be developed, and the net land areas for each of the other blocks. Floor areas by activity type were calculated,

along with morning and evening peak trip generation calculated using the RTA guide. These were converted to gross floor area (GFA) and likely employment using the following assumptions:

Residential	One household per lot
Retail	40% site coverage, and 150 sqm per employee
Office	30% site coverage, 2 floors and 21 sqm per employee
Enterprise	30% site coverage, 2 floors and 50 sqm per employee
Industrial	40% site coverage, 28 employees per hectare (or 360 sqm per employee)
Power Station	20% site coverage, 30 employee on any shift

4 Market demand

4.1 Socio-economic context

A significant increase in the population of Wollongong and Shellharbour LGAs is expected over the next 25 years, which suggests a growing need for population serving local industries and therefore suitable sites on which these uses can locate. There is an opportunity for the Tallawarra site to attract industry that will serve the incoming population of the subject site and immediately surrounding area.

The estimated resident population (ERP), as at 30 June 2009, was 201,438 for Wollongong LGA and 66,905 for Shellharbour LGA (Table 6). Population growth has been steady in both LGAs and the Illawarra region more generally since 2001. Wollongong LGA had an average annual growth rate of 0.7 percent, Shellharbour LGA of 1.4 percent, and the Illawarra region of 0.9 percent.

Table 6. Estimated resident population, 2001-2009

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Wollongong LGA	189,776	191,474	192,306	192,716	193,472	194,543	196,203	199,197	201,438
Shellharbour LGA	59,862	60,572	61,404	62,055	62,761	63,434	64,480	65,875	66,905
Illawarra region	312,337	315,433	317,466	318,573	320,231	322,358	325,828	331,037	335,348

Source: ABS ERP (2010)

Table 7 shows the Department of Planning's population forecasts from 2006 to 2036. Significant population growth is expected, with Wollongong LGA's population projected to increase by 21.2 percent from 2006 to 2036; Shellharbour LGA's by 23.6 percent, and the Illawarra region's by 24.1 percent.

Table 7. Population forecast, 2006-2036

	2006	2011	2016	2021	2026	2031	2036
Wollongong LGA	194,543	201,179	208,322	215,704	223,016	229,691	235,797
Shellharbour LGA	63,434	67,139	70,126	72,316	74,207	76,419	78,409
Illawarra region	322,358	336,214	349,972	363,533	376,655	388,953	400,123

Source: Department of Planning (2010)

4.2 Overview

The industrial property market in the Illawarra region has been performing badly over the last year, and real estate agents predict that depressed prices and slow sales will continue for the coming year. The Tallawarra site is unlikely to be affected by this if it is released further into the future, by which time the market for industrial property is expected to have recovered.

Currently, there is demand for a variety of lot sizes and this may suggest that the Tallawarra site should be subdivided in such a way so as to appeal to a broad market.

The industrial property market in Wollongong and Shellharbour LGAs has been in decline over the last 12 to 18 months; affected by a lack of business confidence and firms facing financing difficulties. Real estate agents expect that the market will remain slow for the next six to 12 months.

In Wollongong LGA the industrial market saw significant growth in sales between 2003 and 2007 and a tripling of land prices. In 2008 and 2009 the market became stagnant, with sales prices declining in 2010 due to the economic downturn. According to local real estate agents, industrial properties close to the water in Shellharbour LGA have been performing strongly. However, there is little movement in the industrial market due to a tightly held market with limited stock.

Smaller industrial properties are most in demand in Wollongong and Shellharbour LGAs, and there is increasing demand for business park space (although it is expected that the Innovation Campus in Wollongong can accommodate a large proportion of this demand over the short term). Industrial properties of less than 1,000 sqm are typically taken up by small local businesses linked to port or manufacturing activities. Real estate agents noted that the market for industrial land in Wollongong is predominantly price-driven. Sales and rental value ranges for smaller industrial properties are shown in the table below.

	Low	High
Sales Price (\$/sqm)	\$1,500	\$2,200
Rental Price – Newer Properties (\$/sqm)	\$100	\$140
Rental Price – Older Properties (\$/sqm)	\$60	\$100

There is some demand for larger industrial properties, typically sized between 1,500 sqm to 4,000 sqm, particularly from medium sized manufacturing firms requiring large building spaces and hardstand areas. Sales and rental value ranges for larger industrial properties are shown in the table below.

	Low	High
Sales Price (\$/sqm)	\$1,000	\$1,500
Rental Price (\$/sqm)	\$100	\$120

4.3 Sales history

The results shown in the following section are for the categories of 'industrial strata units' and 'general industrial' properties, the definitions outlined by RP Data. General industrial properties are those properties not under a strata title.

Table 8 shows industrial strata unit median sales prices for LGAs in the Illawarra and South Coast regions. The data is limited by a lack of reliable size data for each land sale; therefore it is not possible to deduce whether changes in median prices are due to changes in the sizes of land on the market or other factors.

Prices in Wollongong LGA remained stable from 2005 to 2009, experiencing a significant increase in 2010. The number of sales in Wollongong LGA was also constant between 2005 and 2010, ranging from eight to 12 sales.

Median sales prices in Shellharbour LGA fluctuated over the last five years. The LGA also had on average higher median sales prices than Wollongong LGA. While the median price in Shellharbour LGA rose from 2009 to 2010, it was considerably less than the median price for Wollongong LGA.

Table 8. Industrial strata units median sales prices by LGA, 2005-2010

	Wollongong	Shellharbour	Kiama	Shoalhaven	Wingecarribee
2005	\$ 253,250	\$ 170,000	\$ -	\$ 422,500	\$ -
2006	\$ 282,500	\$ 460,000	\$ 250,000	\$ 332,500	\$ 262,500
2007	\$ 212,500	\$ 360,000	\$ -	\$ 180,400	\$ 411,000
2008	\$ 267,625	\$ 287,500	\$ 299,000	\$ 545,000	\$ 284,900
2009	\$ 285,000	\$ 319,550	\$ -	\$ 237,500	\$ 286,250
2010	\$ 810,000	\$ 371,500	\$ 297,000	\$ 160,000	\$ -

Source: RP Data (2011)

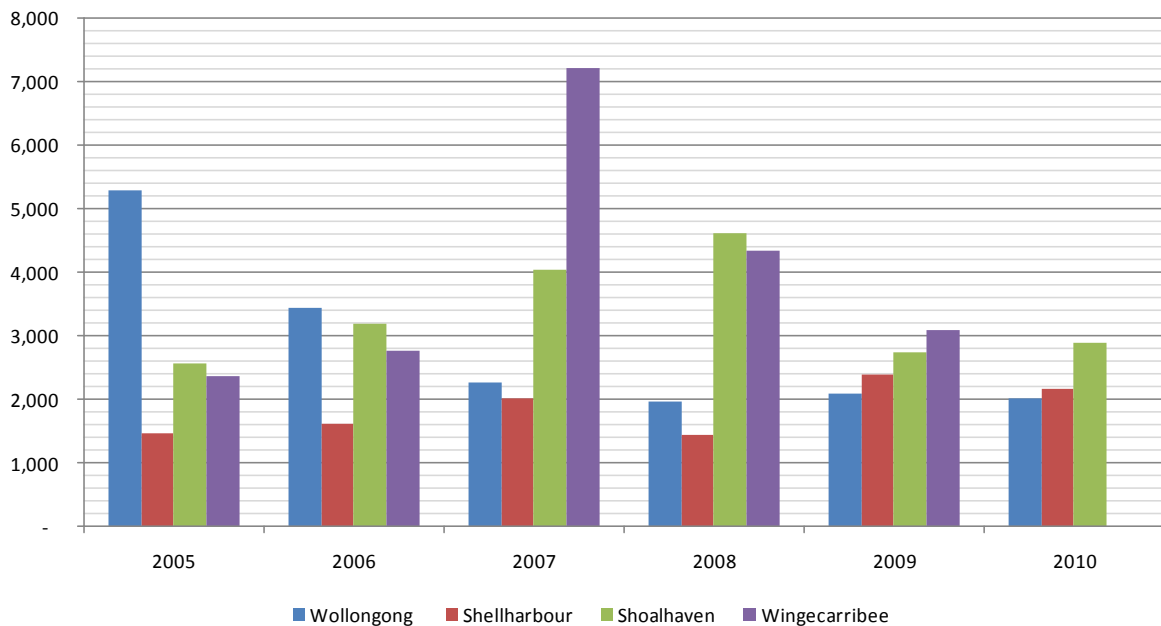
Median sales prices for general industrial properties are typically higher than those of industrial strata units, as shown in Table 9. Sales prices have also varied considerably over the last five years, particularly in Wollongong LGA. The majority of general industrial sales have been in Wollongong and Shoalhaven LGAs, with 130 and 74 sales from 2005 to 2010 respectively.

Table 9. General industrial median sales prices by LGA, 2005-2010

	Wollongong	Shellharbour	Kiama	Shoalhaven	Wingecarribee
2005	\$ 1,570,000	\$ 500,000	\$ -	\$ 387,500	\$ 467,250
2006	\$ 1,100,000	\$ 546,000	\$ -	\$ 430,000	\$ 514,000
2007	\$ 790,000	\$ 787,500	\$ -	\$ 480,000	\$ 840,000
2008	\$ 1,000,000	\$ 670,000	\$ -	\$ 600,000	\$ 649,250
2009	\$ 920,000	\$ 732,500	\$ -	\$ 435,000	\$ 700,000
2010	\$ 860,000	\$ 1,150,000	\$ 720,000	\$ 382,500	\$ 968,000

Source: RP Data (2011)

The majority of industrial property sales in Wollongong LGA occurred in the suburb of Unanderra. In 2010, Unanderra suburb had seven industrial strata unit sales, with a median price of \$929,500, and eight sales of general industrial properties, with a median sales price of \$1,042,000.

Figure 4. General industrial lot sizes (sqm), 2005-2010

Source: RP Data (2011)

General industrial property lot sizes from 2005 to 2010 are shown in Figure 4. Wollongong LGA shows a trend of declining property sizes, from 5,298 sqm in 2005 to 2,023 sqm in 2010. Wingecarribee LGA experienced a peak in lot sizes in 2007 due to the sale of numerous large lots. Kiama LGA has not been included due to limited data availability.

4.4 Local service industry

Local service industries need to be accessible to the population they serve and so their location is driven by proximity to population and accessibility.

Generally, local service industries locate within the immediate vicinity of surrounding residential areas. Tallawarra Lands has a distinct and isolated catchment area, and the neighbouring planned major centre of West Dapto is likely to provide sufficient industrial land to cater for its incoming population. As such, for this assessment it has been assumed that the Tallawarra site will be self-contained and the local service industrial requirements will be for only the population of the site.

Population-driven employment forecast

It is estimated that 302 jobs in 'local industrial service' industries will be required to satisfy market demand generated by the incoming population. The retail industry accounts for 40 percent of this total. These employment forecasts have been converted into floorspace requirements. Approximately 2,200 square metres of Local Light industrial floorspace and 2,300 square metres of Light Manufacturing floorspace will be required from 2021 (when it is assumed that residential development on the site will be completed).

A set of ratios to show the volume of population driven employment (PDE) generated by each resident of the Tallawarra site has been developed through regression analysis of employment growth by ANZSIC (Australian and New Zealand Standard Industrial Classification) category against population growth for every Travel Zone in Sydney SD. The detail of this regression analysis is provided in 'Appendix B – Development of population driven employment ratios'.

There are no firm plans for the development of the residential component of the Tallawarra site. As such, SGS has made the following assumptions in order to estimate the projected population and staging of development:

- there will be 1,000 residential lots⁵, each supporting a separate dwelling occupied by an average of three people⁶
- there will be retirement living of 200 units⁷, each occupied by an average of 1.5 people⁸
- development will occur from 2016⁹ to 2021¹⁰, with staging as shown in Table 10.

⁵ Tallawarra Lands part 3A Concept Plan Application – Economic Impact Assessment

⁶ According to the 2006 ABS Census, the average occupancy of private detached dwellings was 2.8 people in Wollongong LGA and 3.2 people in Shellharbour LGA. An average of these has been taken given the Tallawarra site's location.

⁷ Tallawarra Lands part 3A Concept Plan Application – Economic Impact Assessment

⁸ According to the 2006 ABS Census, the average occupancy of units in three story blocks in Wollongong LGA is 1.7 people. This has been scaled down slightly to reflect trends in retirement accommodation.

⁹ Tallawarra Lands part 3A Concept Plan Application – Economic Impact Assessment

¹⁰ Tallawarra Lands Traffic Impact Assessment

Table 10. Estimated resident population on the Tallawarra site

	2016	2017	2018	2019	2020	2021
Population	0	660	1,320	1,980	2,640	3,300
Percentage of total estimated population	0	20	40	60	80	100

Source: SGS (2011)

The PDE per capita ratios were then applied to these population forecasts to estimate the future demand for population driven jobs by Broad Land Use Category (BLC). Further detail on Broad Land Use Categories is provided in 'Appendix C – Broad Land Use Categories'. The PDE forecasts are provided in Table 11.

In order to service the incoming population from 2016 onwards, the Tallawarra site will require 302 local jobs, of which more than 40 percent will be in the retail industry.

Table 11. Population driven employment on Tallawarra Lands site

BLC	Description	PDE per capita	Population-driven employment						
			2016	2017	2018	2019	2020	2021	2016-2021
AST	Short Term Accom.	0.0001	0	0	0	0	0	0	0
BP	Business Park	0.0005	0	0	1	1	1	2	2
FL	Freight and Logistics	0.0025	0	2	3	5	7	8	8
LL	Local Light Industrial	0.0115	0	8	15	23	30	38	38
MH	Manufacturing Heavy	0	0	0	0	0	0	0	0
ML	Manufacturing Light	0.0088	0	6	12	17	23	29	29
O	Office	0.0042	0	3	6	8	11	14	14
RB	Retail – Big Box	0.0178	0	12	23	35	47	59	59
RBG	Bulky Goods Retail	0.0072	0	5	10	14	19	24	24
RM	Retail Mainstreet	0.0139	0	9	18	28	37	46	46
S	Special Activities	0.009	0	6	12	18	24	30	30
US	Urban Services	0.0053	0	3	7	10	14	17	17
D	Dispersed Activities	0.0107	0	7	14	21	28	35	35
	Total	0.0914	0	60	121	181	242	302	302

Source: SGS (2011)

A set of floorspace per job ratios (provided in Table 12) were then used to convert these employment forecasts into floorspace demand. These standard ratios have been developed by SGS through analysing Land Audit data collected from various employment land studies completed previously.

Table 12. Floorspace per job ratios, by BLC

BLC	Floorspace per job (sqm)
AST	25
BP	50
FL	100
LL	60
MH	150
ML	80
O	25
RB	35
RBG	45
RM	30
S	70
US	100
D	40

Source: SGS (2011)

Table 13 shows that the amount of additional population driven jobs will result in a floorspace demand of around 15,604 sqm on the Tallawarra site. The demand for the Local Light Industrial and Light Manufacturing BLC categories comprises 30 percent of the total floorspace demand to service the incoming population.

However, the demand for population-serving industrial floorspace is assumed to be the same for all residents of the Tallawarra site. In reality, retirees make up 10 percent of the total assumed population and these residents are likely to have different requirements, which may affect projected floorspace demand.

Table 13. Population driven floorspace demand on Tallawarra Lands site

BLC	Description	PDE per capita	Population-driven floorspace demand (sqm)						
			2016	2017	2018	2019	2020	2021	2016-2021
AST	Short Term Accom.	0.0001	0	2	3	5	7	8	8
BP	Business Park	0.0005	0	17	33	50	66	83	83
FL	Freight and Logistics	0.0025	0	165	330	495	660	825	825
LL	Local Light Industrial	0.0115	0	455	911	1,366	1,822	2,277	2,277
MH	Manufacturing Heavy	0	0	0	0	0	0	0	0
ML	Manufacturing Light	0.0088	0	465	929	1,394	1,859	2,323	2,323
O	Office	0.0042	0	69	139	208	277	347	347
RB	Retail – Big Box	0.0178	0	411	822	1,234	1,645	2,056	2,056
RBG	Bulky Goods Retail	0.0072	0	214	428	642	855	1,069	1,069
RM	Retail Mainstreet	0.0139	0	275	550	826	1,101	1,376	1,376
S	Special Activities	0.009	0	416	832	1,247	1,663	2,079	2,079
US	Urban Services	0.0053	0	350	700	1,049	1,399	1,749	1,749
D	Dispersed Activities	0.0107	0	282	565	847	1,130	1,412	1,412
	Total	0.0914	0	3,121	6,242	9,362	12,483	15,604	15,604

Source: SGS (2011)

4.5 Strategic industry

Strategic industries have weaker links with proximate population and instead are driven by more strategic site and location attributes. Assessment of likely demand in this category is based on employment forecasts for Wollongong and Shellharbour LGAs by industry category.

Employment forecasts

High employment growth is predicted for Wollongong and Shellharbour LGAs, although the forecasted data suggest a shift in the employment composition moving from a focus on manufacturing to service-based industries including health care and retail.

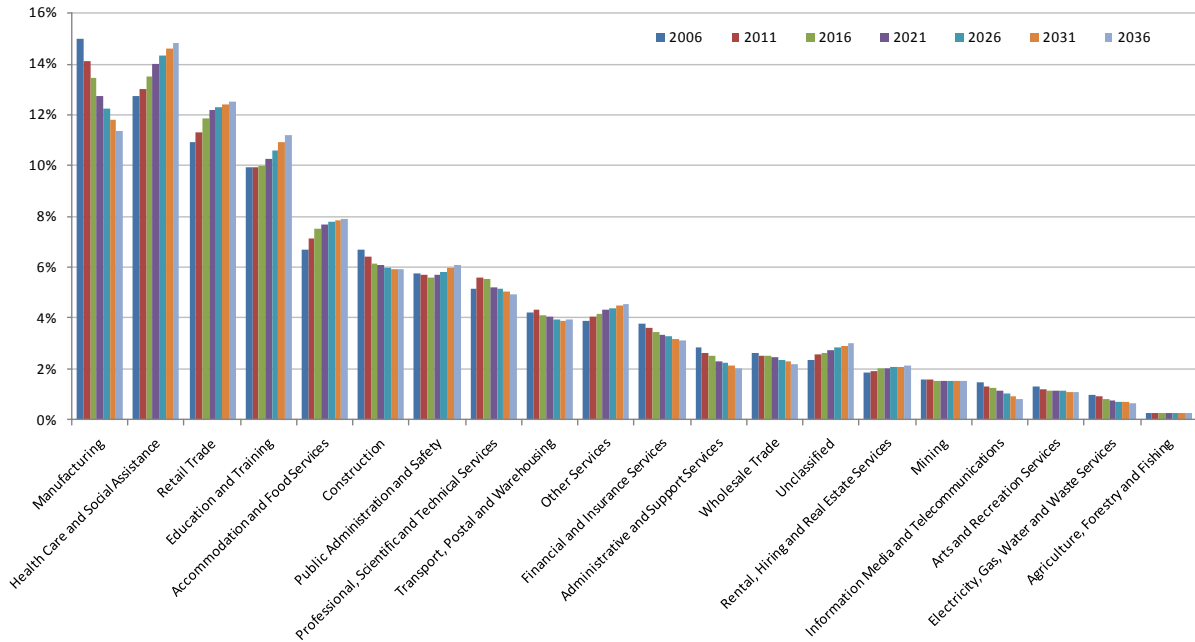
Councils have noted that a high proportion of residents of Wollongong and Shellharbour LGAs leave the region for employment, particularly in Sydney. The existence of an educated and skilled local workforce may help to attract new industries and firms, with the potential for higher-order employment.

Wollongong

Figure 5 and Figure 6 show the Bureau Transport of Statistics (BTS) employment forecasts for Wollongong LGA from 2006 to 2036 as a percentage of total employment and with absolute values.

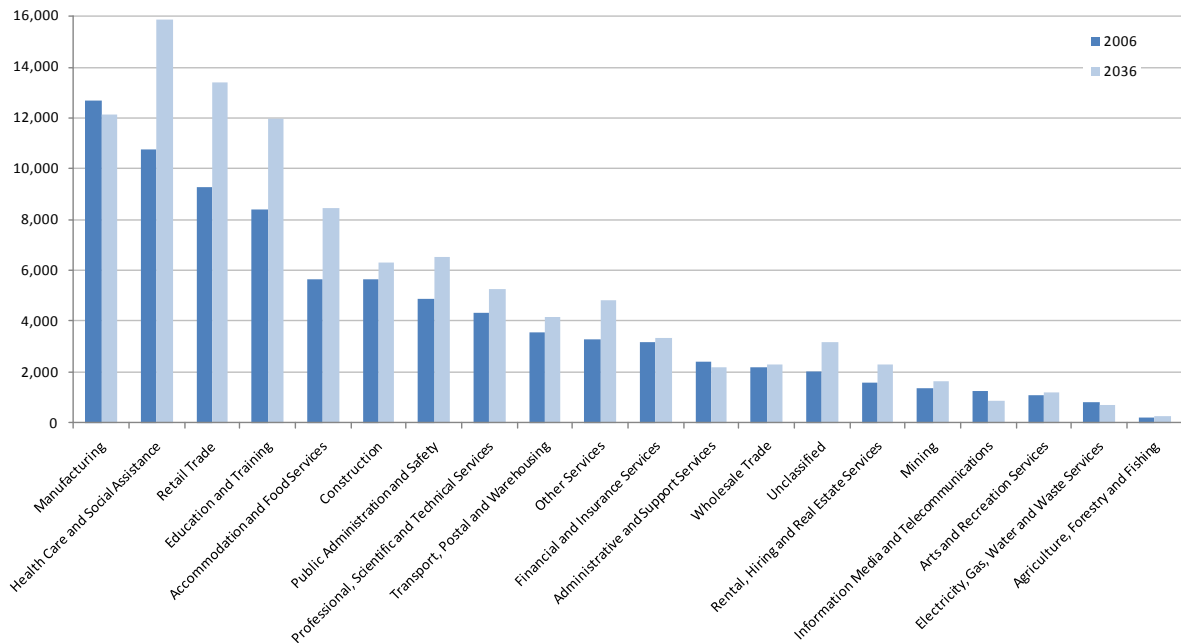
According to the BTS, these forecasts take into account likely major residential developments. For example, likely major population growth in the West Dapto Development Area was taken into consideration when producing forecasts for the 'Wollongong – Balance' SLA. Forecasts assumed that stages 4-5 of the West Dapto development did not occur within the forecast period given the constraints imposed by Department of Planning population projections.

Figure 5. Wollongong LGA employment forecasts, 2006-2036 (as a proportion of total employment)



Source: BTS (2009), SGS (2011)

Figure 6. Wollongong LGA employment forecasts, 2006-2036 (absolute values)



Source: BTS (2009), SGS (2011)

Employment in Wollongong LGA is predicted to increase by 26 percent over the 30 year period, from 84,544 to 106,865 positions.

Of this:

- 5101 new jobs will be in 'Health Care and Social Assistance' (23 percent of total growth)
- 4127 new jobs will be in 'Retail Trade' (18 percent of total growth)
- 3546 new jobs will be in 'Education and Training' (16 percent of total growth)
- 2795 new jobs will be in 'Accommodation and Food Services' (13 percent of total growth).

In the 'Manufacturing' sector, 4 percent of jobs are expected to be lost in the LGA, with total employment predicted to fall from 12,678 jobs in 2006 to 12,142 jobs in 2036. This represents the largest decline of any category when measured as a proportion of total employment in the LGA, from 15 percent to 11.4 percent over the period. However, a loss of employment in the manufacturing sector does not necessarily suggest a decline in the industry, as mechanisation of the factory floor increases and progress is made in less labour-intensive fields of manufacturing.

Within the 'Manufacturing' category, the largest expected declines in terms of job numbers are in 'Primary Metal and Metal Product Manufacturing' (with a predicted loss of 547 positions) and 'Textile, Leather, Clothing and Footwear Manufacturing' (with a predicted loss of 425 positions). 'Furniture and Other Manufacturing' is the area with the highest anticipated growth in jobs, with an expected 320 additional jobs between 2006 and 2036, while 'Machinery and Equipment Manufacturing' is expected to grow by 24 percent over the period; creating 203 jobs.

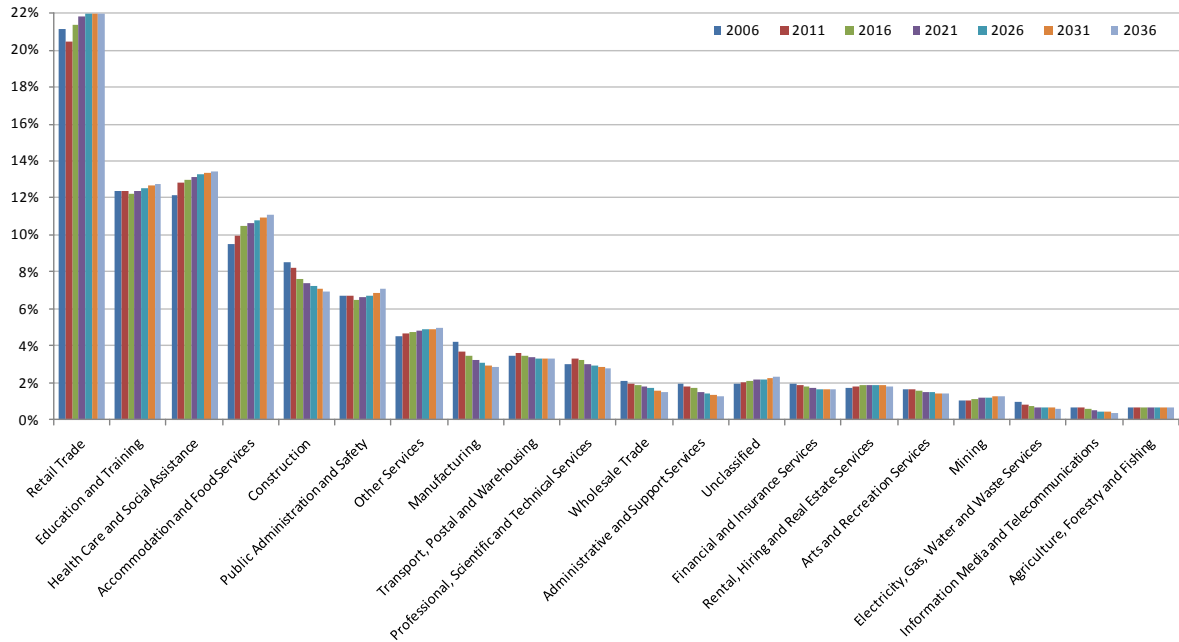
Almost a third of 'Information Media and Telecommunications' jobs (387 positions) are expected to be lost over the period.

Shellharbour

According to Shellharbour Council, there has been a demographic shift in the LGA with a higher proportion of educated and skilled residents now in the area. Consequently there has been a change in the working profile of the LGA from primarily being a dormitory area workers involved in heavy manufacturing in Wollongong, to growth in a broad range of retail, hospitality, health and services. A high proportion of residents leave Shellharbour LGA to work, mainly in Wollongong.

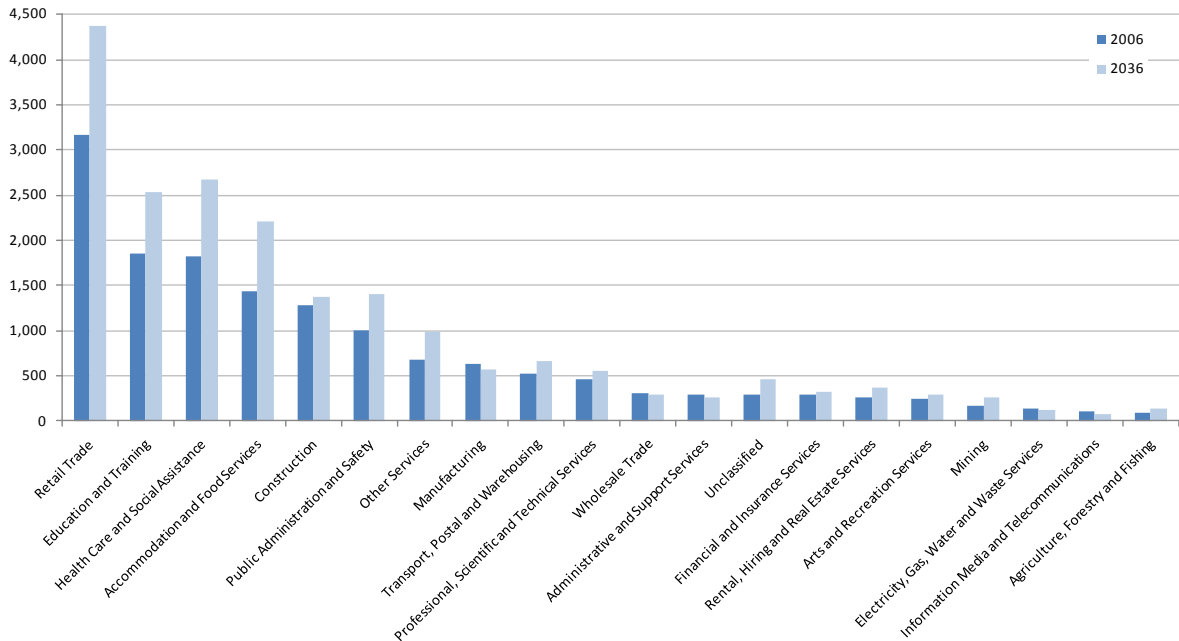
Figure 7 and Figure 8 show the Bureau Transport of Statistics (BTS) employment forecasts for Shellharbour LGA from 2006 to 2036 as a percentage of total employment and with absolute values.

Figure 7. Shellharbour LGA employment forecasts, 2006-2036 (as a proportion of total employment)



Source: BTS (2009), SGS (2011)

Figure 8. Shellharbour LGA employment forecasts, 2006-2036 (absolute values)



Source: BTS (2009), SGS (2011)

Employment in Shellharbour LGA is expected to increase by a third from 2006 to 2036, from 15,013 to 19,871 positions. Almost three quarters of this growth is accounted for by four industries:

- 1200 new jobs will be in 'Retail Trade' (25 percent of total growth)
- 856 new jobs will be in 'Health Care and Social Assistance' (18 percent of total growth)
- 781 new jobs will be in 'Accommodation and Food Services' (16 percent of total growth)
- 677 new jobs will be in 'Education and Training' (14 percent of total growth)

The relative share of employment in the 'Construction' sector is expected to see the largest fall when taken as a proportion of the total in the LGA (declining from 8.5 percent to 6.9 percent over the period). However, actual employment in this sector is predicted to rise by 8 percent, adding 100 jobs.

Over 10 percent of jobs in the 'Manufacturing' sector are expected to be lost, equating to 66 positions. Of this, the greatest loss of jobs will be in 'Textile, Leather, Clothing and Footwear Manufacturing', with 35 fewer positions by 2036. 'Furniture and Other Manufacturing' is expected to add 39 new positions.

Floorspace demand forecast

The Bureau of Transport Statistics (BTS) employment forecasts shown above were used to estimate the amount of floorspace required to accommodate the additional employment anticipated in Shellharbour and Wollongong LGAs. Table 14 provides a set of floorspace per job ratios by ANZSIC category. The job forecasts in both LGAs were multiplied by these ratios to derive the floorspace demand over each five year interval from 2006 to 2036. These floorspace forecasts are based on the premise that industry sectors will continue to occupy sites and use floorspace in the same way in the future.

Table 14. Floorspace per job ratios, by ANZSIC category

ANZIC	Floorspace per job (sqm)
Food Product Manufacturing	90
Beverage and Tobacco Product Manufacturing	80
Textile, Leather, Clothing and Footwear Manufacturing	60
Wood Product Manufacturing	45
Pulp Paper and Converted Paper Product Manufacturing	70
Printing, including the Reproduction of Recorded Media	70
Petroleum and Coal Product Manufacturing	200
Basic Chemical and Chemical Product Manufacturing	200
Polymer Product and Rubber Product Manufacturing	150
Non-Metallic Mineral Product Manufacturing	80
Primary Metal and Metal Product Manufacturing	120
Fabricated Metal Product Manufacturing	30
Transport Equipment Manufacturing	50
Machinery and Equipment Manufacturing	60
Furniture and Other Manufacturing	60
Electricity, Gas, Water and Waste Services	120
Construction	150
Wholesale Trade	220
Retail Trade	37
Accommodation and Food Services	29
Transport, Postal and Warehousing	220
Information Media and Telecommunications	120
Financial and Insurance Services	25
Rental, Hiring and Real Estate Services	25
Professional, Scientific and Technical Services	25
Administrative and Support Services	35
Public Administration and Safety	35
Arts and Recreation Services	35
Other Services	29

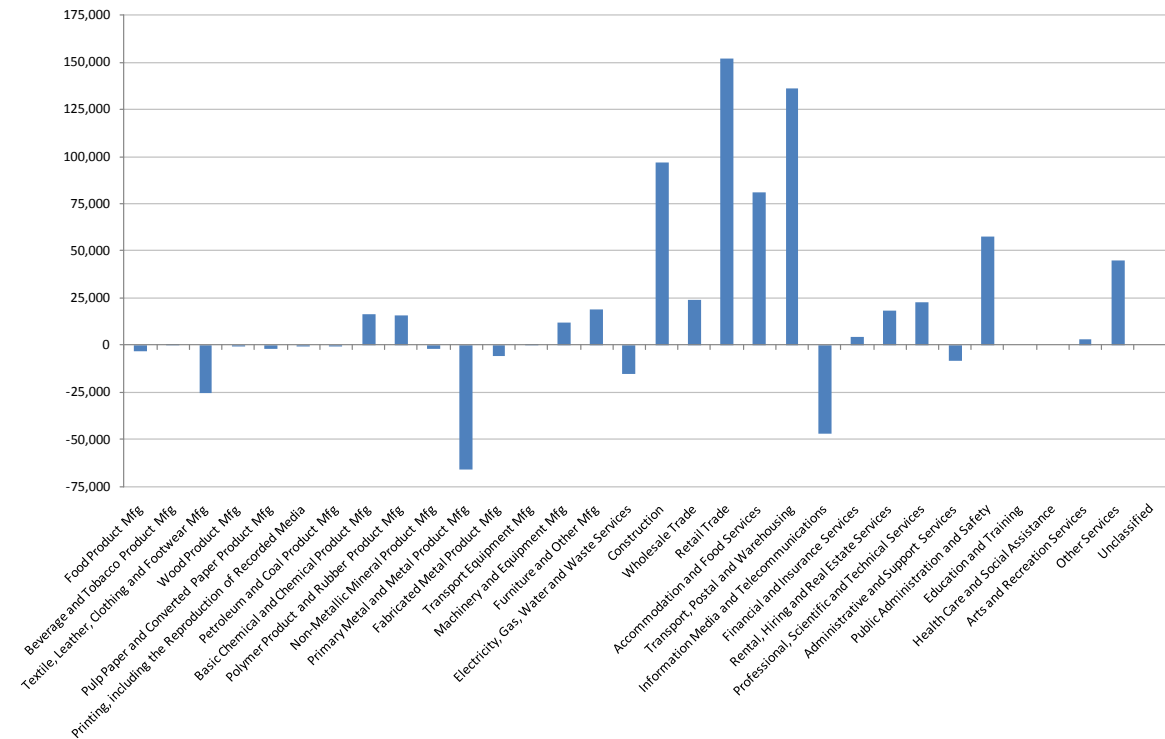
Source: SGS (2011)

The additional floorspace demand from 2006 to 2036 by ANZSIC category is provided in Figure 9 and Figure 10. Retail Trade, Transport, Postal and Warehousing, Accommodation and Food

Services, and Construction will have the highest demand for floorspace in both LGAs, while some manufacturing industries will experience negative growth in floorspace demand due to the declining job forecasts.

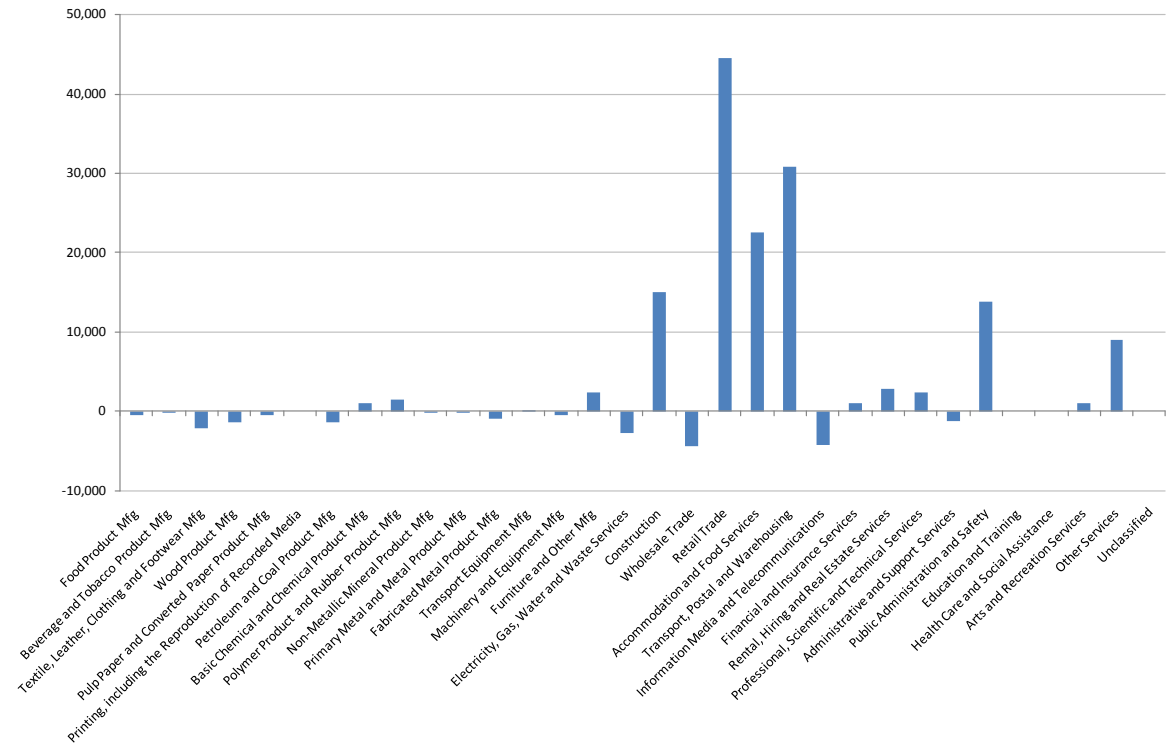
Overall, Wollongong and Shellharbour LGAs are estimated to have a net increase in floorspace demand of around 525,000 and 127,000 square metres respectively from 2006 to 2036.

Figure 9. Additional floorspace demand in Wollongong LGA, 2006-2036 (sqm)



Source: SGS (2011)

Figure 10. Additional floorspace demand in Shellharbour LGA, 2006-2036 (sqm)



Source: SGS (2011)

5 Market supply

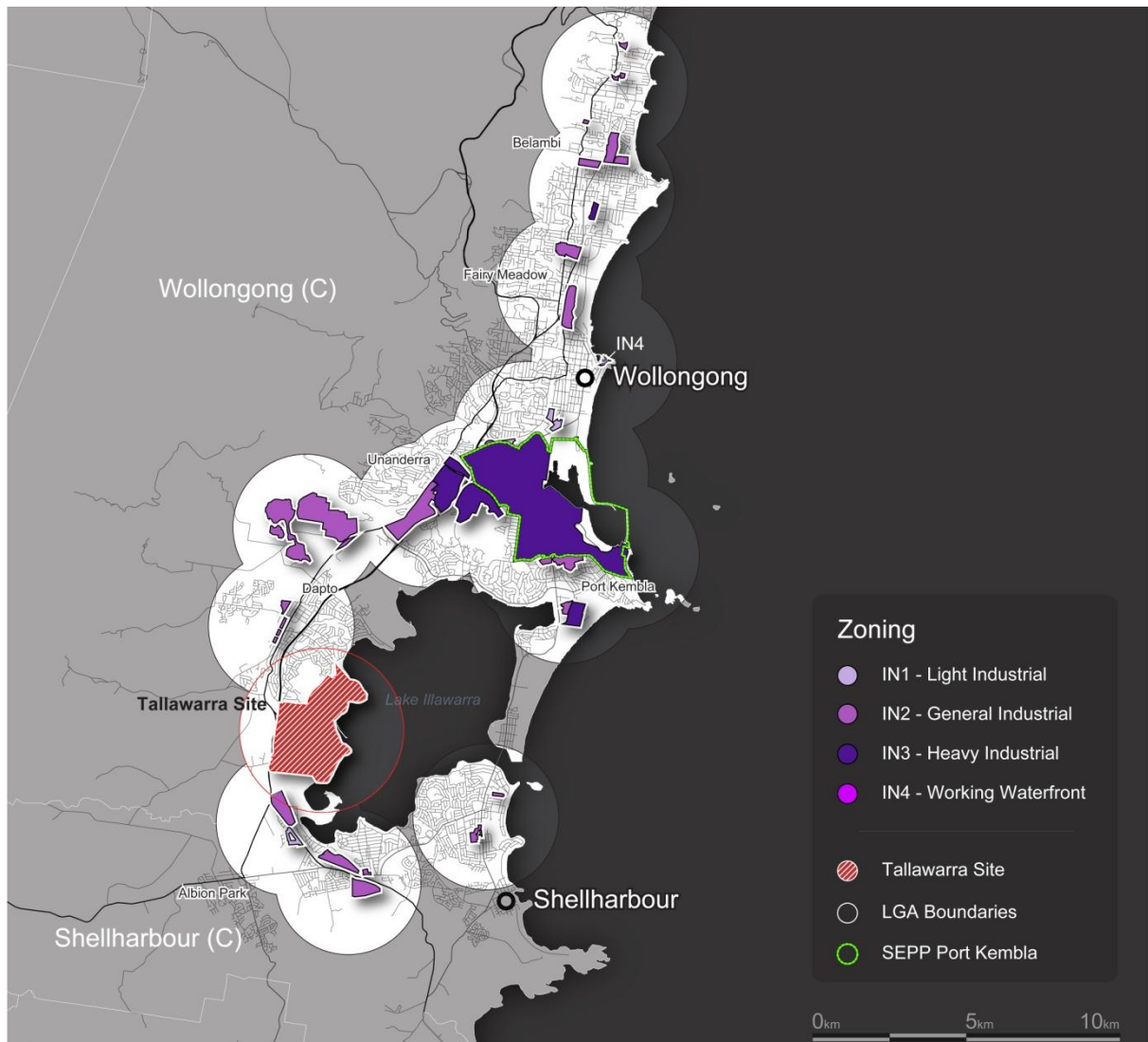
The Tallawarra site is well positioned to meet demand for good quality industrial land, given that it offers level ground with good access to the freeway and infrastructure and is not impacted by surrounding land uses. It is anticipated that the release of the site onto the local market will change perceptions of the area for prospective industrial users, in that strategic industries or firms that may not have considered the region due to constraints in the availability of suitable land may be attracted by the offer of the Tallawarra site.

The lack of developable space in both Wollongong and Shellharbour LGAs is likely to increase prices for industrial land over the short to medium term. However, the market will be affected by timing of the release of industrial lots at West Dapto, which is dependent upon land take-up and therefore unknown. It appears that a six hectare site on the border of the northern edge of West Dapto – Kembla Grange is currently on the market. However, it is unclear whether this implies the release area will come onto the market sooner than is suggested in the strategy and policy documents. If the West Dapto Release Area is developed in the short term, this will have significant implications for the recommended staging of Tallawarra Lands and the prices that can be achieved for the site.

5.1 Overview

The location of industrial zoned land in Wollongong and Shellharbour LGAs is shown in Figure 11.

Figure 11. Industrial zoned land in Wollongong and Shellharbour LGAs



Source: SGS (2011)

There is a large amount of existing industrial land in Wollongong LGA, including the precincts of Unanderra, Port Kembla and Wollongong. Shellharbour LGA contains less industrial land. Its main precincts include Albion Park, Oak Flats and Warilla.

The majority of real estate agents perceive there to be insufficient supply of good quality industrial land to meet future demand in Wollongong and Shellharbour LGAs. This influences the depth in uses in the region, with little opportunity for new industries to move into the area or expansion of existing businesses. There are few industrial sites on large land holdings, while some scattered smaller land held within the region has been on the market for some time.

Wollongong and Shellharbour have seen a lack of investment in recent years due to developers experiencing difficulties in obtaining finance. Additionally, the industrial property market has experienced high land sale prices and low rental return prices, which has taken developers out of the market. Local real estate agents expect that there will continue to be limited interest from developers in Wollongong unless land costs and rental prices even out to make developments viable.

Within Wollongong LGA, a significant proportion of future supply of industrial land has problems with flooding and a lack of access to infrastructure and services. There is a scarcity of developable greenfield land in Shellharbour LGA and Council notes that the area is under persistent pressure to accommodate a large proportion of residential growth in the Illawarra region, resulting in minimal land reserved for industrial purposes. Maximising the utilisation of existing areas for industrial growth is therefore a high priority for the LGA.

5.2 On-the-market analysis

Table 15 shows on-the-market sales industrial listings in Wollongong LGA by suburb, taken from commercialrealestate.com.au and realcommercial.com.au. It shows a high proportion of listings in Wollongong and Unanderra suburbs. The listings show a trend in higher median sales prices matching larger sized properties. This is particularly evident in properties larger than 1,000 sqm having sales prices of more than one million dollars.

Table 15. Wollongong LGA on-the-market sales listings, February 2011

Suburb	Median Sales Price	Number of Listings	Median Size (sqm)
Unanderra	\$1,089,500	19	1,200
Wollongong	\$686,500	13	526
Warrawong	-	3	936
Port Kembla	\$534,500	3	400
Dapto	\$519,000	2	374
Yallah	\$604,500	2	508
Helensburgh	-	2	140
Gerringong	\$485,000	2	261
Kemblawarra	\$2,075,000	2	1,455
Corrimal	-	1	250
Kembla Grange	-	1	-
Figtree	\$4,400,000	1	1,025

Source: www.commercialrealestate.com and www.realcommercial.com (2011)

The new development 'Gateway Industrial Park', located to the south of Wollongong CBD, currently has listings for new bulky goods premises and light industrial lots with an office component. Table 16 shows the sales prices for the Gateway Industrial Park.

Table 16. Gateway industrial park sales prices

Use	No. of Lots	Warehouse area (sqm)	Office area (sqm)	Total area (sqm)	Parking spaces	Sales price	Price per sqm
Bulky Goods	4	421-606	0-200	421-806	7-15	\$930,000- \$1,782,000	\$2,207- \$2,214
Light Industrial	27	90-185	0-64	90-	2-4	\$210,000- \$500,000	\$2,120- \$2,347

Source: commercialrealestate.com and mmj.com.au (2011)

Table 17 shows the on-the-market rental listings in Wollongong LGA by suburb. A high proportion of rental properties are listed in Unanderra and Wollongong. Larger properties, over 1,000 sqm, generate significantly higher rental returns of over \$100,000. At Port Kembla this is attributed to a lack of supply and availability of land close to the Port.

Table 17. Wollongong LGA on-the-market rental listings, February 2011

Suburb	Median Rental Price	Number of Listings	Median Size (sqm)
Unanderra	\$48,660	39	553
Wollongong	\$34,125	19	325
Port Kembla	\$149,322	8	1,421
Kemblawarra	\$32,232	7	282
Dapto	\$18,000	3	180
Yallah	\$26,280	1	219
Fairy Meadow	\$43,992	1	400
Figtree	\$198,840	1	1,025
Gerringong	\$26,000	1	202

Source: commercialrealestate.com and realcommercial.com (2011)

Table 18 shows on-the-market sales industrial listing in Shellharbour LGA by suburb. There were far fewer listings in Shellharbour LGA than Wollongong LGA. Albion Park Rail and Oak Flats contained a high proportion of listings, with eight each. There seems to be little correlation between sales prices and property size.

Table 18. Shellharbour LGA on-the-market sales listings, February 2011

Suburb	Median Sales Price	Number of Listings	Median Size (sqm)
Albion Park Rail	\$429,000	8	336
Oak Flats	\$469,000	8	590
Barrack Heights	\$1,200,000	1	500
Lake Illawarra	\$245,000	1	160
Warilla	\$239,000	1	180

Source: commercialrealestate.com and realcommercial.com (2011)

Table 19 show on-the-market rental listings in Shellharbour LGA by suburb. It shows a pattern between median rental prices and the size of industrial properties, with larger properties listing higher rental prices.

Table 19. Shellharbour LGA on-the-market rental listings, February 2011

Suburb	Median Rental Price	Number of Listings	Median Size (sqm)
Albion Park Rail	\$41,976	11	347
Oak Flats	\$34,905	10	340
Warilla	\$23,400	5	197
Barrack Heights	\$18,200	2	170

Source: commercialrealestate.com and realcommercial.com (2011)

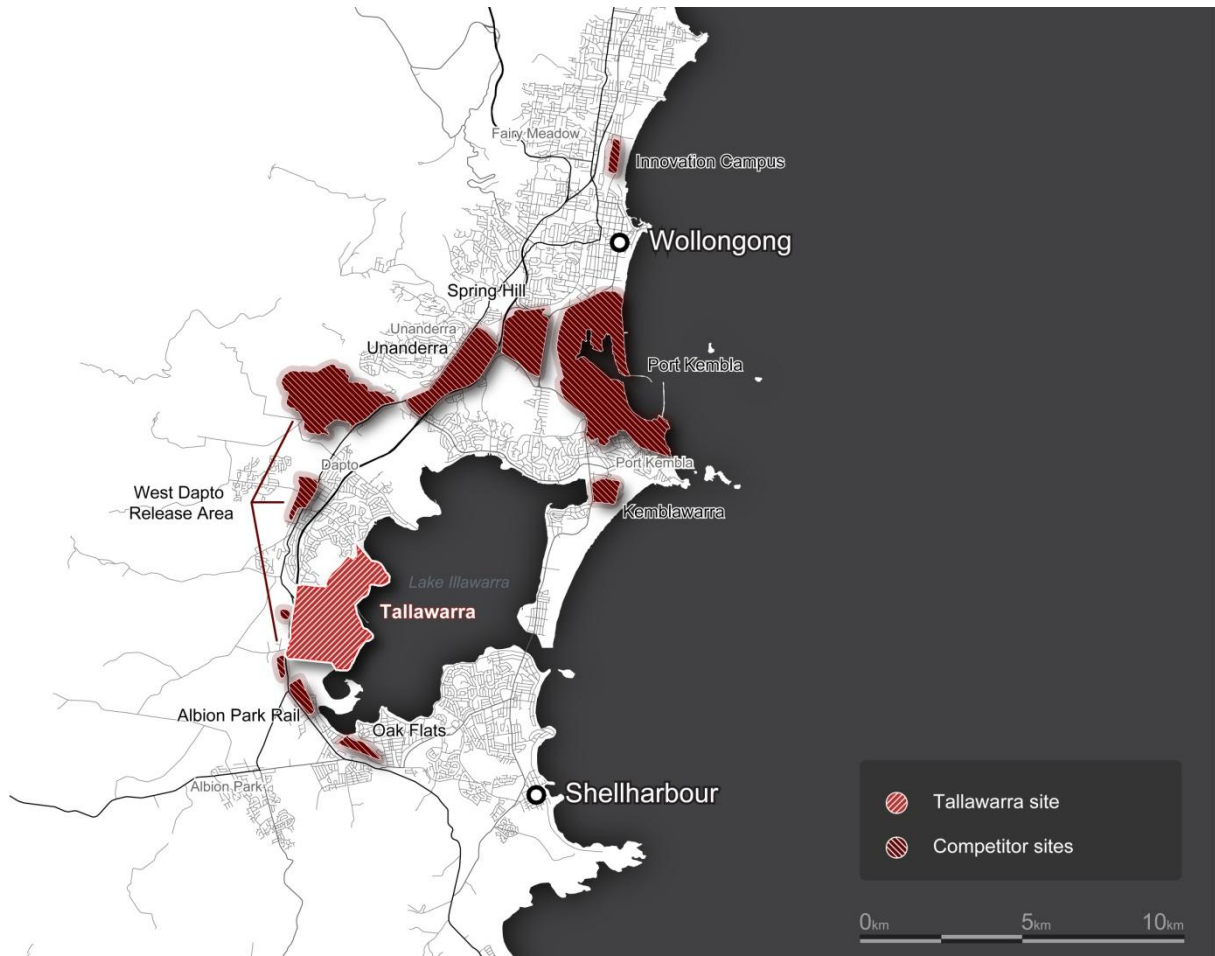
5.3 Strategic industry

Competitor set

Industrial lands in Wollongong and Shellharbour LGAs that may compete with the Tallawarra site are shown in Figure 12 below. Real estate agents noted that areas in south-west Sydney, such as Campbelltown, are currently also competitors to the Illawarra region due to low prices. However, as it is expected that once land in south-west Sydney recovers in value, Wollongong will not compete directly against the area and therefore these sites have not been included in this analysis.

Real estate agents consider Albion Park Rail in Shellharbour LGA, and the West Dapto Release Area in Wollongong LGA to be the two major potential competitors to the Tallawarra site. No timeframe has been set for release of these sites. However, the Albion Park Rail site has the ability to come onto the market earlier than the West Dapto site.

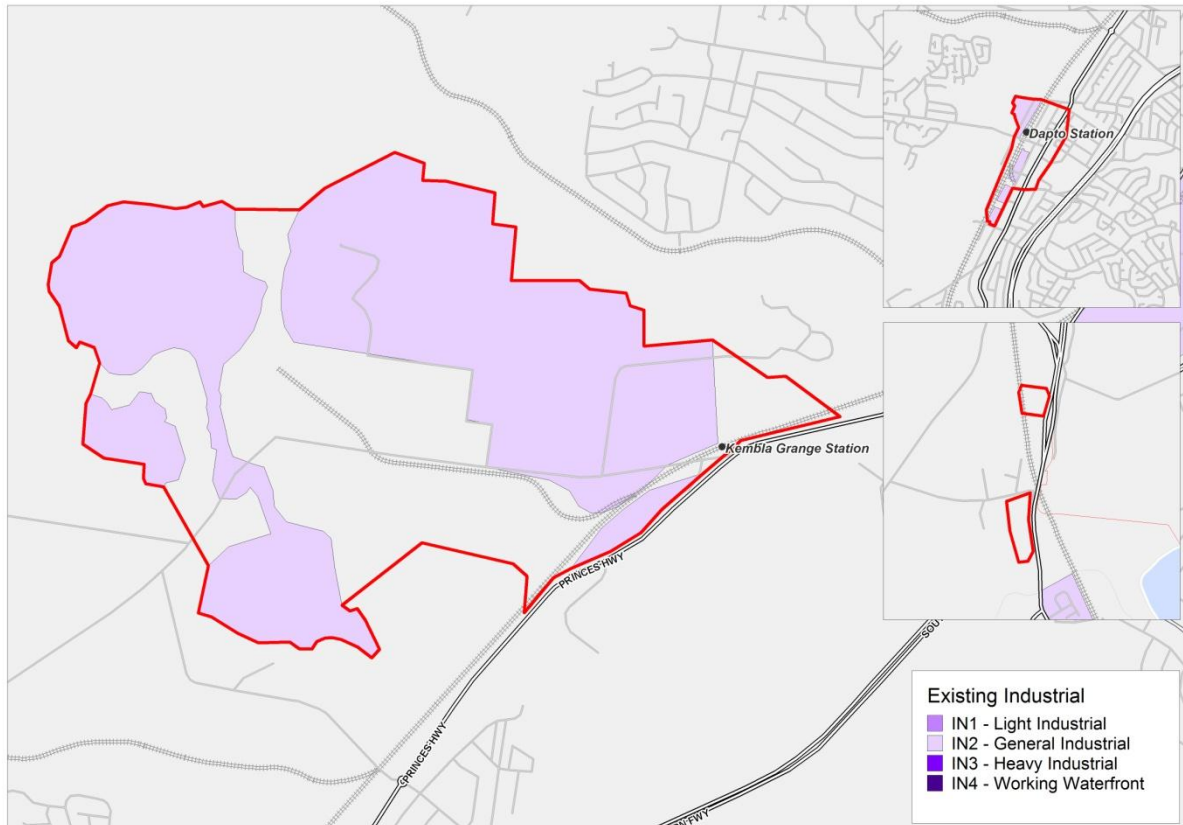
Figure 12. Competing industrial lands in Wollongong and Shellharbour LGAs



Source: SGS (2011)

West Dapto Release Area – Kembla Grange

Figure 13. West Dapto Release Area – Kembla Grange



Source: SGS (2011)

Area Approximately 175 hectares¹¹

Location The West Dapto Release Area covers approximately 4,700 hectares of land to the north-west of Lake Illawarra, in Wollongong LGA. The West Dapto Master Plan will guide development over the next 30 to 40 years in stages. The approval of Wollongong LEP (West Dapto) 2010 allows the proposed stages one and two to proceed. Stages one and two include:

- the release of the Kembla Grange employment area, covering 175 hectares of new employment land
- potential development of 6900 dwellings¹².

The Kembla Grange industrial precinct is designated to contain both light and heavy industrial uses.

¹¹ Wollongong Development Control Plan 2009 – Part D Locality Based DCPs Precinct Plans

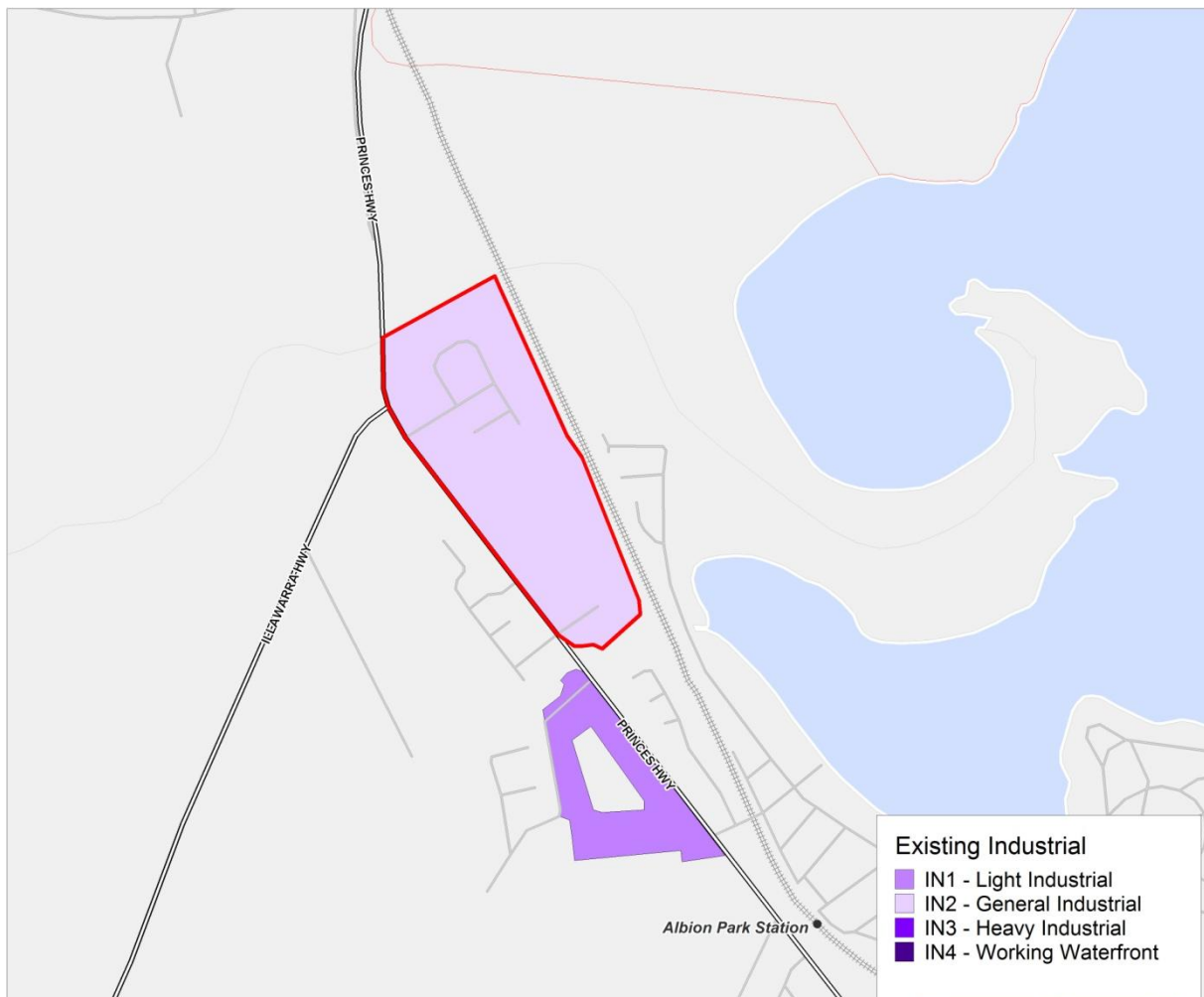
¹² Wollongong Development Control Plan 2009 – Part D Locality Based DCPs Precinct Plans

Access The West Dapto Release Area is directly accessible from the Princes Highway, 9.6 kilometres from Wollongong Regional Centre, and is also accessible from the Southern Freeway via Northcliffe Drive. The precinct is located 9.1 kilometres from the port.

Description The West Dapto Release Area will be a direct competitor to the Tallawarra site if it is placed on the market at around the same time, although the timing for release is currently unknown. The advantages of the West Dapto Release Area are that it has a greater association with the Wollongong area, is closer to the port and will receive flow-on business from surrounding residential areas. Its disadvantages include the surrounding land uses, which may prohibit certain types of industrial use. Additionally, some of the land located in the precinct is prone to flooding.

Albion Park Rail

Figure 14. Albion Park Rail



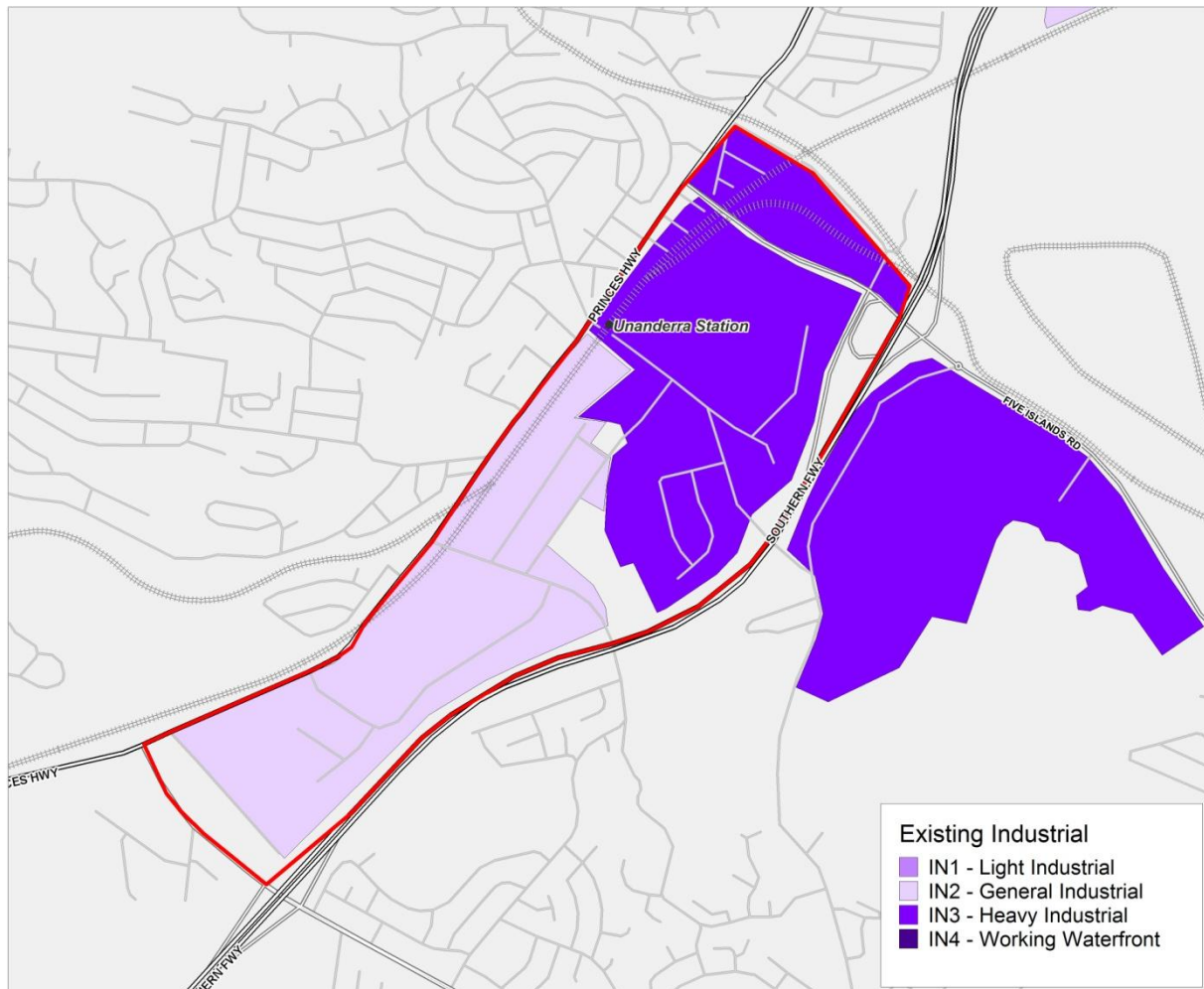
Source: SGS (2011)

Area	37.1 hectares
Location	Located in the north of Shellharbour LGA, bordering Wollongong LGA.
Access	Albion Park Rail has good access and exposure from the Princes Highway. The precinct is located 20.9 kilometres south of Wollongong Regional Centre and 6.6 kilometres from Shellharbour Regional Centre. Albion Park Rail industrial precinct is also located relatively close to Albion Park train station.
Description	<p>Albion Park Rail is the largest cluster of employment land in Shellharbour LGA. The industrial precinct contains approximately 16 hectares of vacant land and 76,876 sqm of employment floorspace¹³. The precinct is currently zoned IN2 Light Industrial.</p> <p>The site is bordered by the railway line and roads, which will be future constraints to further expansion. Businesses in the precinct are focused around aviation uses, light manufacturing and some local light industrial uses.</p> <p>Albion Park – Tongarra Road (also known as the Illawarra Regional Business Park) may also be a competitor site with the ability for linkages with Albion Park Rail. The Albion Park – Tongarra Road site covers 80 hectares, of which 52 hectares are developable. The site was listed as state significant in August 2008. The Business Park will offer 35 lots, occupying 313,000 sqm of floorspace. It is expected the site will contain:</p> <ul style="list-style-type: none"> • airport-related activities • general transport and light industrial uses • commercial activities related to light industrial uses • support services for the region.

¹³ Hill PDA (2009) Shellharbour Employment Lands Study

Unanderra

Figure 15. Unanderra



Source: SGS (2011)

Area 287.91 hectares¹⁴

Location Unanderra is located 6.5 kilometres south-west of Wollongong Regional Centre and directly west of Port Kembla.

Access Unanderra has good road access to the Princes Highway and from the Southern Freeway via Five Islands Road. It is situated seven kilometres from the port. The precinct is also serviced by Unanderra train station.

Description Unanderra industrial precinct has 89.35 hectares of Light Industrial zoned land, and 198.56 hectares of Heavy Industrial zoned land¹⁵. The precinct contains a

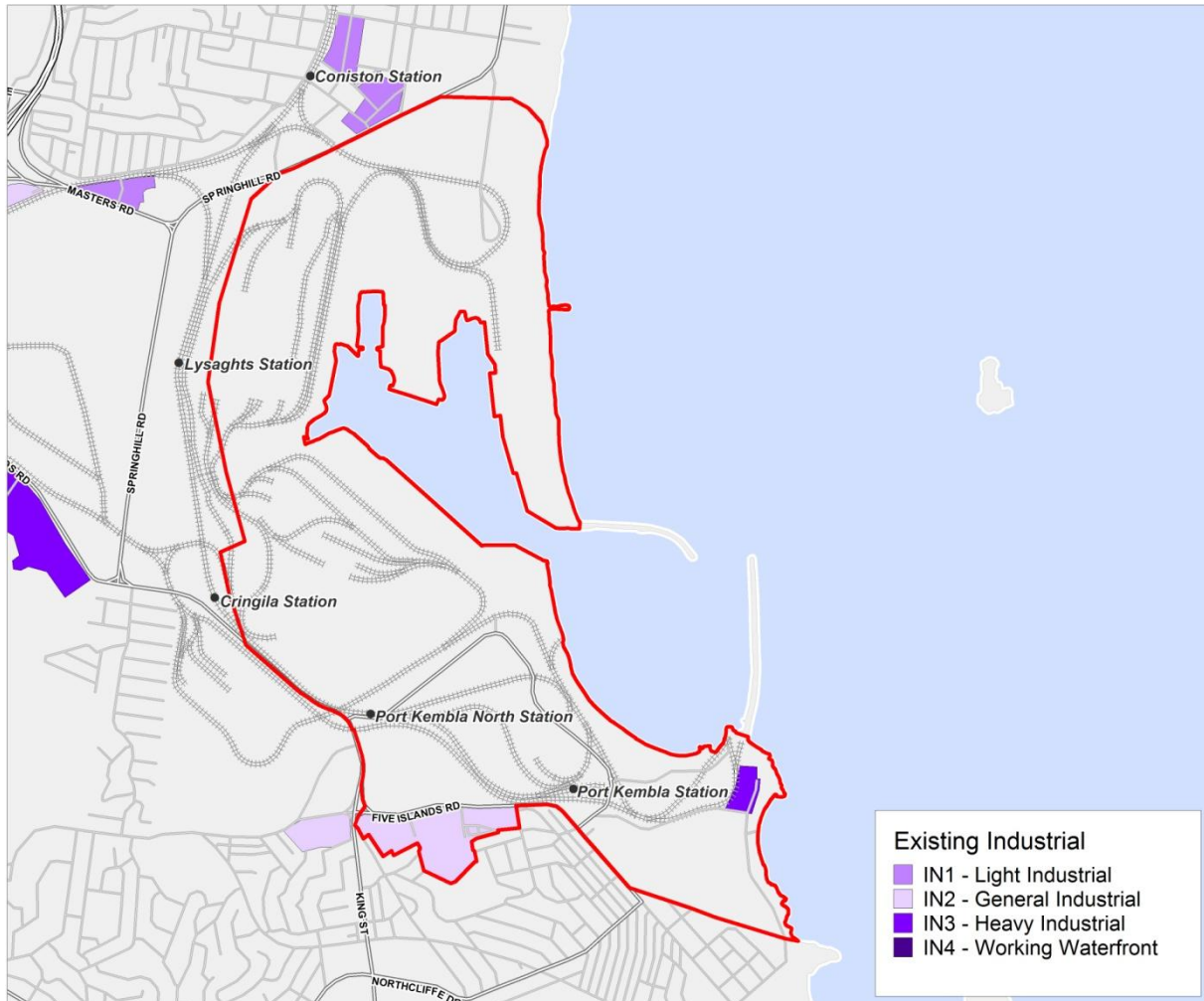
¹⁴ Hill PDA (2006) Wollongong Local Government Area Employment Lands Strategy

¹⁵ Hill PDA (2006) Wollongong Local Government Area Employment Lands Strategy

mixture of uses including heavy manufacturing uses, port-related activities, support services, and some light industrial and warehousing uses. The precinct is surrounded by residential uses (to the west of the Princes Highway) and bordered by the Southern Freeway to the east.

Port Kembla

Figure 16. Port Kembla



Source: SGS (2011)

Area 687.63 hectares¹⁶

Location Port Kembla is located 11.7 kilometres south of Wollongong Regional Centre in Wollongong LGA. Port Kembla includes the port and surrounding employment lands.

Access Access to Port Kembla is off the Southern Freeway and then along Five Islands

¹⁶ Hill PDA (2006) Wollongong Local Government Area Employment Lands Strategy

Road. The port can be accessed by train via Port Kembla, Port Kembla North, Cringella and Lysaghts stations.

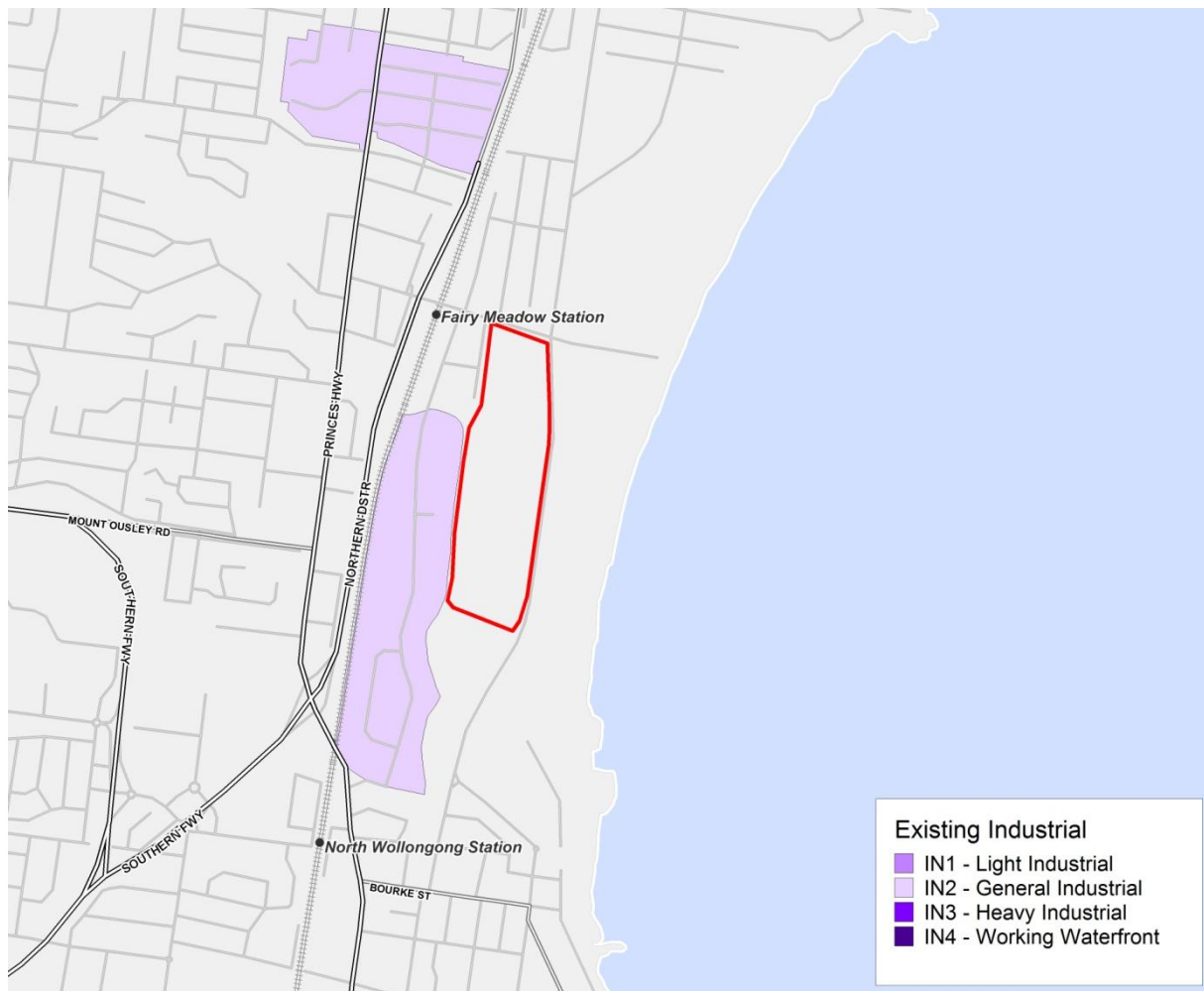
Description

Industrial lands in Port Kembla are zoned IN2 Light Industrial (under Wollongong City Council's LEP), IN3 Heavy Industrial, and SP1 Special Activities (under Major Projects SEPP). The majority of land is zoned for heavy industrial uses, which includes the steelworks.

The site is bordered by residential areas to the south and north, and heavy industrial to the west. The expansion of Port Kembla under Part 3A was approved in March 2011. The expansion will include the reclamation of 42 hectares of land in the Outer Harbour and additional facilities for ship berths, freight terminals, storage, and road and rail infrastructure.

Innovation Campus

Figure 17. Innovation Campus



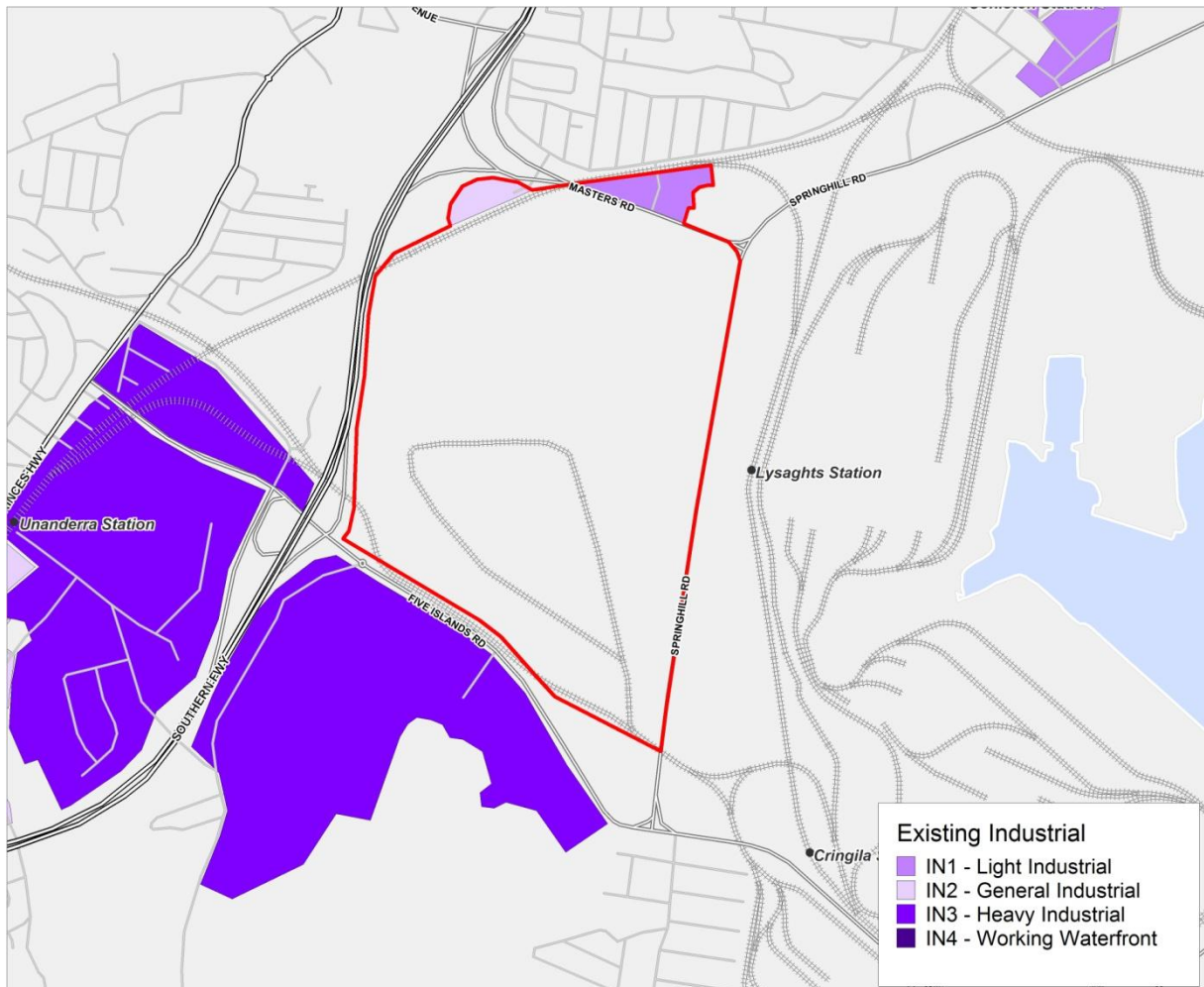
Source: SGS (2011)

Area

Location	The Innovation Campus is located in the north of Wollongong LGA, 4.2 kilometres north of Wollongong Regional Centre.
Access	The Innovation Campus is accessible via the Southern Freeway and the Northern Distributor, and is located 12 kilometres from the port. The precinct is not well-serviced by trains, with North Wollongong station located 2.5 kilometres to the south.
Description	<p>The Innovation Campus has been developed by the University of Wollongong. The first building opened in 2008, with further buildings following in 2009 and 2010 and construction still ongoing for some buildings. In total the Campus will provide approximately 135,000 sqm of gross floorspace. This will include research, office and retail space, a hotel and conference centre, and some residential accommodation. The Innovation Campus is expected to be fully developed over the next 15 to 20 years.</p> <p>Research and development activities have located on the site due to its close proximity to the university, hospital and Wollongong Regional Centre. The Campus is zoned SP1 Special Activities. Consultation revealed that the supply of land on the Innovation Campus is likely to be exhausted within the next five years.</p>

Spring Hill

Figure 18. Spring Hill



Source: SGS (2011)

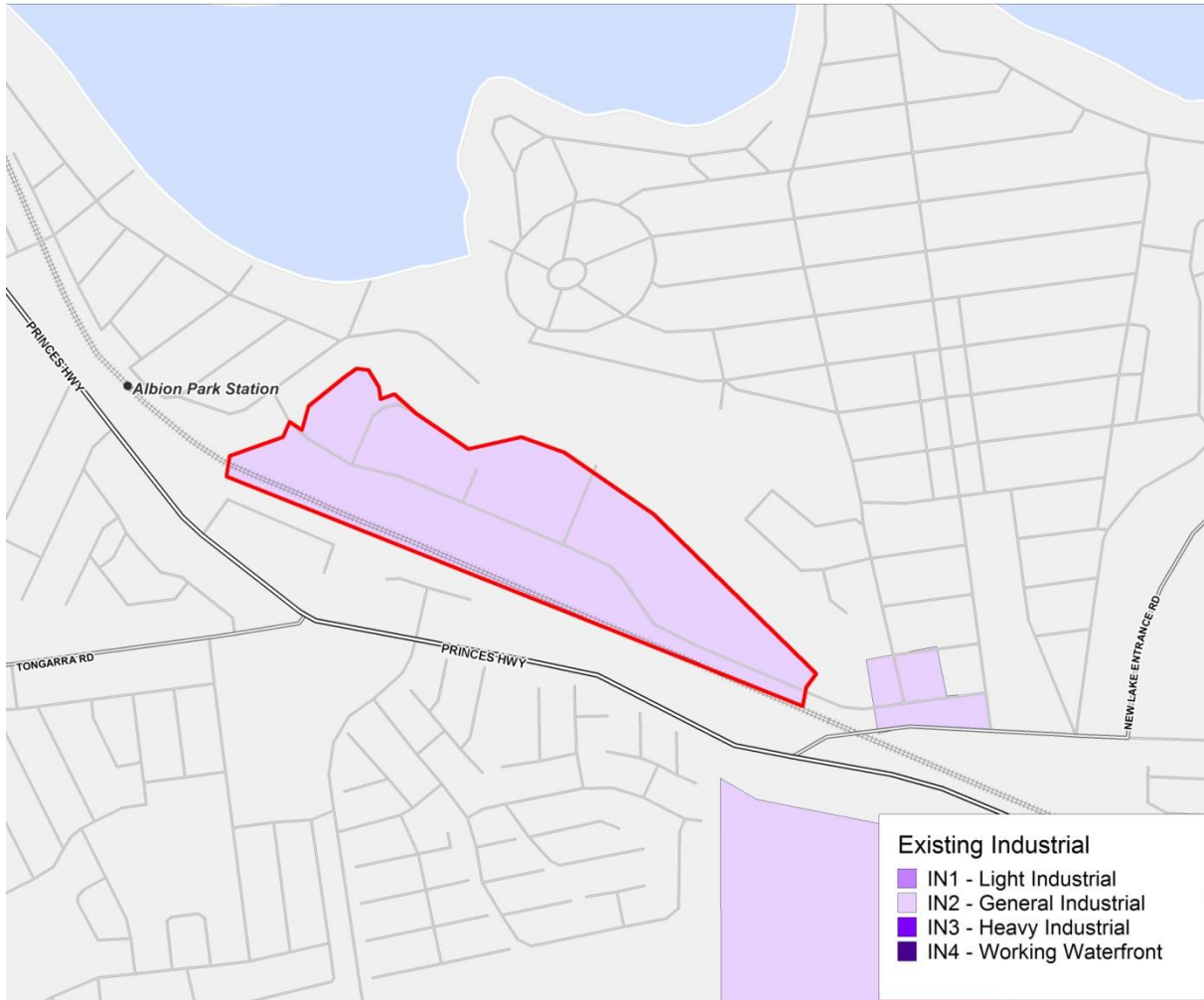
Area	261.38 hectares ¹⁷
Location	Spring Hill is located 6.6 kilometres south of Wollongong Regional Centre and 5.2 kilometres to the west of Port Kembla, in Wollongong LGA.
Access	Spring Hill industrial precinct has direct access to the Southern Freeway from Masters Road and Five Islands Road. The precinct is accessible by public transport at Lysaghts station.
Description	Spring Hill is zoned for IN2 Light Industrial and IN3 Heavy Industrial. The precinct contains a majority of heavy industrial uses and only a small proportion of light industrial uses. The precinct is bordered by Port Kembla and the steelworks to the

¹⁷ Hill PDA (2006) Wollongong Local Government Area Employment Lands Strategy

east, residential uses to the north and east, Unanderra industrial precinct to the south-west, and further industrial land to the south. The precinct is well contained, especially the heavy industrial zoned land, and has limited conflicting surrounding land uses.

Oak Flats

Figure 19. Oak Flats



Source: SGS (2011)

Area 28.1 hectares¹⁸

Location Located in the north of Shellharbour LGA, in close proximity to Shellharbour Regional Centre (2.3 kilometres). The precinct is located 25.4 kilometres from Wollongong Regional Centre and 14.5 kilometres from the port.

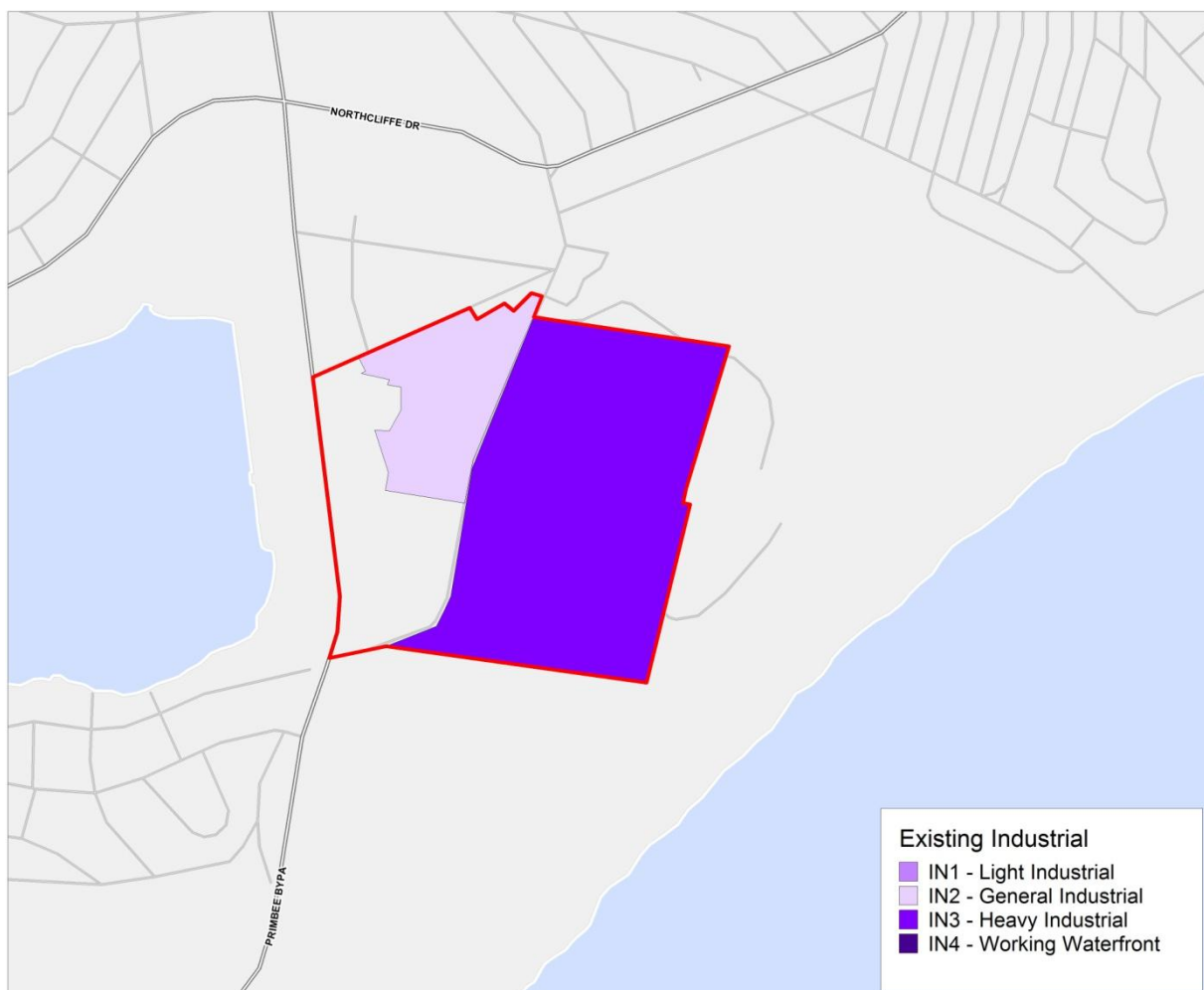
¹⁸ Hill PDA (2009) Shellharbour Employment Lands Study

Access The precinct has no access or exposure from the Princes Highway, with road access via New Lake Entrance Road and Pioneer Drive. The precinct has good public transport access from Oak Flats train station.

Description Oak Flats contains 94,234 sqm of employment floorspace and 451 workers¹⁹. The precinct is a mixture of local light industrial uses, warehousing and support services. There is approximately 3.6 hectares of vacant land in the precinct²⁰, zoned IN2 Light Industrial. The precinct is bordered by the railway line, a creek and open space.

Kemblawarra

Figure 20. Kemblawarra



Source: SGS (2011)

¹⁹ Hill PDA (2009) Shellharbour Employment Lands Study

²⁰ Hill PDA (2009) Shellharbour Employment Lands Study

Area	34.07 hectares ²¹
Location	Kemblawarra is located to the east of Lake Illawarra in Wollongong LGA and south of Port Kembla and Wollongong Regional Centre; 11.4 kilometres from Wollongong Regional Centre and 1.5 kilometres from the port.
Access	Kemblawarra is accessible from the Southern Freeway via Five Islands Road and then King Street. The precinct has good access to Shellharbour LGA via Windang Road but is not serviced by a train station, with the nearest stations being Port Kembla North and Port Kembla.
Description	<p>Kemblawarra is zoned IN2 Light Industrial and IN3 Heavy Industrial along Shellharbour Road, and B6 Enterprise Corridor along King Street. The precinct is bordered by residential uses to the north and south-west, and Commaditchy Lagoon Reserve to the east.</p> <p>Industrial uses in the area consist of light industry, heavy manufacturing and fabrication and some warehousing. The enterprise corridor comprises of bulky goods uses. The precinct is well contained and has limited surrounding conflicting land uses.</p>

League ladder assessment

A classification system for land uses has been developed for previous land use planning investigations conducted by SGS for the Department of Planning. The Broad Land-use Categories (BLCs) reflect desired site characteristics for various land uses.

This subsection considers the competitive offer of the Tallawarra site for BLCs that could be accommodated on industrial zoned land, namely Light Manufacturing, Business Parks and/or Freight and Logistics.

The Tallawarra site will include residential development and therefore is not suitable for land uses generating significant negative externalities such as noise or heavy vehicle traffic. BLCs that fall into this category include Heavy Manufacturing and Urban Services²². These land uses have therefore not been considered.

The league ladder assessment process involves the ranking of similarly zoned land according to various criteria. These criteria relate to the characteristics of the site such as proximity to commercial centres, lot subdivision size and others. The results of the strategic land assessment for Light Manufacturing, Business Parks and/or Freight and Logistics are shown in Table 20, Table 21, and Table 22. Further detail is given in 'Appendix D – League ladder assessment tables'.

²¹ Hill PDA (2006) Wollongong Local Government Area Employment Lands Strategy

²² Urban Services include uses such as concrete batching, waste depots, government depots and electricity generation

Table 20. Strategic assessment for Light Manufacturing

The Innovation Campus, West Dapto Release Area – Kembla Grange and Albion Park Rail have higher rankings than Tallawarra Lands for light industrial uses. This is because these industrial precincts have greater access to public transport, which would serve the workforce, or are located close to major centres or the university. The Tallawarra site has the advantages of a location away from a centre, provision of suitable buffers between industrial and residential uses, good accessibility to road infrastructure, and available land. It would further benefit from public transport provision.

However, if Tallawarra Lands is released in the short to medium term, it is likely to be the best option in the region for light industrial uses. The Innovation Campus is unlikely to compete as it is occupied by higher value uses. The West Dapto Release Area – Kembla Grange and Albion Park Rail sites are expected to come onto the market in the medium to longer term.

Criteria	Desirable site attributes	Assessment of Tallawarra Lands	Comparison to competitor sites
Proximity to a major centre and other land uses	<ul style="list-style-type: none"> Location some distance from centres Suitable buffers between industrial and residential land uses 	The Tallawarra Lands site is located some distance from Wollongong and Shellharbour centres. Buffers between industrial and residential areas are planned.	Some existing employment lands areas in the Illawarra region are situated in close proximity to major centres or towns. These areas are typically well established and at capacity, with only infill development available. New release areas, such as WDRA Kembla Grange and Albion Park, may provide competition to Tallawarra Lands.
Clustering	<ul style="list-style-type: none"> Co-location of uses offers an advantage for raw material delivery and concentrates externalities Opportunity to create niche markets 	The site has the potential to accommodate light manufacturing uses, as it has large available land parcels, and is in proximity to other industrial areas, major roads, the port and steelworks.	There are areas of clustered light manufacturing in the Illawarra region. These are in Port Kembla (centred around the port and steelworks), Unanderra, and Albion Park Rail (centred around the airport). Albion Park Rail is projected to expand its employment lands, which may provide additional land for further clustering opportunities. However, other established

Criteria	Desirable site attributes	Assessment of Tallawarra Lands	Comparison to competitor sites
			areas do not have this potential.
Access	<ul style="list-style-type: none"> • Heavy vehicle access required • Close proximity to public transport 	<p>Access to the Tallawarra Lands site is adequate for heavy vehicle access and turning.</p> <p>The site is also located close to the F6. Access from the southbound F6 requires vehicles to travel 2.7 kilometres down the freeway to backtrack their route to take the Princes Highway then Yallah Bay Rd exits.</p> <p>Access to the Tallawarra Lands site can also be made by diverting off the freeway onto the Princes Highway (4.2km), crossing under the freeway. However, this requires vehicles to travel through residential areas in Dapto.</p> <p>Exiting from Tallawarra Lands is along Yallah Bay Rd then the Princes Highway for 3.5 kilometres, before the on-ramp to the freeway.</p> <p>The Tallawarra Lands site lacks good public transport access. This could be rectified through the modification of the bus routes.</p>	<p>WDRA Kembla Grange – access to the site from the north is via the F6, taking the Kanahooka Rd exit (800m) and backtracking along the Princes Highway for 2.1 kilometres.</p> <p>Access from the site to travel northbound is via the Princes Highway (650m) then Northcliffe Drive (850m) onto the freeway. Kembla Grange has excellent public transport access.</p> <p>Albion Park Rail – vehicles travelling from the north have direct access from the Princes Highway. Vehicles exiting the employment lands travelling north must come down the Princes Highway for 1.8 kilometres and retrace their route. Albion Park Rail has good public transport access.</p> <p>Port Kembla – access for vehicles travelling south to Port Kembla is via the F6 and Five Islands Rd exit (5.5km). Leaving the site northbound is the same route. Port Kembla has reasonable public transport access.</p> <p>Unanderra – access for southbound vehicles to the site is along the F6, taking the Five Islands Rd exit (1km) and then Princes Highway (500m). Unanderra has good public transport access.</p>
Visibility, exposure and passing traffic volume	<ul style="list-style-type: none"> • Low traffic volumes to avoid traffic congestion • Does not require high visibility or exposed areas 	<p>There is currently minimal through traffic along Yallah Bay Rd. This is expected to change with increased traffic from residential, retail and employment land areas. The site also has the ability to accommodate wider roads for easy access and turning. This is ideal</p>	<p>The Tallawarra Lands site compares relatively well to other established areas in the Illawarra region. These areas do have relatively high traffic volumes as they are also situated near heavy manufacturing uses requiring large vehicles. These areas also have narrow roads,</p>

Criteria	Desirable site attributes	Assessment of Tallawarra Lands	Comparison to competitor sites
		for light manufacturing uses.	with poor access and turning circles. Employment lands in the West Dapto Release Area are situated along the Princes Highway, adjacent to large residential areas. This may not be ideal for light manufacturing uses.
Lot sizes	<ul style="list-style-type: none"> Small to medium lot sizes 	The Tallawarra Lands site can accommodate small to medium sized lots, on relatively flat, undeveloped land. This is ideal for light manufacturing uses.	Smaller industrial lots are generally found in more established industrial areas, such as Oak Flats, Kemblawarra and parts of Unanderra. Larger lots are found around Port Kembla and also in Unanderra. New employment lands have the ability to accommodate more flexible lot sizes.
Capacity	<ul style="list-style-type: none"> Sufficient capacity 	The Tallawarra Lands site has good capacity for light manufacturing land uses, due to its undeveloped nature and relatively flat topography. The site may face some constraints by placing light manufacturing uses on the boundary of employment lands. They may be best situated away from buffer zones (near residential land uses).	There is the capacity to accommodate light manufacturing uses at WDRA Kembla Grange and Albion Park Rail. The cluster of light manufacturing uses around Albion Park Rail may be a competitor site to Tallawarra Lands.
Trade catchment	<ul style="list-style-type: none"> Typically strategically located, so the trade catchment is not an important factor 	The site is strategically positioned in the south of Wollongong LGA, as it has access to both Wollongong and Shellharbour centres, the port, steelworks and airport. The site also has enough land availability to cater for larger operations seeking to move or expand their business to the Illawarra region. Timing will be a key factor in the delivery and take-up of employment lands.	The West Dapto Release Area and Albion Park Rail are proposed to come onto the market over the longer term. These sites have the ability to accommodate light manufacturing uses. They will compete against the Tallawarra site if released concurrently.

Table 21. Strategic assessment of Business Parks

No industrial precincts within Wollongong and Shellharbour LGAs rank particularly highly for business park uses. However, the Innovation Campus is best placed to accommodate office-based business park activities because of its proximity to existing population and public transport, and affiliation with Wollongong University. Unanderra and West Dapto Release Area – Kembla Grange have higher rankings than Tallawarra Lands due to their close proximity to major centres or public transport. They are also situated further north in more desirable locations.

Tallawarra Lands may be able to attract business park uses due to its availability of land. However, as the site will compete against the West Dapto Release Area – Kembla Grange, it would be advantageous to release Tallawarra Lands as soon as possible. It should also target a different market to that serviced by the Innovation Centre.

Criteria	Desirable site attributes	Assessment of Tallawarra Lands	Comparison to competitor sites
Proximity to a major centre and other land uses	<ul style="list-style-type: none"> Proximity to centres can assist with the attraction of employees Business parks can support centres by building on existing clusters of 'knowledge-based' activities 	The Tallawarra site is strategically positioned in Wollongong LGA. However, it is not in close proximity to existing commercial uses or the university, and there is likely to be limited opportunity to develop business park uses on the site.	<p>The majority of commercial and institutional activities, relating specifically to the university and hospital, are located in the north of Wollongong LGA.</p> <p>The Innovation Campus and other small pockets of industrial land around Wollongong centre are competitor sites for business park uses. This is because they are in close proximity to commercial activities, and research and development activities associated with the university and new developments. Consultation has revealed that the Tallawarra Lands site would be of little interest to investors for business park activities.</p>
Clustering	<ul style="list-style-type: none"> Agglomeration of firms, which can lead to high productivity On-site support services 	Tallawarra Lands would need to offer good quality developments to attract business park uses. It may also require the provision of on-site support services,	Existing business park activities are clustered on the Innovation Campus and close to Wollongong centre in order to utilise support services.

Criteria	Desirable site attributes	Assessment of Tallawarra Lands	Comparison to competitor sites
		such as a bank, post office, and some food services.	
Access	<ul style="list-style-type: none"> Access for small commercial vehicles, as business parks are used for light industrial and warehousing uses Close proximity to public transport (however, there has been a trend for business parks to become more car-oriented) 	<p>Access to the Tallawarra Lands site is adequate for commercial vehicles, and workers and visitor vehicles. The site also located close to the F6. Access from the southbound F6 requires vehicles to travel 2.7 kilometres down the freeway to backtrack their route to take the Princes Highway then Yallah Bay Rd exits. Access to the Tallawarra Lands site can also be made by diverting off the freeway onto the Princes Highway (4.2km), crossing under the freeway. However, this requires vehicles to travel through residential areas in Dapto.</p> <p>Exiting from Tallawarra Lands is along Yallah Bay Rd then the Princes Highway for 3.5 kilometres, before the on-ramp to the freeway.</p> <p>The Tallawarra Lands site lacks good public transport access. This could be rectified through the modification of the bus routes.</p>	<p>WDRA Kembla Grange – access to the site from the north is via the F6, taking the Kanahooka Rd exit (800m) and backtracking along the Princes Highway for 2.1 kilometres.</p> <p>Access from the site to travel northbound is via the Princes Highway (650m) then Northcliffe Drive (850m) onto the freeway. Kembla Grange has excellent public transport access.</p> <p>Albion Park Rail – vehicles travelling from the north have direct access from the Princes Highway. Vehicles exiting the employment lands travelling north must come down the Princes Highway for 1.8 kilometres and retrace their route. Albion Park Rail has good public transport access.</p> <p>Port Kembla – access for vehicles travelling south to Port Kembla is via the F6 and Five Islands Rd exit (5.5km). Leaving the site northbound is the same route. Port Kembla has reasonable public transport access.</p> <p>Unanderra – access for southbound vehicles to the site is along the F6, taking the Five Islands Rd exit (1km) and then Princes Highway (500m). Unanderra has good public transport access.</p>
Visibility, exposure and passing traffic volume	<ul style="list-style-type: none"> High visibility offers marketing opportunities for tenants choosing to locate their headquarters in 	<p>Approximately 3.1 hectares of the site has been set aside for business park uses²³. This is sufficient land for business park activities.</p>	<p>Existing business park activities surrounding Wollongong centre have good visibility and exposure, which helps promote businesses.</p>

²³ Warren Lee Urban Design Pty Ltd (2010) Tallawarra Land Urban Design Masterplan

Criteria	Desirable site attributes	Assessment of Tallawarra Lands	Comparison to competitor sites
	business parks	However, business would receive limited visibility and exposure from the freeway, as this land is predominantly expected to accommodate large format retailing uses. The site will receive only some passing traffic from the on-site residential population.	Business park activities at the Innovation Campus do not have high exposure or visibility. However, the site's association with Wollongong University offers high recognition.
Lot sizes	<ul style="list-style-type: none"> Large lots to accommodate flexible design and large floorplates. 	The site has the ability to accommodate large lots for flexible design and large floorplates.	Additional business park activities are accommodated on a mixture of lot sizes throughout the Illawarra region. Some business park activities are found on smaller lot sizes around Wollongong CBD. There is limited land availability of future business park uses around Wollongong CBD.
Capacity	<ul style="list-style-type: none"> Business parks are typically large sites free from development, allowing flexible design and large floorplates. 	The site has capacity to contain business park uses. However, a mixture of uses on the site would best utilise land capacity and activity.	There is limited land supply for business park development on land around Wollongong centre; however, land supply on the Innovation Campus is expected to reach capacity only over the medium to longer term. Current developments include commercial space, with 1,100 sqm to 2,500 sqm floorplates subdivisible into 200 sqm areas. There may be a gap in the market for suitable land for certain types of business park activities.
Trade catchment	<ul style="list-style-type: none"> Business parks do not rely on a trade catchment Close proximity to a skilled labour force, as it is an important driver of investment 	The Illawarra region contains a skilled labour force, which provides the opportunity to develop business park activities. Planned residential areas on the site could offer attractive housing options to cater for on-site workers.	Other business park activities in the Illawarra region also have the ability to capitalise on the area's proximity to a skilled labour force. Timing and staging of the release of land at WDRA Kembla Grange will need to be considered, if the site is also expected to accommodate business park activities. This is because it also has the potential to cater for attractive housing options.

Table 22. Strategic assessment of Freight and Logistics

Tallawarra Lands ranks highly for freight and logistics uses, second only to the West Dapto Release Area – Kembla Grange. This position in the league ladder is thanks to its availability of land, and proximity to a centre and population, strategic assets/infrastructure, and roads. Its one disadvantage is the lack of public transport access, although this is likely to be improved after completion of residential development on the site.

Other industrial precincts within Wollongong and Shellharbour LGAs also rank highly to accommodate freight and logistics uses. These include Albion Park Rail and the Innovation Campus. However, the Innovation Campus is unlikely to contain freight and logistics uses as it is geared towards higher value commercial uses. Tallawarra Lands' one point of difference compared to West Dapto Release Area – Kembla Grange and Albion Park Rail may be the timing of when land is released. Placing the site on the market as soon as possible is likely to ensure it is the most attractive location in the area for freight and logistics firms.

Criteria	Desirable site attributes	Assessment of Tallawarra Lands	Comparison to competitor sites
Proximity to a major centre and other land uses	<ul style="list-style-type: none"> Close proximity to strategic assets, such as ports and container areas Proximity to centres is not an important factor for the location of freight and logistics uses 	<p>The Tallawarra site is located strategically between the port, steelworks and Illawarra Regional Airport.</p> <p>Although freight movements from the port and bound for Sydney have to first drive south to reach Tallawarra Lands, the route is more direct than that to other employment lands in the region.</p>	<p>Employment lands in the West Dapto Release Area offer the potential to accommodate freight and logistics uses, as they are strategically located to the port and steelworks, and to a lesser extent the airport.</p> <p>Albion Park Rail is strategically located near the airport, and has the potential to contain freight and logistics uses. However, it is unlikely to compete directly against employment lands closer to the port due to its southerly location.</p> <p>Moving freight to existing industrial areas may be difficult due to narrow roads and small turning circles.</p> <p>Freight and logistics uses have tried to avoid areas such as Unanderra for this reason.</p>
Clustering	<ul style="list-style-type: none"> Clustering of activities is not 	A clustering of freight and logistics uses on the	Freight and logistics uses are dispersed between

	<p>essential. However, the co-location of similar uses can take advantage of good road access, proximity to strategic assets and business to business activity.</p>	<p>Tallawarra Lands could be accommodated. Freight and logistics uses integrate well with other industrial uses, such as light industry and business parks.</p>	<p>industrial precincts throughout Wollongong and Shellharbour LGAs.</p>
Access	<ul style="list-style-type: none"> • Access for heavy vehicles, with wide turning circles and sufficient docking space. • Close proximity to public transport 	<p>Access to the Tallawarra Lands site is adequate for heavy vehicle access and turning.</p> <p>The site is also located close to the F6. Access from the southbound F6 requires vehicles to travel 2.7 kilometres down the freeway to backtrack their route to take the Princes Highway then Yallah Bay Rd exits.</p> <p>Access to the Tallawarra Lands site can also be made by diverting off the freeway onto the Princes Highway (4.2km), crossing under the freeway. However, this requires vehicles to travel through residential areas in Dapto.</p> <p>Exiting from Tallawarra Lands is along Yallah Bay Rd then the Princes Highway for 3.5 kilometres, before the on-ramp to the freeway.</p> <p>The Tallawarra Lands site lacks good public transport access. This could be rectified through the modification of the bus routes.</p>	<p>Some existing industrial areas, particularly in Wollongong LGA, have poor access issues with narrow roads and small turning circles.</p> <p>WDRA Kembla Grange – access to the site from the north is via the F6, taking the Kanahooka Rd exit (800m) and backtracking along the Princes Highway for 2.1 kilometres.</p> <p>Access from the site to travel northbound is via the Princes Highway (650m) then Northcliffe Drive (850m) onto the freeway. Kembla Grange has excellent public transport access.</p> <p>Albion Park Rail – vehicles travelling from the north have direct access from the Princes Highway. Vehicles exiting the employment lands travelling north must come down the Princes Highway for 1.8 kilometres and retrace their route. Albion Park Rail has good public transport access.</p> <p>Port Kembla – access for vehicles travelling south to Port Kembla is via the F6 and Five Islands Rd exit (5.5km). Leaving the site northbound is the same route. Port Kembla has reasonable public transport access.</p> <p>Unanderra – access for southbound vehicles to the site is along the F6, taking the Five Islands Rd exit (1km) and then Princes Highway (500m). Unanderra has good public transport access.</p>

Visibility, exposure and passing traffic volume	<ul style="list-style-type: none"> • Low traffic volumes to avoid traffic congestion • Freight and logistics uses do not require high visibility or traffic volume areas 	<p>It is likely that the Tallawarra Lands site will provide low traffic congestion and good access for freight and logistics uses.</p> <p>Some traffic will be generated from residential and workers. However, this is unlikely to impact on freight movements.</p>	<p>Some existing industrial areas in the Illawarra region have traffic congestion problems, made worse by narrow roads and poor access to turning circles.</p>
Lot sizes	<ul style="list-style-type: none"> • Medium to large lot sizes, to allow for sufficient docking, loading and storage areas 	<p>There is sufficient land availability to accommodate docking, loading and storage areas on Tallawarra Lands.</p> <p>The site could contain medium to large lots, with flexible design and large floorplates.</p>	<p>There are limited medium to large lots suitable for freight and logistics in existing industrial areas. Medium to large lots would be available in Albion Park Rail and WDRA Kembla Grange which may compete against Tallawarra Lands.</p>
Capacity	<ul style="list-style-type: none"> • Sufficient capacity 	<p>Land availability is not an issue for delivering freight and logistics uses on the Tallawarra Lands site.</p>	<p>There is limited capacity in existing employment areas, such as Unanderra and Kemblawarra, for freight and logistics uses. There is an inadequate availability of good quality, large lots.</p> <p>WDRA Kembla Grange and Albion Park Rail have potential for freight and logistics uses on larger lots. This will be dependent on the timing of land release.</p>
Trade catchment	<ul style="list-style-type: none"> • Freight and logistics uses are not reliant on trade catchments 	<p>-</p>	<p>-</p>

6 Gap analysis

6.1 Local service industry

Approximately 2200 square metres of Local Light industrial floorspace and 2300 square metres of Light Manufacturing floorspace will be required to cater for the assumed incoming population to the Tallawarra site.

This assumes that the neighbouring release area of West Dapto will be self contained, providing industrial land for its planned residential development. Additionally, it assumes that existing provision of local service industrial land in the wider area is currently sufficient and there is capacity to enable it to increase in line with the predicted population growth. If this is not the case, then there may be potential for the Tallawarra site to increase the proportion of land used for these population serving industries, given its proximity to Wollongong and Shellharbour centres.

6.2 Strategic industry

High employment growth is predicted for Wollongong and Shellharbour LGAs, which translates into a net increase in floorspace demand of around 525,000 and 127,000 square metres respectively from 2006 to 2036.

Light manufacturing

The requirement for land for manufacturing uses is predicted to fall by almost 46,000 square metres over the next 25 years. However, consultation with real estate agents and investors in the region suggests that there is currently an insufficient supply of good quality industrial land. Tallawarra Lands is ideally placed to fill this gap in the short term, given the site's location, access to infrastructure, and residential buffers. The site may also offer larger lots that are considerably underprovided by the market. Possible competitors include the West Dapto Release Area and Albion Park Rail due to their similar attributes. There are no definite plans as to when these will come on to the market.

Business parks

There is an existing supply of business parks to the north of Wollongong LGA, centred around the university and hospital. These typically contain local light industries with an office component and are attractive to small and medium sized businesses.

The Innovation Campus is primarily focused on research and development and commercial uses. It has been able to capture much of the demand for higher order strategic uses, in particular due to its affiliation with the University of Wollongong. It is expected that the Innovation Campus will have a supply of floorspace over the next 15-20 years due to staged expansion. This suggests that

there is little opportunity for the Tallawarra site to compete in this particular market given its location in the less desirable southern end of Wollongong LGA.

The demand for business parks is expected to grow, however, and there may be the opportunity for the Tallawarra site to provide a different type of business park environment to that offered elsewhere in the region. For example, it could be possible to target specific industries to locate on the site, in effect forming an industrial park cluster. This would require flexible floorplates and potentially securing initial anchor tenants to attract similar uses.

Freight and logistics

Demand for land for the 'Transport, Postal and Warehousing' sector is forecast to rise by almost 170,000 square metres to 2036. The Tallawarra Lands site ranks highly for these uses and has the potential to offer large lots on flat land. In particular, it has excellent access to infrastructure in the region and, therefore, a naturally strong base for transport and logistics operations. The site is capable of handling ancillary activities from the surrounding transport nodes. There are few competing sites for these uses beyond the West Dapto Release Area, which has the additional benefit of good public transport servicing.

7 Recommendations

7.1 Strategic land uses

The recommended land uses detailed consider the outcomes from market analysis, the policy and strategy framework, and the site and its competitive offer for development. These have been detailed in preceding sections.

There has been interest from car-holding companies to locate in Wollongong LGA. However, this is unlikely to be an optimal use for Tallawarra Lands, which has the opportunity to attract higher value uses.

Freight and logistics

Tallawarra Lands is an ideal site for Freight and Logistics uses due to its proximity to infrastructure and strategic assets. There are currently few, if any, competing sites in the region for these uses and the sector is predicted to grow considerably over the next 25 years. Expansion of the port and related activities in particular is a strong policy objective for the Illawarra. As such, it is likely that the Tallawarra site would attract considerable interest for these uses.

However, although this industry is a low risk target it is likely to achieve only low rewards, and there may be higher value uses for the site. The sector also has low employment density, with approximately 220 square metres of floorspace required per job. This implies that housing such uses on the Tallawarra site would not enable it to contribute significantly to the employment targets set for Wollongong LGA.

Light manufacturing

It is recommended that Light Manufacturing uses are targeted for the site. This could take the form of a cluster of firms of a similar industry, forming a specialised industrial park focused on manufacturing. Desirable features of industrial parks, and associated recommendations for Tallawarra Lands, are as follows.

- The **clustering of activity** is seen as a key driver of economic competitiveness. Being in a strong cluster can reduce the cost of doing business, make innovation easier, and reduce risk. Additionally, it may increase the possibility of being ahead of the competition and improve access to customers, distribution channels, suppliers and specialist services.

Tallawarra Lands offers the opportunity to develop clusters of activity in the manufacturing industry. Business support infrastructure, such as banks, a post office, and some food services, is central to achieving this objective.

- A **sustainable development** in economic, social and environmental terms. Basic concepts for sustainable business development include discriminating development (those industries that are discriminating in the use of resources) and conserving resources. Additionally, maximising the 'four R's' (repair, reconditioning, re-use and recycling) where possible, and investing in activities that support sustainability and benefit the community, contribute to this objective.

In keeping with the vision for the site and broader policy directions for Wollongong LGA, TRUenergy should, as far as is feasible, discourage industries that would have a negative environmental impact relative to their peers from locating on Tallawarra Lands.

- A development that **harnesses human capital**. Competitiveness is dependent upon the capacity of industry to innovate and upgrade. As the basis of competition has shifted towards the creation and assimilation of knowledge, human capital plays a greater role. A highly skilled workforce can be instrumental in promoting productivity development, innovation and growth, thus enabling expansion and further recruitment. It can also attract inward investment and enhance the supply and demand chain for clusters.

Tallawarra Lands is fortunate in having a large labour pool to draw upon. Consultation suggests that this labour pool is increasingly over-skilled to the needs of the current economy. As such, there are retention issues due to a lack of available opportunities locally, with many residents of the LGA commuting to Sydney. Development on the Tallawarra site offers an opportunity to attract firms who can utilise higher level skills. Provision of executive housing on residential areas will assist in this aim.

- A **quality environment** is key to attracting investors on the basis of location decision-making factors such as image and quality of life. The character of the built environment needs to consider the quality of the built product, landscaping, infrastructure and accessibility. Increasingly, firms are focusing on an area's image as a prerequisite to their investment and require an image that is attractive to customers, suppliers, employees and investors.

The perceptions of southern Wollongong as a traditional manufacturing area with low skilled employment opportunities presents a barrier to the Tallawarra site's ability to market itself as a high quality investment location to particular industries. Nevertheless, investment in the region and major forthcoming residential development on nearby release areas offers an opportunity to overcome these barriers. Consideration needs to be given to architecture, landscaping, streetscaping, image, profile and industry character to achieve the image of a quality environment. The location of Tallawarra Lands adjacent to Lake Illawarra and protected environmental areas on the site are an advantage over competing developments. Amenities for the workforce are another mechanism for enhancing the perception of a quality development.

- A **connected development** is a key attribute for investors. Proximity to major roads, airports, ports, and rail infrastructure is a consideration when firms are examining the transport costs to their business and accessibility to potential employees. A public transport system demonstrates commitment to environmental awareness.

Tallawarra Lands has excellent road connectivity and is in proximity to the port and regional airport, which will be attractive to firms for whom transport costs are a major competitive consideration. The lack of rail infrastructure on the development may be a disadvantage for some businesses. Commencement of public transport provision is likely to be linked to residential development on the site and should be investigated.

Possible industries that are likely to be successful on an industrial park development on Tallawarra Lands are green industries and food product manufacturing.

Green industries

The United Nations Environmental Program (2008) defines 'green jobs' as:

'positions in agriculture, manufacturing, R&D, administration and service activities aimed at alleviating the myriad environmental threats faced by humanity. Specifically, but not exclusively, this includes jobs that help to protect and restore ecosystems and biodiversity, reduce energy consumption, decarbonise the economy, and minimise or altogether avoid the generation of all forms of waste'.

Green industries are emerging as a global economy and job growth area. They include:

- hydro industries
- solar energy
- waste management and recycling
- Green manufacturing – traditional manufacturing methods to make items used in green industries (for example, wind turbines, solar panels)
- bio-fuels and renewable energy
- Green logistics
- Green chemistry
- retrofitting of buildings.

The Green Jobs Illawarra Action Plan was prepared by the Green Jobs Illawarra Project Steering Committee (PSC) in September 2009 and was the first of its kind in Australia.

It notes that the challenges faced by the Illawarra region – including the impact of climate change policy, the onset of the global financial crisis, and high levels of structural unemployment – will provide the foundations for green industries in the Illawarra region and subsequently a competitive advantage. The Illawarra region is already home to green businesses, such as Oceanlinx in Port Kembla (a world leader in wave power technology).

The Plan makes recommendations for increasing participation in green industries. These include:

- a wave power technology Centre of Excellence. This would position the Illawarra as a 'centre of excellence' for wave power generation technologies by harnessing the existing R&D capacity of the University of Wollongong, the innovative manufacturing and engineering capacity of regional firms, and supporting cutting-edge projects by market leaders.
- transforming manufacturing and engineering industry. Investigating funding sources to assess green technology opportunities for manufacturing and engineering industries, and assessing each technology to identify gaps and the capacity for local companies to take advantage of these opportunities.

An audit of the region's existing renewable energy manufacturing and generation capacity suggests that there is 'significant scope for profitable investment' in the green technology market, with supporting national policy settings providing an opportunity to capitalise on this potential. The Plan notes that there are substantial projects in this sphere, including approvals for a large-scale wind farm project near Goulburn and \$2 billion wind farm on the Mundi Mundi Plains near Broken Hill, in addition to community based wind farms proposed by the Southern Councils Group.

These offer significant opportunities for engineering and fabricating companies in the Illawarra region, particularly in the fields of servicing, repairs and maintenance.

The University of Wollongong is a leader in technology research, with research and development specialisations in 'sustainable manufacturing, sustainable primary production, innovative infrastructure, and sustainable household and community options'²⁴. Moreover, TAFE Illawarra is developing its Yallah Campus – located 7km from the Tallawarra site – into a Green Skills Centre of Excellence offering a range of new Green Skills courses.

There would be an advantage for firms providing support services associated with green industries to locate on Tallawarra Lands. The location of the site offers access to skills, and within Wollongong LGA there is a supportive policy outlook and an ongoing drive to transform the region's manufacturing base to support growth in the green economy through development of key industries. Additionally, a green industries cluster would complement the TRUenergy cogeneration power plant on the Tallawarra site in terms of its contribution to lowering greenhouse gas emissions. A high quality internal environment would be a requirement to appeal to this market.

- Case study – Onkaparinga, South Australia

The City of Onkaparinga in South Australia is developing an 8.3 hectare industrial land site adjacent to a renewable energy precinct. The objective of this site is to attract a wide range of complementary industries in the clean technology sector. More specifically, 'the project aims to attract industries associated with energy use efficiencies, renewable energy generation, vehicle

²⁴ Green Jobs Illawarra Action Plan (2009)

technologies, best practice water use, stormwater harvesting and reuse, green building designs and other initiatives.²⁵

Food product manufacturing

The food product manufacturing industry involves the production, processing and packaging of food products, and in some instances also the distribution of products. Food product manufacturing can target specialist products, and can involve some research and development technologies.

The benefit of having a clustering of food product manufacturers includes new market penetration, value-adding to the local and regional economies, and consolidation benefits. By clustering like food products there is the ability to add value to lower value products (for example, some types of grain) through new processing technologies, new recipes or applications. This would fully utilise specific company strengths. There is also the ability to share or reuse materials such as water, heat and packaging, which links well with the vision for a sustainable development for Tallawarra Lands.

According to the NSW Profile of the Food Product Manufacturing Industry Sector the main drivers of the industry are:

- access to a significant population. A more affluent population may demand more pre-processed package goods and it also may attract higher value products, such as organic or sustainably grown food products²⁶.
- proximity to agricultural land. This is a flow-on effect for the demand for food manufacturers²⁷.
- innovation in technologies and applications. This can involve new product development, new processes or packaging techniques, improved supply chain logistics or new marketing methods²⁸.

With increased trade globalisation, the food product manufacturing industry requires good access to freight movements and associated infrastructure. This will secure the industry's supply to export markets. The meat and poultry industry were the largest exporters in NSW in 2009-2010. Fruit and vegetable manufacturing also accounted for large proportion of exports in the same period²⁹, although recent drought and flooding has seen overall manufacturing activity in this sector decline slightly.

It is unlikely that all food product manufacturing sectors would be appropriate for Tallawarra Lands. For example, meat manufacturing has a considerable impact on surrounding land uses³⁰. Suitable targets in this industry include:

- bakery goods

²⁵ City of Onkaparinga (2010) <http://www.onkaparingacity.com/onka/council/policies_strategies/futurtec.jsp>

²⁶ NSW Industry and Investment, NSW Profile of the Food Product Manufacturing Industry Sector

²⁷ ibid

²⁸ ibid

²⁹ ibid

³⁰ NSW Industry and Investment, NSW Profile of the Food Product Manufacturing Industry Sector

- grain mill and cereal products
- fruit and vegetables
- dairy produce
- cured meats and smallgoods
- sugar and confectionary.

With regard to competing sites in NSW, there are food product manufacturers located on the Central Coast due to its proximity to Newcastle Port and Sydney. Within Sydney there are operators in western Sydney around Wetherill Park and Seven Hills, and also at Mascot and Botany. Tallawarra Lands is likely to be on par with these and may be able to offer lower land prices to attract initial anchor tenants in the industry. There may be an opportunity to collaborate with local and regional agricultural development agencies in targeting this sector given its contribution to the economy of the Illawarra.

The food product manufacturing supply chain also provides other employment opportunities in food distribution, wholesaling and retailing³¹. Some of these activities could be captured on the Tallawarra site.

Tallawarra Lands has an advantageous location for food product manufacturing, as it lies between the major agricultural areas of Wingecarribee, Shoalhaven and Shellharbour LGAs and Sydney and offers excellent road linkages. This is convenient for this industry as it minimises transport costs and provides access to distribution and population centres. Proximity to the port may be attractive for firms with existing foreign markets or those considering pursuing export opportunities. The growing population of the region suggests demand for processed food products will increase.

- Case study – Bendigo, Victoria

In 2002, the City of Greater Bendigo undertook an Opportunity Study for the provision of a comprehensive food manufacturing cluster. The study aimed to identify the potential for further developing food manufacturing in the LGA. Thirty hectares of land was rezoned to establish a food manufacturing precinct. The site, known as Wellsford Estate, is situated beside Bendigo Airport and six kilometres from Bendigo CBD.

Wellsford Estate has been successful due to Bendigo's proximity to agricultural lands and Melbourne's growing population. The development offers purpose-built facilities in a high amenity environment for only food production and associated services.

³¹ NSW Industry and Investment, NSW Profile of the Food Product Manufacturing Industry Sector

7.2 Staging and delivery

Local service industry

It is recommended that 4500 square metres of industrial floorspace is provided for local service industry, which will cater to the assumed local population of Tallawarra Lands.

An existing on-site population is ideal from the perspective of potential local service industry firms, such as mechanics and joiners. Conversely, existing on-site services are attractive to potential residents. Therefore it is recommended that development of industrial land for local service industry commences with, or shortly after, residential development on the site. Positioning the areas allocated for local service industry in clearly visible and accessible locations will assist in attracting business.

Strategic industry

Background

- Based on population forecasts for Wollongong LGA to 2036, an additional three hectares of land will be required for industrial uses. There is projected to be a reduction of 3.2 hectares of land required specifically for light industrial uses, and an increase of four hectares of land required for freight and logistics uses. However, this is unlikely to adversely affect demand for sites on Tallawarra Lands for the following reasons:
 - consultation suggests that there is currently unmet demand for good quality industrial land in the LGA, and therefore this shortfall should be accounted for before a reduction in future demand is considered
 - the Tallawarra site is likely to attract uses from less suitable sites within the LGA, such as those prone to flooding, with poor access, or offering unsuitable lot sizes for businesses wishing to expand. It is probable that these less attractive sites will suffer the majority of the effects of reduced demand
 - it is anticipated that the release of Tallawarra Lands will attract strategic industries from outside the LGA, which have not been incorporated into employment projections.
- The turnover of general industrial land in Wollongong LGA in 2010 was 9.5 hectares, excluding industrial strata units. This was slightly higher than the previous year (6.9 hectares). The annual average for the 2005 to 2007 period of 17 hectares is perhaps more suggestive of how the industrial property market will look once the region has recovered from the effects of the financial crisis. Local estate agents expect this will occur in 2012.

There are 14 hectares set aside on Tallawarra Lands for light and general industrial usage. If, as suggested, 0.45 hectares is used for local service industries, this implies 13.55 hectares for strategic industry. The timing and rate of land take-up will depend on a variety of factors, for example the type and size of industry targeted for the site, general economic conditions,

release schedules for competing land at West Dapto and Albion Park Rail, and the extent of the current undersupply of land in the region.

- The median size of industrial properties sold in Wollongong LGA each year between 2007 and 2010 was around 0.2 hectares. All lots traded in 2009 were below one hectare. In 2010, the majority were under one hectare, with four larger sites sized between one and three hectares sold. Real estate agents suggest that there is demand from investors for lots between 0.2 and 0.4 hectares in Wollongong LGA.

Recommendations

In almost all cases it appears that the main competitors to Tallawarra Lands for strategic industrial uses are the West Dapto Release Area and Albion Park Rail. These sites will similarly offer large sites with access to road networks and infrastructure, and will be able to offer flexible sizing and amenities to meet demand.

There is currently unmet demand for good quality land in the region. In addition, there are a high proportion of skilled workers resident in the Wollongong and Shellharbour LGAs but employed in Sydney. This, coupled with the positive impact of the Innovation Campus in terms of increasing the economic output and productivity of the region, makes it likely that firms will be attracted to locate in the Illawarra.

Additionally, it is of high importance for all activities that industrial activity is clearly separated from other land-uses. The separation of residential and industrial will need to be stressed when attracting industrial interest as disputes over land usage adjacent to residential areas are common. Lot configuration will need to recognise this. Industrial uses should be developed prior to the development of the nearby residential component so as to assure potential residents that the uses will not detract from the amenity of the site.

Given the current shortage of land supply in the region and the forecasted commencement of residential development in 2016, it is recommended that TRUenergy would be better positioned to release industrial land on Tallawarra Lands in the short term. This approach would reduce the likelihood of the site competing directly against the West Dapto Release Area and Albion Park Rail. It may also benefit the development of residential areas on the site.

Constraints include the provision of infrastructure, for example roads, sewerage, water, and electricity.

There may be the potential to offer incentives to attract businesses to relocate on the site, thus ensuring a rapid take-up of land with additional land available in the industrial zoned future development area. It will also be necessary for the development to offer flexibility. Incorporating a variety of development sizes to cater for small local businesses and larger companies is likely to generate interest from different types of industries and activities. Effective marketing and appropriate prices will improve the rate of take-up.

While not essential, floorspace take-up will be encouraged by a large anchor tenant. Securing a strong tenant will set the tone for the precinct, and therefore TRUenergy should be flexible in what they offer prospective commercial interests. This may include the opportunity to change floorplates, for example. Over the past five years, the largest ten percent of lots sold in Wollongong LGA have been between 1.5 and 7.6 hectares. An anchor tenant is likely to require a land parcel sized within this range.

High amenity is considered by the developers interviewed for the study as paramount in attracting industrial tenants. As such, priority should be given to development of the public domain areas. Provision of good truck access, turning circles and wide frontages will further increase the appeal of the site for industrial uses.

Appendix A: Strategy and policy framework

Regional framework

Illawarra Regional Strategy 2006-2031 (2007)

The *Illawarra Regional Strategy* was prepared in 2007, and applies to the local government areas (LGAs) of Kiama, Shellharbour and Wollongong. The Strategy provides directions to meet the housing and employment targets set for the region over the next 25 years. The Region is expected to accommodate 30,000 new jobs and 38,000 new dwellings by 2031.

Sufficient employment lands – approximately 270 hectares – will need to be protected to ensure the employment target is met. In May 2004, 535 hectares of vacant zoned employment land had been identified across the Region: 478 hectares in Wollongong LGA, 49 hectares in Shellharbour LGA, and eight hectares in Kiama LGA.

Many of these employment lands may face development constraints, including buffers, parcel size, land tenure, environmental issues and serviceability. There is demand for larger industrial lots, typically between two to three hectares and ten to 15 hectares. These lands should be protected to prevent further fragmentation and rezoning.

The Strategy has identified employment capacity for 10,000 new jobs in Wollongong city centre, and 8,400 new jobs at Kembla Grange and West Dapto employment lands. The Illawarra region has the potential to expand its port activities and support service industries.

The appropriate mix of housing is shown in Table 23.

Table 23. Housing mix in Illawarra region

LGA	Detached Houses	Medium Density	High Density
Detached houses	50%	60%	43%
Medium density	35%	38%	55%
High density	15%	2%	2%

Illawarra Employment Lands Guidelines (2008)

The guidelines were prepared to support the Illawarra Regional Strategy and apply to Wollongong, Shellharbour, Kiama, Wingecarribee and Shoalhaven LGAs. The main objectives of the guidelines are:

- to promote the orderly planning and development of employment land in the region, particularly in the preparation of strategic plans, new local environmental plans and development control plans

- to monitor the supply of employment lands and their appropriate location and zoning, through the continued update of the Illawarra and South Coast Employment Lands Database
- to establish greater certainty and confidence for private sector investment and the community.

General guiding employment lands principles were identified for the region. Specific principles were also established for different land uses, including:

- Heavy industrial
- Light industrial
- Business parks
- Commercial and retail
- Tourism, entertainment and hospitality
- Bulky goods
- Home based businesses.

State Plan Priority P6, Business Growth Plan: Illawarra Region (2008)

Table 24. Issues, opportunities and challenges in the Illawarra region

Type of issue	Opportunities	Challenges
Industry Development	<ul style="list-style-type: none"> • Logistics and port related industries linked to Port Kembla expansion • Manufacturing sector and existing supply chain opportunities • Business and financial services • Research and development opportunities with the University of Wollongong and Innovation Campus • Tourism investment related to local attractions • Light aeronautics industry due to development of Illawarra Regional Airport • Defence industry due to growth of Albatross Aviation Technology Park, Nowra • Value-added niche food and beverage products • Emerging boat building industry, mostly in the Shoalhaven • Biomedical research and business opportunities due to Garvan Institute's Australian BioResearch facility • Exploration and development of petroleum 	<ul style="list-style-type: none"> • Local economy is still somewhat dependent on the steel industry • Vulnerable manufacturing sector due to offshore competition
Infrastructure	<ul style="list-style-type: none"> • TRUenergy gas fired power station at Tallawarra and planned Delta Energy gas 	<ul style="list-style-type: none"> • Alignment of freight transport links southward with business growth

	<p>fired power station at Nowra</p> <ul style="list-style-type: none"> • Upgrade of Port Kembla • Continued development of Illawarra Regional Airport • Opportunities for development contributions to enable the provision of infrastructure necessary to respond to changing demands 	<p>opportunities</p> <ul style="list-style-type: none"> • Balancing development contributions to ensure housing and employment lands affordability and delivery of appropriate community infrastructure
Land Use/ Planning	<ul style="list-style-type: none"> • Supply of industrial land at Nowra attracting footloose industries and investment • Supply of 600 hectares of industrial land at the Wingecarribee Employment Zone (WEP) • Development of the Tallawarra Business Park • Wollongong City Centre LEP completed to provide substantial boost to the development capacity of Wollongong, accompanied by an infrastructure plan for civic improvements 	<ul style="list-style-type: none"> • Limited broadacre employment lands, in particular large industrial lots and land with suitable access to Port Kembla • Retention of land for food and wine production
Skills and Employment	<ul style="list-style-type: none"> • Strong capacity of the University of Wollongong and TAFE Illawarra to develop highly skilled workforce • New trade schools in Wollongong and Shellharbour • Wollongong Teaching Hospital in collaboration with the University of Wollongong 	<ul style="list-style-type: none"> • High youth unemployment • Large number of commuters to Sydney due to lack of suitable local jobs • Skills shortages in some sectors • Alignment of transport with workplace and training needs

Illawarra and South Coast Employment Lands Update (2009)

A key priority of the NSW Government is to identify sufficient employment land to develop a hierarchy of centres for economic efficiency, to protect suitable employment lands and deliver job opportunities. The Illawarra and South Coast Employment Lands Update monitors available employment lands, and covers Wollongong, Shellharbour, Kiama, Wingecarribee, Shoalhaven, Eurobodalla and Bega Valley LGAs.

Analysis of available employment lands in the Illawarra and South Coast shows an adequate supply; however, this should be maintained and expanded upon to provide a competitive advantage to the regions. In the Illawarra Region there are approximately 55 hectares remaining of vacant zoned employment land. This will increase by an additional 43 hectares from the rezoned land at the Illawarra Regional Business Park. It is also proposed that 175 hectares may be rezoned as part of the draft West Dapto LEP (this would bring the total employment lands for Stages 1 and

2 of West Dapto to 324 hectares). This implies a total of 424 hectares of vacant employment lands in the Illawarra Region.

The employment lands monitor is managed by the Department of Planning and was last updated in 2007. A breakdown of available employment lands in 2007 is shown in Table 25.

Table 25. Employment lands by type

Employment land type	Area (ha)	Number of parcels
Commercial	333	2,775
Extractive Industry	70	15
Heavy Industrial	1,986	635
Light Industrial	610	1,234

Table 26 shows the change in size distribution of employment land parcels from 2004 to 2007.

Table 26. Size distribution of employment land parcels

Size	2004	2007
< 500 sqm	713	1,062
500 to 1,000 sqm	1,745	1,934
1,000 to 5,000 sqm	954	1,190
5,000 to 10,000 sqm	130	185
10,000 to 50,000 sqm	137	209
50,000 to 500,000 sqm	46	72
> 500,000 sqm	5	7

Table 27 shows the number of occupied and vacant employment land parcels in Wollongong LGA.

Table 27. Occupied vs vacant employment land parcels

	Occupied	Vacant
2004	3,177	4,562
2007	552	97

Illawarra and South Coast Employment Lands Audit (2004)

The *Illawarra and South Coast Employment Lands Audit* was prepared by SGS Economics and Planning for the Department of Infrastructure, Planning and Natural Resources in 2004, as part of

the Illawarra and South Coast Employment Lands Strategy. It provided a comprehensive audit of the supply of the existing and vacant employment land in the region.

Employment land parcel numbers for each LGA are given in Table 28.

Table 28. Land parcels by LGA

LGA	Number of land parcels
Wollongong	3,730
Shellharbour	637
Kiama	301
Shoalhaven	1,880
Eurobodalla	680
Bega Valley	867
Total	8,095

In Wollongong LGA, the majority of land parcels (49.2 percent) are between 500 sqm and 1,000 sqm. Five percent of parcels are larger than one hectare, and just 0.1 percent are larger than 50 hectares.

In Shellharbour LGA, just over 90 percent of all employment land parcels are smaller than 5,000 sqm in size. The majority (48.4 percent) are between 1,000 sqm and 5,000 sqm. Less than six percent of parcels are larger than one hectare, and one percent are larger than 50 hectares.

A summary of the developed and occupied, and vacant lands is shown in Table 29.

Table 29. Developed and occupied land summaries

Area	Developed/occupied	Vacant
South Coast and Illawarra Region	<ul style="list-style-type: none"> The manufacturing sector accounts for 33% of occupied employment land (1,259.1 hectares in absolute terms) and mining accounts for 25% of the total area (928.2 hectares). Both of these sectors are land intensive and so could be expected to dominate occupied land-use. Retail trade activities account for 9% (348.1 hectares) due to the high incidence of retail of activity Retail trade accounts for 27% of total employment land parcels (1,841 land parcels), while the manufacturing sector accounts for 9% (622 land parcels) 	
Wollongong	<ul style="list-style-type: none"> 3,179 developed and occupied land parcels; 	<ul style="list-style-type: none"> 356 vacant, undeveloped land parcels in

LGA	<p>covering 1,774.4 hectares (79% of the employment zoned land in the LGA)</p> <ul style="list-style-type: none"> • Manufacturing accounts for 63% of the total occupied employment land, and within this sector heavy industrial use dominates in sub-sectors such as steel manufacturing. Other key sectors in terms of land use include retail (10%) and mining (7%) • Based on the number of land parcels occupied, the retail trade sector dominates, with 27% of the LGA land parcels occupied. Other key sectors on this indicator include manufacturing (11%), and construction, transport and storage (6% for each) • Residential dwellings take up 208 employment land parcels (approximately 7% of land parcels and 3% of the total area) 	<p>total, covering an area of 449.8 hectares (of which 83% are smaller than 5,000 sqm and 11% larger than one hectare).</p> <ul style="list-style-type: none"> • 195 developed and vacant land parcels, covering 28.6 hectares. • The majority of these vacant parcels (89%) have not been levelled for development. • Most of the LGA's high rated parcels are located in the CBD, adjoining the highway in North Wollongong, bordering the highway at Unanderra Industrial Estate, and along the highway at Dapto.
Shellharbour LGA	<ul style="list-style-type: none"> • 460 developed and occupied land parcels, covering 935.4 hectares • There is a high proportion of occupied employment land given over to mining, at 73%. Other key sectors on this indicator include agriculture, forestry and fishing, and retail (each accounting for around 4% of employment land) • The retail sector accounts for 38% of the total number of employment land parcels, followed by the manufacturing sector (10%), which mainly comprises machinery and equipment manufacturing and other activities such as furniture manufacturing. The construction sector and accommodation, cafes and restaurants sector each account for around 7% of all employment land parcels 	<ul style="list-style-type: none"> • 177 vacant employment land parcels: 140 are undeveloped (covering 44.4 hectares) and 37 are developed (covering 4.6 hectares). Half of the developed premises have one floor and half have two floors • Of the vacant but undeveloped employment land parcels, 92.1% are smaller than 5,000 sqm, 7.1% are larger than one hectare, and none are larger than five hectares • Vacant land contained within in Albion Park bordering the highway is likely to have a relatively high development potential

Key points relating to future development of any vacant parcels in Wollongong LGA are as follows:

- The focus of Wollongong Council is currently on new development around West Dapto, which includes the area around the Kembla Grange Golf Course and Kemblawarra. West Dapto will cater for 10,000 to 14,000 lots of housing, commercial and retail and light industrial development.
- The Kemblawarra area has been identified as having development potential for mainly 'bulky goods' and warehousing operations
- The Port Kembla area is likely to have significant potential for future development due to a multi-purpose wharf proposal, which is currently underway

- Vacant land located just south of Warrawong is currently subject to a rezoning proposal for a business park. If accepted, this proposal would give this area a high development potential. However, according to Council it is unlikely that the proposal will eventuate
- The Tallawarra Power Station site in Yallah is currently being rebuilt and is earmarked for technology and light industry
- Overall, 195 vacant sites have some existing built form and are already serviced by electricity, gas, water and telecommunications. If unencumbered, these may have a greater potential development potential than unserviced greenfield sites
- Most of the LGA's parcels with higher development potential are located in the CBD, adjoining the highway in North Wollongong, bordering the highway at Unanderra Industrial Estate, and along the highway at Dapto.

Key points relating to future development of any vacant parcels in Shellharbour LGA are as follows:

- Vacant land in Albion Park bordering the highway is likely to have a relatively high development potential, which is mainly due to the area's access to road and passenger rail infrastructure
- There are 37 fully serviced vacant sites with existing built form.

Wollongong LGA

Wollongong LGA Economic Development Strategy (2006)

The *Wollongong LGA Economic Development Strategy* was developed by Buchan in February 2006 for Wollongong City Council. The Strategy outlines the need for Wollongong to continue its function as the major regional centre for the Illawarra and parts of the South Coast.

Wollongong LGA has the opportunity to become a major economic hub, specialising in manufacturing, service industries and port-related services. Economic development should be focused on manufacturing uses, namely steel production and engineering services.

The Strategy breaks down the industries in Wollongong LGA into five main categories. These are described below, along with the difference in each category's proportion that occupied the market from 1996 to 2001.

- Goods Producing Industries – mining, steel, metals and engineering, construction, other manufacturing, electricity, gas and water. Activities that produce goods for local, national and international markets.
- Goods Related Services – wholesale, transport of goods, port activities. Activities that support goods producing activities.
- Knowledge-Based/Business Services – education, research and development, ICT, business services, creative industries. Higher order services that have a major knowledge component.
- In-Person Services – retail, hospitality, health, community services, personal services. Activities that are delivered in person and which are mainly servicing local and regional markets.

- Government and Defence – government, defence and administration activities, including regional office functions.

Industry category	1996	2001	Difference	Share 1996	Share 2001
Goods Producing Industries	20,052	17,491	-2,561	30.1%	26.3%
Goods Related Services	5,230	5,010	-221	7.9%	7.5%
Knowledge-Based/Business Services	11,362	12,291	929	17.1%	18.5%
In-Person Services	2,235	2,672	437	3.4%	4.0%
Government and Defence	26,948	28,459	1,511	40.5%	42.9%
Total	66,582	66,410	-172	100.0%	100.0%

In the past Wollongong LGA has been vulnerable to the narrow base which the manufacturing sector provides, as it is subject to structural and cyclical changes in the industry. The broadening of service based industries has helped ensure employment in the future. The Strategy identifies future opportunities for Wollongong LGA, including:

- the metals, engineering, and mining sectors
- the development of Port Kembla
- city centre revitalisation
- services growth coming from the health sector, business and community services
- the growth of research at the university and the Innovation Campus provides major opportunities for the development of knowledge based industries
- population growth associated with the development of West Dapto will see some new local service activities emerge including culture and recreation, as well as development of business areas
- rehabilitation of unused BlueScope land holdings – a long term solution to the limits on employment lands
- the development of telecommunications services.

The major challenge for the LGA is to secure employment growth. Wollongong should focus on attracting a greater number of higher valued added manufacturing industries, and strengthening its role as a regional services centre and centre for knowledge-based activities. Threats to employment in the LGA include insufficient infrastructure, an inability to obtain future infrastructure funding, and a skills shortage.

Key recommendations from the Strategy are shown in Table 30.

Table 30. Economic development recommendations for Wollongong

Recommendation	Aim
Recommendation 7	That Wollongong pursues an LGA-wide business growth strategy that recognises the importance of key sectors including: steel, other manufacturing, business services, education, research and development, health, retail services and tourism
Recommendation 9	That Council consider the spatial dimensions of future economic growth through an examination of employment and business activity in sub-regions within the LGA
Recommendation 10	That Council recognises the major developments that will influence Wollongong's future as priority projects, including the steel industry, port development, West Dapto, City Centre revitalisation, and the Innovation Campus
Recommendation 12	That in planning the development of West Dapto, Council continues to include a focus on employment lands and developing local jobs in the area, including unlocking employment lands at Kembla Grange. A business and employment action plan should be developed as part of the planning process
Recommendation 16	That consideration is given to the incentives (from Council and the State Government) that could be used to encourage non-port related businesses located in proximity to the port to relocate to other suitable industrial areas within the LGA
Recommendation 18	That following the completion of the regional Employment Lands Study and the Port Kembla Land Use Strategy, Council and other stakeholders ensure there is an ongoing dialogue with BlueScope on the findings of the study and future regional employment lands requirements
Recommendations 19	That the State Government support land rezoning to unlock employment lands in the Kembla Grange Areas

Wollongong City Centre Plan (2007-2009)

The *Wollongong City Centre Plan* incorporates four key documents that will guide the growth and direction of Wollongong City Centre. Wollongong has been recognised as an important regional centre, with the guiding documents providing new residential and employment opportunities. These include the:

- Vision
- Local Environmental Plan (LEP)
- Development Control Plan (DCP)
- Civic Improvement Plan.

Each of these guiding documents is summarised below.

Vision

The *City Centre Vision* sets out the strategic framework and actions that will guide Wollongong, and states the vision that "as the regional city for the Illawarra Region, Wollongong will be a vibrant

centre for jobs, key regional services, cultural activity, entertainment and tourism". The city centre plans to accommodate 10,000 new jobs and 6,000 new residents.

The key actions for Wollongong include to:

- increase economic diversity in the city, and seek to attract new finance, business and government office jobs to the centre
- revitalise Crown Street Mall and develop the Railway Station Precinct
- improve development and coordination within the health precinct
- manage the foreshore to enhance its appeal while protecting its natural assets
- build the university presence to further develop Wollongong's profile as a 'learning' city
- grow cultural industry activities
- improve movement and public transport options in the centre.

Wollongong centre currently contains approximately 90,000 sqm of retail floorspace.

Local Environmental Plan

The *Wollongong Local Environmental Plan* provides the statutory planning framework to manage development in Wollongong. The main objectives of the LEP include:

- increases in allowable development to provide for anticipated job and housing growth (increased Floor Space Ratios and building heights)
- the provision of development incentives to encourage office development and high quality design, with all buildings above nine storeys and development for key sites to be subject to architectural design competitions.

The employment zones that apply to Wollongong City Centre are shown in Table 31.

Table 31. Wollongong City Centre – employment zones

Zone	Objectives
B3 Commercial Core	<ul style="list-style-type: none"> • Provide a wide range of retail, business, office, entertainment, community and other suitable land uses • Encourage employment opportunities • Strengthen the role of Wollongong as the regional business, retail and cultural centre of the Illawarra
B4 City Edge	<ul style="list-style-type: none"> • Provide a mixture of compatible land uses • Maximise public transport opportunities • Support higher order Commercial Core zone • Create opportunities to improve the public domain and pedestrian links to the City Edge zone
B6 Enterprise Corridor	<ul style="list-style-type: none"> • Promote business along main roads and encourage a mix of compatible uses • Enable a mix of employment and residential uses • Maintain the economic strength of centres by limiting the retailing of food and clothing
IN4 Working Waterfront	<ul style="list-style-type: none"> • Retain and encourage waterfront industrial and maritime activities • Ensure development does not have an adverse impact on environmental and visual qualities of the foreshore • Encourage employment opportunities
SP1 Special Activities	<ul style="list-style-type: none"> • Provide for special land uses that are not provided for in other zones • Facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and which minimises any adverse impacts on surrounding land • Provide for development that is compatible with Wollongong Hospital • Prevent development that is not compatible with, or that may detract from the activities (including medical research and development) associated with Wollongong Hospital

Development Control Plan

The *Wollongong City Centre Development Control Plan (DCP)* details conditions for development in the centre. The main purpose of the DCP is to contribute to the growth and character of Wollongong, and to protect and enhance the public domain.

The DCP has divided up Wollongong centre into different character precincts, including:

- Commercial Core
- City Edge
- Enterprise Corridor
- Special Activities Hospital and Medical Research

- Tourist and Private Recreation
- Working Waterfront and Public Recreation
- General Residential.

Civic Improvement Plan

The *Wollongong Civic Improvement Plan* provides an outline of the infrastructure needed to support the growth and development in the city centre. The Civic Improvement Plan outlines a set of projects with key objectives. The projects focus around public domain and special city centre works.

The emphasis around the public domain is on improving the functionality and liveability of the public domain, and providing a balance between pedestrian and vehicle occupation and access around the centre.

The special city centre projects include works to be undertaken on an upgrade of Crown Street, improvements to City Beach Waterfront, revitalisation of the Civic Precinct, and additional traffic management and public transport initiatives.

Wollongong Local Government Area Employment Lands Strategy (2006)

The *Wollongong Local Government Area Employment Lands Strategy* was prepared by Hill PDA for Wollongong City Council in September 2006. The main objectives of the study were to:

- create assumptions that will form the basis of the employment lands strategy
- examine the present land parcels zoned for employment uses throughout the city and make recommendations regarding any alteration in zoning
- prepare a detailed Employment Lands Strategy for Wollongong LGA
- identify land use planning options to deal with any land capacity issues and to promote future employment generating land uses in the region.

The Strategy notes the supply of employment land is seen to be a constraint on the future growth and competitiveness of the region. Given the current rate of population growth, together with major developments in the region's infrastructure network, it is anticipated demand for employment lands will increase.

Currently, the majority of employment is focussed around the retail centres and industrial areas surrounding Port Kembla. The NSW Government has recently announced a \$140 million deal to expand the port and transform it into Australia's leading car import centre, which will boost the local Illawarra economy by an estimated \$200 million per annum and secure over 1,000 direct and indirect jobs.

Wollongong LGA is a major employment centre for the wider region, with a considerable proportion of residents in surrounding LGAs travelling to the LGA for employment. Based on 2001 ABS Journey to Work (JTW) data, the southern end of the Wollongong industrial zones covering Port

Kembla, Berkeley, Coniston, Unanderra and Dapto accommodate over 10,000 jobs in manufacturing, transport and associated activities.

Table 32 identifies the existing supply of each of the three industrial zones within the LGA and their spatial distribution. It should be noted that not all this land is available for development, as some precincts are constrained by issues such as flooding, slope, heritage or other environmental issues.

Table 32. Supply of industrial zoned lands – Wollongong LGA

Zone	Suburb	Number of Lots	Total area (ha)
4a - Light Industrial	Bellambi	6	33.45
	Berkeley	11	9.82
	Bulli	39	17.29
	Coniston	71	21.96
	Corrimal	65	15.93
	Cringila	47	1.56
	Dapto	120	62.17
	Fairy Meadow	283	47.70
	Fernhill	30	3.04
	Figtree	5	0.54
	Helensburgh	18	2.63
	Kembla Grange	17	57.44
	Kemblawarra	18	7.70
	Mt Ousley	1	0.06
	North Wollongong	29	6.96
	Port Kembla	77	32.37
	Russell Vale	16	15.15
	Springhill	3	10.06
	Tarrawanna	21	2.92
	Thirroul	11	0.72
	Unanderra	275	89.35
	Warrawong	6	2.14
	West Dapto	10	105.70
Wollongong	51	5.75	
Woonona	15	15.59	
Yallah	14	15.10	
Total Zone Summary		1,272	562.32

4b - Heavy Industrial	Berkeley	1	18.01
	Cringila	7	12.62
	Dapto	2	104.02
	Kembla Grange	3	37.58
	Kemblawarra	12	26.37
	Port Kembla	111	655.26
	Primbee	3	2.98
	Springhill	22	251.32
	Unanderra	204	198.56
	West Dapto	9	40.97
Total Zone Summary		374	1,347.68
4c – Extractive Industrial	Bulli	10	51.44
	Coalcliff	2	46.14
	Corrimal	14	119.76
Total Zone Summary		26	227.34

Source: Wollongong City Council (2006)

The Strategy identifies a number of assessment criteria used in order to make recommendations concerning the future zonings of existing industrial zones across the LGA (shown in Table 33).

Table 33. Assessment criteria for potential industrial lands

Criteria	Detail
Accessibility	Access to main arterial roads and location in an area with good access for large vehicles/ machinery, available infrastructure and services
Land Use Conflict	Limited conflict with surrounding incompatible land uses (i.e. surrounding residential or commercial)
Topography	Slope of the land is not steep
Aesthetic Appeal	Suitability of surrounding natural environment and setting – for example proximity to the escarpment or beach may have a higher aesthetic appeal or be more suitable for tourism and/or residential uses
Site Encumbrances	Issues such as environmental protection, a site's cultural significance, flooding/bushfire issues and contamination
Employment	Number of persons employed on existing industrial land. Consideration should be given to preserve an existing precinct of industrial zoned land that accommodates a high number of employees
Size and Agglomeration	Size and clustering of precincts – it is appropriate to preserve large sized or clustered industrial lands
Strategic Economic Importance	Importance of the site in the context of the wider region

There is an existing supply of approximately 630 hectares of industrial zoned land across Wollongong LGA. As noted in Wollongong's draft LEP, 175 hectares of additional industrial zoned land will be provided across the LGA from the West Dapto Urban Release Area: 142 hectares within Kembla Grange and 33 hectares within Horsley.

Hill PDA's preliminary demand assessment for employment lands in the Tallawarra Employment Lands Study indicates that over the 30 year period to 2031 the forecasted increase in employment will result in demand for approximately 242 hectares of additional employment lands within Wollongong LGA, as shown in Table 34.

Table 34. Estimated demand for employment floorspace – Wollongong LGA

Supergroup	2001 jobs	Sqm floorspace	2031 jobs	Sqm floorspace	2001-2031 change
Business	11,292	196,804	27,409	477,695	280,891
Transport	2,316	231,600	3,620	362,009	130,409
Manufacturing	12,230	611,500	19,116	955,824	344,324
Construction & Industry	6,060	424,200	6,600	462,033	37,833
Education	6,671	518,770	11,960	933,510	414,740
Retail	12,175	292,835	16,802	404,112	111,277
Services	7,098	283,920	13,878	555,127	271,207
Health	7,485	224,550	19,257	577,702	353,152
Total	65,327	2,784,179	118,642	4,728,013	1,943,834

Supergroup	2001 jobs	Site (hectares)	2031 jobs	Site (hectares)	2001-2031 change
Business	11,292	10	27,409	24	14
Transport	2,316	58	3,620	91	33
Manufacturing	12,230	102	19,116	159	57
Construction & Industry	6,060	71	6,600	77	6
Education	6,671	86	11,960	156	69
Retail	12,175	29	16,802	40	11
Services	7,098	22	13,878	37	16
Health	7,485	22	19,257	58	35
Total	65,327	400	118,642	642	242

Consultation with local estate agents and industrial lands specialists revealed the following points concerning the demand for industrial lands in the LGA:

- There is no strong demand at present in the south for business parks, as they are more appropriately accommodated in the north in the medium to long term. The fact that the south is neither as aesthetically appealing nor prestigious may contribute to the present lack of demand for business parks within this part of the LGA.
- There is a demand for genuine business incubators, where business parks can offer small businesses access to facilities and flexible space and the ability to locate close to other innovation-focused businesses.

Port Kembla Land Use Strategy

The *Port Kembla Land Use Strategy* was prepared by SKM for the Department of Planning, Wollongong City Council and the Port Kembla Port Corporation. The Strategy provides the planning framework for the industrial and port areas of Port Kembla for the next 20 years, which then informed the Major Developments (Three Ports) SEPP.

Port Kembla does not have the same land and operational constraint issues as ports in the Sydney Metropolitan Area. Key opportunities for Port Kembla include the diversification of cargo projected to use the port, and the availability of underutilised or vacant land to adapt existing building and infrastructure for port-related uses.

The table below outlines the underutilised land within the study area precincts. Precinct 2 has the largest amount and proportion of underutilised land; however, this precinct is earmarked to contain future general cargo and motor vehicle imports. Land within Precinct 1 and Precinct 4 has potential to accommodate future development but is subject to negotiations with multiple owners.

Precinct	Number of sites	Area (ha)	Number of underutilised sites	Underutilised area (ha)	% of area underutilised
Precinct 1	14	408	2	3.5	1%
Precinct 2	20	230	8	105	48%
Precinct 3	133	284	46	80	28%
Precinct 4	174	67	20	30	45%
Precinct 5	16	230	3	1	0%
Total	357	1,219	79	219.5	18%

Shellharbour LGA

Shellharbour Employment Lands Study (2009)

The *Shellharbour Employment Lands Study* was prepared by Hill PDA for Shellharbour City Council in July 2009. In total there are 151.3 hectares of industrial zoned land in the LGA. There are also an additional 313.3 hectares of land zoned for special uses, including the Illawarra Regional Airport and special railway uses.

The key employment precincts in Shellharbour LGA are shown in Table 35.

Table 35. Shellharbour LGA employment precincts

Precinct	Total Precinct Area (ha)	Estimated Vacant (ha)	Lots	Estimated Workers	Estimated Businesses	Current Employment Zones	Proposed Employment Zones
Albion Park Rail	37.1	16.0	77	395	68	4(a) Light Industrial	B6 Enterprise Corridor
						4(a3) Airport Light Industrial	B6 Enterprise Corridor
Illawarra Regional Airport	245.8	45.7	138	352	25	5(a) Special Use	SP1 Special Activities
						4(a3) Airport Light Industrial	B6 Enterprise Corridor
						78 Tongarra Rd-IN2 Light Industrial under Major Projects SEPP	IN2 Light Industrial
Oak Flats	28.1	3.6	121	451	143	4(a) Light Industrial	IN2 Light Industrial
						4(a) Light Industrial	IN2 Light Industrial
						5(a) Special Use	IN2 Light Industrial
Central Business Park, Albion Park Rail	14.8	7.6	81	272	66	4(a) Light Industrial	B6 Enterprise Corridor
						9(b) Arterial Rd Reservation	SP2 Infrastructure
Warilla	8.1	1.5	57	400	45	4(a) Light Industrial	IN2 Light Industrial
						2(2) Mixed Use Residential	B4 Mixed Use
						9(b) Arterial Rd Reservation	SP2 Infrastructure
						Princes Highway 4(a) Light Industrial	B6 Enterprise Corridor
Barrack Heights	9.2	3.2	57	236	56	4(a) Light Industrial	IN2 Light Industrial
						Princes highway 4(a) Light Industrial	B6 Enterprise Corridor
Total	343.1	77.6	531	2,106	403	-	-

The guiding principles for industrial land in Shellharbour LGA include:

- encouraging the use of light industrial land to provide residential support services (including car and house repairs)
- providing a range of lot sizes to accommodate a variety of industry types
- preserving zoned land that can accommodate relatively large floor plates and that are well serviced or connected to main road networks
- developing buffer areas of low impact industrial uses (for example, storage, parking and landscaped areas) around land zoned industrial to minimise its impact with residential uses
- encouraging the clustering of industries

- not permitting bulky goods retailing in industrial zones, and allowing retailing in industrial areas only where it is ancillary to industrial uses.

The following principles were outlined specifically of light industrial uses:

- Only key issues should be permitted within the zone, including light industries, neighbourhood shops, warehouse or distribution centres
- A minimum site area of 1,500 sqm for light industrial zoned lots and a frontage of not less than 20 metres should be required.

The supply of industrial zoned floorspace in Shellharbour LGA is shown in Table 36.

Table 36. Supply of industrial zoned land, Shellharbour LGA (sqm)

Land Use Category	Albion Park Rail	Illawarra Regional Airport	Oak Flats	Central Business Park	Warilla	Barrack Heights	Total
Agriculture, Forestry, Fishing	-	-	-	-	-	-	-
Mining	-	-	-	-	-	-	-
Manufacturing	18,711	-	14,656	4,684	1,253	1,267	40,571
Electricity, Gas, Water, Waste	-	-	-	-	-	-	-
Construction	3,406	-	16,165	8,256	3,235	6,848	37,910
Wholesale Trade	6,762	-	4,857	5,101	5,246	1,828	23,794
Retail Trade	16,958	699	13,483	22,683	3,499	5,730	63,052
Accommodation, Food Services	160	-	-	444	-	-	604
Transport, Postal, Warehousing	9,958	2,573	7,497	-	268	1,419	21,175
Info. Media, Telecommunications	657	-	-	587	-	-	1,244
Financial, Insurance Services	1,300	138	-	-	-	-	1,438
Property, Businesses Services	-	-	3,499	724	1,090	-	5,313
Public Administration, Safety	-	182	-	-	-	-	182
Education, Training	-	-	-	-	-	-	-
Health Care, Social Assistance	3,092	-	332	1,955	258	7,163	12,800
Arts, Recreation Services	12,207	-	23,608	5,720	5,267	12,038	58,840
Vacant	3,163	906	8,296	24,976	1,994	6,728	46,063
Non Classifiable	502	-	1,841	936	600	-	3,879
Under Construction	-	-	-	1,014	-	-	1,014
Total	76,876	4,498	94,234	78,080	22,710	43,021	319,419

Factors which Shellharbour LGA should consider with regard to industrial land are as follows:

- Technology and research industries should be encouraged; this will provide a diversification in base industries in the region. There may be some scope for research facilities with affiliations with universities or aviation to occur
- Future activity and land use controls around Illawarra Regional Airport should be appropriately flexible, enabling a variety of uses to be accommodated within overarching objectives that promote industrial, airport related, and employment uses
- There is a role for state and local government in the funding of infrastructure and the coordination of land development
- Council could consider acting as a developer that services the land and offers lease build packages for industry to purchase.

Shellharbour LGA Employment Land Forecasts (2009)

The Shellharbour LGA Employment Land Forecasts analysed three categories of employment lands – industrial, business and special use. Two methods were applied to determine demand for employment lands.

The first method used Department of Planning population projections as the basis for calculating workforce projections for the region as produced by the Bureau of Transport Statistics (BTS). Projected labour force participation and unemployment rates were applied to the projected population. Once total employment projections were estimated, region employment was disaggregated using three forecast review modules by the BTS. Using this method, Shellharbour LGA to 2031 will require a further:

- 37.1 hectares of business zoned land
- 23.5 hectares of industrial zoned land
- 17.9 hectares of special use zoned land.

The second method uses BTS figures and forecasts to identify job zones within a 20 minute drive of Shellharbour LGA. It then seeks to facilitate job supply according to a zero unemployment scenario. It assumes Shellharbour LGA workers have, and will continue to have, a share of jobs in the job zone (Shellharbour LGA to Coniston) based on the LGA's current and future ratio of workers within a worker zone (Bulli to Shellharbour LGA). Using this method, Shellharbour LGA to 2031 will require a further:

- 11,845 business jobs (106.1 hectares)
- 6,562 industrial jobs (125 hectares)
- 4,848 special use jobs (82.5 hectares).

The study concluded that when using a conservative methodology, there is more than enough job supply capacity for workers from Shellharbour in 2031 when assuming zero unemployment and a drive to work of less than 20 minutes. As such, it was recommended that there is no need to increase the quantity of business or industrial zoned land in the LGA in terms of facilitating job supply capacity.

West Dapto site

Wollongong Local Environmental Plan – West Dapto 2010

The West Dapto LEP provides planning provisions for the land in Wollongong LGA known as West Dapto and Dapto Regional Centre. The aims of the LEP are to achieve economical, environmental and socially sustainable development. West Dapto and Dapto Regional Centre will contain a mixture of land uses including residential, commercial, conservation, open space, and employment-generating activities.

Zonings which apply to the West Dapto and Dapto Regional Centre include:

- RU1 Primary Production
- R2 Low Density Residential
- R3 Medium Density Residential
- R5 Large Lot Residential
- B1 Neighbourhood Centre
- B2 Local Centre
- B3 Commercial Core
- B4 Mixed Use
- B6 Enterprise Corridor
- IN2 Light Industrial
- IN3 Heavy Industrial
- SP2 Infrastructure
- RE2 Private Recreation
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living

Further details of the employment generating zones are outlined in Table 37.

Table 37. West Dapto LEP employment generating zones

Zone	Objectives
B1 Neighbourhood Centre	<ul style="list-style-type: none"> • Provide a range of small scale retail, business and community uses to serve people who live or work in the surrounding neighbourhood • Allow diversity of activities and densities, provided that: <ul style="list-style-type: none"> ○ the scale and height of proposed building is comparable to surrounding development ○ there is a minimal impact in traffic generation ○ there is no significant detractor from character of the locality or amenity of surrounding developments
B2 Local Centre	<ul style="list-style-type: none"> • Provide a range of retail, business, entertainment and community uses to serve people who live, work and visit the local area • Encourage employment opportunities • Maximise public transport usage and walking/cycling
B3 Commercial Core	<ul style="list-style-type: none"> • Provide a wide range of retail, business, office, entertainment, commercial and other uses • Encourage employment opportunities • Maximise public transport usage and walking/cycling • Encourage a diverse and compatible range of activities

	<ul style="list-style-type: none"> • Provide for high density residential development in Dapto Regional Centre
B4 Mixed Use	<ul style="list-style-type: none"> • Provide a mixture of compatible land uses • Integrate business, office, residential, retail and other development into accessible locations • Maximise public transport usage and walking/cycling
B6 Enterprise Corridor	<ul style="list-style-type: none"> • Promote businesses along main roads and a mix of compatible uses • Provide a range of employment and residential uses • Maintain the economic strength of centres by limiting retail activity • Accommodate showrooms close to Dapto CBD • Permit the display and sale by retail of bulky goods where those activities do not impact the viability of development in Dapto Regional Centre
IN2 Light Industrial	<ul style="list-style-type: none"> • Provide a wide range of light industrial, warehouse and related land uses • Encourage employment opportunities and support the viability of centres • Minimise adverse effects of industry on other land uses • Enable other land uses that provide facilities or services to meet the needs of workers in the area • Facilitate and encourage suitable types of light industrial, high technology service and manufacturing activities
IN3 Heavy Industrial	<ul style="list-style-type: none"> • Provide suitable areas for those industries that need to be separate from other land uses • Encourage employment opportunities • Minimise adverse effects of heavy industry on other land uses • Make best use of public utilities and infrastructure required by substantial enterprises

West Dapto Release Area – Draft Infrastructure Implementation Plan 2006

The *West Dapto Release Area – Draft Infrastructure Implementation Plan* was prepared in 2006. It provides a vision for the planning and development of West Dapto Release Area, with the aim of achieving an 'economic, environmental and socially sustainable urban development'.

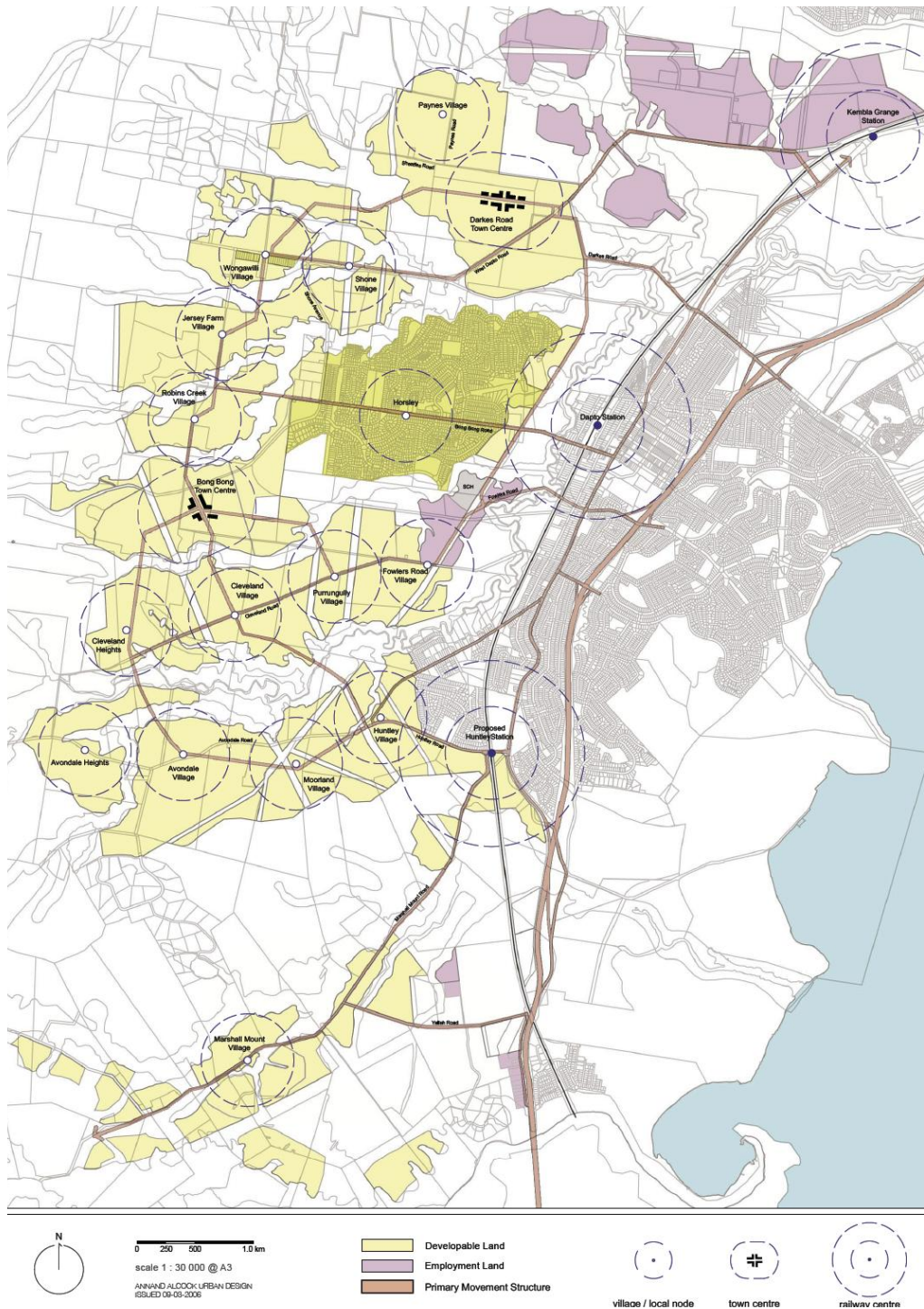
The report focuses on the key infrastructure that is required to service a major land release area. It is estimated that the cost of local and regional infrastructure will be \$1.2 billion. This includes the cost of roads, public transport, water cycle management, provision of community facilities, recreation and environmental protection, and water and sewerage. While providing an opportunity to create unique and distinct settlements, the relatively fragmented nature of the land release area resulting from physical and environmental constraints also creates challenges for infrastructure provision and connectivity – in particular the sewerage and water systems and traffic and transport infrastructure.

Local transport infrastructure includes the following:

- The West Dapto Release Area is characterised by two key north-south links: the Princes Highway and the F6 Southern Freeway. These are essentially external to and east of the Release Area
- The South Coast Railway runs north-south along the eastern boundary of the site
- Internally, with the exception of Shone Avenue (which links West Dapto Road and Bong Bong Road and runs north-south), the remaining roads are characteristically east-west in nature
- There is significant interconnectivity between the settlements and town centres and a high level of interconnectivity of roads, paths and trails along with a hierarchy of village and neighbourhood centres
- Key 'local' roads and road related infrastructure required to service the West Dapto Release Area include the North-South link road, West Dapto Road, and Fowlers Road.

The study area is extensive and could potentially take up to 40 years to develop, depending on the rate of land take up. From a servicing viewpoint, it is logical to commence from the north of the study area where existing water and sewer are available without the need for extensive augmentation. Starting from the north may also facilitate the upgrading of West Dapto Road and consolidation of West Kembla Grange as a major employment precinct. The West Dapto Structure Plan is shown in Figure 21.

Figure 21. West Dapto Structure Plan



Source: West Dapto Release Area Draft Infrastructure Implementation Plan (2006)

Appendix B – Development of population driven employment ratios

Method

Population-related employment was determined by completing a cross-sectional regression for all travel zones in Sydney SD. This aimed to pinpoint:

- (i) the types of jobs that were strongly related to population
- (ii) the number of jobs in these categories for a given population number.

Thus, the regression analysis is expressed as:

$$3\text{-digit ANZSIC jobs} = \text{constant} + \text{jobs-per-person} * \text{population}$$

The cut off point for significance was drawn where the R² value = 15%. The ANZSIC industry sectors that emerged with the strongest relationship to population were sectors such as: Child Care Services, School Education, Pre School Education, Building Completion Services, Clubs (Hospitality), and Motor Vehicle Services.

Population related employment

Aggregating to a 1 digit ANZSIC level, the population related sectors are described in Table 38.

Table 38. Population and non-population related sectors

Population related	Not population related
Manufacturing	Electricity, Gas & Water Supply
Retail Trade	Communication Services
Health & Community Services	Finance & Insurance
Education	Govt. Admin. & Defence
Construction	
Wholesale Trade	
Transport & Storage (only at Subregional level)	
Personal & Other Services	
Accommodation, Cafes & Rest.	
Agriculture, Forestry and Fishing (only at Subregional level)	
Cultural & Recreational Services	
Property & Business Services (only at Subregional level)	
Mining (only at Subregional level)	

The number of jobs in each 1 digit industry sector for every 10,000 residents is shown in Table 39. The relationship between industries and population is not always strong at a local level. For these industries, proximity to population is only important at a subregional level because of the size of the catchment that a single business or facility can serve.

Table 39. No. of jobs per 10,000 residents (SLA and subregional level)

Industry	SLA level	Subregional level
Agriculture, Forestry & Fishing	0	22
Mining	0	3
Manufacturing	106	539
Utilities	0	0
Construction	105	171
Wholesale Trade	85	138
Retail Trade	358	418
Accommodation, Cafes & Restaurants	24	31
Transport & Storage	0	123
Communications Services	0	0
Finance & Insurance	0	0
Property & Business Services	0	8
Government Administration & Defence	0	0
Education	185	182
Health & Community Services	34	210
Culture & Recreation Services	12	17
Personal & Other Services	5	86
Total	914	1,949

Source: SGS (2011), based on ABS (2006)

Appendix C – Broad Land Use Categories

Table 40. Descriptions of Broad Land Use Categories

Land Use Category	Description
Business Parks (BP)	Integrated warehouse, storage, R&D, 'back-room' management and administration with up to 40% office component.
Freight and Logistics (FL)	Warehousing and distribution activities. Includes buildings with a number of docking facilities; 'hard stand' areas with trucks or goods awaiting distribution; and large storage facilities. Warehousing and distribution is a metro level issue with activities preferably locating close to air, sea and inter-modal inland ports, or with access to the motorway system.
Local Light Industrial (LL)	Car service and repair; joinery, construction and building supplies; and domestic storage. Wide range of businesses that service other business (components, maintenance and support) and subregional populations. Needed at local (LGA) to sub-regional level.
Manufacturing – Heavy (MH)	Large scale production activity. Likely to be characterised by high noise emission; emission stacks; use of heavy machinery; and frequency of large trucks. Heavy manufacturing is in decline in Sydney, but will continue to cluster in some locations such as Wetherill Park and Campbelltown/Ingleburn. There are strong arguments for collocation in terms of raw material delivery and to concentrate externalities (though impacts on surrounding uses are generally moderate).
Manufacturing – Light (ML)	Clothing manufacturing, boat building and electrical equipment manufacturing Small scale production with lower noise and emission levels than heavy manufacturing.
Office (O)	Administration, clerical, business services, research. Office buildings that are independent (that is, they are not ancillary to another use on site) and likely to accommodate a significant number of administration staff (>10 people).
Retail – Big Box (RB)	Large shopping complexes, including Westfield.
Bulky Retail Goods (RBG)	Typically large, one-story buildings surrounded by car-parking, usually located out of centre and in high exposure (main road) locations.
Retail - Main Street (RM)	Retailing services traditionally found in main street locations (for example, supermarkets) and small cluster or strips of stores located next to a street or road.
Special Activities (S)	Tertiary level education, health, and community services. Typically require strategic locations and needed in each sub-region.
Urban Services (US)	Concrete batching, waste recycling and transfer, construction and local and state government depots, sewerage, water supply, electricity construction yards. These typically have noise, dust and traffic implications and need to be isolated or buffered from other land uses. Needed in each sub-region.
Dispersed Activities (D)	Primary and secondary education, lower level health, social and community services, trades construction, other 'nomads'.

Appendix D – League ladder assessment tables

Table 41. Strategic assessment for Light Manufacturing

	Type of centre	Population	Access to executive housing	Industrial lands	University lands	Hospital lands	Public transport	Road (arterial)	Motorway ramps	Rail line	Available land	MAX 10 points
	Metrix Centres - buffers	Suitable buffers between industrial and residential land	Adjacent to, or surrounding residential land uses	Industrial precincts land - Regional Strategy	Proximity to (<1km), or strong linkages with, university or research facilities	-	Good accessibility to public transport (<800m from train and major bus stations)			Land along rail line		
	Land outside centre buffers			Yes	Yes	Yes	Yes	Land within 1.5 km from road	Land within 2km from motorway ramps	max 1km buffer on rail line		10
Site												
Innovation Campus	1	1	-	1	1	0	1	1	1	1	1	9
WDRA - Kembla Grange	1	1	-	1	0	0	1	1	1	1	1	8
Albion Park Rail	1	1	-	1	0	0	1	1	1	1	1	8
Tallawarra Lands	1	1	-	1	0	0	0	1	1	1	1	7
Spring Hill	1	1	-	1	0	0	1	1	1	1	0	7
Unanderra	0	0	-	1	0	0	1	1	1	1	0	5
Port Kembla	0	0	-	1	0	0	1	1	0	1	0	4
Oak Flats	0	0	-	1	0	0	1	0	1	1	0	4
Kemblawarra	1	1	-	1	0	0	0	1	0	0	0	4

Table 42. Strategic assessment of Business Parks

	Type of centre	Population	Access to executive housing	Industrial lands	University lands	Hospital lands	Public transport	Road (arterial)	Motorway ramps	Rail line	Available land	MAX 10 points
	Metrix Centres - buffers	Proximity to population, based on Metrix Centres buffers	Adjacent to, or surrounding residential land uses	Industrial Precincts land - Regional Strategy	Proximity to (<1km), or strong linkages with, university or research facilities	-	Good accessibility to public transport (<800m from train and major bus stations)			Land along rail line		
	Land within Specialised, Regional, Major Centre	Area within 2 kms from centre buffer edge [Centre + 2km]	Yes	Yes	Yes	Yes	Yes	Land within 800 m from road	Land within 2km from motorway ramps			10
Site												
Innovation Campus	0	1	-	1	1	0	1	1	1	-	1	7
Unanderra	1	1	-	1	0	0	1	1	1	-	0	6
WDRA - Kembla Grange	0	0	1	1	0	0	1	1	1	-	1	6
Albion Park Rail	0	0	-	1	0	0	1	1	1	-	1	5
Port Kembla	1	1	-	1	0	0	1	1	0	-	0	5
Tallawarra Lands	0	0	1	1	0	0	1	1	1	-	1	5
Spring Hill	0	0	-	1	0	0	1	1	1	-	0	4
Oak Flats	0	1	-	1	0	0	1	0	1	-	0	4
Kemblawarra	0	1	-	1	0	0	0	1	0	-	0	3

Table 43. Strategic assessment of Freight and Logistics

	Type of centre	Strategic assets	Strategic assets	Access to executive housing	Industrial lands	University lands	Hospital lands	Public transport	Road (arterial)	Motorway ramps	Rail line	Available land	MAX 11 points
	Metrix Centres - buffers	Proximity to strategic assets (port)	Proximity to strategic assets (airport)	Adjacent to, or surrounding residential land uses	Industrial precincts land - Regional Strategy	Proximity to (<1km), or strong linkages with, university or research facilities	-	Good accessibility to public transport (<800m from train and major bus stations)			Land along rail line		
	Land outside Centres	Land within 10km	Land within 10km		Yes	Yes	Yes	Yes	Land within 800m from road	Land within 2km from motorway ramps	max 1km buffer on rail line		11
Site													
WDRA - Kembla Grange	1	1	1	-	1	0	0	1	1	1	1	1	9
Tallawarra Lands	1	1	1	-	1	0	0	0	1	1	1	1	8
Albion Park Rail	1	0	1	-	1	0	0	1	1	1	1	1	8
Innovation Campus	1	0	0	-	1	1	0	1	1	1	1	1	8
Spring Hill	1	1	0	-	1	0	0	1	1	1	1	0	7
Unanderra	0	1	0	-	1	0	0	1	1	1	1	0	6
Port Kembla	0	1	0	-	1	0	0	1	1	0	1	0	5
Oak Flats	0	0	1	-	1	0	0	1	0	1	1	0	5
Kembla arra	1	1	0	-	1	0	0	0	1	0	0	0	4

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