This document was prepared as a background report to input into the preparation of the Growth Corridor Plans.

The report represents the view of the consultant only and not the Government.

INTERNAL WORKING DOCUMENT

A study into the take-up of industrial land and future land requirements in Melbourne

Jones Lang LaSalle

July 2010

Department of Innovation, Industry and Regional Development

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We stress that the estimation of future demand, business trends, property prices, rentals and projected take-up rates is a problematical exercise which at best should be regarded as an indicative assessment of possibilities rather than absolute certainties. The process of making forward projections of such key elements involves assumptions respecting a considerable number of variables that are acutely sensitive to changing conditions, variations in any one of which may significantly affect the outcome and we draw your attention to this factor.

You should be aware that the financial analysis and conclusions contained within this draft report do not purport to represent a valuation in the conventional sense. It is an exercise involving only a relatively few variables, such as zoning information and a general knowledge of background market conditions, whereas, a valuation involves a detailed investigation of the property including, where appropriate, the nature of the locality, surrounding properties, full inspection, site peculiarities, the nature, quality and condition of improvements, comparable sales, market trends, yields, competition, design and layout, and so on. The market value could be greatly affected by such factors, and by encumbrances, restrictions, or other impediments on title which have not been considered in this report.

Accordingly, we regard the financial analysis contained herein as indicative only and not authoritative - merely a precursor to a formal valuation, not as a substitute for it. No responsibility is accepted either to the recipient or to any third party for any loss or damage which may result from the financial analyses use including, without limitation, loss or damage arising from any financing, purchasing or leasing transaction.

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1. The six growth area LGAs are not expected to have sufficient 15-year rolling supply of industrial land to satisfy projected demand between FY2010 and FY2030. Collectively, an additional 3,378 Ha of industrial land, in gross terms, will potentially be required during this time frame.
2. We expect an uneven distribution of industrial land supply, with almost 90% of available land at 2030 to be located in Cardinia and Whittlesea LGAs. Aside from Cardinia, all other five growth area LGAs are expected to see a supply shortfall between FY2010 and FY2030.
3. Based on forecast demand and existing land supply some 90% of new industrial land will need to be provided in the west and north; principally in Hume and Wyndham LGAs which are projected to see average land take-up rates above 50 Ha per annum. The structure planning of industrial areas and the release of zoned industrial land in Wyndham LGA will need to be a priority, given it's high demand ranking (equal first) and its existing low zoned industrial land supply (five years).
4. The Victorian State Planning Policy Framework (SPPF) seeks to ensure a continuous 15-year rolling supply of industrial land for industry and protects land of state significance in existing and growth areas. This policy should be reviewed in light of the fact that Melbourne cannot expand indefinitely. The following recommendations should help ensure sufficient industrial land supply in existing and Growth Areas within the defined Urban Growth Boundary.
    a. Land supply around the Principal Freight Network exclusively for industrial purposes is needed to provide for the expected increased activity in the transport and logistics sector. This type of land is typically flat, large enough to accommodate large-scale warehousing, suitably distanced from any sensitive uses and easily accessible for articulated trucks.
    b. Where possible, land should be preserved exclusively for industrial purposes in existing and Growth Areas to counter demand for other uses (such as activity centres, office parks, public open space) or the potential re-zoning of industrial land for higher order uses such as residential development.
    c. Not all future land stock will be suitable for industry therefore a set of criteria needs to be agreed to determine the appropriate location of new industrial areas and quality of industrial land in Melbourne.
    d. Data supporting 15-year rolling land supply requirements should be updated on a regular basis, preferably every five years, to ensure that they are accurate and in line with demographic, economic and industrial market changes.

As part of orderly forward land-use planning and in response to recent rapid population growth in Victoria, the State government is strategically planning to ensure that Victoria is well positioned to accommodate future significant population and employment growth. Key long-term policy intentions and planning directions about these issues are set out in the Victorian Government's Melbourne 2030, A Planning Update: Melbourne @ 5 million policy document, released in December 2008.

The Department of Innovation, Industry and Regional Development (DIIRD) is the Victorian Government's key economic and regional development portfolio and it has significant responsibilities in achieving the Government's vision of a dynamic, innovative and sustainable economy in which business is encouraged to grow and prosper. DIIRD works closely with business, other government agencies and the community to deliver key elements of the government's economic development vision. With a clear focus on increasing the level of investment, export and employment in the State's economy, DIIRD has a number of priority objectives centred around Investment Attraction and Major Projects, Trade Development, Developing Innovative Industries, Skills and Training, Regional Development and Marketing.

In its work to achieve these objectives, DIIRD has a clear interest in ensuring that there is adequate supply – both now and for the future – of available industrial land to facilitate a diverse and broad range of economic development activities throughout Victoria. To this end, DIIRD has commissioned this report to identify industrial land demand in Melbourne to 2030 within the six Growth Area Local Government Areas (LGAs) in Melbourne, and provide advice on the appropriate land specifications required for industrial development in these LGAs. We have also covered the Brimbank and Greater Dandenong LGAs as they contain a substantial amount of zoned land stock over the projection period; however, they are unlikely to make a significant contribution to longer-term supply given their relatively small proportion of unzoned land supply (as at 2009 Urban Development Program).

The State Planning Policy Framework (SPPF) covers strategic issues of State importance and contains the long-term directions and outcomes required of planning schemes. Firstly, Clause 17.03 of the SPPF is the State Government's planning policy for ensuring the availability of land for industry and for facilitating the sustainable development and operation of industry. Secondly, Clause 12.02 of the SPPF seeks to manage the sequence of development in growth areas by monitoring land supply and demand for housing and industry to ensure a 15-year continuous land supply. This report responds to these clauses in the SPPF by projecting the quantum of demand for industrial land in Melbourne's growth areas during a 20-year (2010–2030) study period. This was overlaid with base industrial land supply data from the 2009 Urban Development Program (UDP) to help provide a guide on how much land will potentially be required in the growth areas over the next two decades (FY2010–FY2030).

In our capacity as a leading real estate services provider, Jones Lang LaSalle has been monitoring the supply and take-up of industrial land over the past 25 years, as well as commenting on and analysing trends in the structural makeup of the industrial markets in Melbourne and Australia. This report utilises this data and knowledge, as well as data collected by the Victorian Government's UDP program and ABS statistics, to forecast the likely take-up of industrial land moving forward.

The first stages of the report consider the policy context of the study, historical changes witnessed in the industrial market, changes in locations and quanta of supply and sources of demand, and infrastructure impacts on industrial take-up and land values. The forecasts then take ABS, UDP and Jones Lang LaSalle proprietary data to project the quantum of industrial land demand in the Study Area as a whole in the period up to 2030, with various macroeconomic and infrastructure impacts also considered. The demand projections were also extended out to FY2045 to provide the required 15-year rolling land supply requirements within each Growth Area LGA.

Finally, our recommendations provided advice as to the quantum of industrial land forecast to be demanded within each Growth Area LGA. Supply projections in this report have been outlined in net and gross terms. Data from the 2008 UDP suggests that between 60% and 70% of zoned/unzoned land across all industrial nodes is developable in net terms. In other words, net supply data was adjusted according to this ratio in order to get a clearer picture of gross industrial supply requirements.

Below are the main points covered in each of the chapters in the report and some key conclusions from the data and analyses presented.

Policy Context (Chapter 3)

Victoria's State Planning Policy Framework (SPPF) seeks to ensure that a continuous 15-year supply of industrial land is available for businesses and recognises that land of state significance should be protected. This policy protects certain state-significant areas within well developed industrial locations and also new state-significant industrial land is provided within the growth areas.

As the Urban Growth Boundary (UGB) cannot be expanded indefinitely to accommodate future industrial (and residential) uses, there needs to be a fine balance between the locations for industrial uses in existing areas but also within the growth areas over the next two decades (FY2010–FY2030). As the Melbourne industrial market keeps maturing, existing areas closer to the CBD will become economically unfeasible for some users, resulting in a gradual push towards the middle to outer industrial suburbs. The growth areas are expected to attract large industrial users of land/industrial space but existing areas will continue to play a key role in the Melbourne industrial market given the location of existing port, road and rail transport infrastructure.

Recent State Government policy initiatives are designed to attract new opportunities for industrial land around future freight terminals and the Principal Freight Network (PFN). Port-related commercial activities are also considered by the State as being essential to the growth of the State's economy. In the longer term, freight terminals, road and rail networks throughout metropolitan Melbourne and regional Victoria will need to be planned to contribute to future industrial land supply needs.

Conclusion:

State Government policy recognises that new growth areas need to provide sufficient land to service the needs of industry. The findings of this report will inform growth-area planning by identifying the quantum of industrial land required to 2030, as well as ensuring a 15-year continuous supply is maintained during that period.

There are potential risks associated with under-estimating or over-estimating future supply based on dated projections. Therefore, this policy needs to be reviewed and data behind the 15-year continuous supply projections must be updated on a regular basis (preferably every five years). Future demand for industrial land is dependent on demographic, economic and structural changes in the industrial market. Supply-side factors such as land banking, can also impact on the stock and pricing of existing industrial zoned land and resulting take-up rate projections of zoned and unzoned land.

Recent trends in industrial land use (Chapter 4)

Globalisation, changes in technology and the commercial treatment of real estate by industrial occupiers has changed the nature of the industrial market in Melbourne. Industrial demand is now heavily impacted by the transport and storage sector, although manufacturing still plays a vital role in the Victorian economy. These sectors are increasingly using a national network of large wholesale distribution centres to serve a network of smaller retail outlets.

Manufacturing, which still accounts for over 10% of Victoria's economy, will remain an important driver of demand in the long term. Structural changes in the manufacturing sector, such as the outsourcing of warehousing/distribution functions and a move towards higher value-add production, have been behind the growth in the transport and storage sector's employment and imports. Greater technological efficiencies within the transport and storage industry have meant that multiple clients can be serviced from one building footprint, resulting in the demand for larger land parcels and access to good transport infrastructure. These industry trends will continue to drive the need to warehouse and distribute a large range of goods across Melbourne. Both these sectors will strongly influence the Melbourne industrial market going forward.

It is therefore essential that planning for future growth areas reflects the recent changes in industry business practices, provides flexibility to allow for forecasting future trends within these industries, and importantly, sets aside sufficient land to cater for the needs of the burgeoning transport and storage sector. This has particular relevance for the industrial market in Melbourne's west, which has prime access to the Port of Melbourne and is home to a significant number of Victoria's leading freight and logistics companies.

Conclusion

Planning future industrial land supply in Melbourne needs to take into account the needs of the manufacturing industry as well as the growing transport and storage sector, which require relatively larger parcels of land and access to the port and an efficient road and rail transport network.

Growth-area planning should, by taking into account ongoing development needs of state-significant industries, set aside a sufficient quantum of land dedicated exclusively to industrial purposes. This land should be protected from competing development interests and enable enough flexibility to respond to changing trends (such as increased freight movements).

Melbourne's industrial market overview (Chapter 5)

Melbourne has several key strategic competitive advantages over other markets in Australia, including relatively lower real estate costs and the continued growth of container freight movements generated through the Port of Melbourne. Tullamarine Airport is also responsible for a large amount of Australia's air freight movement, which drives strong demand for industrial land within close proximity of this facility.

The supply of available zoned industrial land in Melbourne has gradually been moving to the outer suburbs as population densities increase and the price of land rises in the inner industrial zones. With this trend expected to continue, the importance of the outer Growth Areas to the overall Melbourne industrial market cannot be overstated. The growth areas are expected to attract large industrial users of land/industrial space but existing middle and outer areas will also continue to play a key role in the Melbourne industrial market given their location of existing port, road and rail transport infrastructure.

Future supply is heavily concentrated in the South market, especially in the Pakenham Industrial Node. The location of this future supply raises a number of issues that will need to be addressed given that demand has largely been concentrated in the North and Western areas of Hume, Wyndham and Brimbank, along with Greater Dandenong in the South. The manufacturing, transport and storage, and wholesale and retail trade sectors have also been the main sectors that contribute to industrial demand. It is worth noting that both Brimbank and Greater Dandenong will have a finite supply of land as they are not designated growth areas.

Conclusion

Previous strategic decisions have ensured that Melbourne has always had a plentiful, 15-year supply of well-located and serviced zoned industrial land. This has significantly contributed to Melbourne's competitive environment for attracting business and growing economic activity and employment. To ensure that this competitive environment is maintained well into the future, a sufficient supply of well-located zoned industrial land needs to be provided in areas where demand will be greatest going forward.

Historical impacts of infrastructure development on industrial demand (Chapter 6)

While supply-demand principles, as they relate to economic fundamentals, are the main indicator when it comes to land values, infrastructure initiatives such as road infrastructure also have an impact.

It is likely that future infrastructure benefiting the industrial land market will be planned according to Victoria's PFN. Hence, future supply should concentrate in these areas so that anticipated increase in demand in these areas can be met.

Conclusion:

While providing a sufficient quantum of land is critical to attracting and maintaining industry to Melbourne, potential locations should be tested to determine their suitability for industrial purposes, particularly if they have good access to transport infrastructure. There are several common factors used to identify prime industrial land that could form site-selection criteria and be used to test suitability.

Deriving 15-year rolling industrial land demand projections (Chapter 7)

The following are the key steps we used to derive annual and 15-year rolling demand projections over the FY2010 and FY2030 period:

1. Analyse the workforce profile of the eight study area LGAs and identify their main place of residence by utilising ABS Journey to Work data from the 1996, 2001 and 2006 censuses. Analysis revealed that their place of residence fell into three key groups: within the study area LGAs; outside the study area but within metropolitan Melbourne; and regional Victoria.

2. Collate historical population data and forecasts for the eight study area LGAs, including the broad geographic areas that were the key source of workers for the study area LGAs (eg. Metropolitan Melbourne and regional Victoria). Data were sourced from ABS and VIC DPCD.

3. Analysis of historical changes in labour force participation; employment rates in the eight study area LGAs and other above two broad geographic areas and make assumptions on trends going forward during the study period. Historical changes in employment containment in the study areas were also included in the model along with forecast assumptions.

4. Once the total number of future workers was identified in each LGA, the industry profile of the workforce was determined using the above-mentioned historical journey to work data by industry category and assumptions were made on the profile going forward. Our analysis focused on three key industries that are the main contributors to industrial land demand: manufacturing, transport and storage, and wholesale trade.

5. Finally, the three industry-specific employment yields were applied to the forecast number of workers in each sector to derive the projected land demand.

Melbourne's industrial land demand requirements through to FY2030 (Chapter 8)

Brimbank and Greater Dandenong LGAs have been and are expected to continue to be favourable industrial locations from a demand perspective. However, they are expected to run out of land by FY2015 (in net terms) and will not see additional supply come on-stream as they are not designated Growth Areas. The six Growth Area LGAs will therefore become important in being able to provide supply of affordable, well-located and serviced industrial land through to FY2030.

Among the Growth Area LGAs, supply constraints may be an issue in Wyndham and Hume LGAs, which have the highest future demand score based on their proximity to major transport infrastructure, major markets and limited pressure on the take-up of industrial land from other competing land uses.

Framework planning and precinct structure planning will identify where new industrial precincts in the Growth Areas will be located, how they will be separated from incompatible uses and ensure that sufficient land supply is provided to meet demand.

At the time of writing this report, 15 Precinct Structure Plans (PSPs) have been completed for the Growth Areas and 25 are underway. Many of these are employment precincts with expectations that they will provide for Melbourne's future industrial land supply. As these PSPs are progressively approved and incorporated into planning schemes, the supply of unzoned land will decrease relative to the increase of zoned supply. This, combined with the varying rate of consumption, will cause the supply and demand levels to fluctuate unevenly across the LGAs.

It is therefore important to plan for the future supply of industrial land in each LGA, taking into account the forecasted demand provided in this report. Identified future zoned stock should be made available to meet this demand, especially in those areas where current zoned supply is low and is expected to be consumed in a relatively short timeframe.

Planning for future industrial land supply in Melbourne should be based on solid market demand fundamentals. Further, it should be recognised that, while demand for industrial land is driven primarily by population and employment growth, growth area planners need to consider other key factors such as distance to the Port of Melbourne, customer markets and major road infrastructure.

Conclusion:

Zoned industrial land supply stocks for individual LGAs will need to be replenished at varying stages throughout the FY2010–FY2030 study period and these should be based on up-to-date 15-year rolling demand projections (preferably updated every five years). It is expected that the PSP process will refine the quantum of land available in each LGA and bring newly zoned land onto the market during the study period.

It important to note that as the remaining 25 PSPs for the current growth areas are rolled out, the land designated for 'employment' in *A Plan for Melbourne's Growth Areas* may not all end up as industrial zoned land. For example, the land affected by the proposed PSP for the Cardinia Road Employment Precinct is included in the UDP 2009 as a 'proposed major industrial area', however only 323 Ha out of a total net developable area of 440 Ha has been set aside in the proposed PSP for industrial purposes. If approved in its proposed form, this will reduce the total designated industrial supply in the Cardinia LGA by 117 hectares.

While this cannot be represented in the supply forecasts until the PSPs are completed, it does emphasise the need to dedicate these areas exclusively for industrial purposes early on in the planning process. When designated industrial land is instead used for other purposes (such as residential and activity centres) the quantum of industrial land lost needs to be provided elsewhere to meet forecasted demand.

Key recommendations (Chapter 9)

1. To ensure a 15-year continuous supply of industrial land to FY2030, an additional 2,071 Ha of net developable land stock (equating to 3,378 Ha in gross terms) is likely to be required in Melbourne's six Growth Area LGAs to meet the projected industrial land demand quantified in this study (see Table 1.1).

   Based on the current and future supply data provided in the UDP (2009), metropolitan Melbourne has sufficient supply to meet demand until FY2030. However, based on our demand projections, 75% of the supply remaining at the end of FY2030 will be located in Cardinia (ie. 993 Ha out of 1,318 Ha across six growth area LGAs by FY2030, in net terms). All other growth area LGAs are likely to see some degree of supply shortfall by then (in net and gross terms).

2. Adequate additional supply of industrial land designated for industrial purposes has to be set aside in each of Melbourne's Growth Areas to meet projected demand and to maintain a 15-year continuous stock of land to the year 2030. As can be seen in Table 1.1, Wyndham and Hume LGAs are not expected to have 15 years of continuous supply of industrial land to match projected demand in each of these two LGAs. There are some key caveats which should be noted when interpreting the data on 15-year continuous industrial land supply requirements (detailed in Section 7.9.3).

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Table 1.1: Projected supply shortfall / surplus by LGA, FY2030

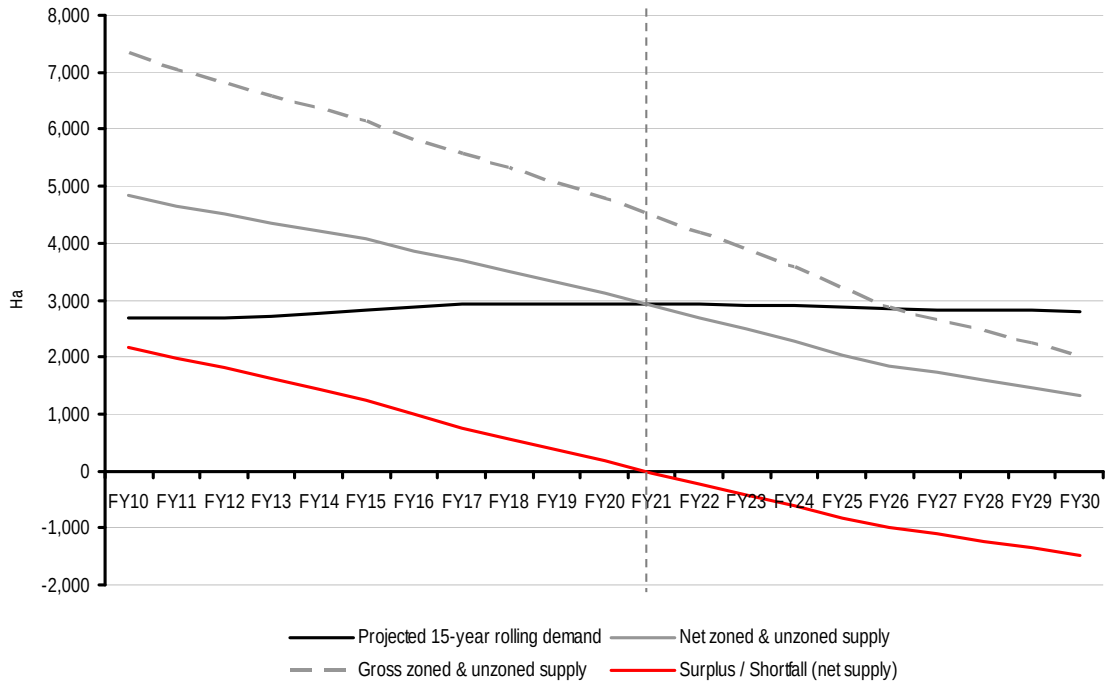
Source: Jones Lang LaSalle Research & Consulting, UDP 2008 & 2009

Note: Derived from Tables 8.1.5 and Table 7.9.2

LGA	Commencement year of net supply shortfall	Shortfall / surplus (net - ha)	Shortfall / surplus (gross - ha)	Gross as % of net unzoned supply (2008 UDP)
Hume	FY2017	858	1,502	175%
Wyndham	FY2012	767	1,273	166%
Casey	FY2010	267	328	123%
Whittlesea	FY2025	99	163	165%
Melton	FY2024	80	112	140%
Cardinia	N/a	587 (in surplus)		
6 Growth Area LGAs		2,071	3,378	

Figure 1.1: 15-year rolling demand vs. supply, six Growth Area LGAs

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



Victorian State Planning Policy seeks to ensure that a continuous 15-year rolling supply of industrial land is available for industry and recognises that land of state significance should be protected in existing and growth areas. This policy should be reviewed in light of the fact that Melbourne cannot expand indefinitely. The following recommendations should help ensure sufficient industrial land supply in existing and Growth Areas within the defined Urban Growth Boundary (UGB).

3. Prioritise structure planning of industrial areas and the release of zoned industrial land in Wyndham given Wyndham's demand ranking (equal first) and its existing low zoned supply (five years).

4. Dedicate sufficient land around the Principal Freight Network exclusively for industrial purposes to provide for the expected increased activity in the transport and logistics sector. This type of land is typically flat, large enough to accommodate large-scale warehousing, suitably distanced from any sensitive uses and easily accessible for articulated trucks.

5. Reserve, where possible, industrial precincts in Growth Areas exclusively for industrial purposes and factor in the need for additional industrial land supply in Growth Areas to counter other uses that are planned in industrial estates (such as activity centres, office parks, public open space).

6. Establish site-selection criteria to guide decisions about the location and quality of industrial land. Common criteria include:

    - Easy access to the principal road freight network as defined in Freight Futures;
    - Proximity to an air, rail or road freight terminal;
    - Proximity to a commercial port;
    - Access to an available workforce;
    - Potential to link up with existing industrial areas or create new clustering; opportunities for business;
    - Ability to take advantage of existing or proposed infrastructure;
    - Minimal or no site constraints and can be commercially developed with required infrastructure and site preparation works;
    - Minimal or no adjoining use constraints and appropriate buffers can be provided from sensitive uses;
    - Suited topographically for industry (relatively flat);
    - Potential to be a key strategic economic development opportunity for industry or sector development.

7. The data supporting 15-year rolling land supply requirements should also be updated on a regular basis, preferably every five years, to ensure that they are accurate and in line with demographic, economic and industrial market changes.

8. Update the criteria in Clause 17.03 to give greater guidance to planning authorities in deciding where to locate new industrial precincts.

9. Update the list of state-significant industrial areas in Clause 17.03 to include large tracts of new industrial areas identified in growth areas.

2. Introduction

As part of orderly forward land-use planning and in response to recent rapid population growth in Victoria, the State government is strategically planning to ensure that Victoria is well positioned to accommodate future significant population and employment growth. Key long-term policy intentions and planning directions about these issues are set out in the Victorian Government's Melbourne 2030, A Planning Update: Melbourne @ 5 million policy document, released in December 2008.

The Department of Innovation, Industry and Regional Development (DIIRD) is the Victorian Government's key economic and regional development portfolio and it has significant responsibilities in achieving the Government's vision of a dynamic, innovative and sustainable economy in which business is encouraged to grow and prosper. DIIRD works closely with business, other government agencies and the community to deliver key elements of the government's economic development vision. With a clear focus on increasing the level of investment, export and employment in the State's economy, DIIRD has a number of priority objectives centred around Investment Attraction and Major Projects, Trade Development, Developing Innovative Industries, Skills and Training, Regional Development and Marketing.

In its work to achieve these objectives, DIIRD has a clear interest in ensuring that there is adequate supply – both now and for the future – of available industrial land to facilitate a diverse and broad range of economic development activities throughout Victoria. To this end, DIIRD has commissioned this report to identify industrial land demand in Melbourne to 2030 within the six Growth Area Local Government Areas (LGAs) in Melbourne, and provide advice on the appropriate land specifications required for industrial development in these LGAs. We have also covered the Brimbank and Greater Dandenong LGAs as they contain a substantial amount of zoned land stock over the projection period; however, they are unlikely to make a significant contribution to longer-term supply given their relatively small proportion of unzoned land supply (as at 2009 Urban Development Program).

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In our capacity as a leading real estate services provider, Jones Lang LaSalle has been monitoring the supply and take-up of industrial land over the past 25 years, as well as commenting on and analysing trends in the structural make up of the industrial markets in Melbourne and Australia. This report utilises this data and knowledge, as well as data collected by the Victorian Government's UDP program and ABS statistics, to forecast the likely take-up of industrial land moving forward.

The first stages of the report consider the policy context of the study, historical changes witnessed in the industrial market, changes in locations and quanta of supply and sources of demand, and infrastructure impacts on industrial take-up and land values. The forecasts then take ABS, UDP and Jones Lang LaSalle proprietary data to project the quantum of industrial land demand in the Study Area

as a whole in the period up to 2030, with various macroeconomic and infrastructure impacts also considered.

Finally, our recommendations provided advice as to the quantum of industrial land forecast to be demanded within each Growth Area LGA. Supply projections in this report have been outlined in net and gross terms. Data from the 2008 UDP suggests that between 60% and 70% of zoned/unzoned land across all industrial nodes is developable in net terms. In other words, net supply data was adjusted according to this ratio in order to get a clearer picture of gross industrial supply requirements.

3. Policy Context

The study into the take-up of industrial land in Melbourne needs to be considered in the context of a number of major policy initiatives and plans released by the Victorian Government. Central to these plans is the *Melbourne 2030, A Planning Update: Melbourne @ 5 million* policy document, the *Victorian Transport Plan*, *Freight Futures* and *Port Futures*.

3.1 Melbourne 2030, A Planning Update: Melbourne @ 5 million

This policy document seeks to actively manage Melbourne's growth to ensure future liveability through a number of initiatives, including;

- The creation of a multi-centre city through six Central Activity Districts (CADS);
- Employment corridors supporting these CADS by linking activity centres;
- The expansion of the UGB;
- The amendment of the State growth-area infrastructure contribution (GAIC), which will be used to provide vital infrastructure and oversee development in growth areas.

The outcomes of this policy document need to be considered in our forecasting exercise for industrial land. These outcomes include:

- Revised population growth in the growth areas as a result of a UGB extension;
- The continuance of relocation trends of industrial occupiers to the outer areas of Melbourne and increasing pressure on existing industrial zoned land within and surrounding Activity Centres for non-industrial use and higher-density development;
- The impact of the designated employment corridors on future demand and supply of industrial property.

Melbourne 2030 also identifies a network of Activity Centres, based on a hierarchy of CADs, Principal Activity Centres (PACs) and Major Activity Centres (MACs). While industrial development and industrial zoned land is, in the majority of cases, located outside of these Activity Centres, it is necessary to consider them and where retail, commercial and residential development is likely to occur within the growth areas. In this regard, work currently being conducted by the Growth Areas Authority (GAA) and Essential Economics, will help identify the likely locations of these Activity Centres within the Study Area.

3.2 State Government Planning Framework

The State Planning Policy Framework (SPPF) covers strategic issues of State importance and contains the long-term directions and outcomes required of planning schemes.

Clause 12.02 of the SPPF seeks to manage the sequence of development in growth areas by monitoring land supply and demand for housing and industry to ensure a 15-year continuous land supply. This report responds to this clause by forecasting demand for industrial land in Melbourne's growth areas during a 20-year (2010–2030) study period. In order to provide estimates of 15-year continuous land supply in the growth areas, demand projections for the 2031–2045 period were based on the 2010–2030 annual average. These were applied to the base data on land supply sourced from the 2009 UDP to derive supply projections for 2045.

Clause 17.03 of the SPPF is the State Government's planning policy for ensuring availability of land for industry and for facilitating the sustainable development and operation of industry. To implement this objective, it provides some key factors to consider in deciding where to set aside land for industrial development. Specifically, it states that:

Planning authorities should zone land for industrial development in urban growth areas where good access for employees and freight transport is available and where appropriate buffer areas can be provided between the proposed industrial land and nearby sensitive land uses.

Upon guiding where this land should be located, it advises decision makers not to approve non-industrial land uses that will prejudice the availability of land for future industrial requirements in industrial zones. It also refers to industrial land of state significance:

Planning authorities should protect the quantum of large areas of industrial land of state significance to ensure availability of land for major industrial development, particularly for industries and storage facilities that require significant threshold distances from sensitive uses.

A number of known industrial areas of state significance are already identified within this clause and, while acknowledging that it is not an exhaustive list, includes:

- Dandenong South in the City of Greater Dandenong;
- Campbellfield and Somerton in the City of Hume and Thomastown in the City of Whittlesea; and
- Laverton North in the City of Wyndham and Derrimut in the City of Brimbank.

By having these areas listed within this clause, it is clear to decision makers that this land needs to be protected. While this may provide certainty for industrial areas within established areas, the only locations that could be reasonably expected to provide for new large areas of industrial land in Melbourne (new state-significant industrial land) are within the growth areas. It could therefore be an opportune time to update this clause as growth area planning progresses and key industrial areas are designated.

3.3 The Victorian Transport Plan

The Victorian Transport Plan is a $38-billion plan to transform the transport network in both Metropolitan Melbourne and Regional Victoria. The plan includes projects at various stages of funding, and is an integral document to understand some of the future drivers of industrial demand in Melbourne's growth areas. Of particular importance is the policy aim to 'invest in new transport links to promote more jobs closer to new housing in Melbourne's fast-growing west and north'. The major

projects that are particularly relevant to this study are listed below, including their estimated timing and funding scenario.

Table 3.3.1: The Victorian Transport Plan – Major Transport Initiatives

Source: Jones Lang LaSalle Research & Consulting, Department of Transport

Initiative	Affected Industrial precincts	Timing	Cost	Funding
Truck Action Plan – Stage 1	West	2009 +	$380 million	Building Australia Fund
Planning for the expansion of the Port of Hastings	South East	2009 – 2012	$20 million	funded
Peninsula Link	South East	2010 – 2017 +	$750 million	Fully funded
WestLink	West	2013 +	$2.8 billion	Building Australia Fund
Principal Freight Network – Donnybrook freight terminal	North	2013 +	$340 million	Building Australia Fund
Port of Melbourne International Freight Terminal	All	2013 +	$260 million	Building Australia Fund
Outer Metropolitan Ring Road	West, North	2020 +	-	unfunded
Completing the Metropolitan Ring Road	All	2020 +	$6 billion	unfunded

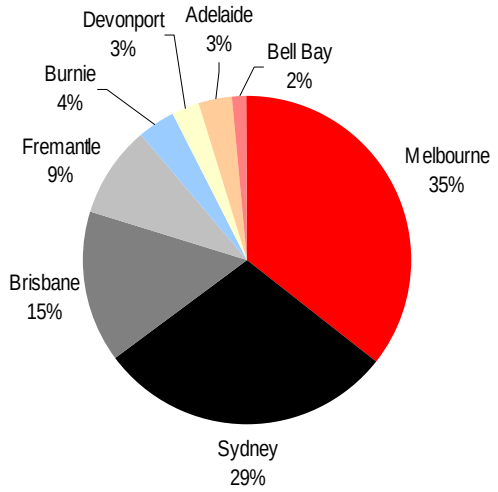
3.4 Freight Futures

Freight Futures is Victoria's long-term plan to ensure that Victoria's freight networks, systems and infrastructure continue to perform well in meeting the current and future freight task. Understanding what these freight initiatives, improvements and upgrades are is essential when forecasting the future demand for industrial land in Melbourne, as well as identifying spatially where this demand is likely to be directed.

Managing and improving the freight task is essential for Melbourne as 37% of Australia's container freight moves through the city.

Figure 3.4.1: Container Trade Market Share, 2008/09

Source: Port of Melbourne Corporation

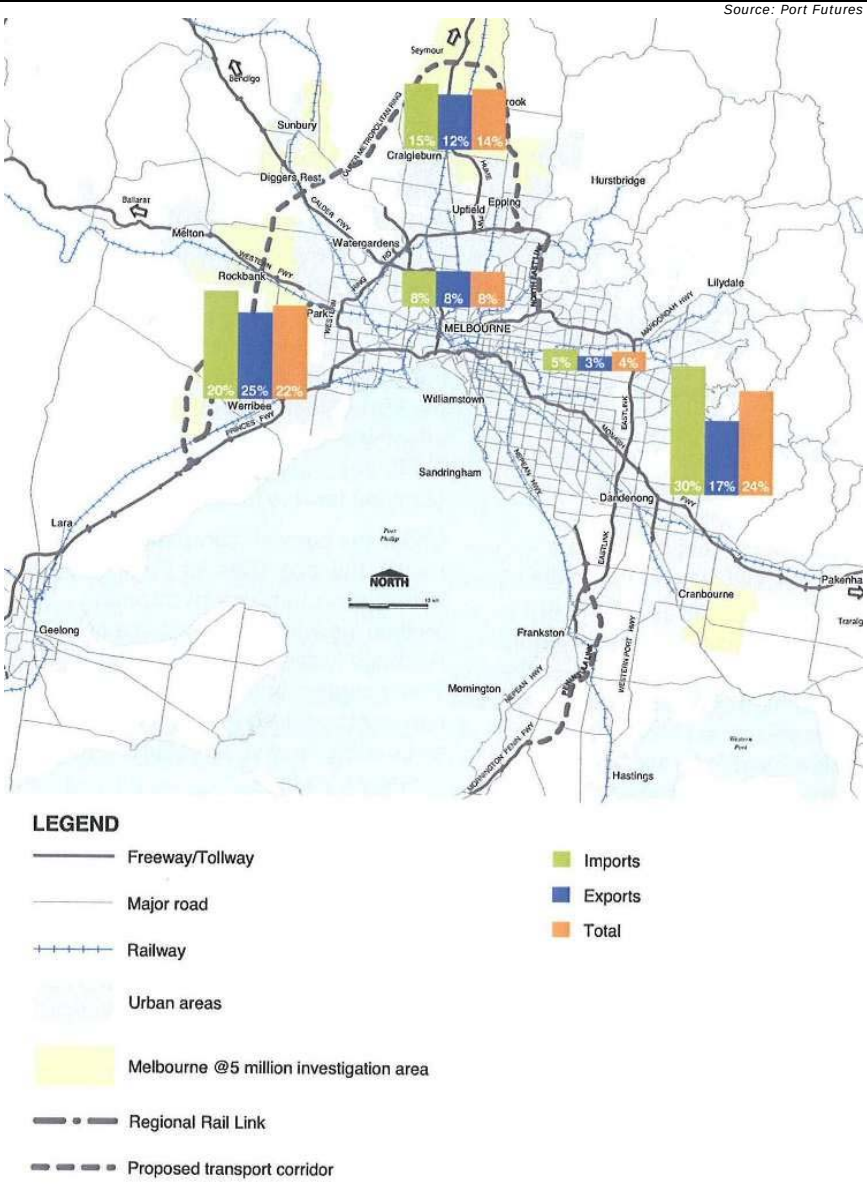


Predominately due to the influence of the Port, *Port Futures* identifies Melbourne as Australia's freight and logistics capital. At present, the freight task in Melbourne is heavily reliant on road infrastructure. Victoria accounts for 41% of Australia's entire B-Double uptake, compared to 21% in NSW and 20% in Queensland; and this uptake is another indicator of Victoria's reliance on higher capacity vehicles.

The movement of this freight from the Port of Melbourne to its final destination is of significance to this study. Figure 3.4.2 (sourced from *Port Futures*) indicates that 65% of all imports, 54% of exports, and 60% of total container distribution travel to/from the study area locations in the north, west and south east of Melbourne. Looking forward, the Principal Freight Network (PFN) and the Freight Terminal Network (FTN), discussed further below, will support the continuation of these travel movements, both by road and rail, and continue to drive demand in the Growth Areas.

Figure 3.4.2: Port of Melbourne Import and Export Container Distribution 2007 – Metropolitan Melbourne

Source: Port Futures



Some important forecast freight data is identified in Freight Futures, and it is necessary to consider these forecasts when determining future uptake of industrial land, especially the increase in TEUs that will be traded through the Port of Melbourne (annualised forecasts of this data have been obtained from the Bureau of Infrastructure, Transport and Regional Economics (BITRE));

Table 3.4.1: Freight Futures Projections

Source: Freight Futures

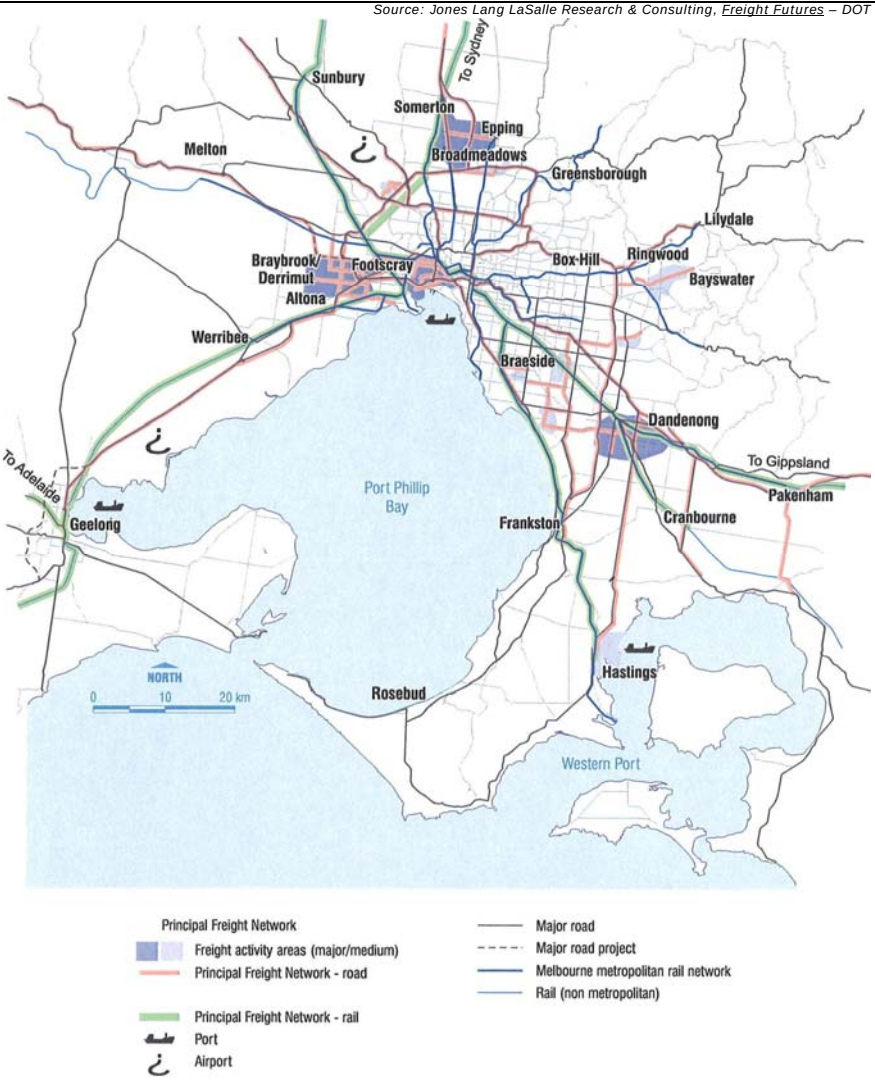
Item	2008	2020	2030	% Increase
Total Freight Task	560 million tonnes (all modes)	820 million tonnes (all modes)	-	47%
Freight Moving within Metro Melbourne (per annum)	12 million tonne kilometres	17 million tonne kilometres	-	40%
Melbourne's Road Freight Task by weight (per annum)	210 million tonnes	-	425 million tonnes	102%
TEU movements through the Port of Melbourne (annually)	2 million	-	6.8 million	210%

Some of the drivers behind the creation of Freight Futures are the significant growth in the freight task in this state, as well as nationally and globally, the impacts of increasing congestion on freight costs, climate change, sustainability and liveability issues, higher security and safety standards, increasing oil prices, labour and skills shortages, and changes to industry structure and technology. The most relevant directives (to this study) of Freight Futures are:

- *Direction 1 – Identify and develop a principal freight network (PFN) for Victoria*. A PFN for both metropolitan Melbourne (Figure 3.4.3) and Regional Victoria have been identified through Freight Futures. By identifying the network for the first time, Freight Futures aims to achieve a fully connected freeway network, and appropriate priority for rail freight on the rail network. Looking forward, substantial investment will be needed to maintain and upgrade the network.
- *Direction 2 – Identify and develop freight activity centres (FACs). Melbourne 2030* plans for the location of industry and freight infrastructure to service key industrial precincts in Metropolitan Melbourne (north, west and south east). Effective land use planning will be required to ensure sufficient land is set aside adjacent to freight terminals, freight corridors and distribution networks. It is also proposed that *Freight Futures* is recognised within the Victorian Planning Provisions and in local planning schemes to ensure that its strategic directions are considered when key planning decisions relevant to FACs are made.
- *Direction 3 – Plan and protect future freight corridors and activity centres.*
- *Direction 4 – Plan and develop a metropolitan freight terminal network (FTN).* This directive aims to alter the current distribution pattern of freight, which is currently centred on the Port of Melbourne and Dynon Rail Terminal. A more sustainable pattern of metropolitan freight flows is to establish Metro Freight Terminals in the West, North and South East Industrial Areas, which is expected to reduce freight movements off the FTN and improve amenity for communities in some areas currently affected by truck traffic.

Figure 3.4.3: The Principle Freight Network – Metropolitan Melbourne

Source: Jones Lang LaSalle Research & Consulting, Freight Futures – DOT

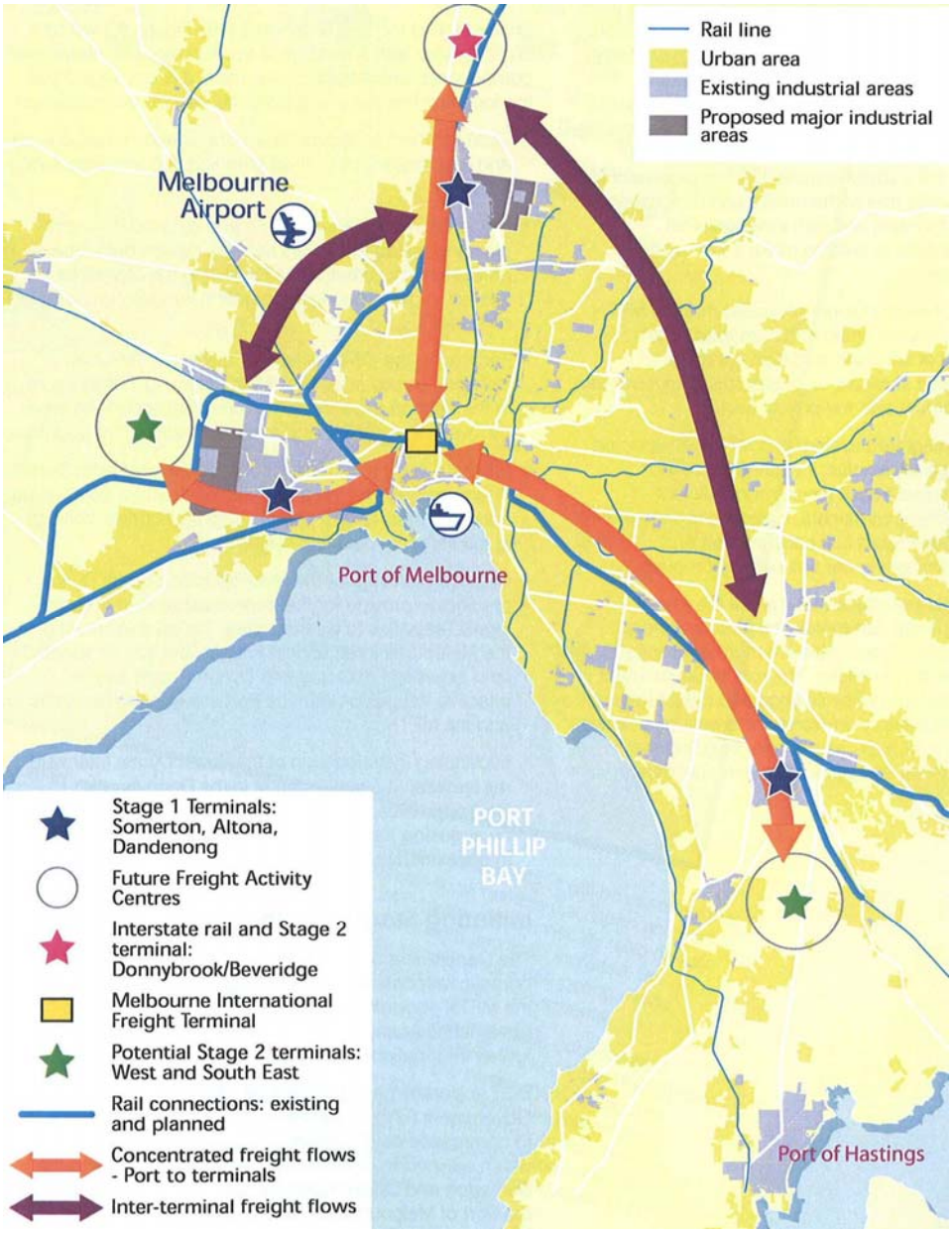


Further to these directions, Freight Futures also acknowledged the finding of the Eddington Report, which found that the 30/2010 rail target (which aims to move 30% of freight from all Victorian ports by rail by 2010) was clearly not going to be met. The government still intends to promote rail freight movements to and from Melbourne Ports, and the establishment of the FTN is a key plank in this strategy.

The vision for the Freight Terminal Network is shown below;

Figure 3.4.4: The Metropolitan Freight Terminal Network vision

Source: Freight Futures



Identified within Freight Futures are key steps which need to be undertaken in order to implement the FTN concept. These include;

- Facilitating the development of a Stage 1 Terminal Network, based around existing sites and infrastructure in the Altona/Laverton, Somerton and Dandenong areas, by investing in facility and access infrastructure upgrades;
- Planning and protecting options for a longer-term Stage 2 Terminal Network by identifying and, where appropriate, acquiring sites and/or establishing appropriate zonings in the statutory planning system;
- Detailed planning of the reconfiguration of the Dynon precinct to provide for the decentralisation of non-port-related activities to external sites, the establishment of the Melbourne International Freight Terminal on vacated land between Footscray and Dynon Roads and its effective integration with the Port stevedoring terminals and the FTN;
- Facilitating the relocation of the South Dynon Interstate rail terminal to a new location in the Donnybrook/Beveridge area, to the north of the metropolitan area, by acquiring a suitable site and commencing investment in base infrastructure.

3.5 Port Futures

Victoria's trading ports, especially the Port of Melbourne, are a key driver of industrial employment and development in this state. Port Futures is a strategy to operate and plan Victoria's ports to 'complement each other in the context of the broader economy and freight and logistics networks within which they have evolved and to which they contribute'. Port Futures is intended as an update on policy and strategy settings contained in the *Victorian Ports Strategic Framework (VPSF),* released in 2004.

The key priorities of *Port Futures* are;

- Consider bringing forward an initial module of terminal capacity at Webb Dock (up to one million TEUs) subject to satisfactory business case and all necessary government approvals;
- Maintain the existing planning reservation for the Webb Dock Rail Link for future consideration;
- Progress planning to increase capacity of the existing East and West Swanson Dock container terminals and wharves, subject to satisfactory business case and all necessary Government approvals; and
- Progress planning and environmental investigations for the staged expansion of the Port of Hastings, subject to satisfactory business case and all necessary government approvals.

Summary:

State Planning Policy seeks to ensure that a continuous 15-year supply of land is available for industry and recognises that land of state significance should be protected. This policy protects certain state-significant areas within well-developed industrial locations and also new state-significant industrial land is provided within the growth areas.

As the Urban Growth Boundary (UGB) cannot be expanded indefinitely to accommodate future industrial (and residential) uses, there needs to be a fine balance between the location of industrial uses in existing areas but also within the growth areas over the next two decades (FY2010–FY2030). As the Melbourne industrial market keeps maturing, existing areas closer to the CBD will become economically unfeasible for some users, resulting in a gradual push towards the middle to outer industrial suburbs. The growth areas are expected to attract large industrial users of land/industrial space but existing areas will continue to play a key role in the Melbourne industrial market given the location of existing port, road and rail transport infrastructure.

Recent State Government policy initiatives are designed to attract new opportunities for industrial land around future freight terminals and the Principal Freight Network (PFN). Port-related commercial activities are also considered by the State as being essential to the growth of the State's economy. In the longer term, freight terminals, road and rail networks throughout metropolitan Melbourne and regional Victoria will need to be planned to contribute to future industrial land supply needs.

Conclusion:

State Government policy recognises that new growth areas need to provide sufficient land to service the needs of industry. The findings of this report will inform growth-area planning by identifying the quantum of general locations of industrial land required to 2030 as well as ensuring a 15-year continuous supply is maintained during that period.

There are potential risks associated with under-estimating or over-estimating future supply based on dated projections. Therefore this policy needs to be reviewed and the data behind the 15-year continuous supply projections must be updated on a regular basis (preferably every five years). Future demand for industrial land is dependent on demographic, economic and structural changes in the industrial market. Supply-side factors such as land banking can also impact on the stock and pricing of existing industrial zoned land and resulting take-up rate projections of zoned and unzoned land.

4. Recent Trends in Industrial Land Use

The industrial landscape of Melbourne, and indeed Australia, has changed markedly over the past 25 years. Central to these changes has been the structural change in the industrial sector, that is, a move away from a manufacturing base to a logistics and transport based industry. A key driver of this has been the outsourcing of activities once performed by firms within the manufacturing sector themselves and the significant increase in international trade volumes within Victoria and Australia. The growing importance of logistics and transport has likewise increased the influence of our freight, transport and infrastructure networks on industrial take-up—both in terms of the quantum of and the location of this take-up. The influence of Melbourne's infrastructure, especially the road network and Port of Melbourne, will be discussed further in Section 5, while the economic changes that Melbourne has experienced will be discussed in this section.

Jones Lang LaSalle has been monitoring the Melbourne Industrial markets since 1985 (in some markets), and the trends in construction, take-up and land values that we have recorded will also be discussed.

While our modelling for future industrial demand will be based at a primary level on population growth and employment trends looking forward, the various economic and infrastructure impacts discussed in the following two sections will play an important role in future demand. Indeed, a model based purely on population growth will produce a somewhat linear outlook, while the historical data recorded by both Jones Lang LaSalle and DPCD in their UDP indicate that take-up of industrial land is by no means this straightforward.

4.1 Transport & storage sector main source of industrial demand

4.1.1 Structural shift and technology changing requirements

From around the year 2000, both the demand for and supply of Australian industrial property has grown dramatically. The expansion has been far in excess of that indicated by Australia's economic growth, a traditional driver of demand for industrial property. The reason for the sudden growth was a structural change in the property needs of industrial space occupiers.

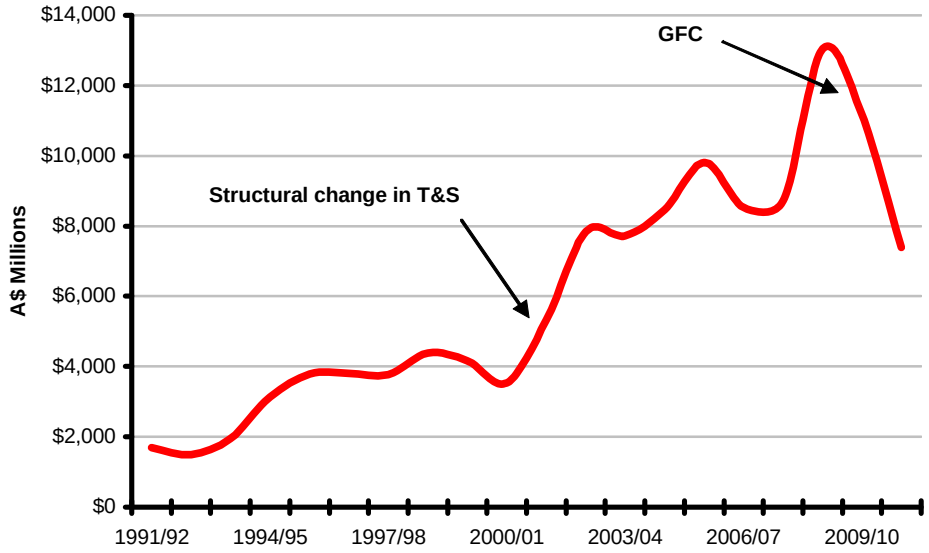
The change in occupier needs was sparked by changes in technology. Mobile communications as well as improved data and inventory management has allowed firms in the transport and storage as well as the wholesale and retail service industries to change their business processes. Changes include outsourcing to specialist logistic firms, consolidation and centralisation of warehousing as well as the adoption of just-in-time inventory management. However, for these changes to be effected, purpose-built facilities need to be available at a reasonable cost. A series of land releases in Australia's major cities adjacent to new roads allowed for comparative ease in the development of new facilities suitable for the new business processes.

The sudden change in operations is evident in a survey of actual and expected expenditure conducted by the Australian Bureau of Statistics (ABS). Figure 4.1.1 shows that expenditure by companies in the transport and storage sector leapt by 120% between the 2001 and 2004 fiscal years as they moved to new premises following land releases and road openings. While the change continued between 2008 and 2009 with expenditure jumping by 50%, the effects of the GFC mean that expenditure is expected to drop by almost 50% on average per annum between 2009 and 2011.

Figure 4.1.1: Transport & storage sector capital expenditure

Source: Jones Lang LaSalle Research & Consulting; ABS Cat. No. 5625.0

Capital expenditure over fiscal year (buildings, structures, equipment, plant & machinery), December 2009 Survey



Aside from moving to new premises to improve efficiencies, another structural shift in the use of industrial property has been the change in the structural composition of Australian manufacturing and the economy generally. Over the last 30 years, with the accelerated growth of the services sector, the value of manufacturing output has gone from approximately 20% of GDP to less than 10%[1]. That is, its relative contribution to the economy has halved as manufacturers have had to cope with increased competition from Asia and, in recent years, a stronger Australian dollar (the higher dollar making exports more expensive and imports cheaper). Output from the manufacturing sector has continued to grow, albeit at a slower rate than the output from the services sector. One strategy has been to move production offshore and import products that are either already assembled or may only require light assembly. This has resulted in a shift in some manufacturers' property requirements—from factory to warehouse space. Changing trends within the manufacturing sector itself will be discussed in more detail later in this section.

The transport and storage (T & S) sector has been a major contributor to growth in values in the industrial sector over the past 15 years. As the manufacturing sector's share of GDP has fallen – although it is important to note that manufacturing continues to grow, albeit at a slower pace – the T & S sector has asserted a greater influence over land values and take-up.

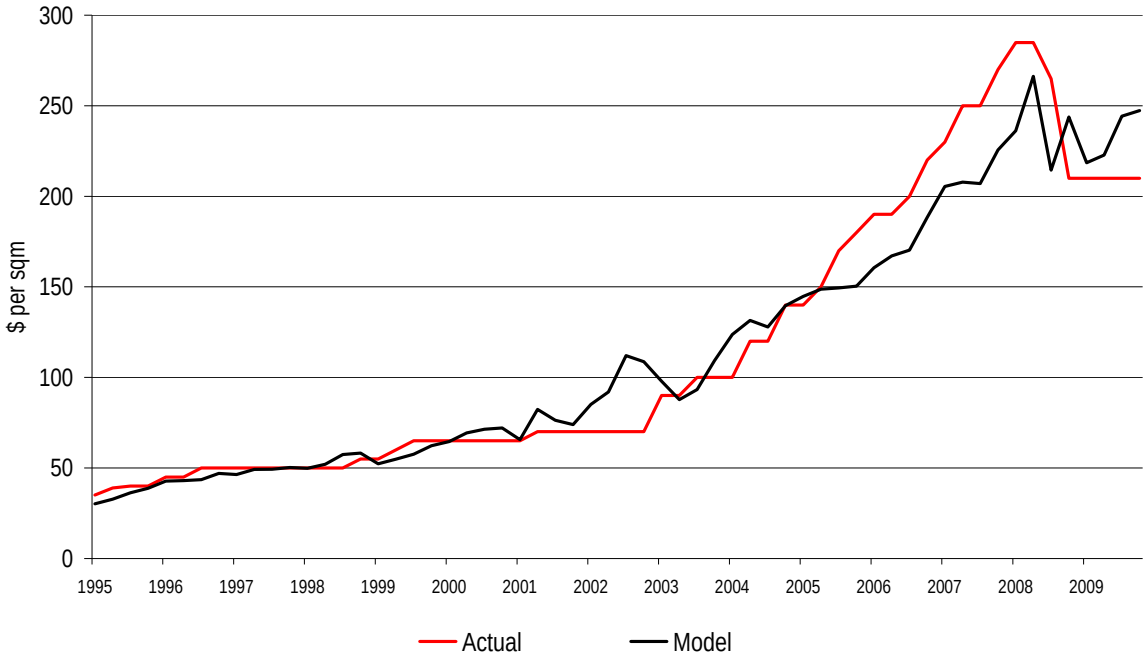
The South East traditionally was home to manufacturing warehouses in the outer urban suburbs of Clayton, Mulgrave and Springvale. Since 2001 with the introduction of China to the WTO, we have seen a shift away from manufacturing (with increasing exports from China), and a lot of these traditional sites are becoming high office component service centres. Recent land releases have focused on areas around Dandenong South/Lyndhurst, where larger, more affordable land is available to accommodate warehouses for transport, logistics and distribution companies.

[1] Access Economics, Business Outlook, December 2009 quarter

We have modelled the relationship between historical land values in Dandenong (using 60 quarterly observations from 1995), and output growth in the T & S sector (nationally), finding a correlation of almost 95% between the two variables. The chart below outlines actual historical growth in Dandenong land values (2,000 sqm serviced allotments) versus the model output based on the regression model.

Figure 4.1.2: Dandenong land values, actual versus model, 1995–2009

Source: Jones Lang LaSalle Research & Consulting, Access Economics



The relationship modelled on T & S output is a useful statistical metric in helping to determine demand and future land value growth. However, assumptions also need to be applied in order to allow for the cyclical nature of industrial land values.

4.1.2 Demand linked to company profitability

Demand for industrial property is also linked to profitability in the transport and storage sector. When oil prices rise and company profits fall, occupier demand decreases and there is a diminished propensity to expand space requirements (Figures 4.1.3 and 4.1.4). Rising diesel costs have also increased transport operating costs.

Figure 4.1.3: Higher oil price & transport & storage industry profits (4 qtr lag)

Source: Jones Lang LaSalle Research & Consulting; Access Economics

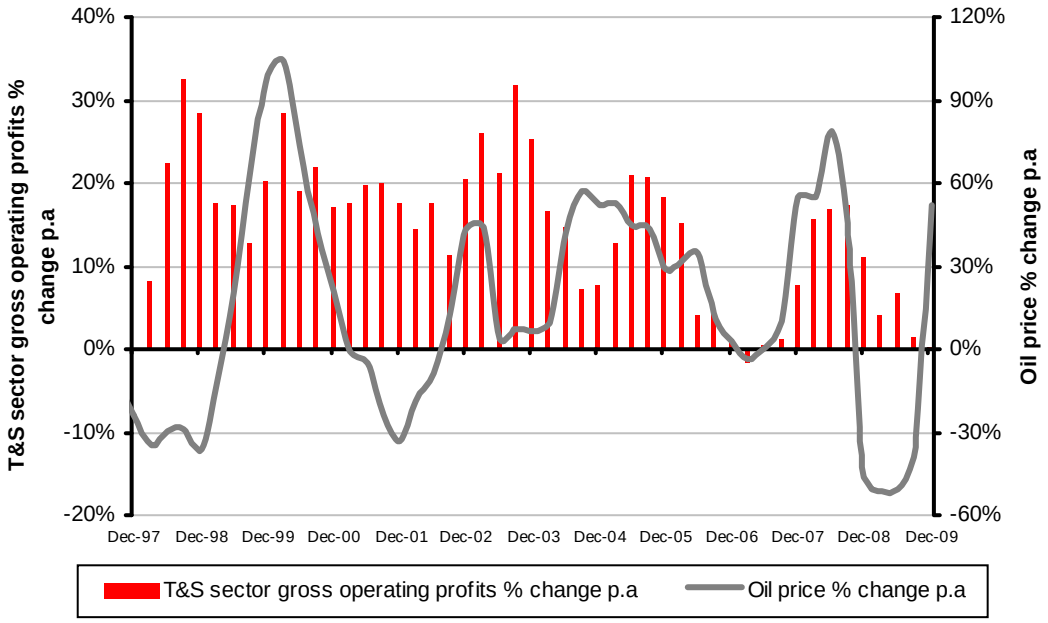
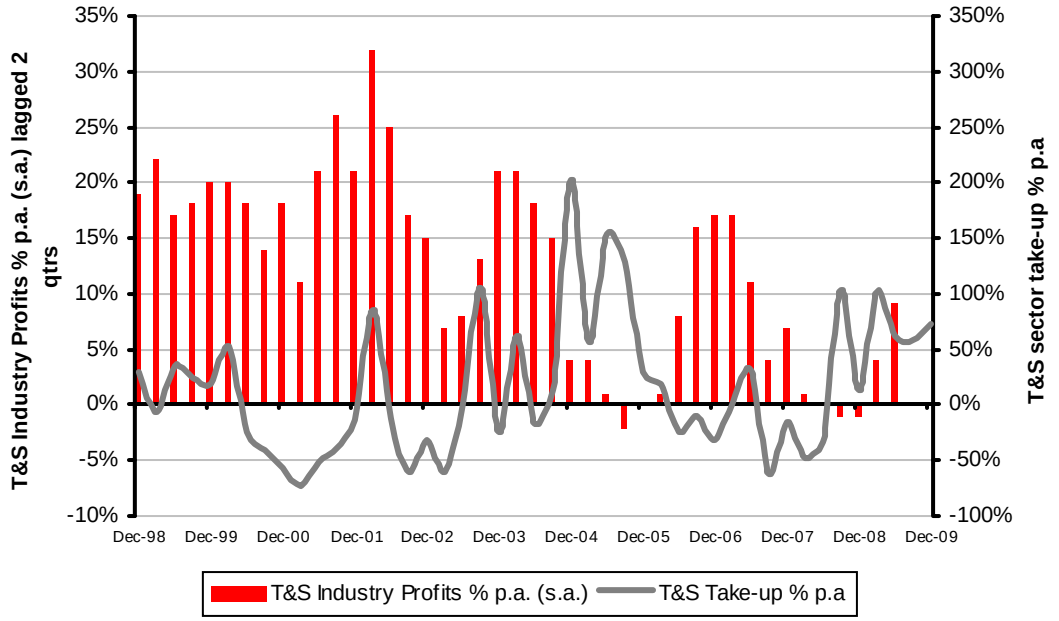


Figure 4.1.4: Transport and storage industry profits vs. change in Melbourne transport and storage industry take-up

Source: Jones Lang LaSalle Research & Consulting; ABS, Cat. No. 5676.0



In the longer term, the cost of fuel may contribute to an acceleration of the activities already underway to encourage a greater proportion of freight to travel via rail—in an effort to decrease truck movements on congested roads. A structural shift is already underway in the transport industry. In most states,

government and industry have already agreed and set broad targets for rail, although it is now acknowledged that these targets are longer-term ones, with Victoria's original 30/2010 target (30% of freight on rail by 2010) identified in the Eddington Report as being unrealistic.

4.1.3 Manufacturing sector

Facing increased competition both domestically and on a global scale, local manufacturers have moved towards greater efficiency. They have become more capital intensive and specialised by offering higher value-added products that compete on features more than price, and by moving lower value-added activities and operations to less expensive locations with relatively cheap real estate and labour, primarily in Asia. Other productivity-enhancing measures which have increased the level of specialisation include outsourcing non-core functions such as warehousing and distribution of IT services.

In Victoria, the result of these developments has been a reduction in total manufacturing employment. However, as Table 4.1.1 depicts, this trend has not been uniform across all manufacturing industries, with some actually increasing total employment numbers. The manufacturing sub-sector that has experienced the most significant decline in employment in Victoria is the textile, clothing, footwear and leather manufacturing industries, where employment declined by almost one-third between the 2001/02 and 2005/06 period. This sector has seen the largest increase in import competition through the lowering of tariffs and the rise of the Chinese clothing manufacturing sector. Printing and publishing also experienced a significant employment decline (–8.2%), as the use of technology by consumers in this industry has increased. Industries that have grown in terms of employment include machinery and equipment manufacturing, wood and paper and non-metallic mineral and metal manufacturing.

Table 4.1.1: Change in manufacturing employment, Victoria, 2001/02 – 2005/06

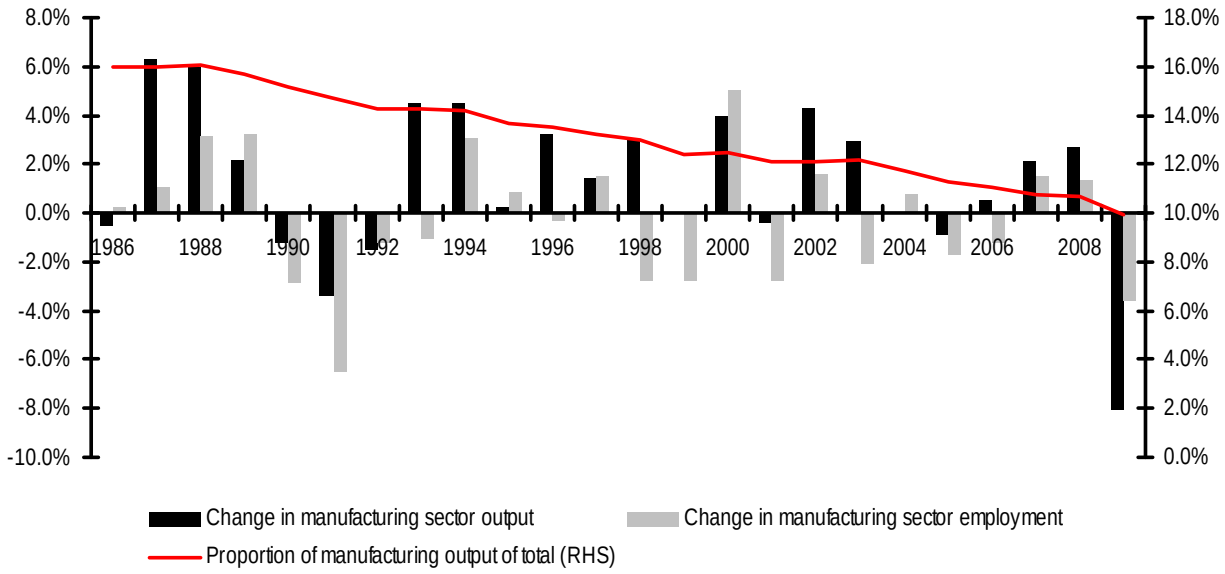
source: Jones Lang LaSalle Research & Consulting, ABS

	Change in employment ('000) (2001/02 - 2005/06)	% change in employment
Total manufacturing	*-4.0*	*-1.2%*
Food, beverage and tobacco mfg	-0.9	-1.6%
Textile, clothing, footwear and leather mfg	-8.8	-31.4%
Wood and paper product mfg	0.9	4.4%
Printing, publishing and recorded media	-2.7	-8.2%
Petroleum, coal, chemical and associated product mfg	0.3	0.8%
Non-metallic mineral product mfg	0.5	4.4%
Metal product mfg	1.7	4.3%
Machinery and equipment mfg	7.9	11.2%
Other manufacturing	-3.0	-12.3%

As mentioned earlier in this section, the value of output from the manufacturing sector has declined relative to total economic output (GDP) over the past 20 years—from 16.5% in 1985 to 9.9% in 2009. Despite the declining contribution of the manufacturing sector to output growth, the sector has continued to perform well, only recording seven years of negative growth, and growing by 1.4% on average, year-on-year. Conversely, employment in the sector as a whole (Australia-wide) has declined by an average of only 0.2% year-on-year. This suggests that a shift away from more labour intensive to more technologically intensive manufacturing production has occurred during this period, and is supported by increased productivity within the sector.

Figure 4.1.5: Change in manufacturing output and employment, 1985–2009

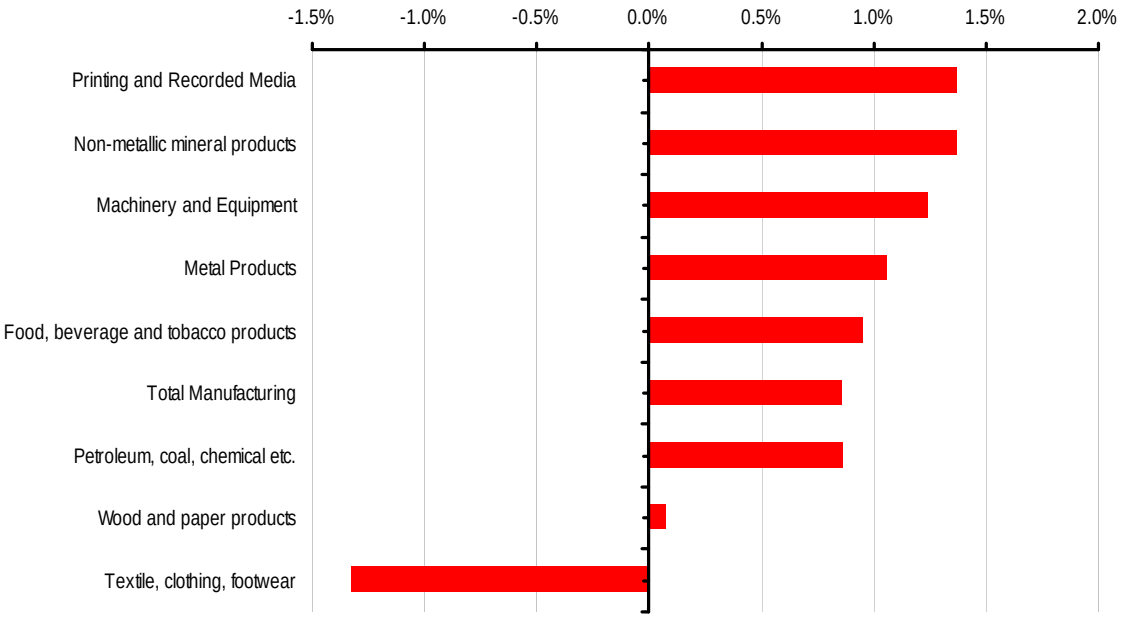
source: Jones Lang LaSalle Research & Consulting, Access Economics



Average five-year growth in industrial production by manufacturing sub-sector (Figure 4.1.6), 1980–2009 demonstrates that the manufacturing sector is still growing, with only the textile, clothing and footwear sector declining significantly during this period.

Figure 4.1.6: Australian industrial production by manufacturing industry sub-sector, five year annual average growth, 1980–2009

source: Jones Lang LaSalle Strategic Consulting, ABS

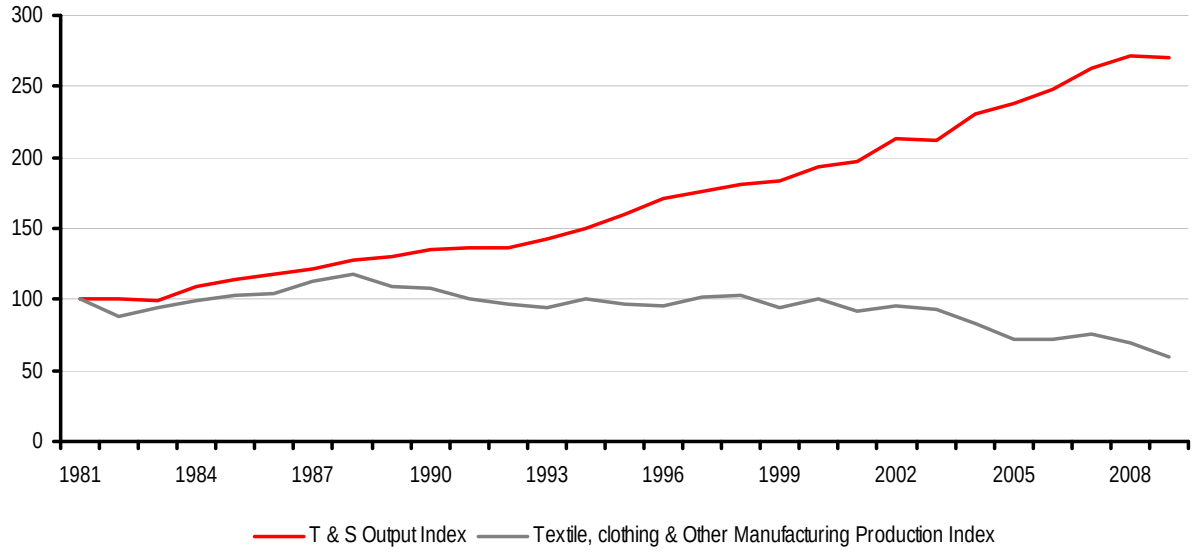


Since about 1988, the decline in the textile, clothing and footwear sector is the inverse to the strong growth in the transport and storage sector, especially in the past ten years, where a comparison between T & S output and textile, clothing and footwear (TCF) production growth produces an 84% (negative) correlation. The decline in TCF manufacturing has been more than matched by a rapid increase in the importation of these products, contributing to the growth in the T & S sector. Figure 4.1.7 compares indexed growth in these two sectors since 1981.

Figure 4.1.7: Index growth in T & S output and textile, clothing & footwear production, 1981–2009*

Source: Jones Lang LaSalle Research & Consulting, ABS, Access Economics

base year 1981 = 100

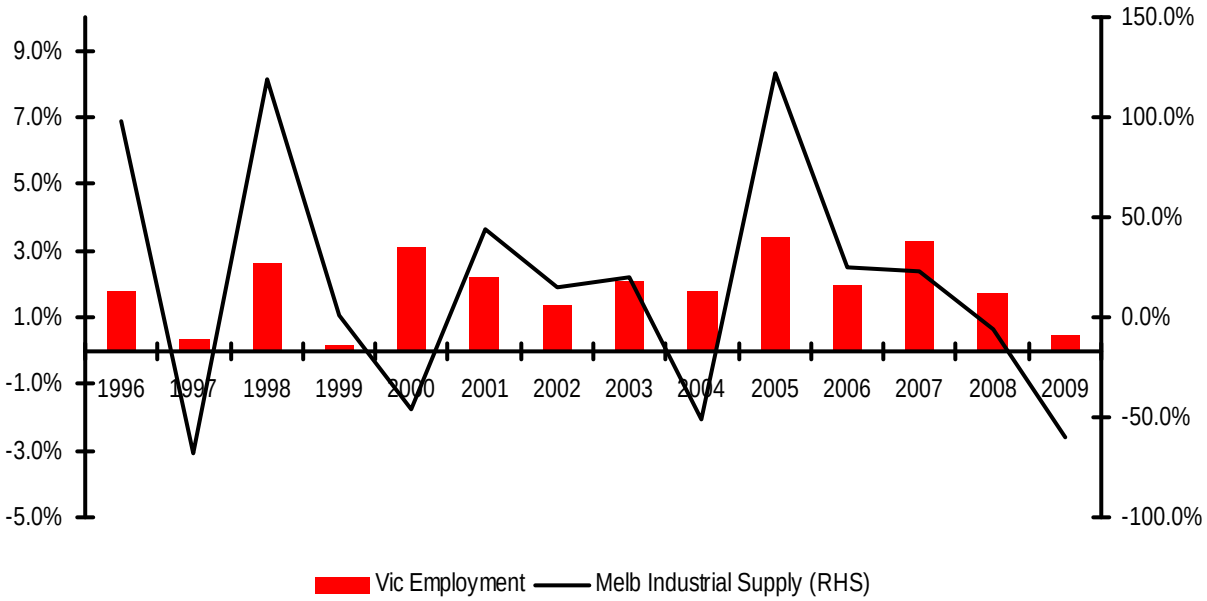


4.2 Employment Growth

While population growth is a major factor in driving industrial land supply and take-up, changes in employment and GSP growth provide a more robust indicator of the cyclical nature of industrial take-up and supply. That is to say it is strongly correlated with the business cycle and the availability of credit at reasonable rates of interest. Employment, in particular, has historically been a leading indicator of industrial construction. Figure 4.2.1 charts the changes in new industrial construction, as recorded by Jones Lang LaSalle, against changes in Victorian employment.

Figure 4.2.1: Changes in industrial supply additions vs. Victorian employment

Source: Jones Lang LaSalle Strategic Consulting, Access Economics



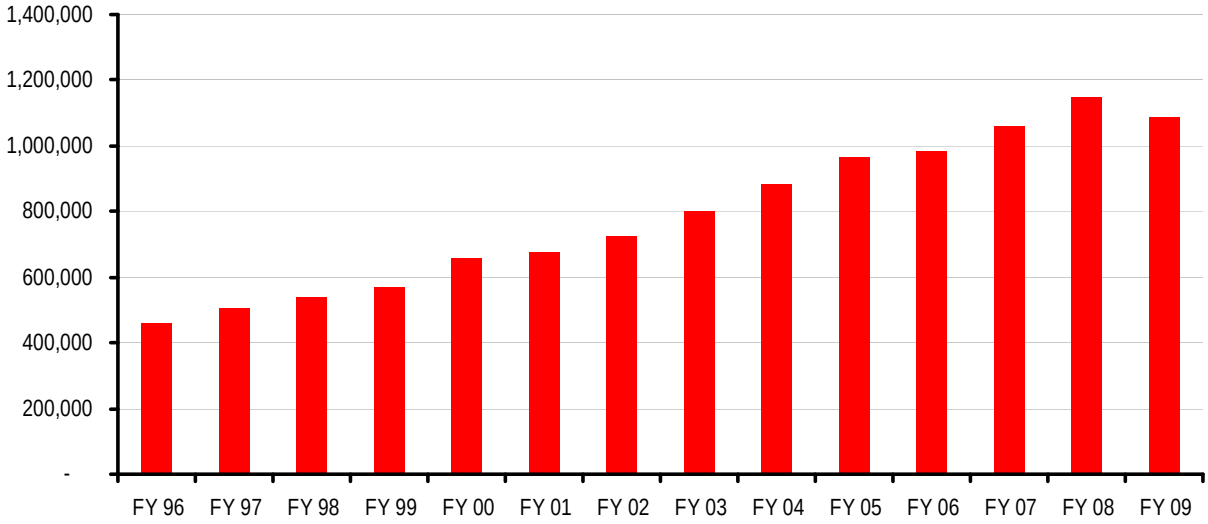
The changing nature of employment within the key industrial employing sub-sectors, manufacturing, transport and storage and wholesale trade will be taken into account, and our model forecasts the outlook for employment specifically in these sectors looking forward (using DPCD population forecasts as a starting point). However, the changes in employment moving forward form a key basis of our land demand forecasting model, while historical changes in employment makeup within the Study Area LGAs will allow us to further refine the employment outlook.

4.3 Technological and Commercial Impacts on Industrial Land Use

Increasingly, more companies are refining their supply-chain strategies to cut costs and improve operational efficiencies by either consolidating their warehouse assets or outsourcing their storage needs. Intense competition from overseas manufacturers and the need to cut production costs have also driven the trend for a large number of organisations to now source products and inputs from overseas. In the wake of these changes, strategies for warehousing have shifted emphasis from smaller local storage facilities to larger consolidated regional centres. The growth of super-sized warehousing in Melbourne can be directly attributed to this increase in volume of imports and has led to a shift from smaller, decentralised warehousing to larger warehouse facilities and distribution centres.

Figure 4.3.3: Containerised imports (TEUs), Port of Melbourne, FY96–FY09

source: Jones Lang LaSalle Research & Consulting, Port of Melbourne Corporation



The location of these super-sized warehouses and distribution centres is increasingly important from a cost, timing and convenience perspective. By locating centres close to major freeways and ports, organisations can achieve considerable savings through significant reductions in transport costs. This is especially true for retailers that source large volumes of goods from multiple vendors. In many cases, the efficiencies realised from well-located, super-sized centres result in net cost savings, even if an additional step is added on the supply chain.

Advances in technology and warehouse design are giving rise to a shift where warehousing sits in overall supply-chain strategies. In the past, operations concentrated on maintaining stocked inventories to 'push' stock out in order to meet potential demand in local areas. Today, communication and inventory tracking software have given rise to more precise methods of maintaining inventories, allowing for so-called 'Just in Time' delivery. The City of Greater Dandenong, which has in its municipality one of Australia's most important industrial nodes, has noticed a shift in warehouse sizes from a typical 10,000–15,000 sqm ten years ago to 40,000 sqm and more today[2].

[2] Stakeholder – Greater Dandenong's Business News, September – November 2008, pg 11

Summary:

Globalisation, changes in technology and the commercial treatment of real estate by industrial occupiers has changed the nature of the industrial market in Melbourne. Industrial demand is now heavily impacted by the transport and storage sector, although manufacturing still plays a vital role in the Victorian economy. These sectors are increasingly using a national network of large wholesale distribution centres to serve a network of smaller retail outlets.

Manufacturing still accounts for over 10% of Victoria's economy and will remain an important driver of demand in the long term. Structural changes in the manufacturing sector such as the outsourcing of warehousing/distribution functions and a move towards higher value-add production have been behind the growth in T & S sector employment and imports. Greater technological efficiencies within the T & S industry has meant that multiple clients can be serviced from one building footprint, resulting in the demand for larger land parcels and access to good transport infrastructure. These industry trends will continue to drive the need to warehouse and distribute a large range of goods across Melbourne. Both these sectors will strongly influence the Melbourne industrial market going forward.

It is therefore essential that planning for future growth areas reflects the recent changes in industry business practices, provides flexibility to allow for forecast future trends within these industries, and importantly, sets aside sufficient land to cater for the needs of the burgeoning transport and storage sector. This has particular relevance for the industrial market in Melbourne's west, which has prime access to the Port of Melbourne and is home to a significant number of Victoria's leading freight and logistics companies.

Conclusion:

Planning future industrial land supply in Melbourne has to take into account the needs of the manufacturing industry as well as the growing T & S sector, which require relatively larger parcels of land and access to the port and an efficient road and rail transport network.

Growth area planning should, by taking into account ongoing development needs of State significant industries, set aside a sufficient quantum of land dedicated exclusively to industrial purposes. This land should be protected from competing development interests and enable enough flexibility to respond to changing trends (such as increased freight movements).

5. Melbourne Industrial market overview

The Melbourne Industrial market is one of the most important markets in Australia as it supports Australia's largest container port. Melbourne has some key strategic advantages over other markets in Australia, on both the supply and demand side. On the supply side, the relative of abundance of land in Melbourne's west, north and south east has kept real estate costs lower, and therefore offered an opportunity for occupiers to reduce overall operating costs and reduce margins. In terms of demand, the continued growth of freight movements through the Port of Melbourne has been the key driver, particularly in the T & S sector. The Port of Melbourne is forecast to remain the dominant container port in Australia, with one of the Port's major advantages being cost competitiveness. The Port of Melbourne currently has the lowest wharfage charges for containerised cargo of any major Australian port, and by a significant margin. Infrastructure investment in Melbourne's road network, the deepening of the channel to the Port of Melbourne, and continued planning for future growth of the freight task with the release of Freight Futures and Port Futures, have also given Melbourne a competitive advantage over other Australian industrial markets.

In our monitoring of the Melbourne Industrial market, Jones Lang LaSalle divides the market into four precincts: West, North, South East and City Fringe.

Figure 5.1: Melbourne Industrial Precincts

Source: Jones Lang LaSalle Research & Consulting

West Precinct

With both an established inner precinct and developing, strategically important, middle to outer industrial area, the West has benefited from the release and availability of large, comparatively affordable premises. Recent improvements to infrastructure, such as the Deer Park Bypass, and access to the Port of Melbourne have made the West an attractive alternative to City Fringe locations close to the port. The suburbs of Laverton North and Derrimut have received the most attention, with construction activity and take-up highest in these areas, rivalled only by activity in Dandenong South/Lyndhurst in the South East. The Truganina Employment Precinct will also expand the Industrial zoned land supply in the West. The proposed Westlink project would benefit the area significantly in terms of access to the Port and Melbourne's Freeway system.

North Precinct

The North precinct is very similar to the west in that it is characterised by availability of larger lots, cheaper rents (comparative to traditional locations i.e. city fringe), and has seen improved infrastructure heading up through Somerton and Craigieburn, with the development of the Craigieburn bypass. The North has seen a lower amount of activity than the West, but it is the location for a number of large distribution centres attracted by the development of the P & O intermodal terminal at Somerton. These include distribution centres developed for Linfox and Coles Myer at Austrak industrial estate in Somerton. The North is also an attractive location for airport-related industrial activity.

South East Precinct

The South East traditionally was home to manufacturing warehouses in the outer urban suburbs of Clayton, Mulgrave, Springvale and Dandenong. Since 2001 with the introduction of China to the WTO, we have seen a shift away from manufacturing (with increasing exports from China), and a lot of these traditional sites are becoming high office component service centres. Recent land releases have focused on areas around Keysborough/Lyndhurst, where larger, more affordable developed land is available for large warehouses for transport, logistics and distribution companies, with Eastlink providing ease of access. Foreshadowed infrastructure improvements, including the approval for intermodal train terminals in Lyndhurst, and plans for increasing use of the deep sea port at Hastings will further induce additional industry interest in the South East as a location for future warehousing over the longer term.

City Fringe Precinct

City Fringe is primarily made up of the suburb of Port Melbourne, with minimal industrial uses remaining in the historical industrial locations of Southbank, Docklands and South Melbourne. The precinct enjoys close proximity and access to the Port of Melbourne and rents are comparatively higher than in the other precincts. For that reason, a number of its traditional industrial residents that do not necessarily need to be next to the port have moved to larger, more affordable lots in the west and north. As such, there has been a shift towards servicing smaller strata requirements with high tech/office components.

5.1 Supply trends

Over the past decade, the supply of industrial land/buildings has increased in the north and south east markets as significant infrastructure projects (Craigieburn Bypass, EastLink) have increased demand for industrial land in these markets. The west, however, remains a significant contributor to industrial supply in Melbourne. In total, 1.94 million sqm of industrial space has been developed in the South East in the ten years to 2009, followed by 1.85 million sqm in the West, and 1.38 million sqm in the North[3].

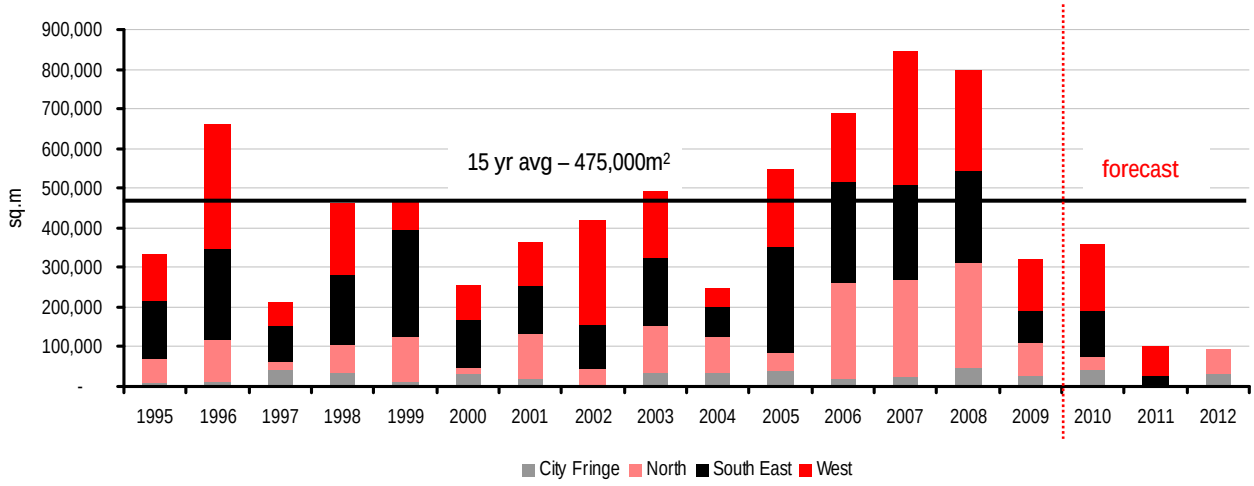
[3] Jones Lang LaSalle monitors all industrial construction projects over 5,000 sqm only.

The City Fringe market is a much smaller one, and is significantly constrained by land availability, has seen 288,783 sqm of industrial construction since 1999.

A substantial pick up in demand for new space over the past decade, driven by stronger economic growth between 2006 and 2007, coupled with availability of newly rezoned land within the UGB, resulted in supply hitting record highs in 2007 and 2008. This demand for new space was consistent across the three major Melbourne industrial precincts. Supply in 2009, however, was significantly down on the previous three years, as pre-leases and Development & Construction (D & C) activity was significantly muted due to the economic downturn.

Figure 5.1.1: Industrial development activity (building floor area), Melbourne, 1995–2012

Source: Jones Lang LaSalle Research & Consulting (Only includes 5,000sqm+ developments with <40% office space)



One of the major drivers of this demand for new space through 2006–2007 was the shrinking differential between rents for pre-lease space and rents for existing space (Figure 5.1.2). In fact, pre-lease rents in the West industrial market were $10 per sqm cheaper than existing rents at the height of the recent boom. This led occupiers to demand new stock, and also encouraged occupiers not necessarily in the market for new space to enter the market to gain the benefits of cheaper rents and new space.

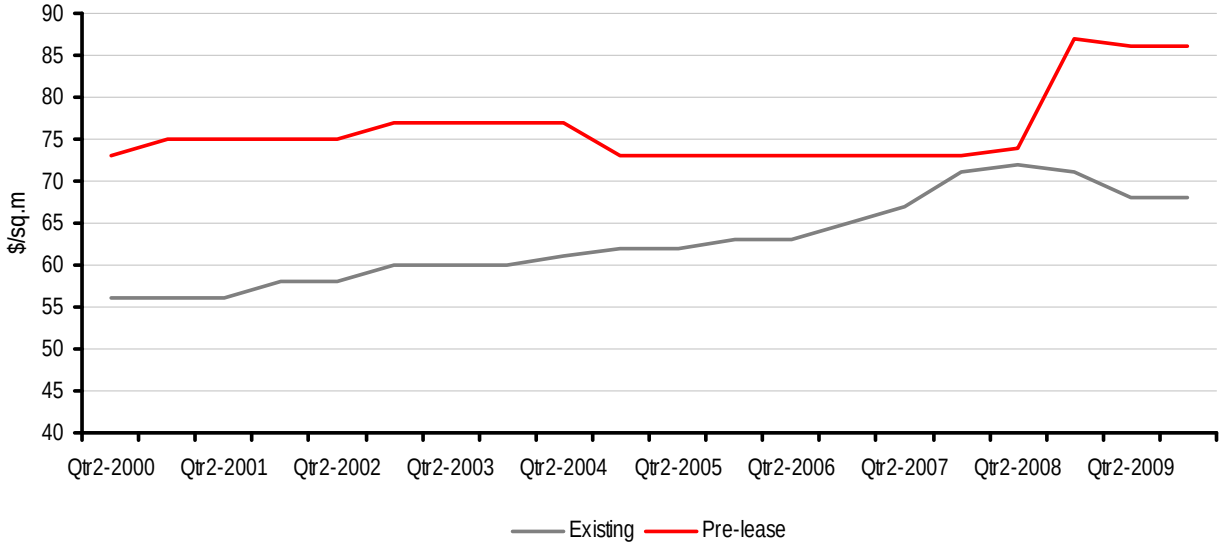
Figure 5.1.2: Melbourne industrial rents, pre-lease rent premium, 2000–2009

Source: Jones Lang LaSalle Research & Consulting

The decreasing gap between existing and pre-lease rents was caused by squeezes at both ends – existing stock was getting more expensive, while pre-lease stock was becoming cheaper (Figure 5.1.3).

Figure 5.1.3: Melbourne north industrial rents, existing vs. pre-lease, 2000–2009

Source: Jones Lang LaSalle Research & Consulting



There are numerous factors behind the relative affordability of pre-lease rents during the boom years, including:

- Tightening of spreads between development financing rates and the cash rate meant reduced costs of financing;
- Yield compression;
- Reduction of incentives as demand increased (incentives would be built in to face rents); and
- Timing of land purchases – most developers offering pre-lease developments during 2006–2007 would have purchased the land at least five years earlier, when values were lower, allowing lower economic (pre-lease) rents to cover their land value costs.

The increase in industrial supply was led by both speculative development and pre-leases, where developers built stock with the confidence that this stock would be taken up before practical completion of the product. The strong demand for existing space was one of the factors driving speculative development in the market.

5.1.1 Ownership Structures and Land Banking

The ownership of major tracts of industrial land in Melbourne is increasingly in the hands of real estate institutions. Major players in the Melbourne market include Goodman, Australand, ING Property Group, Stockland, Salta Property Group, MAB and Pellicano Property Group. The concentration of land ownership has resulted in increasing levels of land banking as major institutions have the financial capability to buy land and defer development until either a level of pre-commitment is achieved or suitable capital gains can be derived from the sale of the banked land. Another major impact of delays in land development is long lead times for planning approvals, which can also force developers into a holding pattern.

The implications of this trend on industrial land supply for industry going forward are important, as the availability of land for development now also depends on the willingness of developers/institutions to release the land at a given time. For institutional property owners, and all owners for that matter, the imperative to develop land is a financial one, and therefore, land banking is likely to continue as more land is released so that developers can increase the financial return on their current developments.

5.1.2 Historical Supply by Precinct

Since 1985, approximately 2.9 million sqm of industrial space has been developed across the South East. Almost all of this (86%) has been developed in the outer region, which is more than 20 km from the CBD. In the west, almost 3.05 million sqm of industrial space has been developed since 1980. The large majority of this (68%) has been developed in the middle region LGAs of Brimbank and Wyndham, approximately 12 km from the CBD. In contrast to other Melbourne markets, particularly the South East, a very small amount of space has been built in the outer region (Melton).

The north industrial market has been monitored since 1995, and 1.62 million sqm of industrial space has been built during this time. The outer north market has seen a very significant majority of construction of industrial development over this time.

Table 5.1.1: South-East industrial construction (sqm), 1985–2009

Source: Jones Lang LaSalle Research & Consulting

	Total Construction (sqm)	% of Total
Inner	32,000	1.1%
Middle	386,396	13.3%
Outer	2,478,447	85.6%
Total	2,896,843	100.0%

Table 5.1.2: West industrial construction (sqm), 1980–2009

Source: Jones Lang LaSalle Research & Consulting

	Total Construction (sqm)	% of Total
Inner	918,479	30.1%
Middle	2,077,225	68.1%
Outer	53,290	1.7%
Total	3,048,994	100.0%

Table 5.1.3: North industrial construction (sqm), 1995–2009

Source: Jones Lang LaSalle Research & Consulting

	Total Construction (sqm)	% of Total
Inner	78,159	4.8%
Outer	1,546,983	95.2%
Total	1,625,142	100.0%

Since 2004, this focus on the outer region in the South East region has become more pronounced. Whereas approximately 22% of industrial development was in the Middle region between 2000 and 2004, this declined to just 12.8% between 2005 and 2009. This has come about as the supply of developable land in the Inner and Middle regions declines and continued pressure from competing uses such as residential and office become more apparent.

Table 5.1.4: South East industrial construction (% of total construction), 1985–2009

Source: Jones Lang LaSalle Research & Consulting

	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009
Inner	0.0%	0.0%	2.2%	0.0%	1.1%
Middle	0.0%	5.5%	11.9%	22.1%	12.8%
Outer	100.0%	94.5%	85.9%	77.9%	86.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

In the west, approximately 52% of industrial development was in the inner region in the 1990s, this declined to just 6.7% between 2000 and 2004, before picking up again between 2005 and 2009 to account for almost one-third of all development. This has been due to a decline in supply of developable land in the Inner region (although more recently the availability of land in Hobsons Bay has improved construction levels in the inner region), and land supply rose in the middle region LGAs. The development of the Deer Park Bypass has also encouraged development in the middle region in recent years. Lower land prices in the middle region also play a vital role in attracting occupiers to these LGAs.

Table 5.1.5: West industrial construction (% of total construction), 1980–2009

Source: Jones Lang LaSalle Research & Consulting

	1980s	1990s	2000–2004	2005–2009
Inner	87.7%	52.0%	6.7%	30.1%
Middle	12.3%	45.9%	91.5%	68.1%
Outer	0.0%	2.1%	1.8%	1.7%
Total	100.0%	100.0%	100.0%	100.00%

The development of the Craigieburn bypass, as well as availability of broad hectare land, has been a driving factor for the movement of development in the north to the outer suburbs of Whittlesea and Hume in the North.

Table 5.1.6: North industrial construction (% of total construction), 1995–2009

Source: Jones Lang LaSalle Research & Consulting

	1995–1999	2000–2004	2005–2009
Inner	19.2%	2.3%	4.8%
Outer	80.8%	97.7%	95.2%
Total	100.0%	100.0%	100.0%

In the Middle region of the South East, construction has been heavily concentrated around Moorabbin where almost 40% of total development has occurred, with a focus around Keys Road and Chifley Drive. In the Outer region, development has concentrated around Dandenong with 38% of total Outer region construction occurring in this area.

Table 5.1.7: South East industrial construction – middle region (% of total construction), 1985–2009

Source: Jones Lang LaSalle Research & Consulting

	Total
Moorabbin	39%
Clayton	16%
Clayton South	7%
Mt Waverley	7%
Other Middle	30%
Total Middle Region	100%

Table 5.1.8: South East industrial construction – outer region (% of total construction), 1985–2009

Source: Jones Lang LaSalle Research & Consulting

	Total
Dandenong	38%
Scoresby	10%
Hallam	8%
Braeside	7%
Other Outer	37%
Total Outer Region	100%

In the western suburbs, Hobsons Bay has experienced the largest share of development in the inner region, with the exception of 2000–2004, where development in the inner region was particularly low. Wyndham has consistently been the focus of development in the middle region. Melton has seen very little development throughout the past three decades as there has been sufficient availability of land in more well-established and strategically located major industrial precincts that have strong transport linkages and closer proximity to workforce and the Port.

Table 5.1.9: West industrial construction by LGA (% of total construction), 1985–2009

Source: Jones Lang LaSalle Research & Consulting

	Region	Total
Hobsons Bay	Inner	24.6%
Maribyrnong	Inner	6.2%
Brimbank	Middle	29.2%
Wyndham	Middle	38.3%
Melton	Outer	1.7%
Total		100.0%

In the North, Hume has been the dominant location for supply increases, and is by far the most dominant LGA in the three monitored precincts. The proximity of Hume along the main Melbourne-Sydney/Brisbane freight routes (both road and rail), proximity to the airport, availability of land and infrastructure investments such as the development of CityLink in 2000, the Western and Metropolitan Ring Roads in 1999 and the Craigieburn bypass in 2005.

Table 5.1.10: North industrial construction by LGA (% of total construction), 1995–2009

Source: Jones Lang LaSalle Research & Consulting

	Region	Total
Darebin	Inner	3.1%
Moreland	Inner	1.7%
Whittlesea	Outer	8.3%
Hume	Outer	86.9%
Total		100.0%

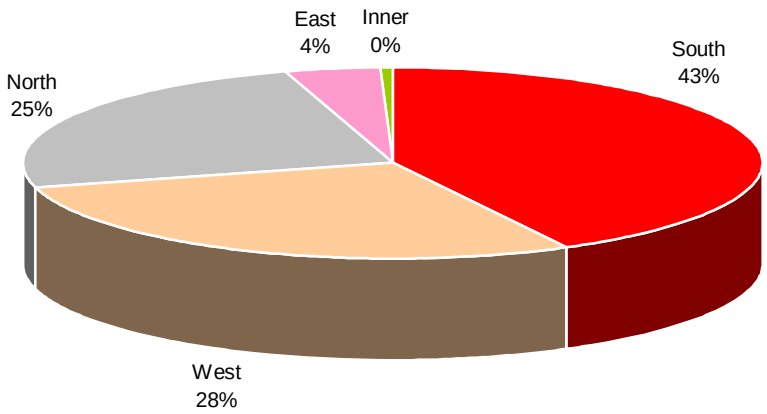
5.1.3 Future Supply

There is an estimated 4,688 Ha net supply of vacant developable industrial zoned land across metropolitan Melbourne, or 6,782 Ha of gross supply. The 'net' supply figure, as defined by the UDP, 'measures the estimated area available for industrial development after accounting for local roads, open space, infrastructure and environmental considerations'. The South, North and West regions contribute to almost 80% of this future supply. A large proportion of supply across these regions falls within the study area LGAs (3,175 Ha net or 67% of all vacant developable industrial land in metropolitan Melbourne)[4].

Figure 5.1.4: Forecast net developable land supply by region in metropolitan Melbourne – 2009

Source: VIC DPCD, 2009 UDP

Note: Estimated stock of zoned vacant industrial land stocks (net developable area – Ha)



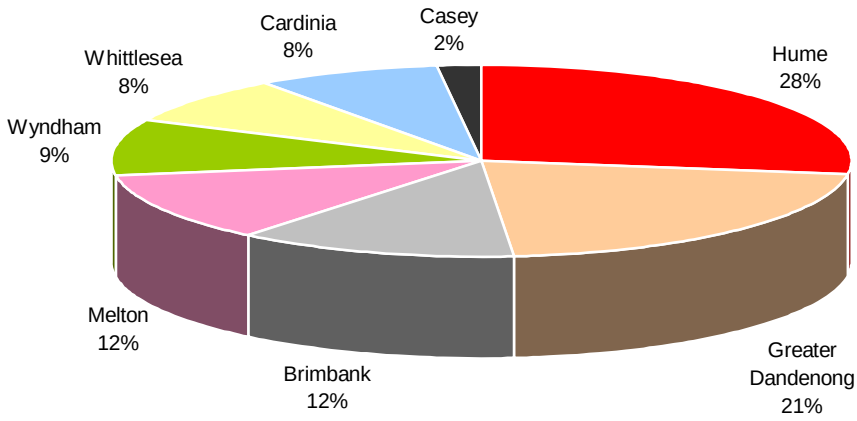
The Hume LGA in the Northern region, Greater Dandenong LGA in the Southern region, and Brimbank and Melton LGAs in the Western region will be relatively large contributors to developable land supply over the next two decades (FY2010–FY2030).

[4] Study area comprises Brimbank, Cardinia, Casey, Greater Dandenong, Hume, Melton, Whittlesea and Wyndham LGAs, data sourced from VIC DPCD, 2009 Urban Development Program.

Figure 5.1.5: Forecast net developable land supply in study area LGAs – 2009

Source: VIC DPCD, 2009 UDP

Note: Estimated stock of zoned vacant industrial land stocks (net developable area – Ha)



Just over 70% of the total stock of vacant developable industrial land in the study area LGAs is zoned Industrial 1, Industrial 2 and Industrial 3. Another 14% lies within the Comprehensive Development zone, 11% in Business 3 zone and the remaining 5% in the Airport Business Park zone.

Table 5.1.11: Estimated stock of vacant industrial land by zoning (net developable area) – region in metropolitan Melbourne, 2009

Source: VIC DPCD, Jones Lang LaSalle Research & Consulting

Region	Industrial 1	Industrial 2	Business 3	Airport Business Park	Comprehensive Development Zone	All zoned land
South	53%	13%	25%	11%	82%	42%
West	28%	87%	53%	16%	18%	28%
North	11%	0%	20%	57%	0%	25%
East	7%	0%	2%	14%	0%	4%
Inner	0%	0%	0%	3%	0%	0%
Metropolitan Melbourne	100%	100%	100%	100%	100%	100%

In terms of future land supply by lot size, lots under 0.5 Ha dominate future zoned land supply, accounting for 80% of total lots available for development. The majority of lots are located in the LGAs of Brimbank and Hume. Greater Dandenong and Wyndham have the largest proportion of vacant lots greater than 1 Ha available for development.

Table 5.1.12: Estimated number of vacant industrial lots by lot size – region in metropolitan Melbourne, 2009

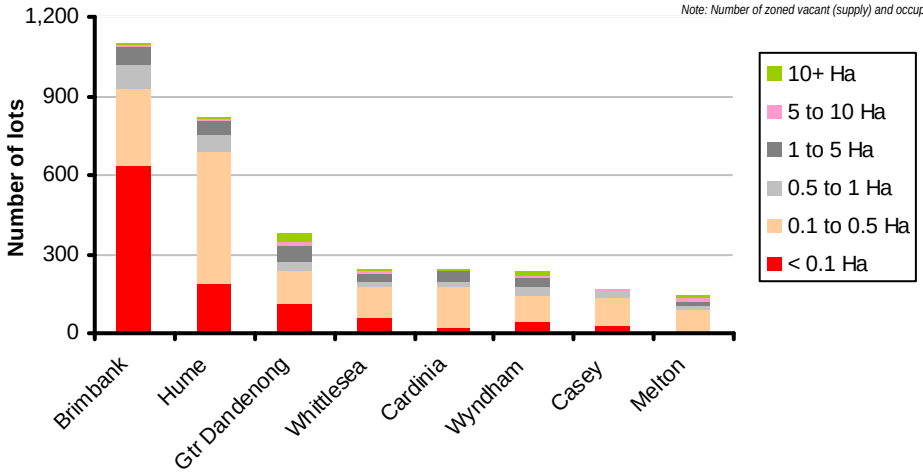
Source: VIC DPCD, Jones Lang LaSalle Research & Consulting

	< 0.1 Ha	0.1–0.5 Ha	0.5–1 Ha	1–5 Ha	5–10 Ha	10+ Ha	Total
South	35%	47%	34%	37%	43%	48%	40%
West	48%	20%	35%	35%	35%	34%	35%
North	12%	27%	19%	19%	15%	15%	19%
East	3%	4%	11%	8%	7%	2%	5%
Inner	2%	1%	1%	1%	0%	0%	1%
Metropolitan Melbourne	100%	100%	100%	100%	100%	100%	100%

Figure 5.1.6: Smaller-sized lots dominate future land supply in study area

Source: VIC DPCD, 2009 UDP

Note: Number of zoned vacant (supply) and occupied industrial lots by lot size cohort



Of the estimated 4,688 Ha of net vacant developable industrial zoned land across metropolitan Melbourne, 64% of this land is located within specified Industrial Nodes. Table 5.1.13 shows that future zoned land supply is fairly evenly spread across the Western nodes (33%), Northern nodes (35%) and Southern nodes (32%). There is an additional 3,150 Ha of unzoned land set aside for future industrial development within the existing UGB, with 48% sitting within the Southern nodes, 27% in the Western nodes and the balance in the North.

Table 5.1.13: Estimated stock of net developable industrial land by Node, 2009

Source: VIC DPCD, Jones Lang LaSalle Research & Consulting

Region/Node	Zoned (Ha)	Unzoned	Years of supply zoned	Years of supply zoned & unzoned
West Region (Melton & West Nodes only)	*980*	*840*	*9 to 10*	*18 to 20*
North Region (Airport & North Nodes only)	*1,060*	*810*	*14 to 17*	*20+*
South Region (Pakenham & South Nodes only)	*950*	*1,500*	*14*	*20+*
All Metropolitan Industrial Nodes	2,990	3,150	12 to 13	20+

An analysis of the adequacy of this supply going forward has been undertaken by the Department of Planning and Community Development (DPCD). Years of supply are estimated by each region/node, based on supply of zoned industrial land and zoned and unzoned industrial land. The 2009 estimates of supply by each region are given in Table 5.1.13. The recommendations provided in this report will provide further understanding as to the availability of industrial land within the Growth Area LGAs.

5.2 Demand Trends

Consumption of industrial land over the past decade has been concentrated in the West and South regions, in line with the distribution of industrial land stock across metropolitan Melbourne. Take-up rates have broadly remained unchanged, with the North the only region to see a consistent rise in consumption over the three time periods shown in Table 5.2.1.

Table 5.2.1: Average annual consumption of industrial land – region in metropolitan Melbourne

Source: VIC DPCD, Jones Lang LaSalle Research & Consulting

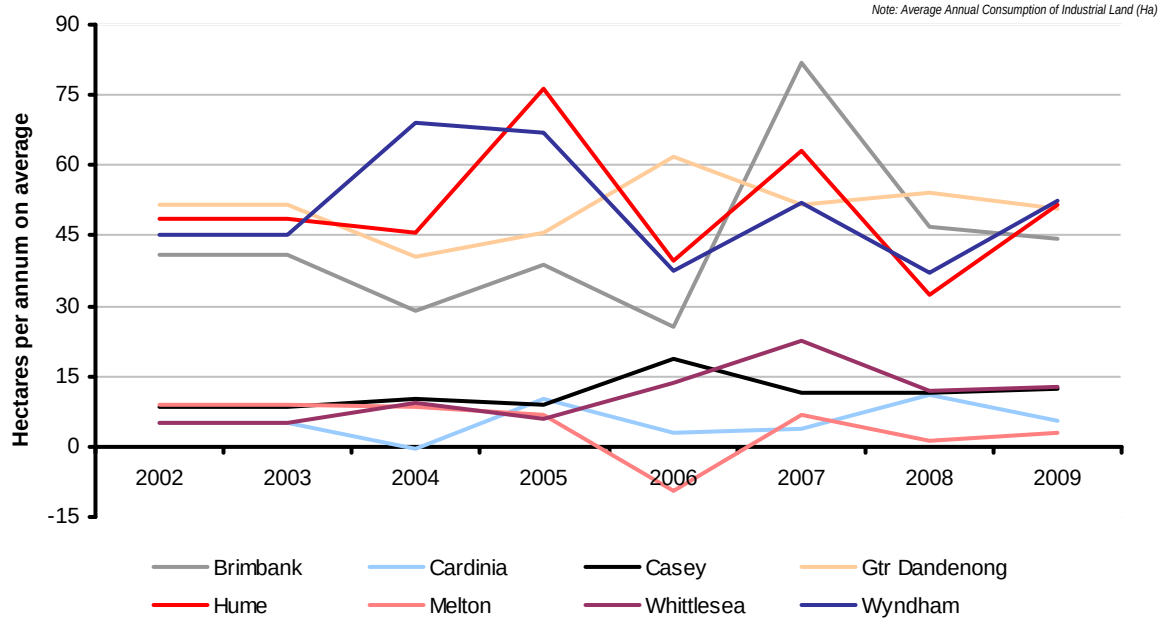
Region	1995 to 2000 (Ha)	2000 to 2005 (Ha)	2005 to 2009 (Ha)
West	119	111	105
South	116	101	96
North	44	54	67
East	26	17	13
Inner	-1	1	1
Metropolitan Melbourne	304	284	281

In the study area, historical consumption by LGA indicates demand is split in to two 'camps', with strong consumption in Brimbank, Wyndham (West) Greater Dandenong (South East) and Hume (North), and considerably lower take up of land in Melton (West), Cardinia, Casey (South East) and Whittlesea (North).

Figure 5.2.1: Stronger take-up rates in Brimbank, Gt. Dandenong, Hume & Wyndham

Source: VIC DPCD, 2009 UDP

Note: Average Annual Consumption of Industrial Land (Ha)



On a proportionate basis, the four LGAs where land consumption is highest, have also recorded strong consumption as a proportion of total supply (vacant zoned industrial land) in 2007–2008. Whittlesea, Cardinia and Melton saw very little land consumed as a proportion of total supply, even at the height of the supply boom. Casey, on the other hand, recorded quite strong consumption as a proportion of total supply, a reflection on its low supply levels (88 ha) rather than particularly strong consumption.

Table 5.2.2: % of total supply (2007 vacant zoned industrial land) consumed 2007–2008

Source: Jones Lang LaSalle Research & Consulting, UDP 2008 and 2007

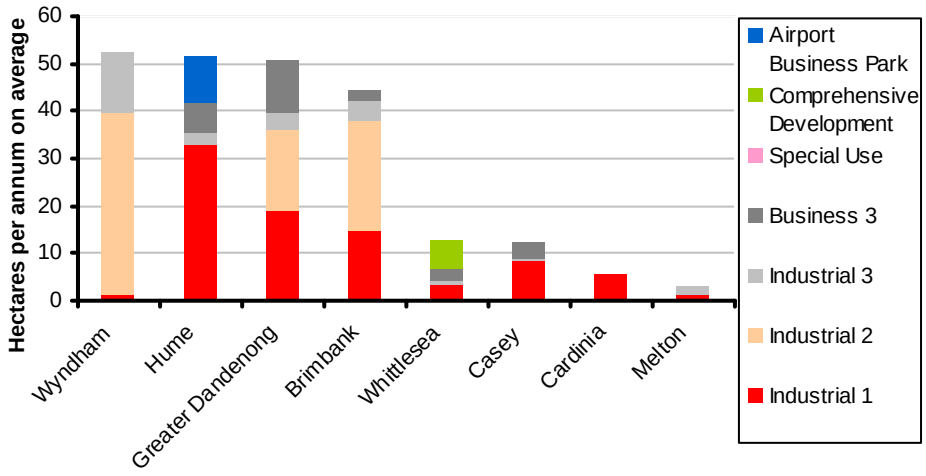
	% of supply consumed
Hume	12.3%
Whittlesea	7.3%
Wyndham	12.9%
Brimbank	12.8%
Melton	0.7%
Greater Dandenong	13.6%
Casey	13.0%
Cardinia	1.5%

Average annual take-up of industrial land in the study area LGAs has primarily been of land zoned Industrial 1 and 2; however, Wyndham, Greater Dandenong and Hume LGAs have seen a relatively high share of land consumption in the Industrial 3, Business 3 and Airport Business Park zones.

Figure 5.2.2: Industrial 1 and 2 zoned land dominated take-up, 2004–2009

Source: VIC DPCD, 2009 UDP

Note: Average Annual industrial land consumption by zone type (Ha), 2004 to 2009



In 2007/08, Jones Lang LaSalle conducted an Industrial Occupier Survey to identify the preferred locations and property requirements of transport and logistics based operators. Two major factors that determine industrial location decisions came out of the survey, which were property costs and access to roads/infrastructure.

In Melbourne, the West precinct was the most popular location choice for 56% of respondents. Of the respondents who prefer the West, only 15% are currently located there. Interestingly, 35% of respondents that preferred the West were based in Sydney, and 20% in Melbourne's City Fringe. Both Sydney and the City Fringe, both now and at the time of the survey, are significantly more expensive areas to be based than Melbourne's west. Rents in Sydney's Outer Central West were around 50%

higher than Melbourne's West in 2008, and Melbourne City Fringe rents around 75% higher. Similarly, land values in the Sydney Outer Central West precinct were around three times higher than the Melbourne West precinct, and the City Fringe around 3.5 times higher. The Melbourne West region also ranks highly in terms of proximity to the Port as well as road infrastructure.

Of the remaining respondents who wished to locate in Melbourne, approximately 20% preferred the South East, 11% preferred the City Fringe, 5% preferred the North and a further 5% preferred a Regional Victoria location.

5.2.1 Industrial Take Up by Industry Sector

Jones Lang LaSalle has tracked tenant moves over 5,000 sqm since 1995. Although it does not track all moves, it does provide an indication as to how the type of user has changed over time.

Wholesale and retail trade have been the strongest growth category in the South East since 2006, accounting for over a third of all tenant movements. Correspondingly, manufacturing has seen a marked decline over time, although this is in part due to the stronger take-up in wholesale and retail trade industries, reducing the overall proportion of manufacturing take-up.

Given the availability of land, it is not surprising that all wholesale and retail trade moves have been to the Outer region, with a focus around Dandenong.

Table 5.2.3: South East take-up (% of total known tenant moves), 1995–2009

Source: Jones Lang LaSalle Research & Consulting

	1995–2000	2001–2005	2006–2009
Manufacturing	41.7%	44.3%	15.0%
Wholesale and Retail Trade	15.9%	19.9%	37.6%
Transport and Storage	24.5%	15.3%	10.1%
Other	17.9%	20.6%	37.3%

Interestingly, the manufacturing sector accounted for 60% of take-up over the past five years in the west, increasing its share of take-up by 18%. It is important to note, however, that these tenant moves track the business that the occupier is involved in, rather than the actual land use of the site. Therefore, there could be hidden warehousing and distribution centres amongst the manufacturing occupiers.

Wholesale and retail trade has declined rapidly in the past five years as a sector in the West, possibly due to a shift to the South East, where the share of wholesale and retail trade take-up has increased over the same time period. The South East has recently seen strong population and housing growth, which has in turn driven the demand for retail and bulky goods uses; hence, the location of wholesale trade firms to this area.

Table 5.2.4: West industrial take up (% of total known tenant moves), 1995–2010

Source: Jones Lang LaSalle Research & Consulting

	1995–2000	2001–2005	2006–2009
Manufacturing	32.5%	41.9%	60.1%
Wholesale and Retail Trade	14.9%	18.8%	4.25%
Transport and Storage	30.7%	25.8%	21.2%
Other	21.9%	13.5%	14.45%

Take up in the north industrial market is particularly diversified, although manufacturing has decreased as an industry sector in terms of new take-up. Transport and storage is the dominant category of take-up most recently, and a number of industrial parks in the north have been created purely to cater to this sector, including Northgate Distribution Centre and Austrak Business Park—both in Somerton.

Table 5.2.5: North industrial take up (% of total known tenant moves), 1995–2010

Source: Jones Lang LaSalle Research & Consulting

	1995–2000	2001–2005	2006–2009
Manufacturing	39.2%	53.8%	26.0%
Wholesale and Retail Trade	16.7%	5.7%	25.2%
Transport and Storage	13.7%	20.8%	38.5%
Other	30.4%	19.7%	10.3%

Summary:

Melbourne has several key strategic competitive advantages over other markets in Australia, including relatively lower real estate costs and the continued growth of container freight movements generated through the Port of Melbourne. Tullamarine Airport is also responsible for a large amount of Australia's air freight movement, this drives strong demand for industrial land within close proximity of this facility.

The supply of available zoned industrial land in Melbourne has gradually been moving to the outer suburbs as population densities and the price of land rises in the inner industrial zones. With this trend expected to continue, the importance of the outer Growth Areas to the overall Melbourne industrial market cannot be understated. The growth areas are expected to attract large industrial users of land/industrial space but existing middle and outer areas will also continue to play a key role in the Melbourne industrial market given their location of existing port, road and rail transport infrastructure.

Future supply is heavily concentrated in the South market, especially in the Pakenham Industrial Node. The location of this future supply raises a number of issues that will need to be addressed given that demand has largely been concentrated in the North and Western areas of Hume, Wyndham and Brimbank, along with Greater Dandenong in the South. The manufacturing, transport and storage; and wholesale and retail trade sectors have also been the main sectors contributing to industrial demand. It is worth noting that both Brimbank and Greater Dandenong will have a finite supply of land given they are not designated growth areas.

Conclusion:

Previous strategic decisions have ensured that Melbourne has always had a plentiful, 15-year supply of well-located and serviced zoned industrial land. It has significantly contributed to Melbourne's competitive environment for attracting business and growing economic activity and employment. To ensure that this competitive environment is maintained well into the future, a sufficient supply of well-located zoned industrial land needs to be provided in areas where demand will be greatest going forward.

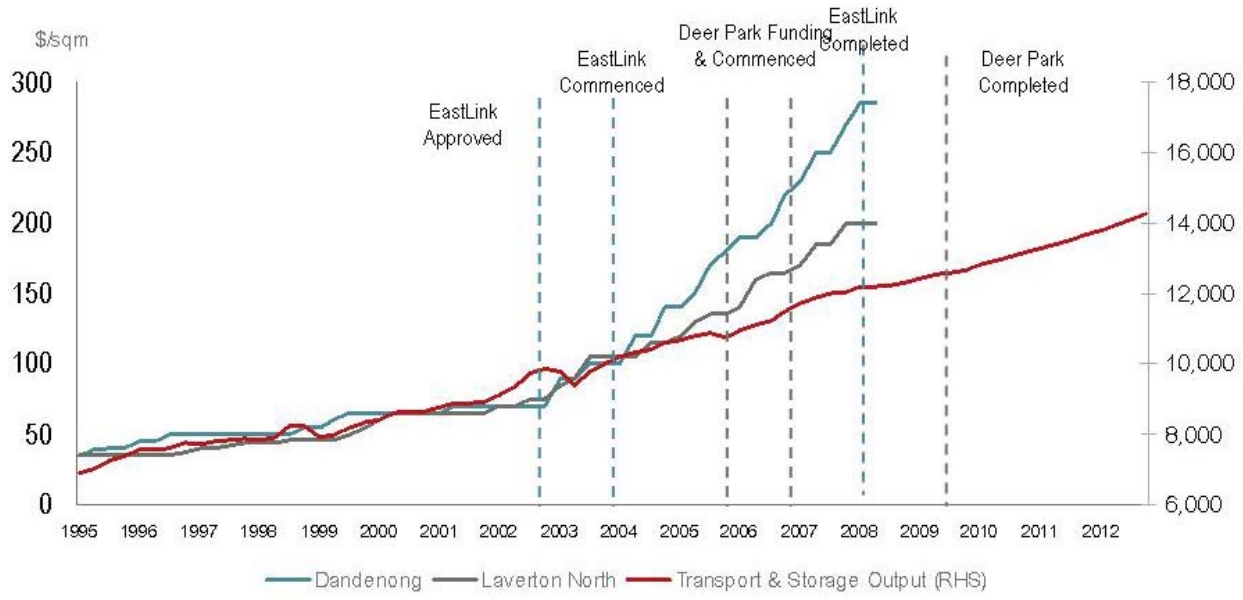
6. Historic Impacts of Infrastructure Development on Industrial Land Take-Up

The infrastructure network across Melbourne is critical for warehousing and manufacturing operations. The Port of Melbourne is Australia's largest containerised freight Port, and the transportation of this freight to and from the Port to the various industrial precincts has a significant impact on Melbourne's industrial sector. As such, the development, upgrading and indeed, even announcement of, major infrastructure projects, especially road projects, has the ability to increase demand in the precinct expected to benefit the most from this project.

A major positive driver of investor and tenant/owner-occupier demand for industrial land has been the announcement of major new transport infrastructure across Melbourne, such as EastLink in the South East and the Deer Park Bypass in the West. Most of these projects have or will service major parcels of greenfield land that were previously inaccessible or difficult to access, thereby opening up large tracts of industrial or future industrial zoned land for development. The corresponding strong increase in demand for englobo[5] land parcels in these precincts has been mirrored with strong price increases.

Figure 6.1.1. Infrastructure impacts on land values (2,000 sqm allotments), 1995 to 2Q08

source: Jones Lang LaSalle Research & Consulting



[5] *Englobo land is considered to be undeveloped land that has the potential for development*.

6.1 Road projects

EastLink had a positive impact on demand in the Dandenong region since it was first announced. The impacts were most significant on those sectors that rely most heavily on transport and the industrial market was expected to experience the greatest benefit from EastLink.

6.1.1 Land Values – uplift

The uplift in land values at each point in the development stage of Eastlink and the Deer Park Bypass can be analysed by our land value data recorded for the Dandenong and Laverton North industrial markets. The below table shows the changes in the raw data at each stage:

Table 6.1.1: Dandenong & Laverton North land value changes - 1998–2008

Source: Jones Lang LaSalle Research & Consulting

	Eastlink - Stage	Dandenong ($/sqm)	% Change	Deer Park Bypass – Stage	Laverton North ($/sqm)	% Change
1998		55	10%		46	5%
1999		65	18%		55	20%
2000		65	0%		65	18%
2001		70	8%		65	0%
2002		70	0%		75	15%
2003	Announcement	100	43%		105	40%
2004		140	40%		115	10%
2005	Commencement	180	29%		135	17%
2006		220	22%	Funded	165	22%
2007		270	23%	Commencement	200	21%
2008	Completion	210	-22%		185	-8%
2009		210	0%	Completion	160	-14%

While the data shows that at the announcement of both major road projects, land values increased (especially in the Dandenong market); at the completion of both road projects there was a drop in land values in both markets. This was a result of both the completion of Eastlink and the Deer Park Bypass coinciding with the downturn in the wider commercial property market caused by the severe curtailing in credit markets.

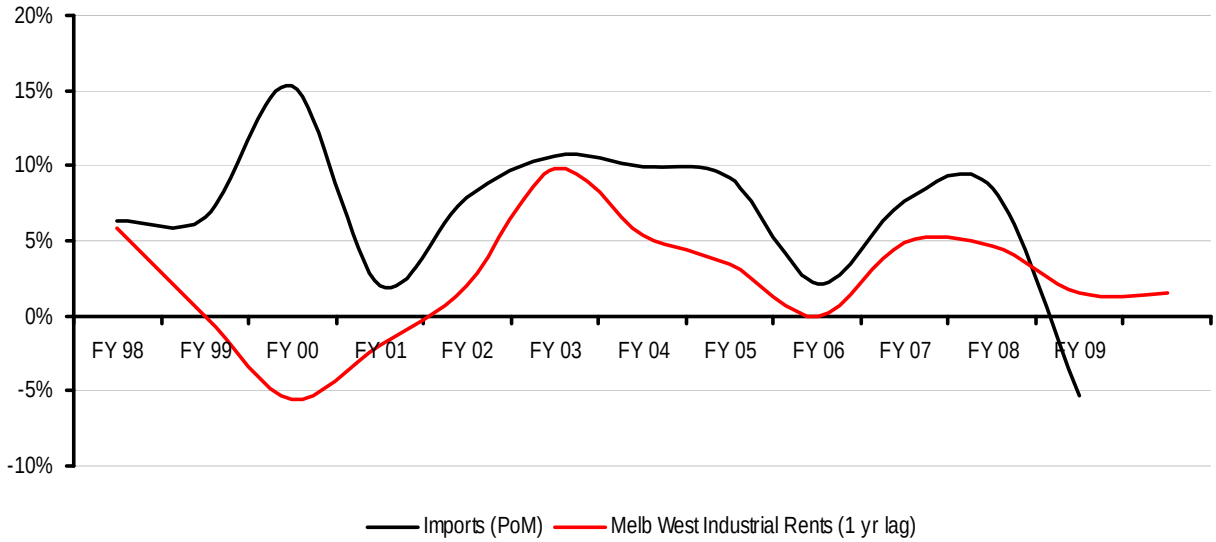
The uplifts witnessed in land values as a result of major road projects will be used in our forecast model scenarios to factor in potential uplift for industrial land take-up in the future. The most notable of these projects will be the 'Westlink' project (or West Gate Bridge alternative), which will link the Western Ring Road to the Dynon Road and Footscray Road at the Port of Melbourne via a tunnel underneath Footscray (assumptions will need to be made as to the likely timing of this project). However, as the above data suggests, economic and employment drivers are still the major indicator in land values going forward, and therefore infrastructure initiatives won't override these impacts.

6.2 Port of Melbourne

Imports through the Port of Melbourne are an important driver of rents in Melbourne, especially in the West industrial market (Brimbank, Wyndham) (Figure 6.2.1). With the advent of more advanced supply chain strategies and an increasing reliance on imports, rather than domestic manufacturing (as discussed in section 4.3), the Port has played a key role in driving demand for local industrial land.

Figure 6.2.1: Change in Port of Melbourne container imports (TEU) vs. change in west industrial rents (existing stock)

source: Jones Lang LaSalle Research & Consulting, Port of Melbourne Corporation

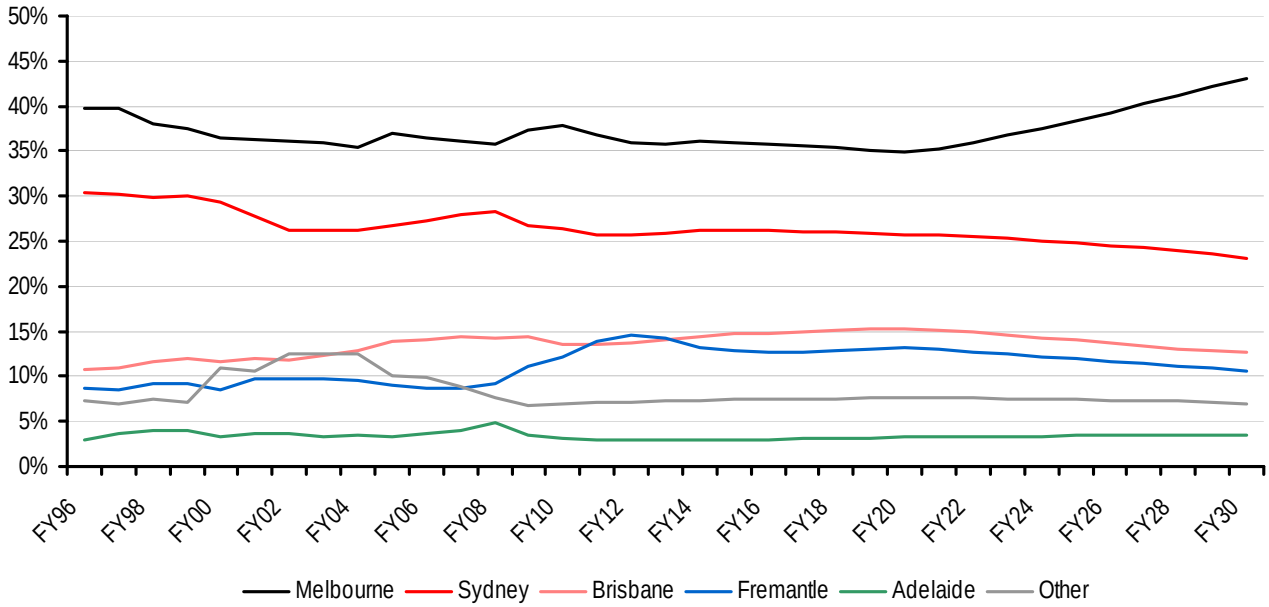


The Port of Melbourne handles 37% of containerised freight in Australia, the largest proportion by some way of any port. Melbourne's importance as a containerised freight destination is set to continue, and indeed strengthen, thanks to already undertaken and planned improvements to the port, including the Channel Dredging project (completed 2009) and the planned international freight terminal at the Port. By 2029/30, the Port of Melbourne is forecast to handle 43% of Australia's containerised freight movements[6]. In terms of TEUs, containerised freight through the Port of Melbourne is set to increase by an average of 76,500 TEUs between FY2010 and FY2020, and 356,000 TEUs between FY2021 and FY2030.

[6] *BITRE*, Australian Marine Activity to 2029–30, Statistical Report, 2010

Figure 6.2.2: Containerised trade forecasts, share of total Australian trade, FY2000–FY2030

Source: BITRE, Jones Lang LaSalle Research & Consulting



The impact of the increase in containerised trade will be considered in our recommendations in terms of the location of this land demand. The West, and to a lesser extent, the North precincts of Melbourne are likely to be the focus of port-related land demand moving forward. The construction of Westlink, should it proceed, will only increase the likelihood of stronger demand in the West precinct in the future.

Table 6.2.1: Forecast growth in containerised trade, Melbourne Ports

Source: BTRE, Jones Lang LaSalle Research & Consulting

	Avg Annual Growth
FY96 – FY08	7.73%
FY08 - FY30	5.04%
FY08 - FY13	1.58%
FY13 - FY30	6.08%

6.3 Rail/Intermodal Terminals

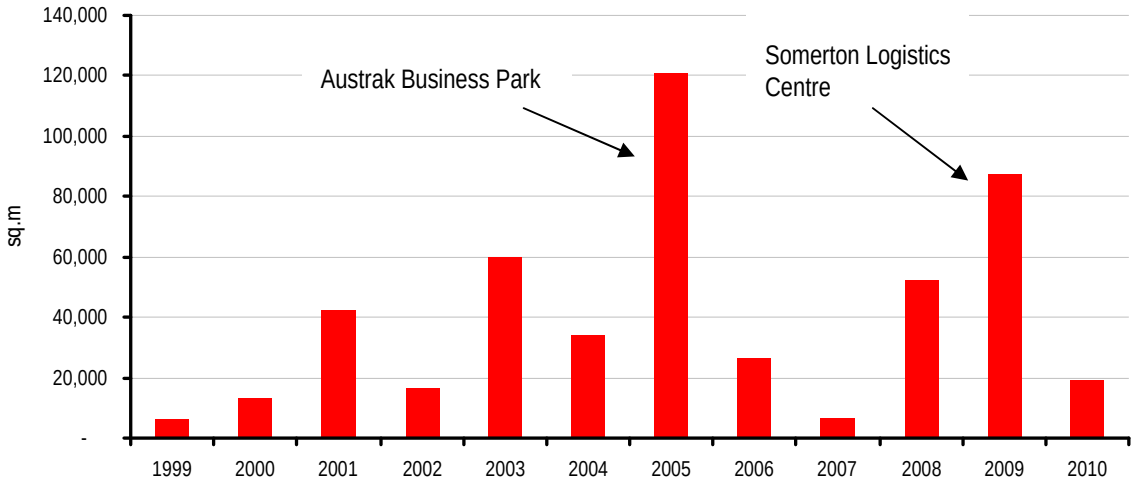
Intermodal terminals currently play a relatively small role in the movement of freight around Melbourne. However, pressures on alternative transport options, particularly roads, and a likely move to more sustainable transportation options, will increase the impact of intermodal terminals on industrial land take-up in the future.

The most recent intermodal terminal to reach completion has been the P & O Terminal in Somerton, which was completed in 2005. Built adjacent to the Somerton Intermodal Terminal was the 120 Ha Austrak Business Park, specifically to house large scale logistics centres that will utilise the P & O Terminal. Tenants that have taken space at Austrak Business Park include Coles Myer, Effem Foods (Masterfoods) and Labelmakers. In 2008, a private developer completed the Somerton Logistics

Centre, and has since leased space to Toll Logistics and ADN/Solve. Figure 6.3.1 shows the increase in take-up in Somerton at the completion of the Somerton Intermodal Terminal and the development of the adjacent logistics centres.

Figure 6.3.1: Somerton industrial take up (gross demand for built space), 1999–2010

Source: Jones Lang LaSalle Research & Consulting



Summary:

While supply-demand principles, as they relate to economic fundamentals, are the main indicator when it comes to land values, infrastructure initiatives such as road infrastructure also have an impact.

It is likely that future infrastructure benefiting the industrial land market will be planned according to Victoria's PFN. Future supply should concentrate in these areas so that anticipated increase in demand in these areas can be met.

Conclusion:

While providing a sufficient quantum of land is critical to attracting and maintaining industry to Melbourne, potential locations should be tested to determine their suitability for industrial purposes, particularly if they have good access to transport infrastructure. There are several common factors used to identify prime industrial land that could form site selection criteria and be used to test suitability.

7. Melbourne's Industrial Demand Requirements

7.1 Methodology

In determining and assessing the viability of our demand model, we have looked at similar industrial land modelling exercises undertaken by other consultants. Details of methodologies utilised in these reports are provided in Appendix – Section 10.1. However, we consider the *Industrial Lands Needs Study*, Syme Marmion & Co (June 2008), commissioned by Landcorp, DPI (WA) to assess 'the likely short, medium and long term supply and demand conditions for general, light and special industrial uses in the Perth and Peel metropolitan regions' as the most appropriate comparable study to our work. The industrial demand forecasting methodology was based on quantifying each of the below metrics and filtering these metrics as follows:

- Perth & Peel Working Age Population
- State Labour Participation Rate
- State Employment Rate
- Perth & Peel Employment Self Sufficiency
- Industrial Estate Employment Share
- Hectares per Employee

The methodology we have identified as the most appropriate to forecast base case industrial land demand in the Study Area broadly follows the same steps as the one derived by Syme Marmion & Co. Our methodology, however, includes some more detailed investigation into employment within the Study Area LGAs, including journey to work flows in and out of the study area. The basic inputs and steps into our base case methodology are identified in the flowchart in Figure 7.1.1 overleaf.

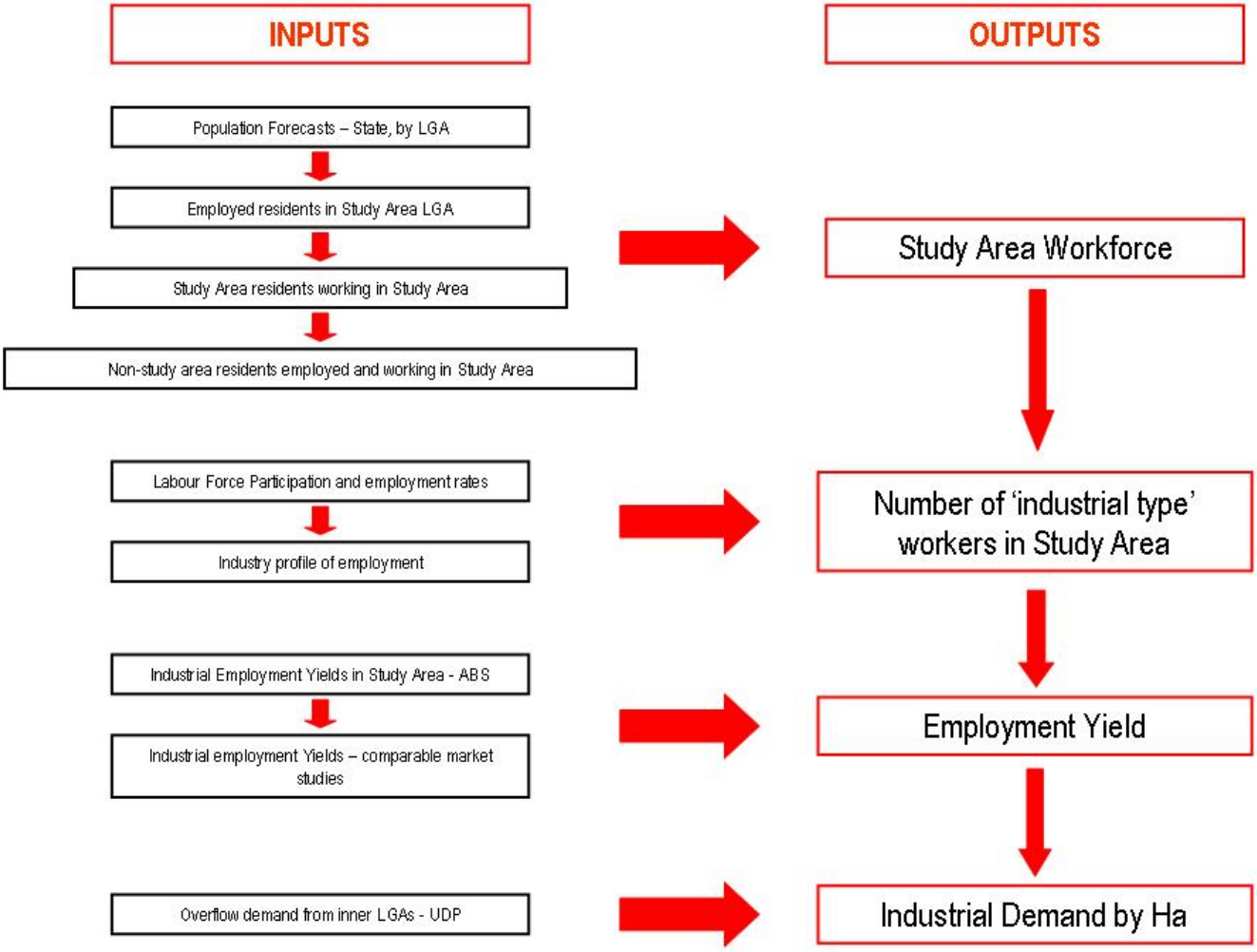
The 25-year population projection period was between the 2006 and 2030 financial years, although we had historical annual population data between 1991 and 2009. We were only able to use relevant Census data on employment rates, industry profile of employment and place of work by usual place of residence data from the 1996, 2001 and 2006 Census periods for our projections. Due to changes in geographic boundaries and industry classifications, data preceding 1996 Census data was unusable.

In most cases demographic data in the model were based on estimated resident population or place of usual residence; however, some time series data were only available by place of enumeration.

To satisfy Clause 12.02 of the SPPF, which requires estimates of 15-year continuous land supply in the growth areas, demand projections had to be prepared between the 2031 and 2045 period. These were essentially average annual projected demand over the 2010–2030 projection period. In order to derive supply projections, these were applied to the base data on land supply, which were sourced from the 2009 UDP. It must be noted that in Cardinia and Hume LGAs, this led to a decline in annual demand figures between FY2031 and FY2032 – detailed data shown in Table 8.1.3 in Section 8.0 (FY2031 was the end period of the demand projections model as it is at the end of a five-year inter-censal period, FY2030 is the projection period in this report).

Figure 7.1.1: Projections methodology flow chart

Source: Jones Lang LaSalle Research & Consulting;



7.2 Source of study area's workforce

The first step in deriving the potential number of workers in the study area was to look at what share of the workforce was resident within the study area, what proportion of the study area's workforce was commuting from elsewhere and where were they coming from. Once historical data was obtained, it would be important to look at projected population growth at these sources over the next 25 years and what implications that would have on the study area LGAs' future workforce.

Historical journey to work data by place of usual residence between 1996 and 2006 were purchased from the ABS. It must be noted that it was only possible to get information on place of usual residence of workers in study area, by all LGAs in Australia from 2001 onwards. In 1996, data were only available for the major urban areas, which were used to form the Journey to Work Study Area in each

State/Territory. This basically means we do not have a complete picture of where the study area workers may have been resident, if not commuting to work from within study area.

Table 7.2.1 highlights the key changes in the study area's employment containment and what areas are the relatively large contributors to its workforce. Analysis of the place of residence of the study area's working population revealed that the largest proportion of its workforce were residents of the area, followed by other areas of metropolitan Melbourne and a small proportion of the area's workforce were residents of regional Victoria. Another key observation was that employment containment had improved in the study area from 59% in 1996 to 62% in 2006 suggesting that population growth within the study area would be very important in projecting future employment and industrial land demand over the next 25 years.

Table 7.2.1: Source of workers in study area, 1996–2006

Source: ABS, Jones Lang LaSalle Research & Consulting

Place of Work	Place of Residence				
	LGAs within study area	LGAs in other areas of metropolitan Melbourne	LGAs in regional Victoria	Interstate / Undefined	Total
No. of workers in the eight study area LGAs					
1996	135,032	83,035	10,130	550	228,747
2001	163,385	93,169	14,241	990	271,785
2006	199,500	103,957	16,558	230	321,174
% of workers in the eight study area LGAs					
1996	59%	36%	4%	0%	100%
2001	60%	34%	5%	0%	100%
2006	62%	32%	5%	*0%*	*100%*

More detailed analyses by LGA showed that Cardinia, Casey and Melton LGAs had relatively high proportions of workers that were residents within the study area LGAs, that is, between 70% and 80% across all three Censuses. Population growth within the study area would therefore be important to these areas (Appendix - section 10.2.2)

Greater Dandenong, Hume and Whittlesea LGAs had a comparatively higher share of workers who were residents in other areas of metropolitan Melbourne, reflecting the fact that these LGAs have more established industrial precincts within them that draw employees from a wider area. Population growth across metropolitan Melbourne would be relevant when projecting future employment and resultant industrial land requirements in these areas.

Finally, Melton and Wyndham LGAs attract a relatively high share of workers from regional VIC compared with the other study area LGAs so population growth across metropolitan Melbourne and regional Victoria would be important in modelling demand for these areas.

Analysis of journey to work data for the study area highlighted that three levels of working age population growth by geography were necessary in the industrial land demand projections model and assumptions would need to be made on how the share of study area workers residents in each of the three regions would change over time, based on the historical trends. The three geographies of population growth that we have analysed are:

- Eight study area LGAs (including six growth area LGAs of Cardinia, Casey, Hume, Melton, Whittlesea and Wyndham LGAs).
- Melbourne Statistical Division (SD), excluding eight study area LGAs.

- Regional Victoria, which covers Victoria but excludes Melbourne SD, the 8 study area LGAs, Gananwarra LGA, Southern Grampians LGA and the Unincorporated LGA. Between the 1996 and 2006 Censuses, there were no workers that had their place of residence in the Gananwarra and Southern Grampians LGAs which is why their historical and forecast population levels would be irrelevant in the model (note: only three worker in the study area were resident in Gananwarra LGA in 1996).

7.3 Population growth

Growth in the study area's future population, in other areas of metropolitan Melbourne, and surrounding regional LGAs that are a large source of workforce for the study area were the main input in the demand projections model.

- Historical estimated resident population data between 1991 and 2009 were sourced from VIC DPCD and ABS, Cat. No. 3218.0. We derived the estimated resident population of working age by applying the percentage share of usual resident population aged 15+ years for each relevant area to each year of the projection period, sourced from five-yearly Census data.
- Forecast data on the rate of growth in estimated resident population over the 2010–2026 time periods were sourced from VIC DPCD's *Victoria in Future, 2008*. As projections for LGAs were not available for 2031, we kept the rate of growth constant between 2026 and 2031. We used DPCD's population projections by age to work out the percentage share of population of working age between 2006 and 2031 and applied this data to the population projections to come up with the working age population in the study area.
- Another issue with using the VIC DPCD population projections was that they were using 2006 Census data as a base rather than more current data available for the 2007 to 2009 period. A comparison on VIC DPCD's population forecast and ABS preliminary data for 2009 revealed that the estimated resident population in the study area was already above that forecast by VIC DPCD (ABS – 1,197,039 / VIC DPCD – 1,193,482). We used the 2009 ABS preliminary data as our base for the population projections and applied the VIC DPCD growth rates between 2010 and 2031.

Metropolitan Melbourne has approximately 4 million residents (as at June 2009), and it recorded an eight-year-high population growth rate of 2.4% over the 2008–09 period. The largest growth in Victoria over this time frame was across the outer suburban fringe areas, or the growth areas. Wyndham LGA in the West experienced the largest growth (+10,800), followed by Casey LGA in the South East (+8,400) and Melton LGA in Melbourne's West (+7,300). Wyndham LGA also recorded the fastest annual growth (+8.1%) during this time frame and other LGAs that saw rapid growth were Melton (7.9%), Cardinia in the South East (6.5%) and Whittlesea (4.7%) in the North[7].

This trend is expected to continue into the future. Aside from Brimbank and Greater Dandenong LGAs, which are relatively well-established areas, all other study area LGAs are expected to record population growth well above that across metropolitan Melbourne over the next two decades. Cardinia, Melton and Wyndham are expected to see average annual population growth rates of 7.0% or higher between 2006 and 2031; while Casey, Hume and Whittlesea are expected to see growth of between 3.0% and 4.5% per annum. The collective population growth in the study area LGAs is projected to be double that of metropolitan Melbourne at 3.6% versus 1.7% (see Appendix – Table 10.2.5). On the other hand, the more established areas of Melbourne will generally only grow at 1.0% per annum. Metropolitan

[7] ABS, Regional Population Growth, Australia, 2008-09, Cat. No. 3218.0

Melbourne's share of population resident in the study area LGAs is expected to increase from 23% in 1991 to 38% by 2031.

Other areas in metropolitan Melbourne and regional Victoria are not expected to see this level of population growth. As discussed in the previous section, over one-third of the study area's workforce resides in other parts of metropolitan Melbourne. These areas are expected to see average annual population growth of 1.0% per annum, in comparison to 1.7% across Melbourne SD and 3.6% per annum in the study area LGAs between 2006 and 2031 (see Table 10.2.5).

Regional Victoria has contributed up to 4–5% of the workforce in the study area between 1996 and 2006 and has seen minimal population growth over this period, well below metropolitan Melbourne and the overall study area. This trend is expected to continue going forward with the region expected to see average annual population growth of 1.3% per annum, which is below the growth expected in the study area but higher that other more established parts of metropolitan Melbourne (see Table 10.2.6).

Shifts in the key components of population change reveal that overseas migration and natural increase have been two major contributors to population growth across metropolitan Melbourne in the past decade and will continue to drive growth in the next 25 years[8] (see Table 10.2.7).

- Overseas migration to Australia and Victoria is projected to remain high, significantly impacting on Melbourne, which has traditionally attracted 92% of the State's overseas migrants.
- Natural increase (births minus deaths) has risen over the last seven years due to a 'baby bounce', after three decades of decrease. As more of the population reaches the high mortality age groups, the number of deaths in Melbourne is expected to rise. However, births will continue to strongly outnumber deaths for many decades.
- Although internal migration from within Australia is a small contributor to population growth, it is important in the outer growth areas as they attract young families (adults in their 30s and early 40s plus their children) from other parts of Melbourne, Victoria and interstate. In general, as suburbs become more established, net internal migration gains drop off, and this is likely to occur going forward.

The working age population (15+ years) is particularly relevant in projecting employment growth and resulting demand for industrial land (see Table 10.2.8). This population cohort includes Melbourne's ageing population, which is behind the gradual decline in the study area's population growth rate between 2006 and 2031. This ageing trend is projected to continue, but at a higher rate as the baby boomers enter old age. But ageing in Melbourne is not expected to be a geographically even process as the growth area LGAs are especially attractive to young families with children. Strong growth is expected for every age group in these areas[9].

7.4 Labour force participation and employment rates

The third step in the model was to identify what share of the resident population of working age were employed in the study area and other areas that were contributing to the study area's workforce.

Historical data on employment rates were sourced from the ABS 1996, 2001 and 2006 Census time series profiles for the respective areas (Table 7.4.1) shows that labour force participation rates in the study area and across metropolitan Melbourne have gradually fallen between 1991 and 2006. Despite this, some of the Growth Area LGAs, such as Cardinia, Casey, Melton and Wyndham, had relatively

[8] VIC Department of Planning & Community Development (DPCD), Victoria In Future 2008.

[9] ABS, Regional Population Growth Australia, Cat. No. 3218.0.

high participation rates of 66%. Employment rates have generally remained unchanged between 1991 and 2006, aside from a consistent increase in Cardinia LGA over this time frame. As with labour force participation rates, employment rates were comparatively high in Cardinia, Casey, Melton and Wyndham LGAs.

Table 7.4.1: Change in labour force participation rate, FY1991–FY2006

Source: ABS, Jones Lang LaSalle Research & Consulting

Note: Data Census time series data based on place of enumeration not place of usual residence

LGA	Working age population in the labour force				% of total population in the labour force			
	FY91	FY96	FY01	FY06	FY91	FY96	FY01	FY06
Brimbank	64,065	67,279	73,643	74,544	63%	59%	58%	56%
Cardinia	17,966	19,617	22,276	27,999	66%	66%	66%	66%
Casey	56,029	70,537	86,541	105,508	70%	68%	67%	66%
Greater Dandenong	63,819	57,393	53,991	52,804	64%	57%	54%	52%
Hume	3,030	53,686	58,968	65,788	67%	63%	61%	59%
Melton	16,756	18,710	25,966	39,089	68%	67%	68%	66%
Whittlesea	46,001	48,784	53,767	58,360	67%	63%	61%	60%
Wyndham	30,577	35,899	41,752	56,141	70%	67%	66%	66%
Study Area Total	*298,243*	*371,905*	*416,904*	*480,233*	*66%*	*63%*	*62%*	*61%*
Melbourne SD	1,501,209	1,531,262	1,653,195	1,772,638	63%	62%	62%	61%

Table 7.4.2: Change in employment rate, FY1991–FY2006

Source: ABS, Jones Lang LaSalle Research & Consulting

Note: Data Census time series data based on place of enumeration not place of usual residence

LGA	Working age population employed				% of total population employed			
	FY91	FY96	FY01	FY06	FY91	FY96	FY01	FY06
Brimbank	53,566	57,905	65,549	67,882	52%	51%	52%	51%
Cardinia	16,224	18,237	21,198	26,806	60%	62%	63%	64%
Casey	49,787	65,142	81,269	99,808	62%	63%	63%	62%
Greater Dandenong	52,311	49,095	47,905	47,804	52%	49%	48%	47%
Hume	2,757	47,659	53,990	61,128	61%	56%	56%	55%
Melton	14,953	16,884	24,048	36,760	61%	60%	63%	62%
Whittlesea	39,922	43,814	49,686	54,935	58%	57%	57%	57%
Wyndham	27,638	32,921	39,062	53,067	63%	62%	62%	63%
Study Area Total	*257,158*	*331,657*	*382,707*	*448,190*	*57%*	*56%*	*57%*	*57%*
Melbourne SD	1,320,996	1,391,637	1,544,301	1,677,707	56%	56%	58%	58%

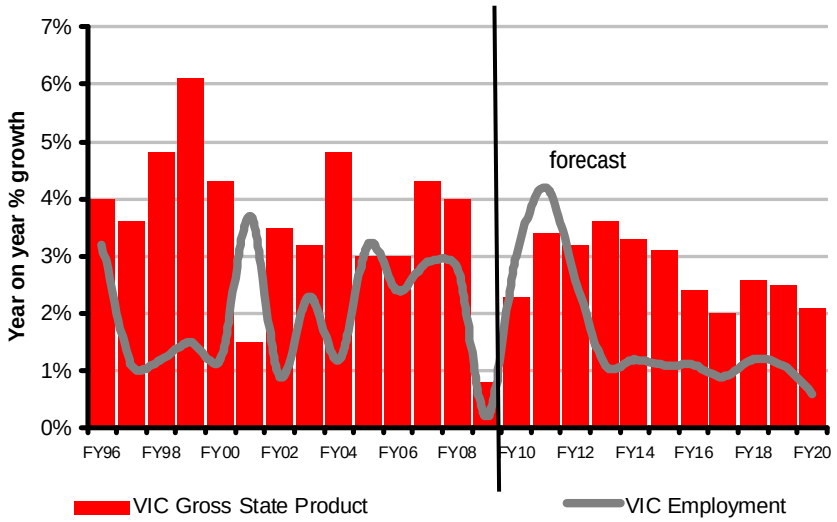
Assumptions were made in the model as to how employment rates would change for each level of geography, based on historical changes in employment rates and forecast changes in employment levels for Victoria (data sourced from Access Economics, Business Outlook, March quarter 2010), see Tables 10.2.12 and 10.2.13). These forecast employment rates were applied to the working age population projections for the study area and other areas that were contributing to the study area's workforce.

It was assumed that employment rates would largely remain unchanged over the projection period; however, we have factored in a slight increase between FY06–FY11 in line with the more buoyant

economic conditions and a slight decline in the FY11–FY16 period when the Victorian economy and employment growth is forecast to soften. These assumptions have been applied across all geographies, that is the study area and other areas that are a source of workers for the study area.

Figure 7.4.1: Economic growth and employment, Victoria

Source: Jones Lang LaSalle Research & Consulting; Access Economics



The following assumptions were made regarding changes in the employment profile and source of workers in the study area from the three geographies over the projection period:

- In the study area LGAs, we assumed an increase in the employment rate between FY06 and FY11 due to expected improvement in economic conditions (54% to 55%), a slight decline between FY11 and FY16 in line with a forecast softening in the economy (55% to 54%) and a gradual decline in the employment rate between FY16 and FY21 due to the expected dispersal of jobs from the more established study area to other newly developing areas in Melbourne over the longer term. The rate was kept constant at 53% between FY21 and FY31.
    - Overall, self containment across all eight study area LGAs is expected to gradually pick up over the projection period as the area becomes more established and retains population within its workforce: 44% in FY06 to 46% in FY31.
- In other areas of metropolitan Melbourne, we kept the employment rate constant at 59% between FY06 and FY11 despite an improvement in economic conditions (assuming most of the growth in jobs would occur in growth areas of the Melbourne SD). As with the study area, a slight decline in rate of employment was factored in between FY11 and FY16 due to the forecast softening in economy (59% to 58%) and a gradual decline in the employment rate between FY16 and FY21 due to the dispersal of jobs from the more established areas of Melbourne to the study area and other newly developing areas over the longer term. The rate was kept constant at 57% between FY21 and FY31.
    - The share of workers commuting to the study area from other parts of metropolitan Melbourne is expected to decline slightly over time as the study area LGAs' employment base becomes more established and is able to retain its resident population: 32% in FY06 to 31% in FY31.

- In regional Victoria, we kept the employment rate constant at 53% between FY06 and FY11 despite an improvement in economic conditions (assuming most of the growth in jobs would occur in growth areas of the Melbourne SD). As with the study area, a slight decline in rate of employment was factored in between FY11 and FY16 due to the forecast softening in economy (53% to 52%) and a gradual decline in the employment rate between FY16 and FY21 due to the dispersal of jobs from the more established areas of Melbourne to the study area and other newly developing areas over the longer term. The rate was kept constant at 51% between FY21 and FY31.
    - The share of workers commuting to the study area regional Victoria is expected to increase slightly over time as the study area LGAs' employment base becomes more established and draws on its own resident population and surrounding regional LGAs: from 5% in FY06 to 7% in FY31.

7.5 Industry profile of employment

The analysis of Jones Lang LaSalle's proprietary data on industrial take-up trends in Melbourne (Section 5.2.1) revealed that three industry sectors were the main source of demand for industrial property across the city and specifically the study area LGAs – manufacturing, wholesale trade, and the transport and storage sectors. Historical working aged population data by industry of employment for 1996, 2001 and 2006 were sourced from the ABS Census time series profiles for each study area LGA. It must be noted that these data were based on place of enumeration.

The percentage share of the workforce in sectors that typically occupy industrial property across metropolitan Melbourne has gradually declined from 27% in 1996, 26% in 2001 to 23% in 2006. Despite having a relatively high share of 'industrial type' employment, the study area has also seen its share decline 43% in 1996, 41% in 2001 and 39% in 2006 (Table 7.5.1). However, there are areas where the share has either remained unchanged or risen such as Greater Dandenong LGA in the South East and Melton and Wyndham in the West. These areas would have benefited from the strong population growth over the past decade, within the LGAs but also in the broader South East and West regions.

Brimbank, Greater Dandenong, Hume and Wyndham have the relatively higher share of employment in 'industrial type' sectors, which is consistent with the relatively large proportion of total industrial land consumption historically in these LGAs (highlighted by UDP data, discussed in Section 5.2). These LGAs also have a comparatively high share of future supply of developable industrial zoned land, which can help service potential future demand.

The study area has a relatively small share of workforce employed in sectors that typically occupy office property compared with employment across 'industrial type' sectors. Three of the LGAs that witnessed a decline in employment across 'industrial type' sectors between 1996 and 2006 also saw an increase in employment across sectors that typically occupy office property – Brimbank, Cardinia and Hume LGAs. These LGAs are likely to see a pick-up in 'higher order' employment or jobs in industries that typically occupy office property over the projection period. This may be because industrial uses slowly get phased out in these areas in favour of higher and better uses or, within the eight study area LGAs, certain LGAs have a greater share of employment across the typical industrial sectors, while others have a larger proportion of employment across the sectors that typically occupy office property (see Tables 10.2.14 – 10.2.19).

Table 7.5.1: Change in workforce in study area LGAs by industry of employment, FY1996–FY2006

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

LGA	Industries typically occupying industrial property (% of total employment in LGA)			Industries typically occupying office property (% of total employment in LGA)		
	FY96	FY01	FY06	FY96	FY01	FY06
Brimbank	41%	38%	38%	10%	11%	13%
Cardinia	26%	22%	22%	9%	10%	11%
Casey	22%	23%	21%	12%	12%	11%
Greater Dandenong	47%	48%	48%	13%	14%	13%
Hume	60%	56%	54%	8%	9%	11%
Melton	14%	18%	20%	14%	13%	13%
Whittlesea	44%	38%	33%	8%	8%	9%
Wyndham	33%	36%	37%	18%	14%	14%
Study Area Total	43%	41%	39%	11%	12%	12%

The share of employment across these industry sectors was applied to the total number of workers in the study area to come up with employment levels by industry sector. In the base case scenario, we made the following assumptions over the projection period:

- A continued decline in the share of employment in the manufacturing sector (23% in 2006 to 17% in 2030);
- An increase in employment in the transport and storage sector (8.5% in 2006 to 13% in 2030);
- The share of employment in the wholesale trade sector would remain unchanged at 8%;
- The proportion of employment across the three sectors reduces slightly over the timeframe, from 39 % in FY2006 to 38% in FY2030. However, this is unlikely to be the case across all the eight LGAs in the study area with some likely to experience a decline in this share while others witness a higher proportion of employment in these industries going forward, both having implications for industrial land demand. Further breakdowns of demand by study area LGA will be provided in our recommendations, with these employment trends and forecasts by LGA considered.

These assumptions are in line with historical trends and forecast changes in the share of output and employment in these sectors compared to all sectors nationally (see Figure 7.5.1). Table 7.5.2 shows these assumptions and projected changes in the level and percentage of employment by industry sector across the study area:

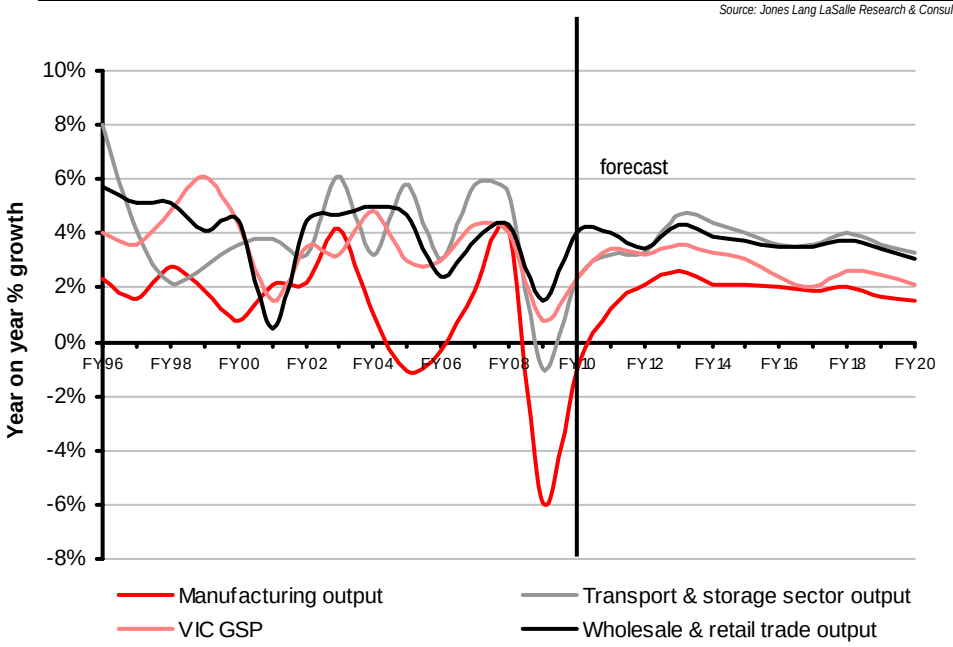
Table 7.5.2: Deriving industrial land demand in study area LGAs, 2006–2031

Source: ABS, Jones Lang LaSalle Research & Consulting

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31
Total number of workers in study area	228,197	270,795	319,873	381,342	420,911	467,697	520,583	569,950
% of total workers in the study area employed in sectors that typically occupy industrial property:								
Manufacturing	28%	26%	23%	22%	20%	19%	18%	17%
Wholesale Trade	8%	8%	8%	8%	8%	8%	8%	8%
Transport & Storage	7%	7%	9%	9%	10%	11%	13%	13%
Total	43%	41%	39%	39%	39%	38%	38%	38%
No. of workers in the study area employed in sectors that typically occupy industrial property:								
Manufacturing	63,413	71,521	73,588	82,269	85,361	88,943	92,824	95,053
Wholesale Trade	17,784	21,105	25,437	29,987	32,837	36,239	40,076	43,572
Transport & Storage	16,038	18,660	27,221	36,054	44,013	53,523	64,809	76,772
Total	97,235	111,286	126,246	148,310	162,211	178,706	197,709	215,397

Figure 7.5.1: Output by industrial sector, Australia

Source: Jones Lang LaSalle Research & Consulting; Access Economics



7.6 Employment yield

In order to translate this to demand, we applied sector specific employment yields to employment levels in each industry sector.

Table 7.6.3 shows the employment yield applied across the three industries based on the ratio of jobs in these sectors and occupied industrial zoned land. The job per hectare ratio in the study area is in line with ratios used in other similar industrial land demand studies in Australia and overseas (Table 7.6.2).

Industrial employment yields have gradually declined between 1996 and 2006 (Table 7.6.1). This can be explained by the increased demand for industrial space by the transport and storage sector; technological improvements in warehousing and distribution that have driven efficiency and reduced overheads. Nationally, within this sector, there has been a trend towards companies occupying large warehouses with high clearances that allow stacking, as discussed in Section 4.3 – Technological and Commercial Impacts on Industrial Land Use.

Table 7.6.1: Industrial employment yield in study area LGAs

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

	1996	2001	2006
Occupied industrial zoned land (Ha)	4,922	6,093	7,250
Jobs across industries typically occupying industrial property	98,765	111,286	126,246
Employment Yield (jobs per Ha)	20	18	17

Table 7.6.2: Industrial employment yield in other industrial market studies

Source: Jones Lang LaSalle Research & Consulting

	Manufacturing	Wholesale Trade	Transport & Storage
SGS Economics & Planning, Industrial Audit of Provincial Victoria - Outline of Trends & Issues, for VIC DSE & VIC DIIRD, May 2007 Table 11	25 - 167	14	14
MacroPlan Australia Pty Ltd, Cranbourne West Urban Growth Plan - Employment Land Sizing, prepared for City of Casey (VIC), updated report, Jan 2009			Industrial Uses - 15
MacroPlan Australia Pty Ltd, Cardinia Road Employment Precinct, Stage 1 Opportunities and Constraints Paper and Stage 2 Assessment, 2007			Heavy industrial uses - 18
Hobsons Bay Industrial Land Management Strategy, June 2008			20
Ratio Consultants Pty Ltd / NIEIR / CB Richard Ellis / CSIRO Transport Futures, Western Region Employment & Industrial Development Strategy, July 2007			19
Macroplan Australia Pty Ltd, Retail Review & Industrial Lands Strategy, prepared for Livingstone Council (QLD), December 2007			Industrial Uses - 20
GeoLink, Coffs Harbour City Council Local Growth Management Strategy - Industrial Lands Component, 2006	71	23	23
Syme Marmion & Co, Industrial Land Needs Study for VIC DPI / Landcorp, August 2008, p. 20 (2001 figure)			All Industrial Estates – 12

Table 7.6.3: Employment yields, jobs per hectare, study area LGAs, FY1996–FY2031

Source: ABS, Jones Lang LaSalle Research & Consulting

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31
Employment yield	20	18	17	17	16	16	16	16
Manufacturing	20	20	19	19	18	18	18	18
Wholesale Trade	18	18	17	17	16	16	16	16
Transport & Storage	16	16	15	15	14	14	14	14
Industrial Land Demand (Ha per annum)	166	172	259	-	-	-	-	-

7.7 Demand Forecasts – Base Case and Econometric modelling outputs

Finally, utilising the methodology and assumptions described in this section, our base case model forecasts total demand of 4,729 Ha in the study area between the years 2010/11 and 2029/30. This equates to average annual demand of 236 Ha over the same time period.

Further to this base case assessment, econometric modelling techniques have been applied to the forecasting of the underlying demand for industrial land in the study area. As with all statistical modelling procedures, the outcomes should be viewed with caution and subject to the test of reasonableness.

Data is only available for the years: 1996, 2001, 2004 and 2005–2009. Subject to this limitation, alternative specifications have been examined. The model that has the best statistical properties (R-squared = 0.938), as well as appealing to prior expectations, is an adaptive adjustment model where:

Land take-up = function (growth in number of workers, growth in Gross State Product).

Forecasts from this model for the period 2010/11 to 2029/30 accord reasonably closely with the results of the spreadsheet based process based on assumptions regarding the ratio of industrial land demand to number of workers (Figure 7.7.1). The correspondence of the two approaches provides some degree of comfort as to the general accuracy of the forecasting process. The econometric modelling technique forecasts total land demand in the study area between 2010/11 and 2029/30 of 4,206 Ha.

The proposed model also allows us to perform sensitivity analysis around alternative population and GSP growth rates (Section 7.8).

Table 7.7.1 breaks down the base case and econometric demand forecasts into five-year cohorts (from financial year 2010/11). More detailed yearly forecasts can be found in Table 10.2.20 in Section 10.2.

Table 7.7.1: Forecast annual average demand, study area, by five-year cohort (Ha)

source: Jones Lang LaSalle Research & Consulting

	2010/11 – 2014/15	2015/16 – 2019/20	2020/21 – 2024/25	2025/26 – 2029/30	2010/11 – 2029/30
Base Case	208	226	258	254	236
Econometric	246	208	165	162	210

Figure 7.7.1: Forecast annual land demand, study area, FY 2011–FY 2030

source: Jones Lang LaSalle Research & Consulting

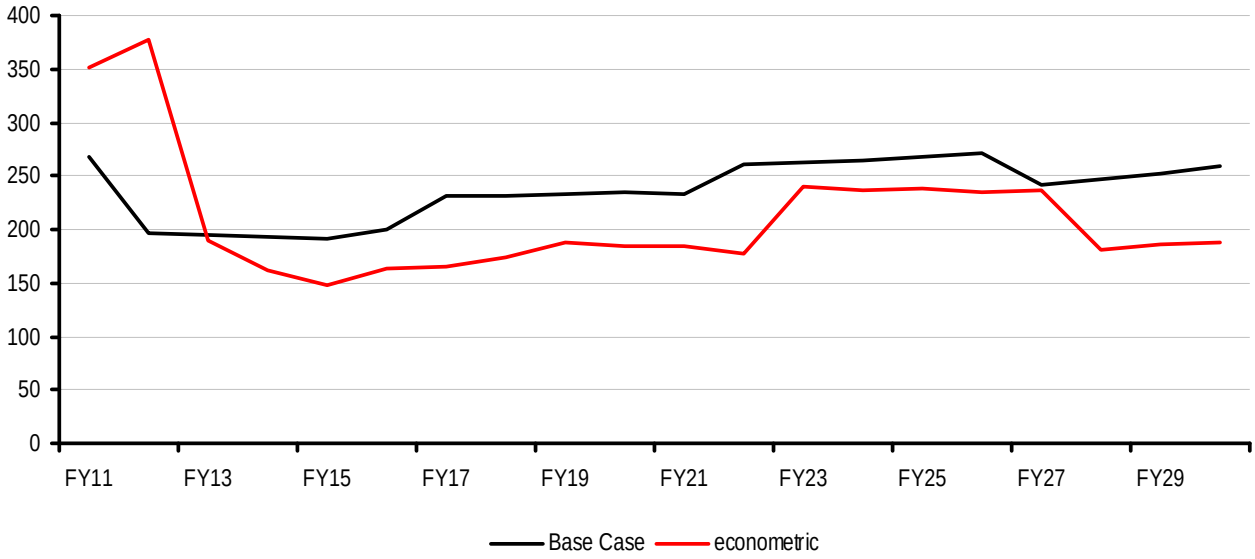
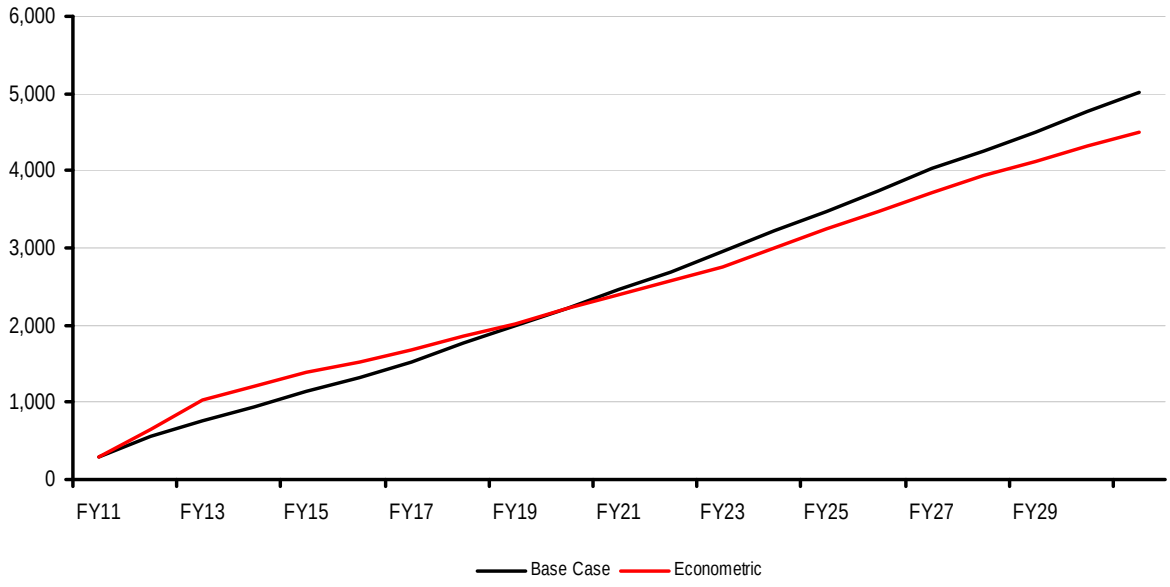


Figure 7.7.2: Forecast cumulative land demand, study area, FY 2011–FY 2030

Source: Jones Lang LaSalle Research & Consulting



7.8 Scenario and sensitivity analysis

As our demand forecasts rely on population growth rates provided by the DPCD, it is vital that we test what the consequences will be if the resulting employment growth rates are higher or lower than what these forecasts suggest. Therefore, a high and low case scenario has been identified for the demand forecasts.

Our scenario development has been built around employment growth as this is the input that is deemed to be most susceptible to population growth and economic shocks and changes. Our analysis shows that a 0.5% reduction in employment growth across each LGA over the projection period will reduce demand by an average of 62 Ha per annum. Conversely, a 0.5% increase in employment growth across each LGA over the projection period will increase demand by an average of 71 Ha per annum.

Table 7.8.1: Land Demand Scenarios, forecast average annual demand, by five-year cohort (Ha)

source: Jones Lang LaSalle Research & Consulting

	FY 2011 – FY 2015	FY 2016 – FY 2020	FY 2021 – FY 2025	FY 2026 – FY 2030	FY 2011 – FY 2030
Base Case	208	226	258	254	236
Low Case	161	169	189	177	174
High Case	258	289	336	346	307

Our land demand model has also been tested against other inputs to analyse sensitivities to various changes in these inputs. The sensitivities tested were:

1. Population Growth – 0.5% change in study area LGAs
2. Employment Containment Rate – 5% change in employment containment rate in study area.
3. Employment Yield – 10% change for each land use yield

The results of the sensitivity are outlined in Table 7.8.2.

Table 7.8.2: Sensitivity Analysis of parameters, FY2011–FY2030

Source: Jones Lang LaSalle Research & Consulting

Parameter	Cumulative change in land demand (Ha)	Annual average change in land demand
1. Population growth rate	531	26
2. Employment containment rate	455	22
3. Employment yield	478	24

7.9 Supply projections

This section sets out the following steps involved in preparing the supply forecasts, which utilised zoned and unzoned industrial land supply data contained within the 2009 UDP as a base:

- Preparing LGA level net industrial zoned and unzoned industrial supply base data;
- Converting the above data to gross levels so they match up with the 'net' land demand projections; and
- Some caveats in relation to preparing industrial supply projections.

7.9.1 LGA level net supply base data

In order to compare the net demand projections against future supply in each LGA, we used 2009 UDP data on level of future zoned and unzoned net land supply. The 2009 UDP provides the following explanation for net developable industrial land supply (p. 170):

'For all industrial land, each individual parcel is recorded with its size (hectare) and zoning. This enables an assessment of the overall or gross supply of land either unavailable as supply (occupied) or available as supply (vacant or proposed major industrial area). Subsequently, a further assessment is conducted to determine a net measure of supply ('developable area').

Using a net measure of industrial land supply provides a more accurate basis for determining adequacy, as it measures the likely area available for development after accounting for local roads, open space, infrastructure requirements and environmental considerations. This varies from locality to locality, depending on site and regional-specific issues.'

We derived LGA level net supply projections by using data on the proportion of land in each growth area LGA by node contained within the 2008 UDP, as this data was not available from the more recent 2009 UDP (shown in Table 7.9.1). This was applied to data on level of future zoned and unzoned land supply from the 2009 UDP to come up with our base data for FY2010. Annual demand projections were then deducted to come up with annual data on future zoned and unzoned supply.

Table 7.9.1: Estimated stock of net developable industrial land by LGA, 2009

Source: VIC DPCD, Jones Lang LaSalle Research & Consulting

Region / Node / LGA	Zoned (Ha)	Unzoned (Ha)
Airport Industrial Node	*210*	0
Brimbank	38	0
Hume	172	0
North Industrial Node	*850*	*810*
Hume	621	442
Whittlesea	229	368
NORTH REGION	1,060	810
Cardinia	230	1,280
Casey	189	92
Greater Dandenong	531	128
South Industrial Node	*720*	*220*
SOUTH REGION	950	1,500
Brimbank	308	0
Hobsons Bay	285	0
Melton	128	250

Region / Node / LGA	Zoned (Ha)	Unzoned (Ha)
Wyndham	260	590
WEST REGION	980	840
ALL INDUSTRIAL NODES	2,990	3,150

7.9.2 Conversion of LGA level net supply data to gross levels

It is important to consider that the demand projections identify the 'net' hectares of land expected to be required. In identifying future land that is required to accommodate this demand, it will be necessary to consider the 'gross' hectares of land required to meet the net demand identified. The level of net supply that can be obtained from industrial land varies greatly from land parcel to land parcel. Of particular importance in the understanding of the 'net gain' that can be generated from a gross parcel of land is the Victorian Native Vegetation Management Framework (the Framework) as it highlights the need to assess and protect biodiversity in all land transactions in metropolitan Melbourne. The Framework has implications on the overall supply of land for development, as the development of land parcels affected by the Framework may be restricted or prevented all together.

It is difficult to determine the exact impact of the Framework on the Melbourne industrial market. Some areas may have little or no issues, while others can have a significant proportion of the land affected by the Framework. However, from recent land transactions experience, Jones Lang LaSalle has seen that anywhere between 10% and 50% of a given land parcel can be affected by the framework.

Further to the considerations that need to be given to the Framework, zoned (or future zoned) industrial land will also be consumed by infrastructure needs, such as road reservations.

Overall, it is essential to consider the net gain that can be derived from a given area of industrial land when assessing the supply-demand balance for the Melbourne Industrial market.

We converted the supply projections to a gross level by using the gross to net supply ratios contained within the 2008 UDP and applying them to future industrial land supply by LGA as at 2009 (level of supply shown in Table 7.9.1, ratios in Table 7.9.2). The ratios were separately applied to data on level of future zoned and unzoned land supply from the 2009 UDP to come up with our base data for FY2010. Data from the 2008 UDP suggests that between 60% and 70% of zoned/unzoned land across all industrial nodes is developable in net terms. Such variability in net-to-gross conversion rates makes it a challenge to come up with precise gross supply projections, and this must be borne in mind when interpreting the data.

Table 7.9.2: Gross to net ratio of industrial land stock, 2008

Source: VIC DPCD, Jones Lang LaSalle Research & Consulting

Region / Node / LGA	Zoned (Ha) – Gross area as % of net	Unzoned (Ha) – Gross area as % of net
Brimbank	173%	
Cardinia	118%	151%
Casey	121%	123%
Greater Dandenong	146%	176%
Hume	136%	175%
Melton	120%	140%
Whittlesea	123%	165%
Wyndham	222%	166%
All Industrial Nodes	147%	158%

7.9.3 Caveats

The following are some caveats in relation to the derivation of future zoned and unzoned industrial land stock levels for the eight study area LGAs and six growth area LGAs during the projection period:

- The 2009 UDP data was used as a base. Any additions to zoned supply from unzoned land stock levels since the completion of the UDP were ignored. We have noted some major additions in the recommendations. Furthermore, the projections do not take into account any potential future additions to zoned and unzoned land stock levels over the FY2010–FY2045 projection period;
- Converting net supply data to gross levels is a problematic exercise because the net-to-gross ratio varies greatly from parcel to parcel and area to area. As this study is a high level analysis of future demand in relation to supply, we have adopted 2008 UDP ratios in order to come up with gross supply levels. These ratios were assumed to have remain unchanged since the completion of the 2008 UDP and assumed to stay static going forward, which may not realistically be the case;
- When deriving projections for each LGA over the FY2010–FY2045 period, unzoned land supply was only assumed to come on-stream when zoned land stock levels were depleted. In reality, unzoned land supply may be gradually added to zoned stock levels over the projection period, expanding the available time frame of zoned land supply but having the reverse impact on unzoned land stock levels. In a year where there is insufficient zoned land supply in relation to demand, we added additional unzoned land supply assuming that supply would meet projected demand;
- We made assumptions around overflow demand. A minimal amount of overflow demand from LGAs with more established industrial areas into the eight study area LGAs was taken into account, along with overflow demand between the eight study areas LGAs during the projection period;
- Over time, industrial land in well-established industrial areas and growth areas of Melbourne will be lost to higher and better uses, such as commercial office, retail and residential. The supply projections do not take into account the impact this will have on industrial supply levels in the eight study areas as we have assumed that the UGB cannot be expanded indefinitely to accommodate future industrial uses, and there will need to be a fine balance between multiple land uses in established and within the growth areas over the next two decades (FY2010–FY2030);
- Following on from the above point, this study only focuses on the impact of demand projections on new land supply levels when in reality some of the future demand is likely to be soaked up by the middle to outer existing industrial areas (which are new or relatively new industrial precincts at present but will become more mature industrial markets over time);
- Finally, the supply projections need to be updated on a continual basis as data contained within the 2009 UDP are updated.

Summary:

The following are the key steps in the derivation of annual and 15-year rolling demand projections over the FY10 and FY2030 period:

1. Analyse the workforce profile of the eight study area LGAs and identify their main place of residence, by utilising ABS Journey to Work data from the 1996, 2001 and 2006 Censuses. Analysis revealed that their place of residence fell into three key groups: within the study area LGAs; outside the study area but within metropolitan Melbourne; and regional Victoria.

2. Collate historical population data and forecasts for the eight study area LGAs and the other two broad geographic areas that were the key source of workers for the study area LGAs (ie. other LGAs in metropolitan Melbourne and regional Victoria). Data were sourced from ABS and VIC DPCD.

3. Analysis of historical changes in labour force participation, employment rates in the eight study area LGAs and other above two broad geographic areas, and make assumptions on trends going forward during the study period. Historical changes in employment containment in the study areas were also included in the model along with forecast assumptions.

4. Once the total number of future workers was identified in each LGA, the industry profile of the workforce was determined using the above-mentioned historical journey to work data by industry category, and assumptions were made on the profile going forward. Our analysis focused on three key industries that are the main contributors to industrial land demand – manufacturing, transport and storage, and wholesale trade.

5. Finally the three industry specific employment yields were applied to the forecast number of workers in each sector to derive the projected land demand.

8. Industrial Demand Requirements by LGA

Our recommendations for this report include land demand projections by LGA between FY2010 and FY2030.

To satisfy Clause 12.02 of the SPPF, which requires estimates of 15-year continuous land supply in the growth areas, demand projections had to be prepared between the 2031 and 2045 periods. These were essentially average annual projected demand over the 2010–2030 projection period. In order to derive supply projections, these were applied to the base data on land supply, which were sourced from the 2009 UDP.

In determining land demand by LGA, we started by disaggregating the base model discussed in the previous section, with demand a function of industrial employment growth in each LGA. However, at this more 'micro' level, there are numerous other factors that will impact where demand for industrial land will be located in the future. In order to identify these factors, a matrix has been developed to rank each LGA by the following factors;

- Distance from Port of Melbourne – as the port is identified as a major driver of demand for the Melbourne industrial market, it is likely that those Growth Area LGAs that are located within close proximity to the Port will attract a larger proportion of this demand. This trend was identified in section 6.2, which showed a correlation between growth in container imports and land values in the West industrial market. However, some markets, such as Port Melbourne, while being close to the Port, will attract less industrial demand, as land values in this area price many out of the market. This is one example of demand drivers need to be balanced and considered in context against one another;
- Principal Freight Network (PFN) – the PFN will necessarily impact demand as infrastructure plays a key role in driving demand for industrial land. The key infrastructure impacts on demand that form part of the PFN are:
    - Rail/Intermodal terminals
    - Road network

  Current road, rail and intermodal infrastructure in each LGA have been rated as part of the LGA Demand Matrix.
- Distance to major markets – the distance to major residential markets is also an important factor for industrial demand, as the final goods being manufactured, warehoused, stored or transported will eventually end up in various retail locations across Melbourne. It is preferable, therefore, for industrial zones to be easily accessible to these major markets, especially Growth Area markets;
- Competing Land uses – over time, industrial areas with limited land availability and are located in popular residential zones, or areas experiencing gentrification, will face increasing pressure from residential, retail and office uses. These competing uses will always yield a higher return than industrial, and therefore, industrial occupiers tend to be pushed out over a period of time. Whilst the LGAs of the study area are in Growth Areas and have relatively large amounts of residential and industrial supply (compared to the rest of Melbourne), this situation is expected to change over time for some LGAs. As competing uses move in to an area, demand for industrial land is expected to decrease as land values rise.

Each LGA has been rated in Table 8.1 according to the above criteria, on a scale of 1–5 (1 being 'poor' and 5 being 'excellent').

Table 8.1: Demand Matrix by LGA

Source: Jones Lang LaSalle Research & Consulting

	Brimbank	Cardinia	Casey	Greater Dandenong	Hume	Melton	Whittlesea	Wyndham
Distance from Port of Melbourne	5	1	1	2	4	3	3	5
Rail / Intermodal	1	0	0	0	2	0	1	0
Road access	3	2	2	4	4	3	4	4
Distance to major markets	5	3	3	4	5	2	5	5
Competing Land Uses	2	4	4	3	3	4	3	4
TOTAL	16	10	10	13	18	12	16	18

Based on our ranking system, Hume and Wyndham LGAs have the highest demand score of 18, followed by Brimbank and Whittlesea (16). Greater Dandenong is the fifth ranked LGA, predominately due to its distance from the Port. Melton, Cardinia and Casey are the three lowest-ranked LGAs. These LGAs are some distance away from the Port and major markets, and are not on the PFN (with the exception of a small portion of Melton); hence, they are expected to attract the least amount of non-population related demand based on the above criteria.

8.1 Forecast industrial land demand by LGA

Following our ranking exercise, we have made numerous additional assumptions for each LGA, which are based on the LGAs' ranking, their supply outlook, as well as additional demand that is expected to be sourced from surrounding inner LGAs that are running short of industrial land.

An overview and list of assumptions for each LGA is provided below.

Detailed tables showing the break up of annual demand, 15-year rolling demand; and net/gross supply disaggregated by zoned/unzoned status over the FY2010–FY2030 period are shown in Tables 8.1.1 – 8.1.5. These tables also show the detailed data beyond the FY2030 projection cut off date that had to be derived for the purposes of calculation 15-year rolling demand projections, which were needed to assess the 15-year rolling supply in net and gross terms as required under the State Planning Policy Framework (SPPF).

8.1.1 Hume LGA (North Region)

Demand Ranking: equal 1st

Overview

- Relatively close to the Port of Melbourne, which is easily accessible by road (via CityLink / Tullamarine Freeway / Western Ring Road / Hume Hwy / Craigieburn Bypass);
- Has an intermodal terminal in operation at Somerton (operated by P & O) and has seen demand from the transport and storage sector in and surrounding Austrak Business Park. Looking forward, intermodal terminal is planned for Donnybrook;
- North is a major residential growth area, especially around Craigieburn and Wallan (with the extension of the UGB), therefore close to major markets and also on the main Melbourne-Sydney transport corridor;

- Areas closer to Broadmeadows, especially land zoned Business 3, will face competing pressures from office/high-tech industrial uses. This impact will increase as Broadmeadows CAD is developed. Industrial zones around Donnybrook, Somerton and Campbellfield, however, will face little competitive land usage pressures.

Demand

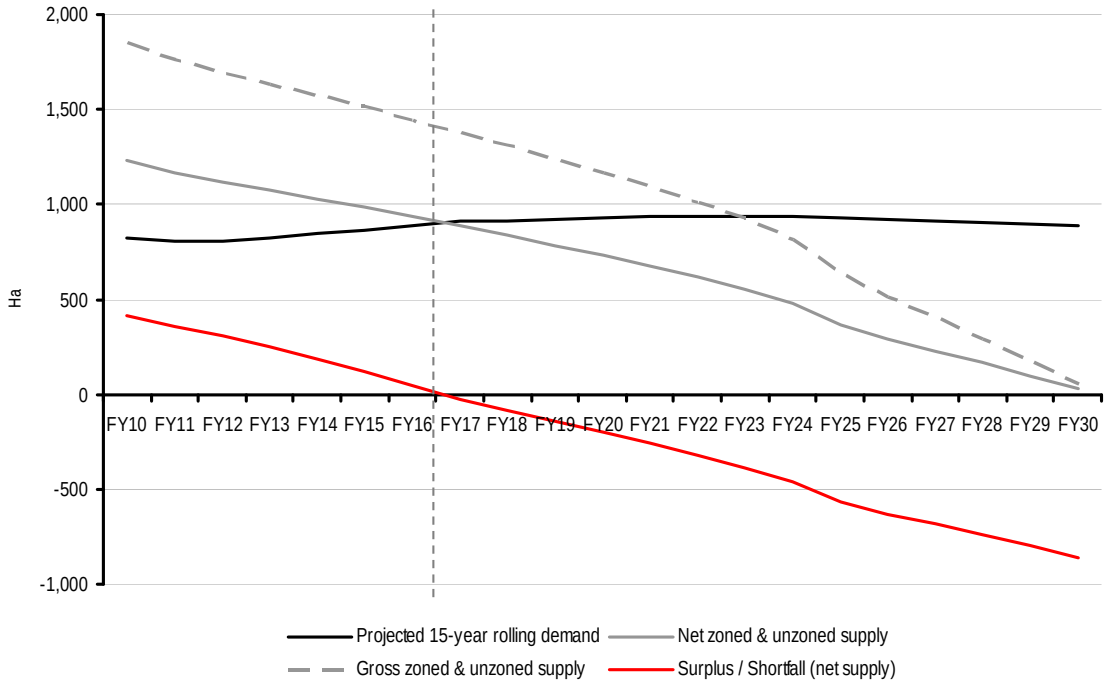
- Highest annual average demand projected over the projection period (57 Ha per annum);
- Forecast population growth to 2030 is 2.8% per annum, compared to 2.6% per annum between FY2001 and FY2009;
- Assumptions were made around the forecast employment rate in this LGA, along with other areas in metro Melbourne and regional Victoria that contribute to this LGA's workforce. These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow-on effect on all the growth area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in GSP during this period. The employment rate was assumed to decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY2016 onwards;
- Hume LGA has the second-highest employment containment rate in the study area (61%). Model assumes this increases to 63% by 2030;
- Assume more employment-generating industries will take up land in this LGA from FY2016 as there are large areas of Business 3, Airport Business Park and Comprehensive Development zoned land. Therefore, employment containment rates were held constant from FY2016 onwards;
- Not expected to see overflow demand from surrounding LGAs as inner northern industrial markets (Banyule, Darebin, Moreland) have sufficient industrial land supply going forward (based on historical consumption rates).

Supply

- Contains a relatively high 29% of total net zoned supply in the study area (793 Ha) and 14% of total unzoned supply (442 Ha);
- A substantial portion of the vacant zoned supply can be attributed to the Merrifield and Folkestone sites – both re-zoned in 2008;
- A substantial portion of the unzoned supply can be attributed to the Mickleham Employment Area. The Precinct Structure Plan for this area is currently at the pre-planning stage;
- Based on projected land demand, net zoned land supply is expected to be consumed by FY2024, while there is sufficient unzoned land for the projection period;
- Figure 8.1.1 shows 15-year rolling demand against projected total net supply, total gross supply and a surplus/shortfall of demand against net supply of land in Hume LGA. When looking at net supply against projected demand, a land shortfall is expected from FY2017 onwards.

Figure 8.1.1: 15-year rolling demand versus supply, Hume LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.1.2 Wyndham LGA (West Region)

Demand Ranking: equal 1st

Overview

- Close to Port of Melbourne, with good road links via Western Ring Road / Deer Park Bypass. Intermodal terminal planned for the West as part of the TFN;
- Strong population growth, and will be closer to major markets as West is the focus of population growth in Melbourne;
- Expected to benefit from increase in container freight movements, due to proximity to Port, excellent road access via the Deer Park Bypass, and relative affordability of land. There is also a strong correlation between container import growth in the west and land value growth.

Demand

- Second-highest annual average take up over the projection period (51 Ha);
- Third-highest population growth out of the eight study area LGAs. However, the growth rate is relatively low over the projection period (5.0%) compared with 6.5% between FY2001 and FY2009;
- The LGA will also benefit from strong population growth in neighbouring Melton LGA (5.3% per annum growth between FY2010 – FY2030);

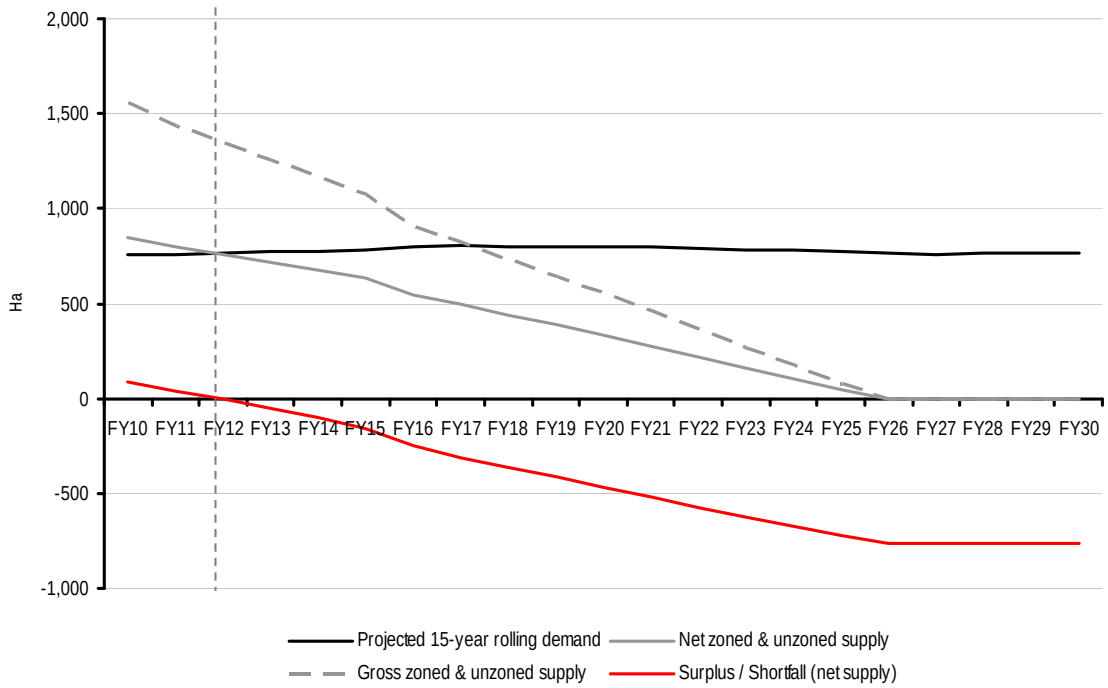
- Assumptions were made around the forecast employment rate in this LGA, along with other areas in metropolitan Melbourne and regional Victoria that contribute to this LGA's workforce. These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow on effect on all the growth area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in Gross State Product during this period. The employment rate was assumed to decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY2016 onwards;
- Wyndham has the highest employment containment out of the two Growth Area LGAs in the West (46%). We assume this increases to 48% by 2030;
- Sub-sector employment yields reduced in FY2006 and FY2016, based on the assumption that the historical decline in employment yields will continue. Locations such as Laverton North and Truganina will continue to attract the transport and storage industry that typically occupy large properties with few employees, with distance to Port, excellent road access and increase in container freight driving this trend;
- Overflow demand from Hobsons Bay and Maribyrnong LGAs has been assumed to begin in FY2010 as historical average annual take-up in surrounding these LGAs drops slightly and a portion of annual take-up shifts to the Western growth area LGAs. It is assumed an additional 1 Ha of land demand from Hobsons Bay and Maribyrnong will be met by Wyndham every year (between FY2010 and FY2015) and this will pick up to 4 Ha per annum from there on as it has relatively large future industrial land stocks in relation to Brimbank and Melton LGAs in the West. An additional 1 Ha of land demand from the Fringe Region is assumed throughout the projection period.

Supply

- Based on projected land demand, zoned land supply is expected to be consumed by FY2015, and unzoned land by FY2026;
- Wyndham has just under 10% of total zoned study area supply (260 Ha) and 19% of total unzoned supply (590 Ha);
- It must be noted that this study has relied on 2009 UDP data as a base for future supply projections. Since the release of the 2009 UDP, a substantial portion of the 590 Ha of unzoned future supply is now zoned for industrial purposes following the decision by the Minister for Planning to approve the Truganina Employment Area Precinct Structure Plan in December 2009. Another contributor to the future unzoned supply is the Robinsons Road Employment Area, which has been progressed substantially through the planning scheme amendment process and is now awaiting a decision by the Minister for Planning. These new additions to zoned supply would not be reflected in the model results.
- Figure 8.1.2 shows 15-year rolling demand against projected total net supply, total gross supply and a surplus/shortfall of demand against net supply of land in Wyndham LGA. When looking at net supply against projected demand, a land shortfall is expected from FY2012 onwards. This LGA is expected to start seeing industrial land supply shortages at a relatively early stage during the FY2010–FY2030 projection period.

Figure 8.1.2: 15-year rolling demand versus supply, Wyndham LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.1.3 Brimbank LGA (West Region)

Demand Ranking: equal 2nd

Overview

- Although Brimbank LGA is not one of the growth area LGAs, it has a substantial proportion of zoned land stock and is likely to meet short to medium term demand.
- It is the closest LGA to the Port of Melbourne. Intermodal terminal located at Altona North (private). Intermodal terminal planned for somewhere in the West as part of the PFN.
- Close to major markets, especially the growing outer western suburbs region.
- Had second-lowest population growth rate of the eight study area LGAs between 2001 and 2009, yet the third-highest annual average take up rate over this period. This is due to the strong location advantages over other LGAs.
- No future zoned supply, but still relatively large amounts of land to be consumed on estates in Brooklyn and Derrimut.

Demand

- Projected average annual take-up rate of 19 Ha per annum is third lowest out of the eight study area LGAs, primarily due to forecast low population growth.
- Aside from Greater Dandenong, it is the only LGA to see a decline in demand for land going forward, in average annual terms.

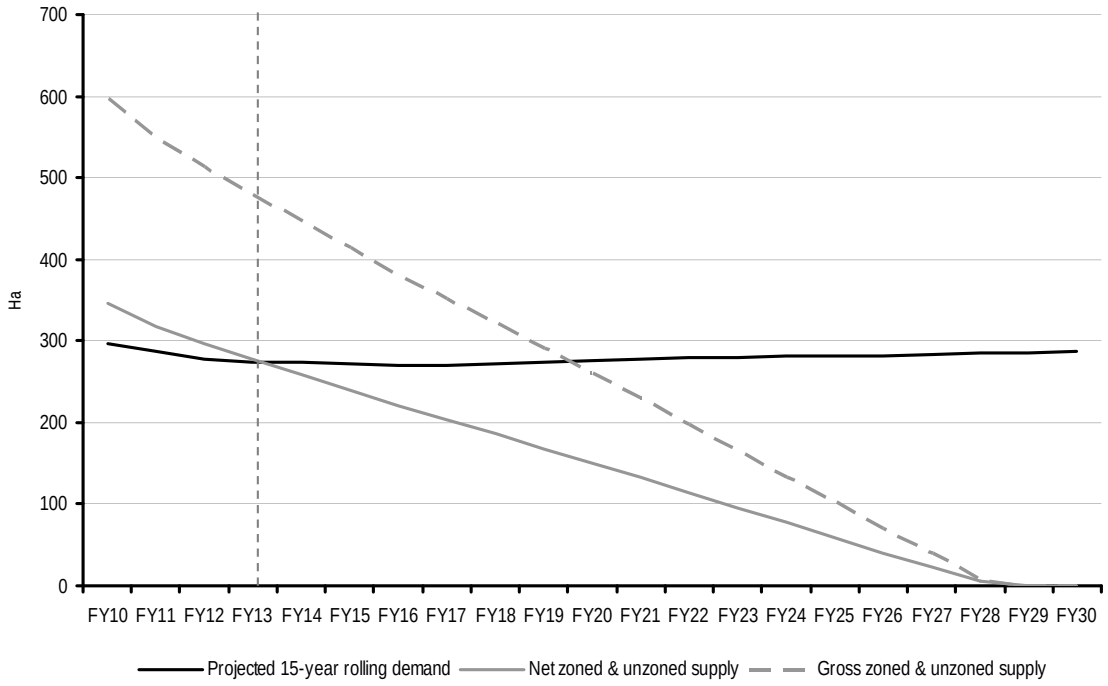
- Brimbank's projected population growth is the lowest of all the eight study area LGAs (avg 0.5% per annum), which is even lower than the average growth rate between FY2001 and FY2009 of 1.3% per annum
- Will benefit from strong population growth in Melton.
- We made assumptions around the forecast employment rate in this LGA, along with other areas in metropolitan Melbourne and regional Victoria that contribute to this LGA's workforce. These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow on effect on all the study area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in Gross State Product during this period. The employment rate was assumed to decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY2016 onwards.
- Employment containment jumped from 35% in FY1996, to 44% in FY2006. Despite a lower population growth rate, we have assumed a larger increase in the rate of employment containment in Brimbank LGA due to its superior access to transport infrastructure and large supply of zoned industrial land ready for development (13% of all zoned land across eight LGAs). The employment containment rate is projected to increase from 44% in FY2006 to 50% by FY2031.
- The three industry sub-sector employment yields were reduced in FY2006 and again in FY2016, with the assumption that the historical decline in employment containment rates would continue.
- Overflow demand from Hobsons Bay and Maribyrnong LGAs has been assumed to begin in FY2010, as historical average annual take-up in surrounding these LGAs drops slightly and a portion of annual take-up shifts to the Western growth area LGAs. Brimbank LGA is expected to see a larger portion of overflow demand in FY2015 compared with Melton and Wyndham LGAs as it has a comparatively large amount of zoned land supply (4 Ha per annum between FY2010 and FY2015). From FY2016 onwards, Brimbank LGA stops seeing any overflow demand, which is assumed to spill over to Melton and Wyndham LGAs. An additional 1 Ha of land demand from the Fringe Region is assumed throughout the projection period.

Supply

- Brimbank LGA is expected to run out of its zoned land stock in FY2028.
- Brimbank has 13% of total zoned land supply in the study area, or 345 Ha. There is no unzoned land supply in Brimbank. Almost 90% of lots in Brimbank are under 0.5 Ha, and this will affect this LGAs ability to meet demand from larger occupiers.
- Given that Brimbank is not a growth area, there will be few, if any, opportunities to replenish this supply.
- Figure 8.1.3 shows 15-year rolling demand against projected total net and total gross supply in Brimbank LGA. Even though this LGA is not part of the growth area, we estimated 15-year rolling demand to highlight the potential land supply shortages that could occur outside of the Growth Areas, which may have to absorb some of this demand in addition to projected demand within each of the Growth Area LGAs.

Figure 8.1.3: 15-year rolling demand versus supply, Brimbank LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.1.4 Whittlesea LGA (North Region)

Demand Ranking: equal 2nd

Overview

- Good access to Port of Melbourne from areas of Whittlesea that are identified as future industrial zones (Cooper St/Somerton Rd), via the Craigieburn Bypass. Close to Somerton Intermodal terminal.
- Will face pressure from competing land uses, as almost half of identified industrial supply in Whittlesea is zoned for comprehensive development (CDZ).

Demand

- Annual average take up in Whittlesea is projected to be 20 Ha per annum over the projection period, or the second lowest of the eight study area LGAs.
- The area's population is growing at a strong rate of 4.2% p.a. between FY2010 and FY2020, but drops to an average rate of 1.8% between FY2020 and FY2030.
- We made assumptions around the forecast employment rate in this LGA, along with other areas in metropolitan Melbourne and regional Victoria that contribute to this LGA's workforce. These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow-on effect on all the study area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in Gross State Product during this period. The employment rate was assumed to

decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY2016 onwards.

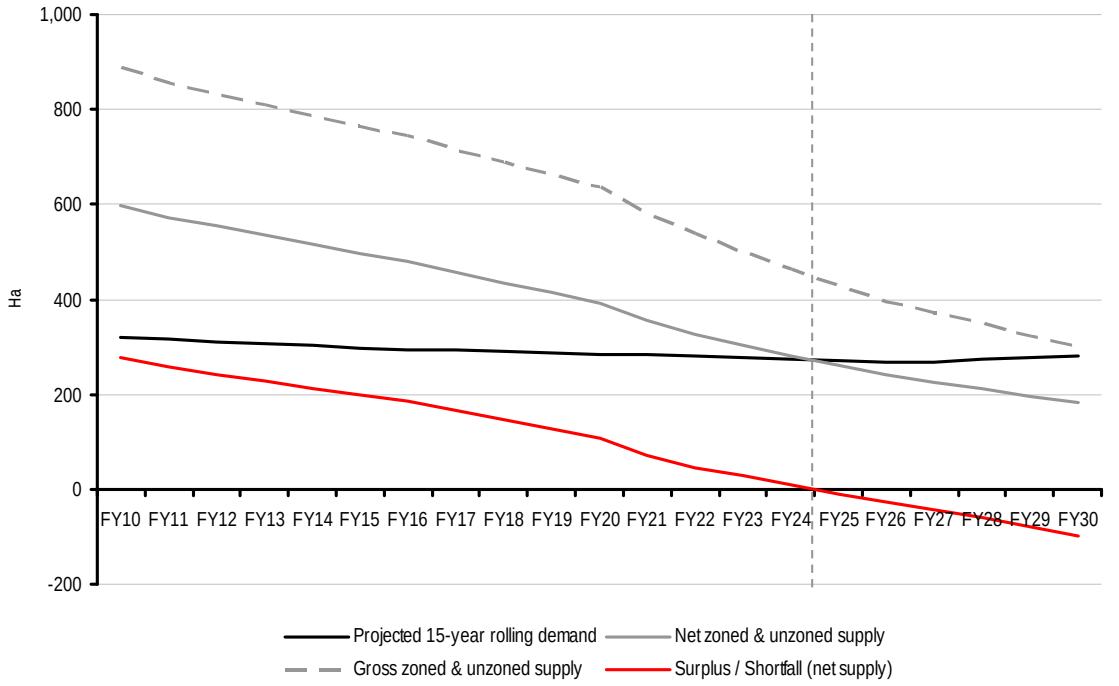
- Whittlesea has a low containment rate of 33% (FY2006). We assume this rises to 35% by 2031.
- The three industry sub-sector employment yields have been reduced in FY2006 but have been kept constant from FY2016 onwards (rather than dropping them further), with the assumption that more employment-generating industries would take up industrial land in this LGA. This is given the large amount of vacant developable land in the CDZ.
- As with Hume LGA, Whittlesea LGA is not expected see overflow demand from other surrounding LGAs in the Northern Region as these LGAs have sufficient stock of zoned land supply to satisfy projected demand.

Supply

- Based on the projected industrial demand, Whittlesea LGA has sufficient zoned and unzoned land supply to satisfy demand over the next 15 years and the entire projection period. Zoned land supply is expected to be consumed by 2021. However, a large share of future land supply lies is located in the CDZ (e.g. Cooper Street, Epping Town Centre), which will not be able to accommodate traditional industrial uses.
- The Special Use Zone 4 land at Cooper Street is also another substantial contributor to future supply which is shown as a proposed major industrial area in the UDP 2009. The planning for this land is at a preliminary stage with Council.
- Whittlesea LGA contains just 8% of total zoned land supply across the study area LGAs, or 229 Ha. In addition, it contains 12% of unzoned land supply, or 368 Ha.
- Of the total current supply of industrial land in Whittlesea, 45% is zoned for comprehensive development.
- Figure 8.1.4 shows 15-year rolling demand against projected total net supply, total gross supply and a surplus/shortfall of demand against net supply of land in Whittlesea LGA. When looking at net supply against projected demand, a land shortfall is only expected from FY2025 onwards. As with Melton LGA, this LGA is only expected to see industrial land supply shortages at the tail end of the FY2010–FY2030 projection period.

Figure 8.1.4: 15-year rolling demand versus supply, Whittlesea LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.1.5 Greater Dandenong LGA (South Region)

Demand Ranking: 3rd

Overview

- Although Greater Dandenong LGA is not one of the growth area LGAs, it has a substantial proportion of zoned land stock and is likely to meet short to medium term demand;
- Not particularly close to Port of Melbourne, but is still a major destination for container freight. Access is via CityLink / Monash Freeway / Eastlink. Long history as industrial centre of Melbourne;
- There is no intermodal terminal, although Salta Group is planning an intermodal terminal on their land in Lyndhurst. An intermodal terminal is also planned as part of the PFN;
- Close to major south east residential growth markets. Will face competitive pressures from higher order industrial uses and office development. Especially as land in Clayton, Mulgrave etc. is consumed, and as Dandenong CAD is developed into a major commercial centre.

Demand

- Greater Dandenong LGA has the third-highest average annual take-up rate of 35 Ha per annum over the projection period. Higher take-up is assumed in the second half of the projection period (i.e. 2020–2030), which is explained by the slight pick-up in forecast population growth rate over this time (linked to ageing population);

- It has a relatively low forecast annual average rate of population growth (1.1% per annum), as it is a well-established area compared with the other study area LGAs, with a strong manufacturing base sector. This growth rate is roughly the same rate that has been recorded over FY2001–FY2009;
- Despite forecast population growth being at low levels, this LGA will continue to attract industrial occupiers due to its good road linkages to the Port and access to the surrounding residential growth areas, particularly in Cardinia LGA;
- We made assumptions around the forecast employment rate in this LGA, along with other areas in metropolitan Melbourne and regional Victoria that contribute to this LGA's workforce. These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow on effect on all the study area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in Gross State Product during this period. The employment rate was assumed to decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY2016 onwards;
- Greater Dandenong LGA's employment containment in FY2006 was 80%, the highest of all study area LGAs, and a substantial increase from 68% in FY1996. We assume containment will increase to 82% by 2031;
- The three industry sub-sector employment yields were reduced in FY2006 but kept constant from FY2016 onwards (rather than reducing them), with the assumption that more employment generating industries would take-up up industrial land in this LGA. That is, it will continue to have a dominant manufacturing sector base, which has relatively high employment yields compared with the wholesale trade and transport and storage sectors;
- Overflow demand from surrounding Bayside, Kingston and Frankston LGAs has been assumed to begin in FY2010, as historical average annual take-up in these LGAs drops slightly and a portion of annual take-up shifts to the Southern growth area LGAs. Greater Dandenong LGA is expected to see a larger portion of overflow demand out to FY2015 compared with Cardinia and Casey LGAs as it has a comparatively large amount of zoned land supply (8 Ha per annum between FY2010 and FY2015). From FY2016 onwards, the overflow demand drops down to 3 Ha per annum, as Cardinia LGA is likely to see a larger share given its solid unzoned land supply pipeline.

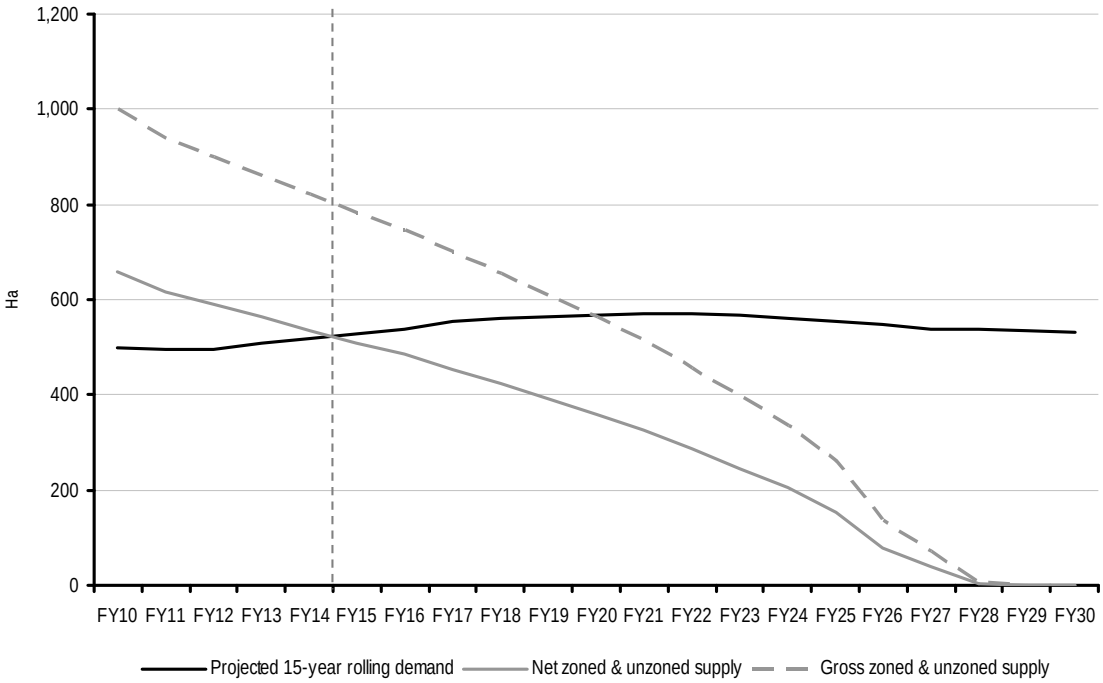
Supply

- Greater Dandenong LGA has a sizeable 20% of zoned land supply (531 Ha) but just 4% of unzoned land supply in net terms (or 128 Ha);
- Based on projected industrial land demand, zoned land is expected to be consumed by 2025 and zoned and unzoned land supply is expected to run out in FY2029 as it faces competitive pressures from higher order industrial uses and office development over the long term;
- Greater Dandenong LGA is not one of the growth area LGAs but has a substantial proportion of zoned land stock and is likely to meet short to medium term demand. However, it has a relatively small proportion of unzoned land supply and there will be few, if any, opportunities to replenish future land supply over the long term.
- Figure 8.1.5 shows 15-year rolling demand against projected total net and total gross supply in Greater Dandenong LGA. Even though this LGA and Brimbank LGA are not part of the growth area, we estimated 15-year rolling demand to highlight the potential land supply shortages that

could occur outside of the Growth Areas, which may have to absorb some of this demand in addition to projected demand within each of the Growth Area LGAs.

Figure 8.1.5: 15-year rolling demand versus supply, Greater Dandenong LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.1.6 Melton LGA (West Region)

Demand Ranking: 4th

Overview

- Some distance from Port of Melbourne, and major markets, as Melton itself is still semi-rural. Major markets will move closer as areas of the west are developed in to residential land. Parts of Melton, however, are in the West industrial node, which is part of the PFN.
- Will have limited competitive use issues. If any, they would come from pressure from developers/council to zone land residential instead of industrial/employment.

Demand

- The projected annual average rate of take up over the projection period is 13 Ha per annum, higher than the historical take-up rate of 6 Ha per annum recorded between 1995 and 2009.
- The LGA had the second highest forecast population growth rate out of all the six growth area LGAs, at an annual average rate of 5.3% over the projection period (FY2010-FY2030). Despite the high projected increase in population, it is a reduction from the 8.3% per annum growth recorded between FY2001 and FY2009.
- We made assumptions around the forecast employment rate in this LGA, along with other areas in metropolitan Melbourne and regional Victoria that contribute to this LGA's workforce.

These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow-on effect on all the study area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in Gross State Product during this period. The employment rate was assumed to decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY 2016 onwards.

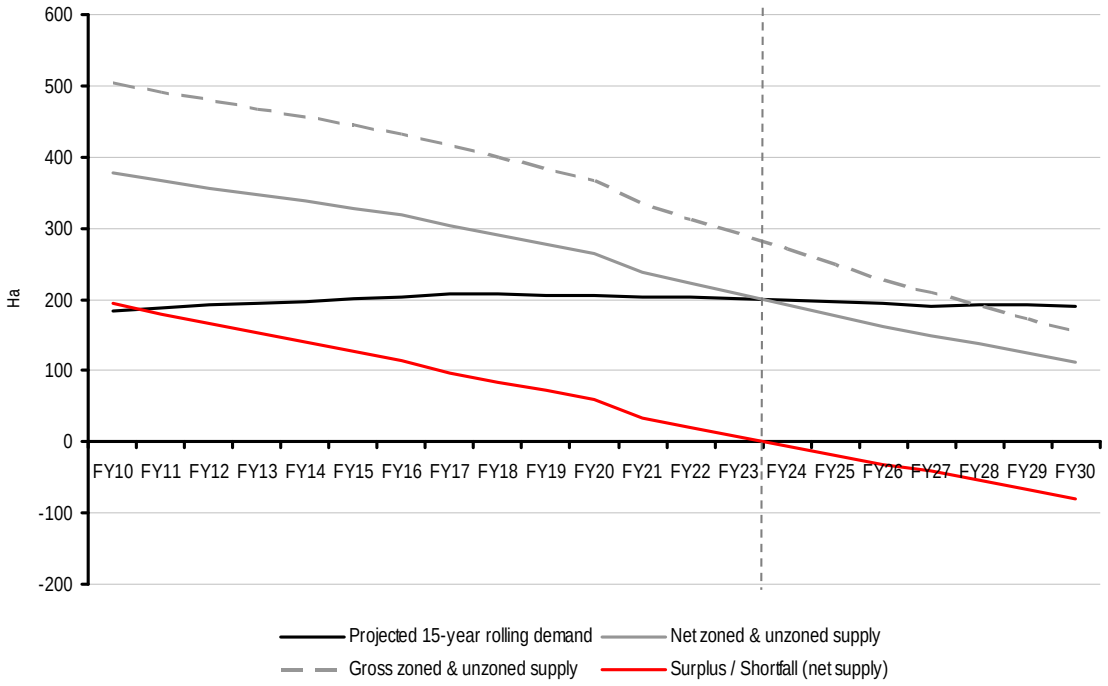
- Melton's containment rate fell from 25% in FY1996 to 23% in FY2006, and has the lowest containment rate in the West Region. A 2% increase in containment over projection period has been assumed, suggesting a recovery in its employment containment rate to 25% by FY2031.
- As with Brimbank and Wyndham LGAs in the West, we reduced the three industry sub-sector employment yields in FY2006 and again in FY2016, with the assumption that the historical decline in employment containment rates would continue. Locations such as Melton, Ravenhall and Truganina will continue to attract the large users of space that typically employ few people.
- As with Brimbank and Wyndham LGAs, we factored in overflow demand from Hobsons Bay and Maribyrnong LGAs from FY2010 onwards, as historical average annual take-up in surrounding these LGAs drops slightly and a portion of annual take-up shifts to the Western growth area LGAs. It is assumed an additional 1 Ha of land demand will be met by Melton LGA every year (between FY2010 and FY2015) and this will pick up to 2 Ha per annum from there on land stocks diminish and prices rise in Brimbank LGA. An additional 1 Ha of land demand from the Fringe Region is assumed throughout the projection period.

Supply

- Melton LGA has sufficient zoned and unzoned land supply over the projection period given its relatively low projected land take-up rate, although zoned land supply is expected to be consumed by 2021;
- It is just over 5% of total zoned land supply in the study area (128 Ha) and 8% of future industrial supply (250 Ha).
- A substantial portion of the unzoned supply can be attributed to the Toolern Employment Node. The Precinct Structure Plan for Toolern has been substantially progressed through the planning scheme amendment process and is expected to bring new zoned industrial land onto the market imminently.
- Figure 8.1.6 shows 15-year rolling demand against projected total net supply, total gross supply and a surplus/shortfall of demand against net supply of land in Whittlesea LGA. When looking at net supply against projected demand, a land shortfall is only expected from FY2024 onwards. As with Whittlesea LGA, this LGA is only expected to see industrial land supply shortages at the tail end of the FY2010–FY2030 projection period.

Figure 8.1.6: 15-year rolling demand versus supply, Melton LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.1.7 Cardinia LGA (South Region)

Demand Ranking: equal 5th

Overview

- Cardinia is some distance from the Port of Melbourne, and importantly, not a part of the PFN. Semi-rural currently. Access via Monash Freeway / Pakenham Bypass;
- Will face competitive pressures from residential development. For example, there is evidence that current land designated for industrial purposes is being identified as residential in recently submitted Precinct Structure Plans.

Demand

- Cardinia LGA is projected to have the second-lowest average annual take-up rate – 16 Ha per annum over FY2010–FY2020 (following Melton LGA) but is expected to see take-up increase to 30 Ha per annum over FY2021–FY2030 as the area becomes more established. This is a substantial increase from the very low average take-up rate of 5 Ha per annum between 1995 and 2009.
- Cardinia LGA has a forecast population growth rate of 7.4% per annum over the projection period (FY2010 – 2030), the highest out of all the six growth area LGAs. It will see much stronger growth compared with the other growth area in the Southern Region, Casey LGA.
- We made assumptions around the forecast employment rate in this LGA, along with other areas in metropolitan Melbourne and regional Victoria that contribute to this LGA's workforce.

These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow-on effect on all the study area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in Gross State Product during this period. The employment rate was assumed to decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY2016 onwards.

- Cardinia LGA has an employment containment rate of 41%, which is low compared with Greater Dandenong LGA and saw a drop in containment from 44% in FY2001. A more aggressive increase to the employment containment rate has been applied (compared to the other study area LGAs). We have assumed that the containment rate will increase to 44% by 2030 as the area is expected to become more established in the longer term (following growth in Greater Dandenong & Casey LGAs). The LGA will have access to major markets as Greater Dandenong becomes even more established and demand flows onto Cardinia, which will itself become a major market over the long term.
- The three industry sub-sector employment yields have been reduced in FY2006 and again in FY2016, with the assumption that the historical decline in employment containment rates would continue.
- We have assumed that from FY2023 onwards, Cardinia LGA will see an additional 7 Ha of demand from the surrounding non-study area LGAs, as demand would not be met with supply in these regions.
- As with Greater Dandenong LGA, we have factored in overflow demand from surrounding Bayside, Kingston and Frankston LGAs from FY 2010 onwards, as historical average annual take-up in these LGAs drops slightly and a portion of annual take-up shifts to the Southern growth area LGAs. Cardinia LGA is expected to see a small portion of overflow demand out to FY2015 compared with Greater Dandenong LGA as it has a comparatively small amount of zoned land supply (2 Ha per annum between FY2010 and FY2015). From FY2016 onwards, the overflow demand picks up to 9 Ha per annum as it has a large share of unzoned land supply pipeline, which is likely to come on-stream by then and land supply in Casey LGA begins to diminish.

Supply

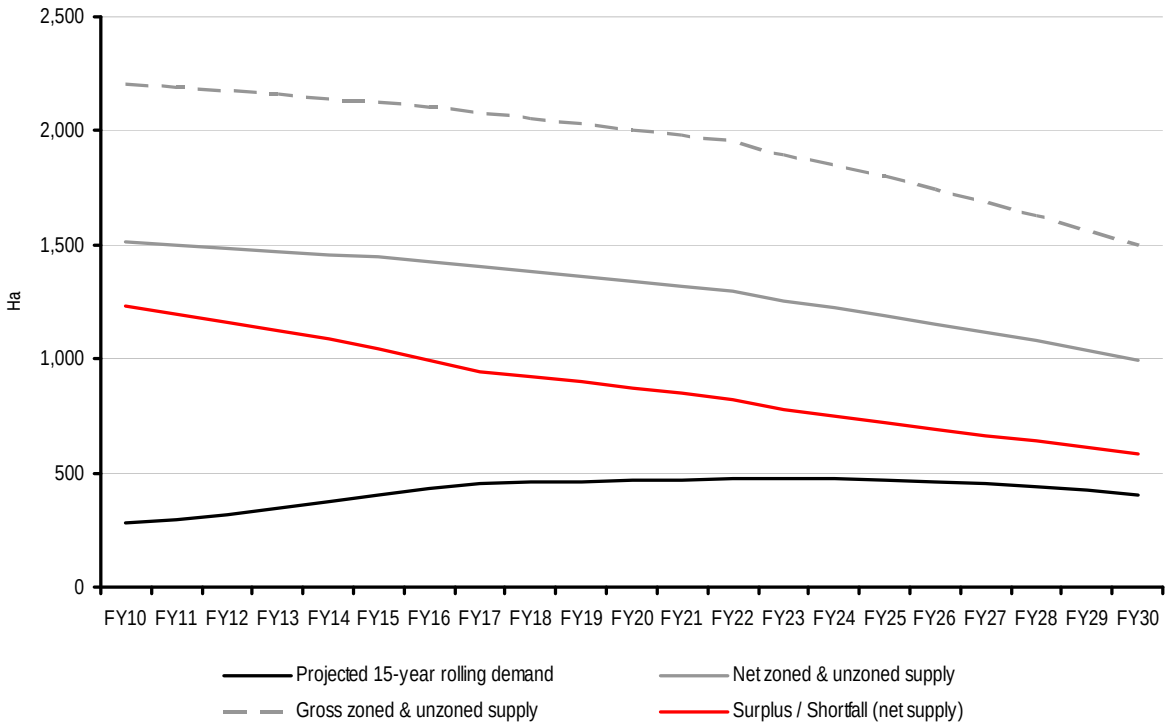
- Pakenham, the main industrial area within Cardinia LGA, contains a very high portion of future unzoned industrial land in net terms (41% or 1,280 Ha) but only 9% or 230 Ha of zoned land ready for development;
- The LGA has more than sufficient supply over the projection period given its relatively low take-up rate (23 Ha per annum between FY2010–FY2030) and large amount of future supply.
- The five employment-based Precinct Structure Plans in Pakenham, making up the majority of the future unzoned supply, are due to be rolled out soon. The Cardinia Road Employment Area Precinct Structure Plan is the most advanced, while the Officer Employment Area, C21 Business Park and Pakenham Employment Areas 1 and 2 are either under preparation or at the pre-planning stage.
- It important to note that as the remaining 25 PSPs for the current growth areas are rolled out, the land designated for 'employment' in A Plan for Melbourne's Growth Areas may not all end up as industrial zoned land. For example, the land affected by the proposed PSP for the Cardinia Road Employment Precinct is included in the UDP 2009 as a 'proposed major

industrial area', however only 323 Ha out of a total net developable area of 440 Ha has been set aside in the proposed PSP for industrial purposes. If approved in its proposed form, this will reduce the total designated industrial supply in the Cardinia LGA by 117 hectares.

- Figure 8.1.7 shows 15-year rolling demand against projected total net supply, total gross supply and a surplus/shortfall of demand against net supply of land in Cardinia LGA. This LGA is not expected to see a shortfall in industrial land supply during the FY2010–FY2030 projection period due to its relatively low projected demand.

Figure 8.1.7: 15-year rolling demand versus supply, Cardinia LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.1.8 Casey LGA

Demand Ranking: equal 5th

Overview

- Similar to Cardinia, Casey is some distance from the Port of Melbourne;
- Limited parts of the LGA have industrial areas that are part of the PFN (Hallam and a small area of Hampton Park). Cranbourne South future industrial land is some way south of the South Industrial Node.

Demand

- Casey LGA is projected to have the third-lowest average annual take-up rate at 18 Ha per annum over the projection period;

- As is the case with Greater Dandenong LGAs, Casey LGA is expected to see relatively low population growth rate over the projection period. The growth rate of 2.2% per annum over the FY2010 – FY2030 projection period is lower than the growth of 3.9% per annum between FY2001 and FY2009;
- From a land demand perspective, the LGA is likely to benefit from the strong population growth expected in neighbouring Cardinia LGA, which is forecast to see the highest increase in working age population over the projection period.
- We made assumptions around the forecast employment rate in this LGA, along with other areas in metropolitan Melbourne and regional Victoria that contribute to this LGA's workforce. These were based on Access Economics forecasts of Victoria's economic growth, which were likely to have a flow on effect on all the study area LGAs. We assumed an increase in rate of employment between FY2006 and FY2011 due to an expected improvement in the rate of growth in Gross State Product during this period. The employment rate was assumed to decrease slightly in FY2016 due to some forecast weakening in the State's economy over the FY2011–FY2016 period and remain at the same level from FY2016 onwards.
- Casey LGA has the lowest employment containment rate of the two growth area LGAs in the Southern Region at 31% in FY2006 (up from 27% in FY1996). As with Cardinia LGA, we have applied a more aggressive increase to the employment containment rate in Cardinia LGA than the base case scenario. We have assumed that the containment rate will increase to 34% by 2031 as the area becomes more established in the longer term.
- As there is limited likelihood of higher employment generating uses locating in the traditional industrial locations of Casey LGA, we have reduced the three industry sub-sector employment yields in FY2006 and again in FY2016, with the assumption that the historical decline in employment containment rates would continue.
- As with Greater Dandenong and Cardinia LGAs, we have factored in overflow demand from surrounding Bayside, Kingston and Frankston LGAs from FY2010 onwards, as historical average annual take-up in these LGAs drops slightly and a portion of annual take-up shifts to the Southern growth area LGAs. Casey LGA is expected to see a nominal portion of overflow demand out to FY2015 as it has a comparatively small amount of zoned land supply (2 Ha per annum between FY2010 and FY2015). It is not expected to see overflow demand from FY2016 onwards as its future industrial land stock diminishes.

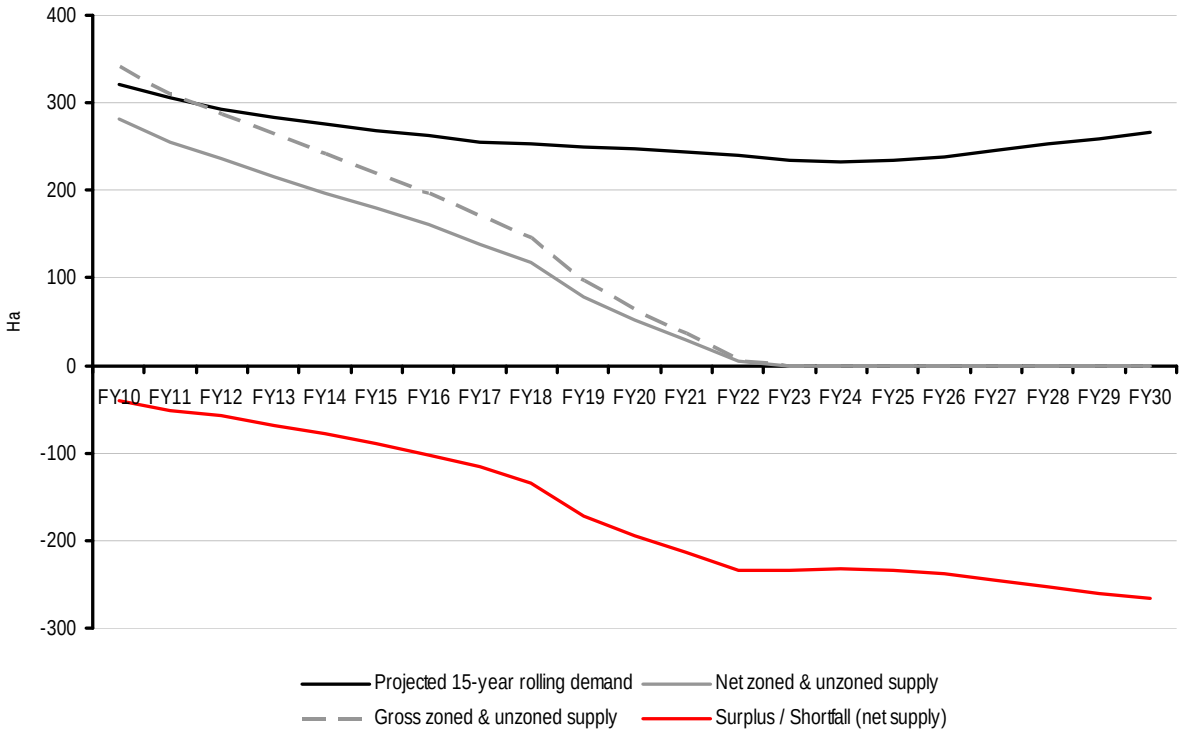
Supply

- Casey has just 7% of zoned land supply (189 Ha) and 3% of unzoned land supply in net terms (or 92 Ha), with the majority of this future land supply situated in Cranbourne West;
- Given that the Cranbourne West PSP was approved by the Minister for Planning in February 2010, there will be very little future unzoned supply left in Casey. However this new addition to zoned supply would not be reflected in the model results as the study relied on 2009 UDP data as a base for future supply projections;
- It is the first LGA to run out of zoned and unzoned land supply due to relatively limited land stock in relation to projected take-up rates, even though it has the lowest expected average annual demand in relation to the other growth area LGAs. Based on projected industrial land demand, zoned and unzoned land supply is expected to run out in FY2023.
- Casey LGA's close proximity to Cardinia's large supply of future unzoned industrial land should be a determining factor in deciding its future supply needs.

- Figure 8.1.8 shows 15-year rolling demand against projected total net supply, total gross supply and a surplus/shortfall of demand against net supply of land in Casey LGA. When looking at net supply against projected demand, a land shortfall is expected from FY2010 onwards. This LGA is expected to be the first to start seeing industrial land supply shortages out of all six Growth Area LGAs, as projected 15-year rolling demand well exceeds supply during the projection period.

Figure 8.1.8: 15-year rolling demand versus supply, Casey LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009



8.2 Supply and Demand Outlook

Based on the current and future supply data provided in the UDP (2009), metropolitan Melbourne has sufficient supply to meet demand until FY2030. However, based on our demand projections, 75% of the supply remaining at the end of FY2030 will be located in Cardinia (in net terms). All other growth area LGAs are likely to see supply shortfall by then (in net and gross supply terms).

Table 8.2 summarises the time frame of supply shortfalls by the six Growth Area LGAs, with the key points listed below:

- Current and future supply will have been fully consumed in Casey and Wyndham. This is also the case with the two non-Growth Area LGAs, Brimbank and Greater Dandenong, which were included in this study as they contain significant industrial areas and zoned land supply.
- Less than two years worth of supply will remain in Casey and Wyndham.
- Melton, Whittlesea and Cardinia are the only three LGAs that will still have a reasonable level of supply going forward (based on our demand projections).

Table 8.2: Year of supply shortfall based on 15-year rolling demand by LGA

Source: Jones Lang LaSalle Research & Consulting, UDP 2009

	Year of supply shortfall
Casey	FY2010
Wyndham	FY2012
Brimbank *(non growth area LGA)*	*FY2014*
Greater Dandenong *(non growth area LGA)*	*FY2015*
Hume	FY2017
Melton	FY2024
Whittlesea	FY2025
Cardinia	Nil

Supply constraints may be a particular issue the LGAs of Wyndham and Hume, which had the highest future demand score. This score was based on a number of key positive factors that are likely to influence industrial land demand such as each LGA's distance to major transport infrastructure, major markets and impact of competing land uses.

Brimbank and Greater Dandenong LGAs are expected to continue to be favourable industrial locations from a demand perspective. However, they expected to run out of land by FY2015 (in net terms) and will not see additional land supply come on stream as they are not designated Growth Areas. Some of this demand may flow through to surrounding LGAs with substantial land supply but with relatively low projected demand such as Melton LGA in the West and Cardinia LGA in the South.

Whittlesea LGA was another LGA with a relatively high score but it has enough land supply in gross terms to support this potentially high projected industrial land demand.

Casey LGA is expected to run out of industrial land supply the earliest but it has a relatively low future demand score and projected demand levels between FY2010 to FY2030.

The main aim of this study is to determine the quantum of industrial land that will be needed to service projected demand in eight out area LGAs over the next 20 years, which has been the focus of this chapter. When planning for the provision of this supply, there needs to be some consideration of the type of land that is needed to accommodate industrial occupiers. Ideally, future industrial zoned land should have the following characteristics:

- Easy access to freight networks;
- Within close proximity to air, rail and road freight terminals;
- Access to available workforce;
- Potential to link up with existing industrial areas or create new clustering opportunities for business;
- Ability to take advantage of existing or proposed infrastructure;
- Minimal or no site constraints and can be commercially developed;
- Minimal or no adjoining use constraints and appropriate buffers can be provided for sensitive uses;

- Suitable topographically for industry; and
- Potential to be an area for strategic economic development or growth of a particular industrial sector.

It should also be noted that the supply projections are based on the assumption that all future industrial supply that is identified in the UDP will be re-zoned industrial supply within the projection period. There is the threat that some of this supply will in fact be zoned for other uses, such as residential, or is given a Comprehensive Development or Business 3 zone, which allows for uses other than pure industrial. It is important, therefore, to consider the future supply of land in each LGA by the projected demand provided in this report, and ensure that identified future zoned stock is made available to meet this demand, especially in those areas where current zoned supply is due to be consumed in a relatively short timeframe.

It is recommended that planning for future industrial land supply in Melbourne should be based on solid market demand fundamentals, and not merely on availability of land. Further, it should be recognised that while demand for industrial land is driven primarily by population and employment growth, other factors such as distance to the Port and customer markets and major road infrastructure are also major factors to consider. Demand projections based on all these variables should also be prepared on a 15-year rolling basis that needs to be regularly reviewed and updated, preferably at five-year intervals, so they can provide a more accurate picture of future supply requirements.

Therefore, in the planning for future growth in Melbourne, ample consideration should be given not just to the quanta of demand going forward, but also to the locations where land is likely to be demanded.

Table 8.1.1: Net industrial land demand and supply, six growth area LGAs, FY10–FY30 (Ha)

Source: Jones Lang LaSalle Research & Consulting, UDP 2009

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Cardinia																					
Projected demand	16	15	13	13	12	12	20	22	22	21	20	20	21	25	29	34	36	37	39	41	43
Net zoned supply	230	215	202	190	177	165	145	123	102	81	60	41	20	0	0	0	0	0	0	0	0
Net unzoned supply	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,279	1,253	1,224	1,190	1,154	1,117	1,077	1,036	993
Total net supply	1,510	1,495	1,482	1,470	1,457	1,445	1,425	1,403	1,382	1,361	1,340	1,321	1,299	1,253	1,224	1,190	1,154	1,117	1,077	1,036	993
Casey																					
Projected demand	29	27	19	19	19	18	18	21	21	22	22	22	24	21	18	14	12	11	11	12	12
Net zoned supply	189	163	143	124	105	87	69	47	26	4	0	0	0	0	0	0	0	0	0	0	0
Net unzoned supply	92	92	92	92	92	92	92	92	92	74	52	30	6	0	0	0	0	0	0	0	0
Total net supply	281	255	235	216	197	179	161	139	118	78	52	30	6	0	0	0	0	0	0	0	0
Hume																					
Projected demand	77	68	47	46	45	44	48	52	50	52	53	54	59	62	64	65	70	63	65	66	67
Net zoned supply	793	725	678	632	587	543	495	443	394	341	289	235	176	114	50	0	0	0	0	0	0
Net unzoned supply	442	442	442	442	442	442	442	442	442	442	442	442	442	442	428	363	293	230	165	99	32
Total net supply	1,235	1,166	1,119	1,074	1,029	985	937	885	835	783	730	677	617	555	478	363	293	230	165	99	32
Melton																					
Projected demand	12	11	10	10	9	9	10	13	14	14	13	13	14	15	15	15	16	12	13	13	13
Net zoned supply	128	116	107	97	88	78	68	55	41	27	14	1	0	0	0	0	0	0	0	0	0
Net unzoned supply	250	250	250	250	250	250	250	250	250	250	250	237	223	208	193	177	162	149	137	124	111
Total net supply	378	367	357	347	338	328	318	305	291	277	264	238	223	208	193	177	162	149	137	124	111
Whittlesea																					
Projected demand	26	25	19	19	19	19	17	22	23	22	21	21	24	23	22	22	20	14	15	15	15
Net zoned supply	229	205	186	167	148	129	112	90	67	45	24	3	0	0	0	0	0	0	0	0	0
Net unzoned supply	368	368	368	368	368	368	368	368	368	368	368	351	327	304	282	260	241	226	212	197	182
Total net supply	598	573	554	535	516	497	480	458	436	414	392	354	327	304	282	260	241	226	212	197	182
Wyndham																					
Projected demand	58	52	41	42	42	41	44	53	53	53	55	54	59	57	57	57	56	48	49	50	51
Net zoned supply	260	207	167	125	83	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net unzoned supply	590	590	590	590	590	590	546	493	440	387	333	279	220	163	106	49	0	0	0	0	0
Total net supply	850	797	757	715	673	632	546	493	440	387	333	279	220	163	106	49	0	0	0	0	0

Table 8.1.2: Net industrial land demand and supply, Brimbank and Greater Dandenong LGAs, FY10–FY30 (Ha)

Source: Jones Lang LaSalle Research & Consulting, UDP 2009

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Brimbank																					
Projected demand	29	28	20	19	19	19	19	18	18	18	18	17	18	18	19	19	19	18	18	18	18
Net zoned supply	345	317	297	278	259	240	221	203	186	168	150	133	114	96	78	59	40	23	5	0	0
Net unzoned supply	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total net supply	345	317	297	278	259	240	221	203	186	168	150	133	114	96	78	59	40	23	5	0	0
Greater Dandenong																					
Projected demand	44	42	27	27	27	28	23	31	31	32	32	32	40	41	41	42	43	37	38	38	38
Net zoned supply	531	489	462	435	407	380	357	326	295	263	231	199	159	118	76	34	0	0	0	0	0
Net unzoned supply	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	120	78	41	3	0	0
Total net supply	659	617	590	563	535	508	485	454	423	391	359	327	287	246	204	155	78	41	3	0	0

Table 8.1.3: Industrial land demand projections for 15-year rolling demand, six growth area LGAs, FY31–FY45 (Ha)

Source: Jones Lang LaSalle Research & Consulting

	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45
Cardinia	46	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Casey	12	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Hume	69	58	58	58	58	58	58	58	58	58	58	58	58	58	58
Melton	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Whittlesea	15	20	20	19	19	19	19	19	20	19	19	19	19	19	19
Wyndham	52	51	51	51	51	51	51	51	51	51	51	51	51	51	51

Table 8.1.4: Net versus gross industrial land supply, six growth area LGAs, FY10–FY30 (Ha)

Source: Jones Lang LaSalle Research & Consulting

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Cardinia																					
Net zoned supply	230	215	202	190	177	165	145	123	102	81	60	41	20	0	0	0	0	0	0	0	0
Net unzoned supply	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,280	1,279	1,253	1,224	1,190	1,154	1,117	1,077	1,036	993
Gross zoned supply	272	254	239	224	210	195	172	146	120	95	71	48	23	0	0	0	0	0	0	0	0
Gross unzoned supply	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,934	1,932	1,893	1,849	1,798	1,743	1,687	1,628	1,565	1,500
Casey																					
Net zoned supply	189	163	143	124	105	87	69	47	26	4	0	0	0	0	0	0	0	0	0	0	0
Net unzoned supply	92	92	92	92	92	92	92	92	92	74	52	30	6	0	0	0	0	0	0	0	0
Gross zoned supply	229	197	174	150	128	105	83	57	32	5	0	0	0	0	0	0	0	0	0	0	0
Gross unzoned supply	114	114	114	114	114	114	114	114	114	92	64	36	7	0	0	0	0	0	0	0	0
Hume																					
Net zoned supply	793	725	678	632	587	543	495	443	394	341	289	235	176	114	50	0	0	0	0	0	0
Net unzoned supply	442	442	442	442	442	442	442	442	442	442	442	442	442	442	428	363	293	230	165	99	32
Gross zoned supply	1,080	987	923	861	800	740	674	604	536	465	393	320	239	155	68	0	0	0	0	0	0
Gross unzoned supply	774	774	774	774	774	774	774	774	774	774	774	774	774	774	750	637	514	403	290	174	56
Melton																					
Net zoned supply	128	116	107	97	88	78	68	55	41	27	14	1	0	0	0	0	0	0	0	0	0
Net unzoned supply	250	250	250	250	250	250	250	250	250	250	250	237	223	208	193	177	162	149	137	124	111
Gross zoned supply	154	140	128	117	105	94	82	66	49	33	17	1	0	0	0	0	0	0	0	0	0
Gross unzoned supply	351	351	351	351	351	351	351	351	351	351	351	333	313	292	270	249	227	210	192	174	155
Whittlesea																					
Net zoned supply	229	205	186	167	148	129	112	90	67	45	24	3	0	0	0	0	0	0	0	0	0
Net unzoned supply	368	368	368	368	368	368	368	368	368	368	368	351	327	304	282	260	241	226	212	197	182
Gross zoned supply	282	251	228	205	182	159	138	110	83	56	29	4	0	0	0	0	0	0	0	0	0
Gross unzoned supply	606	606	606	606	606	606	606	606	606	606	606	578	539	501	464	429	396	373	349	325	300
Wyndham																					
Net zoned supply	260	207	167	125	83	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net unzoned supply	590	590	590	590	590	590	546	493	440	387	333	279	220	163	106	49	0	0	0	0	0
Gross zoned supply	576	460	369	277	184	93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross unzoned supply	980	980	980	980	980	980	907	819	731	643	553	463	366	271	176	82	0	0	0	0	0

Table 8.1.5: 15-year rolling demand versus land supply, six growth area LGAs, FY10–FY30 (Ha)

Source: Jones Lang LaSalle Research & Consulting

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Cardinia																					
15-yr rolling demand	280	299	320	345	371	400	431	457	459	462	465	470	474	478	477	472	462	450	437	423	406
Total net zoned & unzoned supply	1,510	1,495	1,482	1,470	1,457	1,445	1,425	1,403	1,382	1,361	1,340	1,321	1,299	1,253	1,224	1,190	1,154	1,117	1,077	1,036	993
Surplus / Shortfall (net supply)	1,230	1,197	1,162	1,125	1,086	1,045	994	947	922	899	875	851	824	776	748	718	692	666	640	614	587
Total gross zoned & unzoned supply	2,205	2,188	2,173	2,158	2,143	2,129	2,105	2,080	2,054	2,029	2,005	1,982	1,955	1,893	1,849	1,798	1,743	1,687	1,628	1,565	1,500
Casey																					
15-yr rolling demand	321	306	292	284	276	269	262	255	253	250	247	244	240	235	233	234	238	245	252	260	267
Total net zoned & unzoned supply	281	255	235	216	197	179	161	139	118	78	52	30	6	0	0	0	0	0	0	0	0
Surplus / Shortfall (net supply)	-40	-52	-56	-68	-79	-90	-102	-116	-135	-172	-195	-214	-234	-235	-233	-234	-238	-245	-252	-260	-267
Total gross zoned & unzoned supply	343	311	287	264	241	219	197	171	145	97	64	36	7	0	0	0	0	0	0	0	0
Hume																					
15-yr rolling demand	821	808	810	826	845	866	890	910	917	925	931	936	940	938	935	929	922	910	905	898	890
Total net zoned & unzoned supply	1,235	1,166	1,119	1,074	1,029	985	937	885	835	783	730	677	617	555	478	363	293	230	165	99	32
Surplus / Shortfall (net supply)	414	359	309	248	184	119	47	-25	-81	-142	-200	-259	-323	-383	-457	-566	-629	-680	-739	-799	-858
Total gross zoned & unzoned supply	1,854	1,761	1,697	1,635	1,573	1,514	1,448	1,378	1,310	1,239	1,167	1,094	1,013	929	818	637	514	403	290	174	56
Melton																					
15-yr rolling demand	184	187	191	194	197	200	204	207	207	206	205	204	203	202	199	197	194	191	191	191	191
Total net zoned & unzoned supply	378	367	357	347	338	328	318	305	291	277	264	238	223	208	193	177	162	149	137	124	111
Surplus / Shortfall (net supply)	194	179	165	153	141	128	114	97	84	72	59	34	20	6	-7	-19	-32	-42	-55	-68	-80
Total gross zoned & unzoned supply	505	491	479	468	456	445	432	416	400	383	367	334	313	292	270	249	227	210	192	174	155

Table 8.1.5: 15-year rolling demand versus land supply, six growth area LGAs, FY10–FY30 (Ha) - continued

Source: Jones Lang LaSalle Research & Consulting

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Whittlesea																					
15-yr rolling demand	321	317	312	307	303	298	295	293	291	287	285	283	281	277	273	271	268	268	273	277	281
Total net zoned & unzoned supply	598	573	554	535	516	497	480	458	436	414	392	354	327	304	282	260	241	226	212	197	182
Surplus / Shortfall (net supply)	277	256	243	228	214	199	186	165	145	126	108	72	46	27	9	-10	-28	-42	-61	-80	-99
Total gross zoned & unzoned supply	888	858	835	811	788	765	744	717	689	662	636	582	539	501	464	429	396	373	349	325	300
Wyndham																					
15-yr rolling demand	760	759	763	770	777	786	796	804	802	800	798	795	792	784	778	772	766	761	764	766	767
Total net zoned & unzoned supply	850	797	757	715	673	632	546	493	440	387	333	279	220	163	106	49	0	0	0	0	0
Surplus / Shortfall (net supply)	90	39	-6	-55	-104	-154	-249	-311	-362	-413	-466	-516	-572	-621	-672	-723	-766	-761	-764	-766	-767
Total gross zoned & unzoned supply	1,556	1,440	1,349	1,257	1,164	1,073	907	819	731	643	553	463	366	271	176	82	0	0	0	0	0

8.3 Scenario Testing

The forecast industrial land demand by LGA, as given in Table 8.3.1., is based on a number of assumptions relating to employment growth, employment containment, employment yields and overflow demand from other LGAs. However, external 'shocks' that affect market demand have not been considered. One such demand shock is the development of a significant piece of infrastructure within the Melbourne market.

Westlink has been flagged as one such development that, if constructed, will have a significant impact on demand within Melbourne. Our scenario testing, therefore, assumes that this project goes ahead along the timeframes as outlined below, and applies assumptions to the base case model to test the outcomes on demand. The assumptions that we have applied are based on land value increases that were witnessed at the announcement and commencement of the Deer Park Bypass and Eastlink projects (see section 6). The assumptions applied are as follows:

- Announcement of Westlink in 2018, commencement of project in 2020, and completion in 2026
- Containment rates in Wyndham and Melton LGAs increased from 2018, with further spikes in 2020
- Containment rates gradually decreased in Hume LGA, as a portion of demand related to container freight movements shift to the west. This decrease occurs from 2020 onwards.

The scenario testing shows that demand will increase in Wyndham and to a lesser extent Melton in the FY2016–FY2020 cohort, and again in FY2026–FY2030. Hume will see a slight drop in demand as a portion of port-related demand is attracted to the west as a result of the road development.

Table 8.3.1: Land Demand Scenario - Westlink, projected average annual demand, by five-year cohort (Ha)

Source: Jones Lang LaSalle Research & Consulting

	FY2011–FY2015		FY2016–FY2020		FY 2021–FY2025		FY2026–FY2030	
	Base Case	Scenario	Base Case	Scenario	Base Case	Scenario	Base Case	Scenario
Brimbank	21	21	18	18	18	18	18	18
Cardinia	13	13	21	21	26	26	39	39
Casey	20	20	21	21	20	20	12	12
Greater Dandenong	30	30	30	30	39	39	39	39
Hume	50	50	51	48	61	60	66	64
Melton	10	10	13	14	15	13	13	13
Whittlesea	20	20	21	21	22	22	16	16
Wyndham	44	44	51	53	57	56	51	57

Summary:

Brimbank and Greater Dandenong LGAs have been, and are expected to continue to be, favourable industrial locations from a demand perspective. However, they are expected to run out of land by FY2015 (in net terms) and will not see additional supply come on-stream as they are not designated Growth Areas. The six Growth Area LGAs will therefore become important in being able to provide supply of affordable, well-located and serviced industrial land through to FY2030.

Among the Growth Area LGAs, supply constraints may be an issue in Wyndham and Hume LGAs, which have the highest future demand score, based on their proximity to major transport infrastructure, major markets and limited pressure on the take-up of industrial land from other competing land uses.

Framework planning and precinct structure planning will identify where new industrial precincts in the Growth Areas will be located, how they will be separated from incompatible uses, and ensure that sufficient land supply is provided to meet demand.

At the time of writing this report, 13 Precinct Structure Plans (PSPs) have been completed for the Growth Areas and 27 are underway. Many of these are employment precincts with expectations that they will provide for Melbourne's future industrial land supply. As these PSPs are progressively approved and incorporated into planning schemes, the supply of unzoned land will decrease relative to the increase of zoned supply. This, combined with the varying rate of consumption, will cause the supply and demand levels to fluctuate unevenly across the LGAs.

It is therefore important to plan for the future supply of industrial land in each LGA taking into account the forecasted demand provided in this report. Identified future zoned stock should be made available to meet this demand, especially in those areas where current zoned supply is low and is expected to be consumed in a relatively short timeframe.

Planning for future industrial land supply in Melbourne should be based on solid market demand fundamentals. Further, it should be recognised that, while demand for industrial land is driven primarily by population and employment growth, growth-area planners need to consider other key factors such as distance to the Port of Melbourne, customer markets and major road infrastructure.

Conclusion:

Zoned industrial land supply stocks for individual LGAs will need to be replenished at varying stages throughout the FY2010–FY2030 study period and these should be based on up-to-date 15-year rolling demand projections (preferably updated every five years). It is expected that the PSP process will refine the quantum of land available in each LGA and bring newly zoned land onto the market during the study period.

It important to note that as the remaining 25 PSPs for the current growth areas are rolled out, the land designated for 'employment' in *A Plan for Melbourne's Growth Areas* may not all end up as industrial zoned land. For example, the land affected by the proposed PSP for the Cardinia Road Employment Precinct is included in the UDP 2009 as a 'proposed major industrial area'; however, only 323Ha out of a total net developable area of 440Ha has been set aside in the proposed PSP for industrial purposes. If approved in its proposed form, this will reduce the total designated industrial supply in the Cardinia LGA by 117 hectares.

While this cannot be represented in the supply forecasts until the PSPs are completed, it does emphasise the need to dedicate these areas exclusively for industrial purposes early on in the planning process. When designated industrial land is instead used for other purposes (such as residential and activity centres) the quantum of industrial land lost needs to be provided elsewhere to meet forecasted demand.

9. Recommendations

Land supply in outer metropolitan Melbourne is finite and valuable. Residential is always a higher order use and there is constant pressure to re-zone land for this purpose to accommodate future population growth. It is therefore important to ensure a sufficient stock of appropriately zoned land for businesses generating employment.

Because industrially zoned land is continually being lost from the inner and middle Melbourne suburban areas, industrial land in the Growth Areas takes on an increased importance and should be protected. The greenfield sites in the Growth Areas can be planned in advance to allow for adequate buffering and zoning protection to ensure against future encroachment. Over the long term, minimising or eliminating the unnecessary loss of industrial zoned land in Growth Areas will help limit future pressures to further extend the UGB.

In order to ensure sufficient industrial land supply in existing and new growth areas, it is suggested that the Victorian Government adopt a similar practice to that operating in South Australia, where before any industrial land is re-zoned to other uses, it needs to meet certain criteria that clearly demonstrate that the land is no longer fit for industrial purposes. This combined with a higher density ratio for residential land use, particularly close to public transport infrastructure, would provide a more sustainable platform for urban development across metropolitan Melbourne.

We have listed some key recommendations in relation to future industrial land supply requirements based on the analysis of projected industrial demand between FY2010 and FY2030 in eight outer Melbourne LGAs, which include the six Growth Area LGAs.

Victorian State Planning Policy seeks to ensure that a continuous 15-year rolling supply of industrial land is available for industry and recognises that land of state significance should be protected in existing and growth areas. This policy should be reviewed in light of the fact that Melbourne cannot expand indefinitely. The following recommendations should help ensure sufficient industrial land supply in existing and Growth Areas within the defined Urban Growth Boundary (UGB).

1. Establish site-selection criteria to guide decisions about the location and quality of industrial land. Common criteria include:
    - Easy access to the principal road freight network as defined in Freight Futures;
    - Proximity to an air, rail or road freight terminal;
    - Proximity to a commercial port;
    - Access to an available workforce;
    - Potential to link up with existing industrial areas or create new clustering; opportunities for business;
    - Ability to take advantage of existing or proposed infrastructure;
    - Minimal or no site constraints and can be commercially developed with required infrastructure and site preparation works;

- Minimal or no adjoining use constraints and appropriate buffers can be provided from sensitive uses;
- Suitable topographically for industry (relatively flat);
- Potential to be a key strategic economic development opportunity for industry or sector development.

2. Reserve, where possible, industrial precincts in Growth Areas exclusively for industrial purposes and factor in the need for additional industrial land supply in Growth Areas to counter other uses that are planned in industrial estates (such as activity centres, office parks, public open space).

3. To ensure a 15-year continuous supply of industrial land to FY2030, an additional 2,071 Ha of net developable land stock (equating to 3,378 Ha in gross terms) is likely to be required in Melbourne's six Growth Area LGAs to meet the projected industrial land demand quantified in this study (see Table 9.1).

   Based on the current and future supply data provided in the UDP (2009), metropolitan Melbourne has sufficient supply to meet demand until FY2030. However, based on our demand projections, 75% of the supply remaining at the end of FY2030 will be located in Cardinia (ie. 993 Ha out of 1,318 Ha across six growth area LGAs by FY2030, in net terms). All other growth area LGAs are likely to see some degree of supply shortfall by then (in net and gross terms).

Table 9.1: Projected supply shortfall / surplus by LGA, FY2030

Source: Jones Lang LaSalle Research & Consulting, UDP 2008 & 2009

Note: Derived from Tables 8.1.5 and Table 7.9.2

LGA	Commencement year of net supply shortfall	Shortfall / Surplus (net – Ha)	Shortfall / Surplus (gross – Ha)	Gross as % of net unzoned supply (2008 UDP)
Hume	FY2017	858	1,502	175%
Wyndham	FY2012	767	1,273	166%
Casey	FY2010	267	328	123%
Whittlesea	FY2025	99	163	165%
Melton	FY2024	80	112	140%
Cardinia	N/a	587 (in surplus)		
6 Growth Area LGAs		2,071	3,378	

4. Adequate additional supply of industrial land designated for industrial purposes has to be set aside in each of Melbourne's Growth Areas to meet projected demand and to maintain a 15-year continuous stock of land to the year 2030. As can be seen in Table 9.2, Wyndham and Hume LGAs are not expected to have 15 years of continuous supply of industrial land to match projected demand in each of these two LGAs.

5. Prioritise structure planning of industrial areas and the release of zoned industrial land in Wyndham given Wyndham's demand ranking (equal first) and its existing low zoned supply (five years).

6. Dedicate sufficient land around the Principal Freight Network exclusively for industrial purposes to provide for the expected increased activity in the transport and logistics sector. This type of land is typically flat, large enough to accommodate large scale warehousing, suitably distanced from any sensitive uses and easily accessible for articulated trucks.

7. Update the criteria in Clause 17.03 to give greater guidance to planning authorities in deciding where to locate new industrial precincts.

8. Update the list of State significant industrial areas in Clause 17.03 to include large tracts of new industrial areas identified in growth areas.

There are some key caveats that should be noted when interpreting the data on 15-year continuous industrial land supply requirements:

- Supply-side projections utilised historical 2008 and 2009 UDP data as a base. Any additions to zoned supply from unzoned land stock levels since the completion of the UDP were ignored. Furthermore, the projections do not take into account any potential future additions to zoned and unzoned land stock levels over the FY2010–FY2045 projection period.
- Converting net supply data to gross levels is a problematic exercise because the net-to-gross ratio varies greatly from parcel to parcel and area to area; and the ratios are unlikely to have remained static since the 2008 UDP and going forward.
- When deriving projections for each LGA over the FY2010–FY2045 period, unzoned land supply was only assumed to come on-stream when zoned land stock levels were depleted. In reality, unzoned land supply would be gradually added to zoned stock levels, expanding the available timeframe of zoned land supply.
- We made assumptions around overflow demand. A minimal amount of overflow demand from LGAs with more established industrial areas into the eight study area LGAs was taken into account, along with overflow demand between the eight study areas LGAs during the projection period. It may be likely that some growth areas with relatively large land stocks will compensate for lower land stocks in other surrounding growth area LGAs by absorbing their demand out to FY2030.
- There are potential risks associated with under-estimating or over-estimating future supply based on dated projections. Therefore, demand projections feeding into the supply projections need to be reviewed on a regular basis (preferably every five years), to ensure that the 15-year continuous supply is in line with up-to-date demand projections. From a commercial perspective, over-estimating supply could discourage developers to invest in the Melbourne market, with a supply glut diluting property values and returns, and not encourage innovation in terms of more efficient use of industrial land. In contrast, under-estimating supply could mean the loss of Melbourne's economic and industrial market competitive advantages.

10. Appendices

10.1 Comparable land demand methodologies

Vancouver-Portland Industrial Land Needs Study (1999), Otak Inc.

Several public, quasi-public and private agencies agreed that information on industrial lands was found to be insufficient. As such a study was commissioned to:

- Identify 20-year industrial land needs based on regional job growth forecasts and market trends;
- Provide a detailed and up-to-date industrial land inventory using a newly developed GIS land classification system;
- Consider the effects of development constraints, such as parcel size and environmental issues, on land absorption and our region's ability to meet job growth forecasts;
- Determine if there are any significant discrepancies in the availability of buildable industrial lands to accommodate expected job growth.

The methodology included inputs and steps as outlined below:

1. Metro Employment by Sector & County
2. Industrial Workers in Each Sector
3. Industrial Workers by Type of Building
4. Square Foot of Building Space by Type
5. Demand for Industrial Space by Type and County

Industrial Land Demand Tasmania: Short to Medium Term overview (2008), SGS Economics and Planning

This study was completed for the Department of Economic Development (Tasmania Government) with the aim of the project to forecast future demand for industrial and commercial land and floor space. The intention was to use this information to allow for better planning of land uses for commercial-supporting infrastructure, such as transport, hydraulic services, energy and communication.

A two-tiered approach was used to forecast land demand for the study area – a local-service oriented industry demand approach and an export-oriented industry demand approach. The inputs and methodology for each were;

Local service oriented industry demand:

1. Population forecast
2. Land requirement per capita
3. Estimated additional land needed
4. State of industry cycle, local issues
5. Location flexibility of population growth

Export-oriented industrial land demand

1. Industry selection

2. Industry analysis (forecasts, location factors, issues, trends)
3. Land requirement per sector (including multiplier needs)
4. Suitable locations

The methodology undertaken by Jones Lang LaSalle in our report looks at all sectors of industry demand – local and export – as well as import-related demand, with the understanding that the Port of Melbourne and imports and exports are a key driver of demand in Melbourne.

Coffs Harbour City Council Local Growth Management Strategy – Industrial Lands Component (2006), SGS Economics and Planning

The methodology used to forecast industrial land demand was an input-output model, which was derived using a statistical adjustment of the national input-output coefficients and based on the premise that industrial land forecasts are driven by employment forecasts.

The inputs and approach used to forecast land demand is described below:

'As part of an Input-Output model, the total value of inter-regional exports for each industry is estimated. Assuming that exports grow in proportion to NSW Gross State Product levels and applying regional employment multipliers, it is possible to project the amount of employment that will be generated by a region as industry sectors change their production levels to service export demand.

The method above only takes into account the employment effects of population growth, the resultant increased consumer spending and the multiplier effect thereof. The employment effects due to consumer spending are expected to be quite substantial, especially in a developing area. Hence, the SGS Economics and Planning Employment Yield Model combines Input-Output Export Based forecasts with a population yield model to project employment forecasts.

This approach examines economic growth due to population increase by looking at the consumer spending in the region (based on population growth forecasts). This growth in consumer spending will need to be supported by the labour force (that will be earning wages/salaries). In other words, any increase in demand due to growth in consumer spending would in turn require an increase in wages (for this new population). Hence, the population in an area can be treated as an industry with both supply (wages) and demand streams (consumer spending). The effect of this pseudo industry will not only provide its own economic stimulus, but also magnify the economic stimulus due to export growth.

By using an Input-Output table, it is possible to produce regional employment multipliers and predict the amount of employment generated in Coffs Harbour as industry sectors increase their production to meet export demand and population growth.'

10.2 Forecast Land Demand – Tables

10.2.1 Usual place of residence of workers in study area

Table 10.2.1: Usual place of residence of workers in study area, 1996

Source: ABS, Jones Lang LaSalle Research & Consulting

Note: in 1996, Journey to Work data were only available for the major urban areas which were used to form the Study Area in each State/Territory

Place of Work by LGA	Place of Residence			Total
	LGAs within study area	LGAs in other areas of metropolitan Melbourne	LGAs in regional Victoria	
Brimbank	20,099	9,913	1,544	31,556
Cardinia	7,591	1,001	699	9,291
Casey	17,513	6,333	351	24,197
Greater Dandenong	33,209	31,838	828	65,875
Hume	26,655	18,821	3,434	48,910
Melton	4,238	493	707	5,438
Whittlesea	12,539	9,598	833	22,970
Wyndham	13,188	5,038	1,734	19,960
Total study area	*135,032*	*83,035*	*10,130*	*228,197*
Brimbank	64%	31%	5%	100%
Cardinia	82%	11%	8%	100%
Casey	72%	26%	1%	100%
Greater Dandenong	50%	48%	1%	100%
Hume	54%	38%	7%	100%
Melton	78%	9%	13%	100%
Whittlesea	55%	42%	4%	100%
Wyndham	66%	25%	9%	100%
Total study area	59%	36%	4%	*100%*

Table 10.2.2: Usual place of residence of workers in study area, 2001

Source: ABS, Jones Lang LaSalle Research & Consulting

Place of Work by LGA	Place of Residence			Total
	LGAs within study area	LGAs in other areas of metropolitan Melbourne	LGAs in regional Victoria	
Brimbank	24,641	11,333	2,235	38,209
Cardinia	9,389	1,188	887	11,464
Casey	23,927	8,287	543	32,757
Greater Dandenong	34,131	31,687	984	66,802
Hume	31,577	21,188	4,491	57,256
Melton	6,010	827	1,062	7,899
Whittlesea	16,223	11,888	1,314	29,425
Wyndham	17,487	6,771	2,725	26,983
Total study area	*163,385*	*93,169*	*14,241*	*270,795*
Brimbank	64%	30%	6%	100%
Cardinia	82%	10%	8%	100%
Casey	73%	25%	2%	100%
Greater Dandenong	51%	47%	1%	100%
Hume	55%	37%	8%	100%
Melton	76%	10%	13%	100%
Whittlesea	55%	40%	4%	100%
Wyndham	65%	25%	10%	100%
Total study area	*60%*	*34%*	*5%*	*100%*

Table 10.2.3: Usual place of residence of workers in study area, 2006

Source: ABS, Jones Lang LaSalle Research & Consulting

Place of Work	Place of Residence			Total
	LGAs within study area	LGAs in other areas of metropolitan Melbourne	LGAs in regional Victoria	
Brimbank	29,708	13,243	2,488	45,439
Cardinia	11,269	1,512	1,029	13,810
Casey	31,349	10,347	712	42,408
Greater Dandenong	38,458	34,364	1,095	73,917
Hume	37,183	22,103	4,999	64,285
Melton	8,715	1,340	1,439	11,494
Whittlesea	18,010	12,484	1,604	32,098
Wyndham	24,808	8,564	3,192	36,564
Total study area	*199,500*	*103,957*	*16,558*	*320,015*
Brimbank	65%	29%	5%	100%
Cardinia	82%	11%	7%	100%
Casey	74%	24%	2%	100%
Greater Dandenong	52%	46%	1%	100%
Hume	58%	34%	8%	100%
Melton	76%	12%	13%	100%
Whittlesea	56%	39%	5%	100%
Wyndham	68%	23%	9%	100%
Total study area	*62%*	*32%*	*5%*	*100%*

10.2.2 Population Growth

Table 10.2.4: Estimated resident population in study area LGAs

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

LGA	FY91	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31	Change FY06–FY31
Brimbank	144,277	155,584	168,247	176,003	187,818	192,795	198,120	203,175	208,404	32,401
Cardinia	38,704	42,716	47,010	58,540	77,498	97,869	115,547	144,728	193,094	134,554
Casey	117,001	148,957	181,562	222,681	267,102	307,483	345,686	365,329	370,211	147,530
Greater Dandenong	133,666	131,796	128,516	131,389	139,511	145,077	152,188	160,831	170,499	39,110
Hume	106,570	120,819	135,986	154,351	178,807	200,937	222,354	247,743	278,744	124,393
Melton	36,170	40,612	52,830	81,414	113,858	144,178	172,451	198,853	227,259	145,845
Whittlesea	97,361	106,212	118,118	129,793	160,276	193,661	223,842	245,171	261,637	131,844
Wyndham	63,415	76,239	87,141	116,332	162,428	203,945	243,333	279,258	315,855	199,523
Study Area Total	*737,164*	*822,935*	*919,410*	*1,070,503*	*1,288,075*	*1,488,336*	*1,677,317*	*1,850,197*	*2,025,595*	*955,092*
Melbourne SD	3,155,576	3,283,278	3,471,625	3,743,015	4,132,315	4,450,164	4,761,693	5,060,599	5,364,130	1,621,115
Melbourne SD – Study Area	*2,418,412*	*2,460,343*	*2,552,215*	*2,672,512*	*2,844,239*	*2,961,829*	*3,084,376*	*3,210,401*	*3,338,535*	*666,023*
Study Area - % of Melbourne SD	23%	25%	26%	29%	31%	33%	35%	37%	38%	

Table 10.2.5: Estimated resident population growth in study area LGAs (average annual % change)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

LGA	FY96–FY01	FY01–FY06	FY06–FY11	FY11–FY16	FY16–FY21	FY21–FY26	FY26–FY31	Change FY06–FY31
Brimbank	1.6%	1.6%	0.9%	1.3%	0.5%	0.6%	0.5%	0.7%
Cardinia	2.0%	2.0%	4.9%	6.5%	5.3%	3.6%	5.1%	9.2%
Casey	4.4%	4.4%	4.5%	4.0%	3.0%	2.5%	1.1%	2.7%
Greater Dandenong	-0.5%	-0.5%	0.4%	1.2%	0.8%	1.0%	1.1%	1.2%
Hume	2.5%	2.5%	2.7%	3.2%	2.5%	2.1%	2.3%	3.2%
Melton	6.0%	6.0%	10.8%	8.0%	5.3%	3.9%	3.1%	7.2%
Whittlesea	2.2%	2.2%	2.0%	4.7%	4.2%	3.1%	1.9%	4.1%
Wyndham	2.9%	2.9%	6.7%	7.9%	5.1%	3.9%	3.0%	6.9%
Study Area Total	*2.3%*	*2.3%*	*3.3%*	*4.1%*	*3.1%*	*2.5%*	*2.1%*	*3.6%*
Melbourne SD	1.1%	1.1%	1.6%	2.1%	1.5%	1.4%	1.3%	1.7%
Melbourne SD – Study Area	*0.7%*	*0.7%*	*0.9%*	*1.3%*	*0.8%*	*0.8%*	*0.8%*	*1.0%*

Table 10.2.6: Estimated resident population and growth, regional Victoria

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

Note: Table refers to all non-metropolitan Melbourne LGAs, excluding Gananwarra, Southern Grampians and Unincorporated LGAs as they are not a source of workers for study area

Regional VIC	FY91	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31	Change FY06–FY31
Estimated resident population	1,233,083	1,246,693	1303457	1353896	1,451,518	1,531,441	1,614,373	1,698,350	1,784,014	430,118
5-year average annual population growth (%)		0.2%	0.9%	0.8%	1.4%	1.1%	1.1%	1.0%	1.0%	1.3%

Table 10.2.7: Components of population growth in Melbourne SD, 2006–2031

Source: VIC DPCD, Jones Lang LaSalle Research & Consulting

Note: Projections in table work of the 2006 population base and not more up-to-date 2009 population data

Year Ending 30 June	2006–2011	2011–2016	2016–2021	2021–2026	2026–2031
Population at Start of Period	4,018,336	4,334,337	4,644,070	4,942,136	5,224,196
Natural Increase	31,162	31,828	31,466	29,930	26,768
Net Overseas Migration	43,101	43,101	43,101	43,101	43,101
Net Interstate Migration	-1,272	-2,509	-2,552	-2,531	-2,506
Net Intrastate Migration	-8,456	-9,842	-11,366	-12,589	-13,411
Net Migration	33,373	30,750	29,183	27,981	27,184
Population at End of Period	4,082,871	4,396,916	4,704,719	5,000,048	5,278,149
Change in Population	64,535	62,579	60,649	57,911	53,953
Change in Population %	1.61%	1.44%	1.31%	1.17%	1.03%

Table 10.2.8: Working age population and growth

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

**Note: Table refers to all non-metropolitan Melbourne LGAs, excluding Gananwarra, Southern Grampians and Unincorporated LGAs as they are not a source of workers for study area*

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31	Change FY06 – FY31
8 study area LGAs									
Working age population	616,458	699,158	830,598	1,009,260	1,166,107	1,310,703	1,454,858	1,592,778	976,320
Working age population as % of total population	75%	76%	78%	78%	78%	78%	79%	79%	
Melbourne SD, excluding study area LGAs									
Working age population	1,998,685	2,087,002	2,218,808	2,419,312	2,617,470	2,812,678	3,005,650	3,218,763	1,220,078
Working age population as % of total population	81%	82%	83%	84%	84%	84%	85%	85%	
*Regional VIC**									
Working age population	953,454	1,013,162	1,079,149	1,175,205	1,250,207	1,322,321	1,399,783	1,470,388	516,934
Working age population as % of total population	76%	78%	80%	81%	82%	82%	82%	82%	

10.2.3 Labour Force Participation and Employment Rates

Table 10.2.9: Employed working age population and growth

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

**Note: Journey to Work data by place of usual residence. Table refers to all non-metropolitan Melbourne LGAs, excluding Gananwarra, Southern Grampians and Unincorporated LGAs as they are not a source of workers for study area*

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31
8 study area LGAs								
Working age population	331,657	384,656	451,171	558,310	633,415	698,851	775,712	849,250
Employed as % of total working aged population	54%	55%	54%	55%	54%	53%	53%	53%
Melbourne SD, excluding study area LGAs								
Working age population	1,059,980	1,161,594	1,229,517	1,416,439	1,506,280	1,590,490	1,699,610	1,820,120
Employed as % of total working aged population	56%	58%	59%	59%	58%	57%	57%	57%
*Regional VIC**								
Working age population	480,453	521,843	567,013	617,484	644,389	668,336	707,487	743,173
Employed as % of total working aged population	50%	52%	53%	53%	52%	51%	51%	51%

Table 10.2.10: Study area workforce by place of usual residence

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

**Note: Journey to Work data by place of usual residence. Table refers to all non-metropolitan Melbourne LGAs, excluding Gananwarra, Southern Grampians and Unincorporated LGAs as they are not a source of workers for study area*

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31
8 study area LGAs								
Residents employed & working within study area	135,032	163,385	199,500	246,875	280,085	316,008	358,521	392,509
% of workers in study area also resident within study area	41%	42%	44%	44%	44%	45%	46%	46%
Melbourne SD, excluding study area LGAs								
Workers in study area resident in other Melbourne SD LGAs	83,035	93,169	103,957	119,761	127,358	134,478	143,704	153,893
% of workers in study area resident in other Melbourne SD LGAs	36%	34%	32%	32%	32%	31%	31%	31%
*Regional VIC**								
Workers in study area resident in regional VIC LGAs	10,130	14,241	16,558	18,032	18,818	19,517	20,660	21,702
% of workers in study area resident in regional VIC LGAs	4%	5%	5%	6%	6%	7%	7%	7%

Table 10.2.11: Study area workforce projections summary

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

**Note: Journey to Work data by place of usual residence. Table refers to all non-metropolitan Melbourne LGAs, excluding Gananwarra, Southern Grampians and Unincorporated LGAs as they are not a source of workers for study area*

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31
8 study area LGAs								
Residents employed & working within study area	135,032	163,385	199,500	246,875	280,085	316,008	358,521	392,509
Melbourne SD, excluding study area LGAs								
Workers in study area resident in other Melbourne SD LGAs	83,035	93,169	103,957	119,761	127,358	134,478	143,704	153,893
*Regional VIC**								
Workers in study area resident in regional VIC LGAs	10,130	14,241	16,558	18,032	18,818	19,517	20,660	21,702
Total number of workers in 8 study area LGAs	*228,197*	*270,795*	*320,015*	*384,668*	*426,260*	*470,003*	*522,885*	*568,104*
Average annual % growth in workers in study area		*3.7%*	*3.6%*	*4.0%*	*2.2%*	*2.1%*	*2.3%*	*1.7%*

Table 10.2.12: Study area workforce employment rate projections summary (by LGA)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31
Brimbank	48%	50%	48%	49%	48%	48%	48%	48%
Cardinia	58%	62%	61%	62%	61%	61%	61%	61%
Casey	61%	61%	60%	61%	60%	60%	60%	60%
Greater Dandenong	47%	46%	45%	46%	45%	45%	45%	45%
Hume	54%	54%	52%	53%	52%	52%	52%	52%
Melton	58%	62%	60%	61%	60%	60%	60%	60%
Whittlesea	54%	55%	54%	55%	54%	54%	54%	54%
Wyndham	59%	61%	60%	61%	60%	60%	60%	60%

Table 10.2.13: Study area workforce containment rate projections summary (by LGA)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

	FY96	FY01	FY06	FY11	FY16	FY21	FY26	FY31
Brimbank	35%	37%	44%	45%	47%	48%	49%	50%
Cardinia	42%	44%	41%	41%	41%	42%	43%	44%
Casey	27%	29%	31%	31%	31%	32%	33%	34%
Greater Dandenong	68%	71%	80%	80%	80%	81%	82%	82%
Hume	56%	58%	61%	61%	61%	62%	63%	63%
Melton	25%	25%	23%	23%	23%	24%	25%	25%
Whittlesea	29%	33%	33%	33%	33%	34%	35%	35%
Wyndham	40%	45%	46%	46%	46%	47%	48%	48%

10.2.4 Industry Profile of Employment

Table 10.2.14: Industry profile of workforce in study LGAs, 1996 (no. of jobs)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

1996 (Place of Work by Industry)	Brimbank	Cardinia	Casey	Greater Dandenong	Hume	Melton	Whittlesea	Wyndham	Total
Manufacturing	8,737	1,567	2,660	20,782	17,807	372	7,988	3,500	63,413
Wholesale Trade	2,580	446	1,914	6,342	2,877	242	1,587	1,796	17,784
Transport & Storage	1,726	360	843	2,118	8,916	129	594	1,352	16,038
Industries typically occupying industrial property	*13,043*	*2,373*	*5,417*	*29,242*	*29,600*	*743*	*10,169*	*6,648*	*97,235*
Communication Services	360	98	283	1,009	564	51	138	136	2,639
Finance & Insurance	446	161	480	1,682	398	141	312	303	3,923
Property & Business Services	1,530	424	1,538	3,695	1,785	367	1,107	1,166	11,612
Government Administration & Defence	981	189	607	1,654	1,124	187	190	1,972	6,904
Industries typically occupying office property	*3,317*	*872*	*2,908*	*8,040*	*3,871*	*746*	*1,747*	*3,577*	*25,078*
Other sectors	14,649	5,946	15,541	23,487	14,935	3,881	10,700	9,534	98,673
Not classifiable	582	105	352	1,081	689	57	370	301	3,537
Not stated	25	3	17	36	21	4	21	13	140
Total	31,616	9,299	24,235	61,886	49,116	5,431	23,007	20,073	224,663

Table 10.2.15: Industry profile of workforce in study LGAs, 1996 (% of total jobs in each LGA)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

1996 (Place of Work by Industry)	Brimbank	Cardinia	Casey	Greater Dandenong	Hume	Melton	Whittlesea	Wyndham	Total
Manufacturing	28%	17%	11%	34%	36%	7%	35%	17%	28%
Wholesale Trade	8%	5%	8%	10%	6%	4%	7%	9%	8%
Transport & Storage	5%	4%	3%	3%	18%	2%	3%	7%	7%
Industries typically occupying industrial property	*41%*	*26%*	*22%*	*47%*	*60%*	*14%*	*44%*	*33%*	*43%*
Communication Services	1%	1%	1%	2%	1%	1%	1%	1%	1%
Finance & Insurance	1%	2%	2%	3%	1%	3%	1%	2%	2%
Property & Business Services	5%	5%	6%	6%	4%	7%	5%	6%	5%
Government Administration & Defence	3%	2%	3%	3%	2%	3%	1%	10%	3%
Industries typically occupying office property	*10%*	*9%*	*12%*	*13%*	*8%*	*14%*	*8%*	*18%*	*11%*
Other sectors	46%	64%	64%	38%	30%	71%	47%	47%	44%
Not classifiable	2%	1%	1%	2%	1%	1%	2%	1%	2%
Not stated	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 10.2.16: Industry profile of workforce in study LGAs, 2001 (no. of jobs)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

2001 (Place of Work by Industry)	Brimbank	Cardinia	Casey	Greater Dandenong	Hume	Melton	Whittlesea	Wyndham	Total
Manufacturing	9,492	1,432	3,693	22,604	20,273	855	8,506	4,666	71,521
Wholesale Trade	2,933	652	2,533	6,716	3,866	286	1,777	2,342	21,105
Transport & Storage	2,139	490	1,270	2,809	8,167	263	882	2,640	18,660
Industries typically occupying industrial property	*14,564*	*2,574*	*7,496*	*32,129*	*32,306*	*1,404*	*11,165*	*9,648*	*111,286*
Communication Services	460	96	452	1,554	812	76	186	293	3,929
Finance & Insurance	451	165	572	1,725	475	130	308	332	4,158
Property & Business Services	2,319	680	2,228	4,083	2,922	583	1,465	1,802	16,082
Government Administration & Defence	884	176	627	2,054	1,244	218	438	1,497	7,138
Industries typically occupying office property	*4,114*	*1,117*	*3,879*	*9,416*	*5,453*	*1,007*	*2,397*	*3,924*	*31,307*
Other sectors	19,220	7,715	21,165	24,885	19,341	5,444	15,697	13,354	126,821
Not classifiable	220	46	146	323	229	27	115	127	1,233
Not stated	199	55	177	308	184	37	120	95	1,175
Total	38,317	11,507	32,863	67,061	57,513	7,919	29,494	27,148	271,822

Table 10.2.17: Industry profile of workforce in study LGAs, 2001 (% of total jobs in each LGA)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

2001 (Place of Work by Industry)	Brimbank	Cardinia	Casey	Greater Dandenong	Hume	Melton	Whittlesea	Wyndham	Total
Manufacturing	25%	12%	11%	34%	35%	11%	29%	17%	26%
Wholesale Trade	8%	6%	8%	10%	7%	4%	6%	9%	8%
Transport & Storage	6%	4%	4%	4%	14%	3%	3%	10%	7%
Industries typically occupying industrial property	*38%*	*22%*	*23%*	*48%*	*56%*	*18%*	*38%*	*36%*	*41%*
Communication Services	1%	1%	1%	2%	1%	1%	1%	1%	1%
Finance & Insurance	1%	1%	2%	3%	1%	2%	1%	1%	2%
Property & Business Services	6%	6%	7%	6%	5%	7%	5%	7%	6%
Government Administration & Defence	2%	2%	2%	3%	2%	3%	1%	6%	3%
Industries typically occupying office property	*11%*	*10%*	*12%*	*14%*	*9%*	*13%*	*8%*	*14%*	*12%*
Other sectors	50%	67%	64%	37%	34%	69%	53%	49%	47%
Not classifiable	1%	0%	0%	0%	0%	0%	0%	0%	0%
Not stated	1%	0%	1%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 10.2.18: Industry profile of workforce in study LGAs, 2006 (no. of jobs)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

2006 (Place of Work by Industry)	Brimbank	Cardinia	Casey	Greater Dandenong	Hume	Melton	Whittlesea	Wyndham	Total
Manufacturing	9,884	1,736	4,424	24,190	18,432	1,185	7,251	6,486	73,588
Wholesale Trade	3,726	712	2,870	7,911	4,416	508	2,305	2,989	25,437
Transport & Storage	3,566	650	1,765	3,866	11,715	559	1,081	4,019	27,221
Industries typically occupying industrial property	*17,176*	*3,098*	*9,059*	*35,967*	*34,563*	*2,252*	*10,637*	*13,494*	*126,246*
Communication Services	833	97	416	1,488	1,018	81	168	339	4,440
Finance & Insurance	474	215	642	1,475	524	161	362	362	4,215
Property & Business Services	2,961	934	2,743	4,485	3,367	739	1,614	2,436	19,279
Government Administration & Defence	1,472	274	1,036	2,516	2,184	483	841	2,042	10,848
Industries typically occupying office property	*5,740*	*1,520*	*4,837*	*9,964*	*7,093*	*1,464*	*2,985*	*5,179*	*38,782*
Other sectors	22,040	9,051	28,142	27,454	22,255	7,698	18,205	17,624	152,469
Not classifiable	543	159	423	753	622	102	335	425	3,362
Not stated	55	22	55	76	44	6	25	25	308
Total	45,554	13,850	42,516	74,214	64,577	11,522	32,187	36,747	321,167

Table 10.2.19: Industry profile of workforce in study LGAs, 2006 (% of total jobs in each LGA)

Source: ABS, VIC DPCD, Jones Lang LaSalle Research & Consulting

2006 (Place of Work by Industry)	Brimbank	Cardinia	Casey	Greater Dandenong	Hume	Melton	Whittlesea	Wyndham	Total
Manufacturing	22%	13%	10%	33%	29%	10%	23%	18%	23%
Wholesale Trade	8%	5%	7%	11%	7%	4%	7%	8%	8%
Transport & Storage	8%	5%	4%	5%	18%	5%	3%	11%	8%
Industries typically occupying industrial property	*38%*	*22%*	*21%*	*48%*	*54%*	*20%*	*33%*	*37%*	*39%*
Communication Services	2%	1%	1%	2%	2%	1%	1%	1%	1%
Finance & Insurance	1%	2%	2%	2%	1%	1%	1%	1%	1%
Property & Business Services	6%	7%	6%	6%	5%	6%	5%	7%	6%
Government Administration & Defence	3%	2%	2%	3%	3%	4%	3%	6%	3%
Industries typically occupying office property	*13%*	*11%*	*11%*	*13%*	*11%*	*13%*	*9%*	*14%*	*12%*
Other sectors	48%	65%	66%	37%	34%	67%	57%	48%	47%
Not classifiable	1%	1%	1%	1%	1%	1%	1%	1%	1%
Not stated	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 10.2.20: Actual and forecast study area land demand (p.a.), FY04–FY30, Ha (base case and econometric)

Source, Jones Lang LaSalle Research & Consulting

	Base Case (Ha)	Econometric (Ha)
FY04	176	172
FY05	176	211
FY06	187	259
FY07	244	191
FY08	263	293
FY09	291	333
FY10	290	297
FY11	268	352
FY12	196	377
FY13	194	189
FY14	193	162
FY15	191	148
FY16	199	163
FY17	232	165
FY18	231	174
FY19	233	188
FY20	234	185
FY21	233	184
FY22	260	178
FY23	262	239
FY24	265	237
FY25	267	239
FY26	271	235
FY27	241	236
FY28	247	181
FY29	253	186
FY30	258	188

11. Bibliography

Bureau of Infrastructure, Transport and Regional Economics (BITRE) 2010, *Australian Maritime Activity to 2029-30*, Statistical Report, Canberra

Butera, M. 2009, *Melbourne's North – the new knowledge economy*, NORTH Link, Bundoora

Crothers, N. 2008, *Survey of Industrial Occupiers, Australia*, Jones Lang LaSalle, Sydney

Department of Planning and Community Development 2009, *Urban Development Program 2009 – Annual Report*, East Melbourne

Ganguli, R. 2005, *The Infrastructure Phenomenon – Shifting Warehousing & Distribution West*, Jones Lang LaSalle, Sydney

Ganguli R. 2004, *Manufacturing: Achieving Business Efficiencies Through Real Estate Strategy*, Jones Lang LaSalle, Sydney

GeoLink 2006, *Coffs Harbour City Council Local Growth Management Strategy – Industrial Lands Component*, Sydney

Jones Lang LaSalle 2007, *Tomorrow's Warehouse for Today's Supply Chain*, Sydney

Macroplan Australia 2007, *Cardinia Road Employment Precinct*, Stage 2 Assessment, Melbourne

Macroplan Australia 2007, Retail Review and Industrial Lands Strategy, Prepared for Livingston Council (QLD), Brisbane

Macroplan Australia 2009, *Cranbourne West Growth Plan, Employment Land Sizing*, Final, Prepared for the City of Casey, Melbourne

Otak Inc. 1999, *Regional Industrial Land Study*, Prepared for the Portland-Vancouver Metropolitan Area, Oregon US

Ratio Consultants Pty Ltd, NIEIR, CBRE, CSIRO Transport Futures 2007, *Western Region Employment and Industrial Development Strategy*, Melbourne

SGS Economics and Planning 2008, *Melbourne Employment Projections*, Final, prepared for the Victorian Department of Transport, Melbourne

SGS Economics and Planning 2008, *Industrial Land Demand Tasmania, Short to medium term overview*, Prepared for the Department of Economic Development, Hobart

Syme Marmion & Co. 2008, *Industrial Land Needs Study*, Final, Landcorp, Department of Planning and Infrastructure, West Perth

The State of Victoria 2008, *Freight Futures, Victorian Freight Network Strategy*, Melbourne

The State of Victoria 2008, *The Victorian Transport Plan*, Melbourne

The State of Victoria 2009, *Port Futures, New Priorities and Directions for Victoria's Port System*, Melbourne