311 Hume Highway, Liverpool
Economic Impact Assessment
Hume Developments Pty Ltd

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Executive Summary

Introduction and Background

This Economic Impact Assessment (EIA) considers the economic impact and net community benefit of a proposed rezoning and subsequent development of a site at 311 Hume Highway, Liverpool.

The proposed rezoning would see the site rezoned from B6 Enterprise Corridor to B4 Mixed Use. This would facilitate a greater amount of residential floorspace and a lesser amount of commercial office and retail floorspace delivered comparative to an existing approved development for the Site.

Planning and Policy Context

Relevant State and Liverpool Local Government Area wide planning policy is considered, the main implications for the proposed rezoning are as follows:

A Plan for Growing Sydney (DPE, 2014) articulates State Government's vision and emphasis in planning for Sydney's growth.

- State Government is placing strong emphasis on increasing housing supply, accelerating the speed of housing supply and increasing housing choice, particularly with the delivery of smaller dwellings which are the most affordable.
- New and higher density housing development on urban infill sites should be encouraged.
- New homes should be provided close to jobs where they can support centres and promote convenience of access for workers whilst supporting activity hubs within centres.

As a Regional City Centre Liverpool's role is to serve as a major employment centre for the region. Liverpool City Council policy focus is generally to reinforce the primacy of the Liverpool CBD (Liverpool City Council, 2013).

- New retail and commercial office development should be encouraged in Liverpool City Centre and discouraged from other non-centre locations where it could disperse the consolidation of such uses away from centres.

The Rezoning Scenario would support this aim by lowering the quantum of retail and commercial uses in this location outside the Liverpool CBD core, thereby supporting the consolidation of such uses within the Liverpool City Centre core.

A net community benefit test is completed as advocated in NSW Draft Centres Policy. The EIA additionally considers consistency of the proposed rezoning with s117 Directions of the Environmental Planning and Assessment Act 1979.

Economic Impact of Planning Proposal

In order to assess the economic impact of the planning proposal, two scenarios are considered:

- **Base Case (Approved Development)**
  The Site is developed pursuant to development approved via s96 modified development consent granted in 2007. This comprises the delivery of 93 residential units, 3,600sqm retail floorspace and 2,500sqm commercial floorspace. This development has commenced.
- **Rezoning Scenario (Proposed Development)**
  The Site is assumed to be rezoned and developed to accommodate 318 residential units and 637sqm retail floorspace.

A summary of the impacts identified in the Base Case and the Rezoning Scenario. Once these impacts are identified the net economic costs and benefits are determined which allow consideration of the extent to which a net community benefit would eventuate from the Rezoning Scenario as follows:

Economic Costs of Rezoning Scenario v Base Case

- Reduction in on-site jobs of 157, assuming development envisaged in the Base Case is fully tenanted.
- Reduction in retail floorspace on-site of 2,963sqm.

Economic Benefits of Rezoning Scenario v Base Case

- Generating a net gain in retail floorspace demand of +1,033sqm (compared to negative 3,116sqm under the Base Case). The 3,600sqm of retail floorspace in the Base Case is unlikely to be met from retail demand from new residents (in 93 units) alone, thereby is expected to draw trade from residents in the broader locality which would otherwise be directed to existing or future facilities in Liverpool CBD or other centres/ facilities.
- Providing an additional +225 homes.
- Encouraging a consolidation of retail and commercial uses in Liverpool City Centre.
- Allowing an additional +563 residents to live close to Liverpool City Centre.
- Providing a more suitable residential mix conducive to promoting access to the housing market for first time buyers by delivering a greater number of smaller, more affordable units.
- Making more efficient and effective use of an infill development site by delivering a greater quantum of development.
- Supporting an additional $41.5m in direct construction costs.
- Supporting an additional $68.7m in indirect multiplier impacts as a result of the construction process.
- Supporting an additional 191 jobs directly and indirectly via the construction process.

Net Economic Benefit of Rezoning Scenario v Base Case

Based on the above, the Rezoning Scenario is deemed to deliver a greater net positive community benefit comparative to the Base Case.

Viability of Retail/Commercial Uses

The EIA considers the viability of the retail and commercial uses which would be delivered under the Rezoning Scenario. Ground floor retail and high street commercial uses proposed would likely be economically viable on the Site given its location, surroundings and the nature of the proposed development itself which includes high density residential uses. Such provision would be likely to increase the attraction of the end development as a place to live for future residents, through the incorporation of a greater quantum of proximate retail goods and services.

A quantum in the order of 637sqm of retail floorspace is envisaged in the Rezoning Scenario. We would recommend provision be made for sub-division into a number of smaller tenancies (if required) which would be capable of accommodating localised retail and high street commercial uses of the type discussed in this Chapter.

Consistency with Section 117 Directions

The EIA considers Section 117(2) direction of the Environmental Planning and Assessment Act 1979, in particular the Section 1.1 Business and Industrial Zones identified as being relevant. The objectives are identified in the following table together with their consideration in the context of the Proposal.

Table ES.1: Consistency with Section 117(2) Objectives

No.	Objective	Rezoning Scenario
1	Encourage employment growth in suitable locations	• The rezoning would deliver a higher and better use on the Site than that which would be delivered if the existing zoning were retained. It is an appropriate location upon which to deliver the proposed development and would add net retail expenditure and an increased number of workers to the local catchment. This would support employment opportunities in Liverpool CBD and the other commercial centres in the hierarchy. • The Rezoning Scenario and subsequent development would also sustain greater construction related direct and indirect impacts and multipliers than development of the permitted DA, some of which would be felt by local businesses. • In this manner the rezoning would encourage employment growth in suitable locations, whilst accommodating a proportion of employment uses on the Site itself.
2	Protect employment land in business and industrial zones	• The B4 Mixed Use zoning sought would not lead to a reduction in the quantum of land zoned for businesses uses in the area as B4 remains an employment generating land use and the Site would still provide some employment uses post-development. • It would not adversely impact on any business or industrial zoned elsewhere in the local area or set a precedent for further land zonings. As noted, the Liverpool LGA is considered likely to have an ample supply of B6 land in light of the South West Growth Centre and recent land zonings. As such the Rezoning Scenario complies with this Objective.
3	Support the viability of identified strategic centres	• The Rezoning Scenario would consolidate new homes, jobs and investment within close proximity to a Regional Centre and should be the primary location for high density commercial and retail uses to be accommodated in accordance with planning policy; • The Rezoning Scenario would increase the quantum of expenditure generated by residents in the trade area of Liverpool CBD, providing a net positive addition to the pool of expenditure available to be captured by local businesses. It would also provide a greater potential workforce living within walking distance of the CBD, supporting the viability of commercial office uses within it. • For these reasons, the Rezoning Scenario would fulfil this Objective.

Source: DoP, AEC

Section 117 Directions set out five requirements for planning authorities to consider when preparing a planning proposal that will affect land within an existing or proposed business or industrial zone. This are considered below in relation to the Rezoning Scenario.

Table 6.2: Planning Authority Considerations

Consideration	Achieved?	Explanation
Give effect to the objectives of this direction	Yes	• Table 6.1 of this EIA has established that the objectives of the Direction would be achieved via the Rezoning Scenario
Retain the areas and locations of existing business and industrial zones	Yes	• The Rezoning Scenario would ensure the Site remains in commercial use through the proposed B4 Mixed Use zoning rather than a residential zoning. • It would not adversely impact upon the quantum or location of business or industrial zoned land elsewhere in the local area, and furthermore the facilitation of greater retail expenditure and worker pool as well as supporting greater construction related multipliers, the financial viability of existing businesses is strengthened.
Not reduce the total potential floor space area for employment uses and related public services in business zones	Yes	• The Site currently accommodates no employment floorspace being under construction. The proposed rezoning would see the removal of retail and commercial floorspace that would otherwise be provided but will have a greater net positive impact on the viability of retail and employment uses in the local area, including Liverpool CBD; • The Rezoning Scenario would have no impact upon public service land use within a business zone.
Not reduce the total potential floor space area for industrial uses in industrial zones	Yes	• No industrial land would be impacted by the Rezoning Scenario.

Consideration	Achieved?	Explanation
Ensure that proposed new employment areas are in accordance with a strategy that is approved by the Director-General of the Department of Planning	Yes	• As established in this Report, the Rezoning Scenario is consistent with State and Local Government objectives to accelerate housing supply in suitable locations, support jobs, economic development and efficient and effective use of land. It therefore complies with this requirement.

Source: DoP, AEC

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1. Introduction

1.1 Background

SJB Planning has prepared a planning proposal (on behalf of Hume Developments Pty Ltd) for submission to Liverpool City Council wherein a rezoning is sought from B6 Enterprise Corridor to B4 Mixed Use. The proposed rezoning relates to a site located at 311 Hume Highway, Liverpool (hereinafter referred to as the Site).

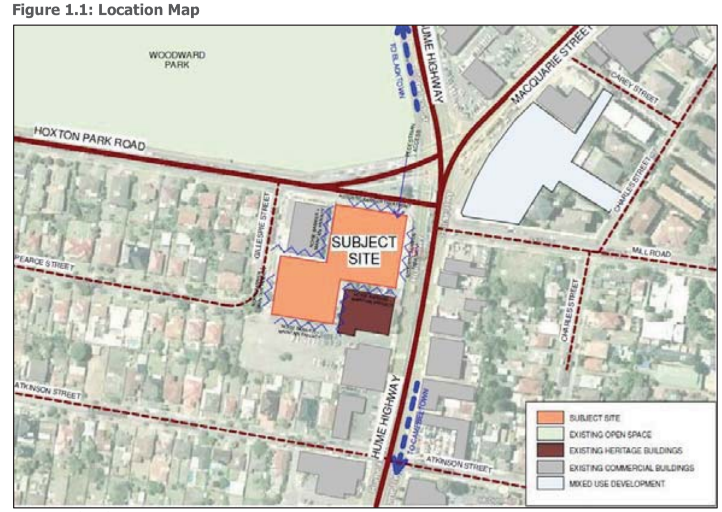
A development application pertaining to the Site under its current B6 zoning has been approved and is understood to have been activated. A rezoning to B4 Mixed Use is being sought to facilitate a different development mix involving a greater quantum of dwellings and a reduced component of retail and commercial uses.

Liverpool City Council (Council) has requested that an economic impact assessment (EIA) is prepared to assess the impact of the proposed rezoning, specifically addressing the 'loss of employment lands' and the provisions of s117(2) of the Environmental Planning and Assessment Act (1979). Council has additionally queried the viability of retail/commercial operations of the ground floor if the Site were to be zoned B4 Mixed Use and thereby requesting this issue of viability be addressed.

1.2 The Subject Site

The Site is bound by Hume Highway to the east, Hoxton Park Road to the north, Gillespie Street to the west and an existing building and car park to the south.

Figure 1.1: Location Map

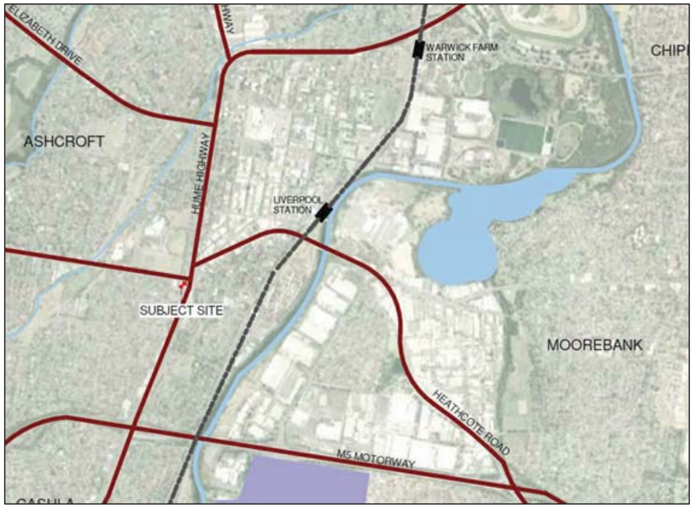


Source: SJB (2015)

The Site is situated at a major road intersection at the south western entrance to Liverpool CBD. Liverpool CBD is approximately 1km north east of the Site or a 15 minute walk. The Liverpool train station is located some 900m to the north east of the Site.

Figure 1.2 shows the Site in the context of the broader and surrounding area.

Figure 1.2: Locational Context



Source: SJB (2015)

1.3 The Approved and Proposed Development

Approved Development

Development consent for a mixed use development was granted by Liverpool City Council in October 2003, subsequently modified in September 2007. The elements of the approved development (having commenced) include:

- 93 residential units.
- 3,600sqm retail floorspace.
- 2,500sqm commercial floorspace.

For the purposes of this EIA, this is referred to as the Base Case.

Proposed Development (Rezoning Scenario)

The planning proposal envisages a rezoning of the Site from B6 Enterprise Corridor to B4 Mixed Use to facilitate the following development scheme.

- 318 residential units.
- 637sqm retail floorspace.

For the purposes of the EIA this is referred to as the Rezoning Scenario.

The Rezoning Scenario incorporates flexibility whereby 374sqm of the ground floor retail floorspace proposed (owing to double floor heights) could be converted to provide six SOHO (Small-Office-Home-Office) units. It is our understand that the use of this floorspace for retail purposes is more likely and therefore this is the outcome tested in this Economic Impact Assessment. In any case the economic impacts of the use of this floorspace for retail purposes and the use for six SOHO units is likely to be marginal.

The difference between the Base Case and the Rezoning Scenario is depicted in Table 1.1.

Table 1.1: Approved Development (Base Case) and Rezoning Scenario

Use	Base Case		Rezoning Scenario		Difference	
	GFA (sqm)	No.	GFA (sqm)	No.	GFA (sqm)	No.
Residential						
1 bedroom units				36		+36
2 bedroom units		53		244		+191
3 bedroom units		40		38		-2
Total		**93**		**318**		**+225**
Retail/Commercial						
Retail	3,600		637		-2,963	
Commercial	2,500		-		-2,500	
Total	**6,100**		**637**		**-5,463**	

Source: Hume Developments

The impact of the rezoning scenario and change in development floorspace is the subject of this economic impact assessment.

1.4 Methodology of this Study

Council has requested that the applicant address the loss of employment lands that could result from a rezoning of the Site from B6 Enterprise Corridor to B4 Mixed Use as well as the s117 Ministerial Directions that relate to Business and Industrial zones. This requires the completion of an Economic Impact Assessment relating to the rezoning scenario (and proposed development), justifying the proposed development in economic terms and its impacts on employment growth opportunities.

In meeting with the requirements of the brief, this Economic Impact Assessment:

- Reviewed the approved development and assessed its economic impact if it were implemented. This comprises the Base Case.
- Assessed the economic impact of the Site if it were rezoned and developed to the proposed scheme. This comprises the 'Rezoning Scenario'.
- Compared the economic impacts identified under the Rezoning Scenario with those identified under the Base Case to assess the net additional impact under the Rezoning Scenario, specifically the impact from a community perspective.
- Considered the viability of retail/commercial uses on the Site in the context of the broader Liverpool CBD and the Site's location.
- Considered other matters relevant to the Rezoning Scenario, specifically the requirements articulated by Ministerial Directions s117.

For the purposes of this EIA, the term "economic impact" refers to the contribution of the proposed development (Rezoning Scenario) to the economy from the perspective of the community. Economic impacts include both positive and negative impacts.

1.5 Assumptions and Limitations

Benchmark capacity metrics and per capita retail demand benchmarks are used in estimating generic floorspace demand likely to result from the anticipated increase in new resident population. This is described in section 3.1.

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

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

In addition to the general assumptions and limitations inherent in Input-Output modelling, assumptions have been made regarding where goods and services are likely to be sourced during the construction of the proposed development (see section 4.1). The accuracy of the estimated economic impacts is limited by the accuracy of the assumptions used for construction and ongoing enabled activity.

2. Planning and Policy Context

2.1 A Plan for Growing Sydney (2014)

A Plan for Growing Sydney (DPE, 2014) was released by NSW Department of Planning and Environment (DPE) in 2014 to provide state level direction on planning policy for Sydney. The Plan is premised on four goals for Sydney focused on the economy, housing choices, providing a great place to live and protecting the natural environment. The Plan is divided into Goals which are supported by directions and actions.

Of specific relevance to this EIA are the following goals, directions and actions:

- Goal 1: A competitive economy with world-class services and transport
    - Direction/action: Grow strategic centres providing more jobs closer to home
- Goal 2: A city of housing choice, with homes that meet our needs and lifestyles.
    - Direction/action: Accelerate housing supply across Sydney
    - Direction/action: Improve housing choice to suit different needs and lifestyles

Direction 1.7 is to grow strategic centres and provide more jobs closer to home. The specific actions that result from this direction are:

- Action 1.7:1 Invest in strategic centres across Sydney to grow jobs and housing and create vibrant hubs of activity.
- Action 1.7.4: Continue to grow Penrith, Liverpool and Campbelltown Macarthur as Regional City Centres supporting their surrounding communities.

A Plan for Growing Sydney identifies a set of priorities for the South West subregion, which include:

- Accelerating housing supply, choice and affordability and to build great places to live.
    - Identify suitable locations for housing, employment and urban renewal particularly around established and new centres and along key public transport corridors.

Liverpool is identified as a Regional City Centre. The Plan envisages DPE working with Council to:

- Retain a commercial core in Liverpool, as required, for long-term employment growth.
- Provide capacity for additional mixed use development in Liverpool including offices, retail, services and housing.

2.2 NSW Draft Centres Policy (2009)

The Draft Centres Policy was released by DP&E for public consultation in April 2009 (DP&E, 2009). It was developed in response to a Federal Government direction requiring State/Territorial planning authorities to review planning regulations and policies relating to retail development following an Australian Competition and Consumer Commission (ACCC) enquiry. Whilst the Draft Centres Policy has not been adopted and does not formally constitute government planning policy, the guidance it contains has effectively be used as a basis for making decisions by the DP&E since its publication.

The Draft Centres Policy introduced the requirement for a net community benefit test to be undertaken for rezoning proposals within commercial centres. A net community benefit is deemed to arise when the sum of all the benefits outweigh the sum of all the costs. Under this approach, the outcome of the proposed rezoning should be assessed against a base case(s) when the existing zoning would be retained.

Although the Draft Centres Policy is focused on changes to retail uses within centres, the principles of the net community benefit test have been applied to the rezoning under consideration in this Study.

2.3 Environmental Planning and Assessment Act (1979)

Under Section 117(2) of the Environmental Planning and Assessment Act 1979 the Minister for Planning and Infrastructure provides directions to planning authorities regarding proposals lodged with DPE.

Of relevance to this Report is Section 1.1 Business and Industrial Zones which stipulates the following objectives of S117 (2):

- Encourage employment growth in suitable locations.
- Protect employment land in business and industrial zones.
- Support the viability of identified strategic centres.

Given that S117 (2) applies in this case, Council must:

- Give effect to the objectives of this direction.
- Retain the areas and locations of existing business and industrial zones.
- Not reduce the total potential floor space area for employment uses and related public services in business zones.
- Not reduce the total potential floor space area for industrial uses in industrial zones.
- Ensure that proposed new employment areas are in accordance with a strategy that is approved by the Director-General of the Department of Planning.

Planning proposals which are inconsistent with the terms of this direction are only permissible if a number of criteria are satisfied, including that it is *"…justified by a study (prepared in support of the planning proposal) which gives consideration to the objective of this direction…"*. This Study fulfils this requirement.

S117 (2) is considered in the context of the proposed rezoning in Chapter 6.

2.4 Liverpool Policy Context

Liverpool Business Centres and Corridors Strategy (2013)

The Liverpool Business Centres and Corridors Strategy was published by Council in 2013 (Liverpool City Council, 2013). It adopts the retail hierarchy recommended to Council in the Liverpool Retail Centre Hierarchy Review (Hill PDA, 2012) and sets out the strategic approach to decision making affecting retail provision in centres and corridors.

With respect to Liverpool City Centre Councils approach is to:

> *"…continue to support opportunities to strengthen and consolidate the retail offer of Liverpool City Centre as the Regional City for the South-West Subregion. Council will seek to promote short term growth in the Liverpool City Centre through a variety of initiatives, in particular the relevant actions contained within the Liverpool City Centre Vision.*
>
> *Council supports expansion opportunities in Liverpool City Centre which could include the provision of additional department store or discount department store floorspace (5,000sqm) and further specialty stores. In total an expansion of up to 15,000sqm of retail floorspace in the Liverpool City Centre has been recommended by the Retail Hierarchy Review 2012 which is supported by council.*
>
> *Long term growth of the Liverpool City Centre will be sufficient to support a significant expansion of retail floorspace. At least a further 20,000sqm of supermarket, speciality, and department and discount department store floorspace could be provided to strengthen the retail offer of the centre. An expansion such as this is likely to rejuvenate the retail offer of the City Centre and potentially reduce the loss of trade to the Leppington Major Centre".*

In terms of commercial office floorspace, the Strategy also seeks to consolidate this in Liverpool City Centre which will support the major role of the centre. It also promotes convenience for office workers by providing new employment on a major transport note/ The Strategy seeks to achieve this outcome by preserving the existing commercial core zoning and restricting office use outside of this to dedicated business parks.

Liverpool Retail Centre Hierarchy Review (2012)

The Liverpool Retail Centres Hierarchy Review (the Review) was produced on behalf of Council by consultants (Hill PDA, 2012). Its purpose was to guide future planning and policy decisions regarding the role and function of centres within the LGA. It also sought to encourage consistent and responsive decision making and support Council's vision in promoting sustainable growth of existing centres.

The Review found that the LGA had sufficient land within existing and planned commercial centres to accommodate projected retail demand over the next 20 years. It emphasised the need to consolidate new retail development on Liverpool City Centre to support its primacy as the highest rank retail centre and the wider employment, transport and civic functions in demand. The Review recommended containment of retail centres and advised against dispersal of retail uses over a number of different locations.

In terms of commercial office floorspace, the Review recommended that these also be consolidated on existing commercial and retail centres. It noted that the economics of the suburban office market were currently fragile.

2.5 Implications for the Proposal

A Plan for Growing Sydney (DPE, 2014) articulates State Government's vision and emphasis in planning for Sydney's growth.

- State Government is placing strong emphasis on increasing housing supply, accelerating the speed of housing supply and increasing housing choice, particularly with the delivery of smaller dwellings which are the most affordable.
- New and higher density housing development on urban infill sites should be encouraged.
- New homes should be provided close to jobs where they can support centres and promote convenience of access for workers whilst supporting activity hubs within centres.

As a Regional City Centre Liverpool's role is to serve as a major employment centre for the region. Liverpool City Council policy focus is generally to reinforce the primacy of the Liverpool CBD (Liverpool City Council, 2013).

- New retail and commercial office development should be encouraged in Liverpool City Centre and discouraged from other non-centre locations where it could disperse the consolidation of such uses away from centres.

The Rezoning Scenario would support this aim by lowering the quantum of retail and commercial uses in this location on the fringe of the Liverpool CBD and physically separated by the Hume Highway, thereby supporting the consolidation of such uses within the Liverpool City Centre core.

3. Economic Impact Assessment

The Site is currently under development to deliver the approved DA outlined in Table 1.1. It is usually appropriate to consider the economic impacts of two potential scenarios against a 'Do Nothing' scenario. In this case, the do nothing scenario would comprise the Site being left in its current partially developed state. The Site would be unusable in this form and yield no positive economic impacts by virtue of this. As such the Base Case is premised on the *implementation* of the approved DA which has already commenced.

3.1 Base Case (Approved Development)

In the Base Case, the Site is assumed to be implemented pursuant to development approved via s96 modified development consent granted in 2007.

This would be to develop 93 residential units, 3,600sqm of retail floorspace and 2,500sqm of commercial floorspace.

The following economic impacts of the permitted development are identified:

- Jobs created on site post-development.
- Contribution to housing stock.
- Retail demand generation.
- Contribution to retail offer and choice.
- Providing homes close to jobs, retail facilities and public transport.
- Making efficient and effective use of land.

Each of these is considered in turn below.

Job Creation

The retail and commercial floorspace under the Base Case Scenario would sustain employment on the Subject Site. A worker ratio of 1 job per 25sqm has been applied to the retail and commercial uses. The eventual job ratio sustained would be dependent upon the end business or operator but the worker ratio applied is consistent with industry benchmarks, including the ABS Retail Census (ABS, 2003-04).

Based on 5,200sqm of retail and commercial uses permitted, the Base Case Scenario would sustain approximately 208 full and part time jobs upon completion.

Contribution towards New Housing Supply

The Sydney metropolitan area is experiencing significant demand for housing, largely as a result of population growth. As a response, State Government is focused on ensuring that the planning system delivers increased housing development at a faster rate.

A Plan for Growing Sydney sets out State Government objectives for the Sydney metropolitan area over the period of the Plan (2011 to 2031). The Plan states that accelerated delivery of new housing is a major goal over the period, with approximately +664,000 additional homes required in the 20 year period, equivalent to +33,200 new homes per annum. This is in response to forecast population growth of +1.58 million and persistent housing affordability issues.

The priority for new housing delivery will be on established areas, particularly those with access to transport infrastructure and proximity to established centres. This maximises the use of existing infrastructure and lowers the need to develop new greenfield land. New housing delivery is recognised as boosting economic activity, supporting the viability of infrastructure and stimulating business investment opportunities.

The provision of 93 new residential dwellings in an existing centre on a site proximate to public transport and other infrastructure constitutes a positive economic impact. ABS Census data (2011) for the Liverpool LGA indicates that the typical occupancy rate for a 4 or more storey dwelling in the LGA is 2.5 persons. Applying this rate to the 93 units in

the Base Case yields an estimated residential population of 232 persons on full development.

Retail Demand Generation

New residents of the 93 units under the Base Case would generate retail expenditure which would be available to be captured by the retail floorspace on-site, the Liverpool CBD and other centres and facilities in the broader locality. This would contribute towards the commercial centres hierarchy and support business performance in Liverpool LGA.

In assessing retail demand, the NSW Centres Policy (2010) advocates applying a rate of 2.0sqm of retail floorspace per capita. This is assumed to increase by 0.1sqm per capita every five years in accordance with the historic trend. This is considered by the industry to be a slight under-estimate of retail demand in light of the trend since 2010, but for the purposes of this EIA we have adopted a conservation assumption of 2.1sqm of retail demand generated by capita in line with the NSW Centres Policy guidance (the proposed development is assumed for the purposes of this Report to be completed and fully occupied by 2016 or later).

By applying retail demand of 2.1sqm per capita to the 232 persons estimated to be accommodated on the Site under the Base Case, residents would generate some 487sqm of retail demand per annum.

In consideration of the 3,600sqm of retail floorspace which would be provided under the Base Case, overall the development would deliver 3,113sqm more retail floorspace than would be demanded by residents on-site. On-site retail facilities would therefore depend on capturing demand from residents in the broader locality which would otherwise be directed to existing or future facilities in Liverpool CBD or other centres/ facilities.

Acknowledging that this is a simplistic assessment - as the 487sqm of retail floorspace generated by future residents would be across all retail types and only a small proportion would be captured by retail facilities on-site. The workers in the commercial office uses on site would also generate some additional retail expenditure which retail floorspace on the Site could capture. Nevertheless, it still points to the impact of the retail floorspace under this Scenario drawing expenditure from a wider area and in doing so redirecting trade from elsewhere. This is contrary to Liverpool Council's planning policy position.

Contribution to Retail Offer and Choice

In providing 3,600sqm of retail floorspace, the Base Case Scenario would contribute towards the retail offer and choice for workers and residents in the local area.

Notwithstanding this, it should be noted that it will capture more retail demand from the local area than it will contribute to it. This could redirect demand from other locations which would otherwise have captured it had this development not been implemented, such as Liverpool CBD.

The Subject Site is not contiguous to the B3 Commercial Core area defined in the LEP, which comprises the retail heartland of Liverpool CBD and situated 800m north east. The NSW Draft Centres Policy advocates consolidating large retail uses in one location, as far as possible, so that residents may undertake linked shopping trips without requiring additional journeys, as well as compare the prices and range of goods and services more easily. It is likely residents from the wider area would undertake linked trips between the retail floorspace on-site and retail floorspace located on other sites in the local area.

Providing Homes close to Jobs, Retail Facilities and Public Transport

Liverpool CBD is identified as a Regional City Centre by State Government, containing an array of employment, office, retail and civic functions. It is highly accessible by public transport which includes Liverpool railway station and multiple bus routes.

Providing new homes in a location that is close to existing economic and transport infrastructure is a positive economic benefit of the Base Case. Doing so reduces the need and associated costs to residents of travelling to work. This includes externalities of transport costs, lost time, pollution and so on. Providing homes close to centres supports the viability of local businesses, offering the ability for staff to live and work locally whilst retaining the economic multipliers associated with their wages, such as retail expenditure. It supports the viability of existing and potential improvements to public transport connections by providing additional patronage opportunities.

Efficient and Effective Use of Land

By delivering much needed residential, retail and commercial development on a previously developed infill site the Base Case Scenario would assist to ensure that efficient and efficient use of urban land is made. This would achieve planning policy aims by concentrating new development on locations most capable of accommodating it. It may assist to alleviate pressure for development in locations less suitable for such uses, such as outer lying suburbs or greenfield sites not well connected to public transport infrastructure, services, jobs and retail facilities.

3.2 Rezoning Scenario (Proposed Development)

In the Rezoning Scenario, the Site is assumed to be implemented pursuant to development approved via s96 modified development consent granted in 2007.

This would be to develop 318 residential units and 637sqm of retail floorspace.

The following economic impacts of the permitted development are identified:

- Jobs created on site post-development.
- Contribution to housing stock.
- Retail demand generation.
- Making efficient and effective use of land.
- Providing homes close to jobs, retail facilities and public transport.
- Loss of land zoned B6 Enterprise Corridor under the LEP.

Each of these is considered in turn below.

Job Creation

Applying a rate of 1 worker per 25sqm of retail/ commercial floorspace commensurate with the Base Case Scenario, the 637sqm of retail floorspace proposed under the Rezoning Scenario would support 25 full and part time jobs upon competition.

Contribution to New Housing Supply

As recognised in Chapter 2 of this Report, the State Government has placed strong emphasis on delivering a greater number of new dwellings per annum than that which is currently being achieved. This reflects significant population growth over the next 25 years, to assist ensuring housing affordability and remove pressure on greenfield land.

The Rezoning Scenario would deliver 318 new dwellings on the Site, which is well located in relation to existing infrastructure. These would be a mixture of 1-bed, 2-bed and 3-bed units. Applying an assumed 2.5 persons per dwelling consistent with 2011 ABS Census benchmarks for units in 4 or more storey development, the Rezoning Scenario would support 795 residents once complete and fully occupied.

Retail Demand Generation

Applying retail demand of 2.1sqm per capita, the 795 residents on the Site post-development would generate demand for 1,670sqm of retail floorspace.

Under the Rezoning Scenario up to 637sqm of retail floorspace would be provided. As such the Rezoning Scenario would deliver +1,033sqm of net additional retail demand locally. This demand would be available to support existing and future businesses in Liverpool CBD and the other commercial centres in the locality.

Notwithstanding the simplicity of the assessment approach, it nevertheless demonstrates the Rezoning Scenario's contribution to retail demand generation in the overall Liverpool LGA.

Providing Homes close to Jobs, Retail Facilities and Public Transport

The benefits of providing homes close to jobs, retail facilities and public transport were outlined in Chapter 2 of this Report. The delivery of 318 new homes in this location constitutes a strong positive benefit enabling more people to live and work locally, making a greater contribution that the Base Case towards reducing the need for residents to travel and the associated externalities with distances travelled.

Efficient and Effective Use of Land

The importance of ensuring efficient and effective use of land was outlined in Chapter 2 of this EIA. A greater quantum of housing on the Subject Site as sought under the Rezoning Scenario would capitalise on the opportunity presented by this well located site to deliver new homes and a greater contribution towards alleviating pressure on other, less suitable sites to deliver new development.

Loss of Land zoned B6 Enterprise Corridor under the LEP

The Rezoning Scenario would see the Site rezoned from B6 Enterprise Corridor to B4 Mixed Use under the LEP. Planning policy at a State and local level is resistant to the loss of employment generating land. In this case it should be noted that B4 Mixed Use, even with the proposed clause in this instance, mandates some provision of employment generating uses, albeit it is less onerous in regard compared to the B6 Enterprise Corridor zone.

In the case of the Site, a development scheme that has been approved would be implemented in the absence of the proposed rezoning. In effect therefore the issue of the B6 versus B4 zoning is effectively a comparison of the existing zone versus the proposed DA. If the permitted development were implemented, the residential component would be strata titled so there is little likelihood of it being redeveloped to yield additional employment generating uses for a long time. The opportunity cost of the Rezoning Scenario is the Base Case, not an alternative scenario where a greater concentration of employment generating uses is provided.

In the context of employment, the issue at hand is the lower number of jobs sustained under the development sought through the Rezoning Scenario compared to the development sought under the Base Case. This does not pertain to the zoning of the Site.

The rezoning of the Site from B6 to B4 would have no material impact on the amount of employment land available to sustain future employment generating uses beyond the two development scenarios under consideration here, given that it will be unavailable for alternative development either way. As a matter of construction, the rezoning of the Site is therefore immaterial in this case.

We note that Liverpool LGA has a substantial quantum of B6 zoned land, much of which is under-developed such as the land earmarked as part of the South West Growth Centre and Edmondson Park. Council has approved a number of land rezonings to B6 uses which has contributed towards B6 land supply, including:

- Amendment No 16 - B6 Enterprise Corridor Rezoning on Newbridge Road, Moorebank
- Amendment No 23 - Rezoning of Old Council Chambers, Hoxton Park Road, Liverpool from SP2 to B6; and
- Amendment No. 29 - 402 Hoxton Park Road, Prestons.

On this basis it is likely that, should the Site be rezoned from B6 to B4 and notwithstanding that either way the site will be unavailable to accommodate alternative development, there is sufficient B6 zoned land within the LGA capable of delivering future supply in the short to medium term.

3.3 Summary of Impacts

A summary of the impacts identified in this Chapter is provided below.

Table 3.1: Base Case v Rezoning Scenario

Economic Impact	Base Case	Rezoning Scenario
Employment		
Permanent jobs	208	25
Construction jobs	No change	B6 land would be rezoned, but were the rezoning to be retained it would not be available for alternative development under B6 given the Approved Development scenario.
Retail		
Retail office/choice	3,600sqm retail	637sqm localised retail floorspace
Net retail expenditure demand	-3,113sqm	+1,033sqm
Housing Market		
Housing supply	93 new homes	318 new homes
Homes close to jobs	93 new homes allowing 232 people to live close to transport and Liverpool CBD	318 homes allowing 795 people to live close to transport and Liverpool CBD.
Efficient and effective use of land	Would support some contribution to this positive community outcome	Would result in a greater quantum of development, yielding greater positive impacts from this urban infill site.

Source: AEC

As outlined in **Table 3.1** the Rezoning Scenario would yield greater positive economic impacts than the Base Case. Although the Base Case would sustain a lesser quantum of jobs on site but it would sustain a higher quantum of new housing on a site located close to Liverpool City Centre.

The Base Case is likely to redirect trade away from the Liverpool City Centre core and other established centres, potentially undermining the retail centres hierarchy as outlined in Council policy (Liverpool City Council, 2013).

Maximising delivery of new housing expeditiously is a major State Government goal as established in Chapter 0 of this report. The Rezoning Scenario would also make a greater contribution towards alleviating housing affordability and choice by providing more housing and a greater component of smaller units which are the most affordable.

From an employment perspective, the Rezoning Scenario would provide greater support to Liverpool City Centre by increasing the potential shopper pool whilst also helping to avoid dilution of the retail and commercial office offer by not delivering a significant amount of such floorspace on-site as would occur under the Base Case.

The scheme proposed under the Rezoning Scenario includes flexibility for 374sqm of retail floorspace to be converted to provide 6 SOHO (Small-Office-Home-Office) units, if required. We understand that this outcome is unlikely and it as thus not been considered in this Economic Impact Assessment.

The impact of SOHO units being developed at the expense of some retail floorspace would marginally reduce the number of jobs sustained, but would increase the number of on-site residents and the level of retail floorspace demand which would be available to support other retailers in the locality. This outcome would therefore not alter the findings of this Economic Impact Assessment to any great extent.

4. Other Economic Impacts

4.1 Construction Impacts

4.1.1 Approach

The following sections examine the estimated economic activity supported through the approved and proposed construction options. The economic impact has been assessed at the Liverpool Local Government Area (LGA) level.

An Input-Output model, including the development of a series of specific regional Input-Output transaction tables, was developed to reflect the economic structure of the Liverpool LGA (refer to Appendix A).

Input-Output modelling describes economic activity through the examination of four types of impacts which are defined and described in the table below.

Table 4.1: Economic Indicators

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

Source: AEC

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

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

The following estimates consider both Type I and Type II flow-on impacts, though it should be noted that Type II impacts are commonly considered to overstate economic activity.

4.1.2 Model Drivers

For modelling purposes, construction costs (including contingency) were broken down into their respective Australian and New Zealand Standard Industrial Classification (ANZSIC) industries. This breakdown was developed based on assumptions by AEC regarding the most appropriate ANZSIC industries for each activity (see Table 4.2).

Table 4.2: Construction Costs

Construction Component	Cost $2014-15 ($M)	ANZSIC Sector
Base Case		
Residential	$18.0	Residential Building Construction
Commercial	$10.2	Non-Residential Building Construction
Basement	$18.6	Non-Residential Building Construction
Site Works	$0.9	Construction Services
Professional Fees	$3.7	Professional, Scientific and Technical Services
Statutory Fees	$0.5	Excluded*
Total	**$52.0**	**n.a.**
Proposed Development		
Residential	$64.0	Residential Building Construction
Commercial	$1.3	Non-Residential Building Construction
Basement	$15.2	Non-Residential Building Construction
Storage	$2.5	Non-Residential Building Construction
Site Works	$1.7	Construction Services
Professional Fees	$6.6	Professional, Scientific and Technical Services
Statutory Fees	$1.0	Excluded*
Total	**$92.1**	**n.a.**

Notes: * Treated as a transfer of funds not resulting in additional economic activity. Totals may to sum due to rounding.
Source: AEC

Only the construction activity expected to be undertaken within the Liverpool LGA has been included in the economic impact assessment. For the purposes of this assessment it was assumed:

- Approximately 75% of the direct expenditure on construction activity would be sourced from local businesses and labour (including construction and professional services activity).
- Approximately 25% of purchases on goods and services (supply chain related activity) made by construction-related businesses sourced from outside the Liverpool LGA would be spent within the local economy (i.e., 25% of the Type I flow-on activity associated with non-local construction companies is assumed to represent additional local activity in Liverpool LGA)
- Approximately 5% of wages and salaries paid to construction-related workers sourced from outside the region would be spent on local goods and services, such as food and beverages (i.e., 5% of the Type II flow-on activity associated with non-local workers is assumed to represent additional local activity in Liverpool LGA).

4.1.3 Construction Impact Assessment

Base Case

The construction phase associated with the base case development is expected to support the following economic activity through direct and flow-on impacts:

- $89.6 million in additional output.
- $34.1 million in GVA.
- $17.5 million in incomes and salaries paid to households.
- 241 FTE jobs.

The breakdown of modelling outcomes is provided in the table below.

Table 4.3: Base Case Construction Phase Impacts ($2014-15)

Impact	Output ($M)	GVA ($M)	Income ($M)	Employment (FTE)
Direct Impact	$38.6	$9.6	$5.1	71
Indirect Impact (Type I)	$29.1	$12.4	$7.2	87
Indirect Impact (Type II)	$21.9	$12.1	$5.2	83
Total Impact	**$89.6**	**$34.1**	**$17.5**	**241**

Note: Totals may not sum due to rounding.
Source: AEC

Rezoning Scenario

The construction phase associated with the proposed development is expected to support the following economic activity through direct and flow-on impacts:

- $155.6 million in additional output.
- $58.0 million in GVA.
- $31.9 million in incomes and salaries paid to households.
- 437 FTE jobs.

The breakdown of modelling outcomes is provided in the table below.

Table 4.4: Rezoning Scenario Construction Phase Impacts ($2014-15)

Impact	Output ($M)	GVA ($M)	Income ($M)	Employment (FTE)
Direct Impact	$68.4	$16.1	$10.0	141
Indirect Impact (Type I)	$49.8	$21.2	$12.8	152
Indirect Impact (Type II)	$37.4	$20.7	$9.1	144
Total Impact	**$155.6**	**$58.0**	**$31.9**	**437**

Note: Totals may not sum due to rounding.
Source: AEC

4.2 Supporting the Liverpool Retail Centres Hierarchy

As previously identified, the facilitation of additional residents and workers on-site will create a range of positive economic impacts in the local and broader economy including wages, value-and as well as additional retail expenditure for local businesses to capture.

In addition to the residential uses on-site, the Rezoning Scenario offers opportunities for home-based businesses to operate in a centralised, well serviced location which will support economic activity.

5. Viability of Retail and Commercial Uses

In accordance with Council requirements, this Chapter considers the viability of retail or commercial uses on the ground floor of the Site under the Rezoning Scenario.

5.1 Drivers of Viable Retail Uses

Given the location of the Site at a major road intersection which is highly accessible, visible to passing traffic and close to existing residential areas, some level of retail floorspace on the Site is likely to be viable. Commercial viability is further strengthened by the number of new residential units proposed on-site.

Demand from new residents on the Site under the Rezoning Scenario is estimated to be equivalent to 1,670sqm of retail demand. This implies that at least 1,670sqm of retail demand would be sustainable on the Site. That is not to say that all of the retail demand generated by these residents would be captured, but that provision retail floorspace equivalent this this could be sustainable without any adverse impacts on existing or future businesses in Liverpool CBD or other commercial centres as retail floorspace provided would be equal to total new demand generated by residents.

Retail floorspace on the Site is suitable for retail floorspace given:

- The presence of a large residential population on-site who will generate demand for retail goods and services.
- The prominent location of the Site adjacent to a major road intersection and highly visible to passing traffic.
- The presence of new and existing residential uses in the vicinity of the Site.

New retail floorspace on the Site should cater for local needs to minimise competition with other commercial centres and Liverpool CBD in particular. Retail facilities should cater for the daily needs of residents on the Site and in the immediate area to promote convenience and minimise the need to travel. Such businesses could include a convenience store or small supermarket, café, take-away food establishment, pharmacy, bakery, florist, laundry facility, retail bank and greengrocer.

Providing retail floorspace of a convenience nature would cater for the localised shopping needs of residents and reduce their need to travel, but would be of a scale to avoid competing with existing and planned retail in surrounding centres.

5.2 Drivers of Viable Commercial Uses

Based on the latest Property Council of Australia Office Market Report (PCA, 2015), Liverpool CBD provided some 86,639sqm of office floorspace at 1 January 2015. It contained 4,377sqm of vacant floorspace representing a vacancy rate of 5.1%. This represents a decline in vacancy of 6,760sqm (or 7.8 %) over the previous six months as a result of positive absorption.

The extent of recent office absorption reflects positively on the viability of such uses in the Liverpool CBD. However, the Site is not contiguous to the CBD and provision of a sizeable quantum of commercial office uses is not likely to be viable.

Commercial office uses work better when they are co-located and in close proximity to each other and to public transport, allowing a critical mass of supporting facilities to develop (e.g. restaurants, newsagents, drycleaners, etc.). Examples from the broader Sydney metropolitan locality which evidence the need for consolidation include North Sydney, St Leonards, Chatswood and Parramatta.

The Site is considered a sub-optimum location for large scale commercial office uses from a viability and a community perspective. It would dilute the primacy of the commercial precinct in Liverpool CBD. Larger commercial office uses on the Site may compete for tenancies with the CBD which would adversely impact upon the role and function of the centre, contrary to planning policy.

Provision of high street 'destination' commercial uses such as retail banks, medical services, travel agencies, etc. would be viable on the Site, given that these serve residential demand. However a substantial quantum of commercial office uses is neither desirable nor likely to be viable on the Site.

5.3 Implications for the Proposal

Ground floor retail and high street commercial uses would likely be economically viable on the Site given its location, surroundings and the nature of the proposed development itself which includes high density residential uses. Such provision would be likely to increase the attraction of the end development as a place to live for future residents, through the incorporation of a greater quantum of proximate retail goods and services.

A quantum in the order of 637sqm of retail floorspace is envisaged in the Rezoning Scenario. We would recommend this floorspace have the flexibility (if required) to be sub-divided into a number of smaller tenancies which would be capable of accommodating localised retail and high street commercial uses of the type discussed in this Chapter.

6. Net Community Benefit Test

6.1 Net Economic Impact

The net economic costs and benefits of the Rezoning Scenario compared to the Base Case are provided below.

Economic Costs

- Reduction in on-site jobs of 157, assuming development envisaged in the Base Case is fully tenanted.
- Reduction in retail floorspace on-site of 2,963sqm.

Economic Benefits

- Generating a net gain in retail floorspace demand of +1,033sqm (compared to 3,116sqm under the Base Case).
- Providing an additional +225 homes
- Encouraging a consolidation of retail and commercial uses in Liverpool City Centre core.
- Allowing an additional +563 residents to live close to Liverpool City Centre.
- Providing a more suitable residential mix conducive to promoting access to the housing market for first time buyers by delivering a greater number of smaller, more affordable units.
- Making more efficient and effective use of an infill development site by delivering a greater quantum of development.
- Supporting an additional $41.5m in direct construction costs.
- Supporting an additional $65.5m in indirect multiplier impacts as a result of the construction process.
- Supporting an additional 191 jobs directly and indirectly via the construction process.

Net Economic Benefit

Based on the above, the Rezoning Scenario is deemed to deliver a greater net positive community benefit compared to the Base Case.

6.2 Consistency with Planning Policy Objectives

Section 117 Directions

The Section 117(2) direction was previously considered in this Report with Section 1.1 Business and Industrial Zones identified as being relevant. The objectives are identified below together with their consideration in the context of the Proposal.

Table 6.1: Consistency with Section 117(2) Objectives

No.	Objective	Rezoning Scenario
1	Encourage employment growth in suitable locations	• The rezoning would deliver a higher and better use on the Site than that which would be delivered if the existing zoning were retained. It is an appropriate location upon which to deliver the proposed development and would add net retail expenditure and an increased number of workers to the local catchment. This would support employment opportunities in Liverpool CBD and the other commercial centres in the hierarchy. • The Rezoning Scenario and subsequent development would also sustain greater construction related direct and indirect impacts and multipliers than development of the permitted DA, some of which would be felt by local businesses. • In this manner the rezoning would encourage employment growth in suitable locations, whilst accommodating a proportion of employment uses on the Site itself.
2	Protect employment land in business and industrial zones	• The B4 Mixed Use zoning sought would not lead to a reduction in the quantum of land zoned for businesses uses in the area as B4 remains an employment generating land use and the Site would still provide some employment uses post-development. • It would not adversely impact on any business or industrial zoned elsewhere in the local area or set a precedent for further land zonings. As noted, the Liverpool LGA is considered likely to have an ample supply of B6 land in light of the South West Growth Centre and recent land zonings. As such the Rezoning Scenario complies with this Objective.
3	Support the viability of identified strategic centres	• The Rezoning Scenario would consolidate new homes, jobs and investment within close proximity to a Regional Centre and should be the primary location for high density commercial and retail uses to be accommodated in accordance with planning policy; • The Rezoning Scenario would increase the quantum of expenditure generated by residents in the trade area of Liverpool CBD, providing a net positive addition to the pool of expenditure available to be captured by local businesses. It would also provide a greater potential workforce living within walking distance of the CBD, supporting the viability of commercial office uses within it. • For these reasons, the Rezoning Scenario would fulfil this Objective.

Source: DoP, AEC

Section 117 Directions set out five requirements for planning authorities to consider when preparing a planning proposal that will affect land within an existing or proposed business or industrial zone. This are considered below in relation to the Rezoning Scenario.

Table 6.2: Planning Authority Considerations

Consideration	Achieved?	Explanation
Give effect to the objectives of this direction	Yes	• Table 6.1 of this EIA has established that the objectives of the Direction would be achieved via the Rezoning Scenario
Retain the areas and locations of existing business and industrial zones	Yes	• The Rezoning Scenario would ensure the Site remains in commercial use through the proposed B4 Mixed Use zoning rather than a residential zoning. • It would not adversely impact upon the quantum or location of business or industrial zoned land elsewhere in the local area, and furthermore the facilitation of greater retail expenditure and worker pool as well as supporting greater construction related multipliers, the financial viability of existing businesses is strengthened.
Not reduce the total potential floor space area for employment uses and related public services in business zones	Yes	• The Site currently accommodates no employment floorspace being under construction. The proposed rezoning would see the removal of retail and commercial floorspace that would otherwise be provided but will have a greater net positive impact on the viability of retail and employment uses in the local area, including Liverpool CBD; • The Rezoning Scenario would have no impact upon public service land use within a business zone.
Not reduce the total potential floor space area for industrial uses in industrial zones	Yes	• No industrial land would be impacted by the Rezoning Scenario.

Consideration	Achieved?	Explanation
Ensure that proposed new employment areas are in accordance with a strategy that is approved by the Director-General of the Department of Planning	Yes	• As established in this Report, the Rezoning Scenario is consistent with State and Local Government objectives to accelerate housing supply in suitable locations, support jobs, economic development and efficient and effective use of land. It therefore complies with this requirement.

Source: DoP, AEC

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Appendix A: Input-Output Methodology

Input-Output Model Overview

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

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

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

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

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

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

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

Model Development

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

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

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

Where appropriate, values were rebased from 2009-10 (as used in the Australian national IO transaction tables) to 2014 values using the Consumer Price Index (ABS, 2015).

Modelling Assumptions

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

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

assume that household and government consumption is not subject to budget constraints.

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

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

- It is assumed the sub-region has similar technology and demand/ consumption patterns as the parent (Australia) table (e.g. the ratio of employee compensation to employees for each industry is held constant).

Intra-regional cross-industry purchasing patterns for a given sector vary from the national tables depending on the prominence of the sector in the regional economy compared to its input sectors. Typically, sectors that are more prominent in the region (compared to the national economy) will be assessed as purchasing a higher proportion of imports from input sectors than at the national level, and vice versa.

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